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NAS PENSACOLA
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CHARACTERIZATION STUDY

ASSESSNENT OF POTENTIAL GROUND-WATER POLLUTION AT NAVAL AIR STATION, PENSACOLA PENSACOLA, FLORIDA

Prepared for

DEPARTMENT OF THE NAVY
SOUTHERN DIVISION, NAVAL FACILITIES ENGINEERING COMMAND

March 3, 1936

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INTRODUCTION

In January 1954, Geraghty & Miller, Inc., (G&M) was retained by the Naval Facilities Engineering Command, Southern Division (Navy) to provide hydrogeologic consulting services at the Naval Air Station (NAS) in Pensacola, Florida. Specifically, G&M was to assist the Navy in performing Phase II (Confirmation Study) of the 3-phase Navy Assessment and Control of Installation Pollutants (NACIP) program. Phase I or the Initial Assessment Study (IAS) was performed by the Navy and assessed sites at the NAS which might pose a potential threat to human health or the environment due to past hazardous materials or waste management practices. Phase III of the NACIP program will be a remedial-action/ground-water monitoring plan for the sites in need of such measures, as determined from the Confirmation Study (Phase II).

The Confirmation Study consists of two parts, verification and characterization. During verification, the presence or absence of potential contaminants in ground water at each of the sites recommended for study in the IAS, was assessed. The results of the verification study was presented in a report prepared by G&N dated July 26, 1984, and entitled "Verification Study-Assessment of Potential Ground-Water Pollution at the Naval Air Station, Pensacola, Florida." Based on these findings, the characterization study was initiated in order to determine the nature and

extent of contamination at sites requiring additional analysis. Table 1 illustrates the sequence of investigations performed during the NACIP program thus far. Presented in this report are the results of the characterization study work including pertinent data from the verification study.

Project Setting

NAS Pensacola is located on a peninsula in southern Escambia County, immediately southwest of the City of Pensacola. Based at the station are various housing, training, and support activities and a Naval Air Rework Facility (NARF), a large industrial complex for major repair and rework of aircraft engines and frames. The naval base at Pensacola has a long history, during which there have been many activities involved with hazardous materials, some of which are now inactive and largely without records of past operations. Solid wastes have been disposed of primarily at two landfill areas, one north of Chevalier Field (Site No. 11) and the other west of the golf course (Site No. 1). Liquid wastes from the NARF operations were discharged to storm sewers until 1973 when an industrial sewer system and wastewater-treatment plant were installed. Other activities involved with hazardous materials include pesticide application, transformer storage, transport and storage of fuel, and firefighting training.

Potable water for the base is primarily supplied by the well field located at Corry Station several miles north of

Table 1. NACIP Program

Site Number	Phase I IAS Sites Recommended for Study	FDER/Navy Meeting Nov. 17, 1983 Sites Recommended For Study	Phase II Verification Sites Studied	Phase II Characterization Sites Studied
1 Landfill	x	x	x	x
2 Waterfront		x	x	
3 Crash Crew		x	x	
4 Rubble				
5 Borrow Pit				
6 Redoubt				
7 Fire School				
8 Rifle Range				
9 Navy yard		x	x	
10 Commodore P.				
11 N. Chevalier	x	x	x	x
12 Scrap Bins				
13 Mag. Point				
14 Dredge Spoil				
15 Pesticide		x	x	x
16 Brush Disposal				
17 Transformer	x	x	x	
18 PCB Spill				
19 Fuel Pipeline		x	x	x
20 Berthing Pier				
21 Fuel Tank Sludge	x	x		
22 Refueler	x	x	x	
23 Chevalier		x	x	
24 DDT				
25 Radium Spill				
26 Supply Dept.		x	x	x
27 Dial Shop	x	x	x	x
28 PCB Spill				
29 Bldg. 3460	x	x	x	
30 Bldg. 649/755		x	x	
31 Bldg. 648		x	x	x
32 Sludge Beds (WWTP)		x	x	(1)
33 Ponds (WWTP)		x	x	(1)
34 Bldg. 3557			x	x

(1) These sites were studied in conjunction with the surge pond as part of the RCRA Ground-Water Quality Assessment Program at the Wastewater-Treatment Plant (WWTP).

NAS Pensacola, but is supplemented when needed by three wells at NAS Pensacola, the locations of which are shown in Figure 1.

Verification Study Overview

In evaluating the sites of the verification study, the overriding consideration was the potential risk to human health and the environment. The factors which were taken into account in preparing recommendations for further study at specific sites, as outlined in FAC 17-4.245(7)b, include: (1) size of the contaminant plume, (2) toxicity of the contaminants and their concentrations, (3) rate and direction of plume movement in relation to sources of water supply, (4) rate of attenuation of the plume, (5) current and projected future use of adjacent ground and surface waters affected by the plume, and (6) costs of further study or clean-up in comparison to the benefits to the public of such actions.

The locations of the 18 sites included in the verification study are shown in Figure 1. Of these 18 sites, seven were recommended by G&M for further study in the characterization phase (sites 1, 11, 26, 15, 27, 31, and 34) based on the criteria described above. The Florida Department of Environmental Regulation (FDER) recommended that additional studies be conducted at site 19 (fuel farm pipeline leak) and agreed with the Navy's request to study sites 32 and 33 (polishing pond, intermediate pond and industrial sludge drying beds) in conjunction with the ground-water assessment

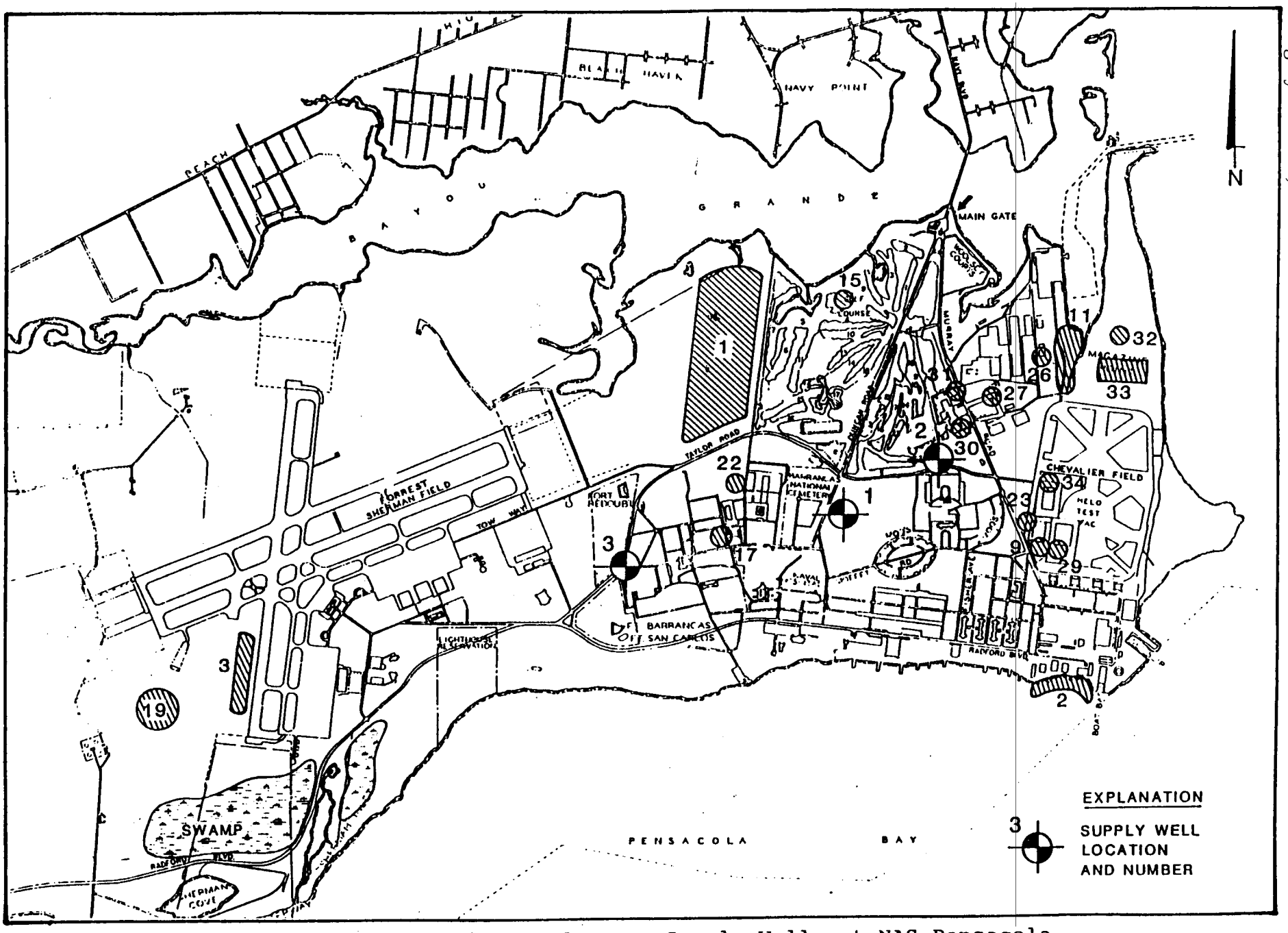


Figure 1. Locations of IAS Sites and Water-Supply Wells at NAS Pensacola.

study of the surge pond, which was performed in accordance with Resource Conservation and Recovery Act (RCRA) regulations. For all other sites which were discussed in the Verification Report, no further actions were recommended.

HYDROGEOLOGIC SETTING

Geologic Framework

The geologic sequence of sediments underlying NAS Penscola is illustrated in Figure 2, which is a composite geologic column constructed from published data and logs of borings and wells in the area. The uppermost sediments extending to a depth of up to 400 feet (ft), comprise the so-called "sand and gravel aquifer." It is underlain by the relatively impermeable Pensacola clay, below which lies the Floridan aquifer, which consists of thick layers of limestone and shale extending to a depth of about 1700 ft.

Topography and Drainage

NAS Pensacola is located on a peninsula, bounded on the north by Bayou Grande, on 'the east and south by Pensacola Bay. The central part of the peninsula is gently rolling with surface elevations as high as 40 ft msl (feet mean sea level). Because of the sandy soil, a high proportion of rainfall infiltrates into the ground and consequently there are few streams. Much of the surface drainage has been constructed or modified to accommodate structures on base. Essentially, the only areas served by storm sewers are Forrest Sherman Field and the highly developed area in the southeast part of the base.

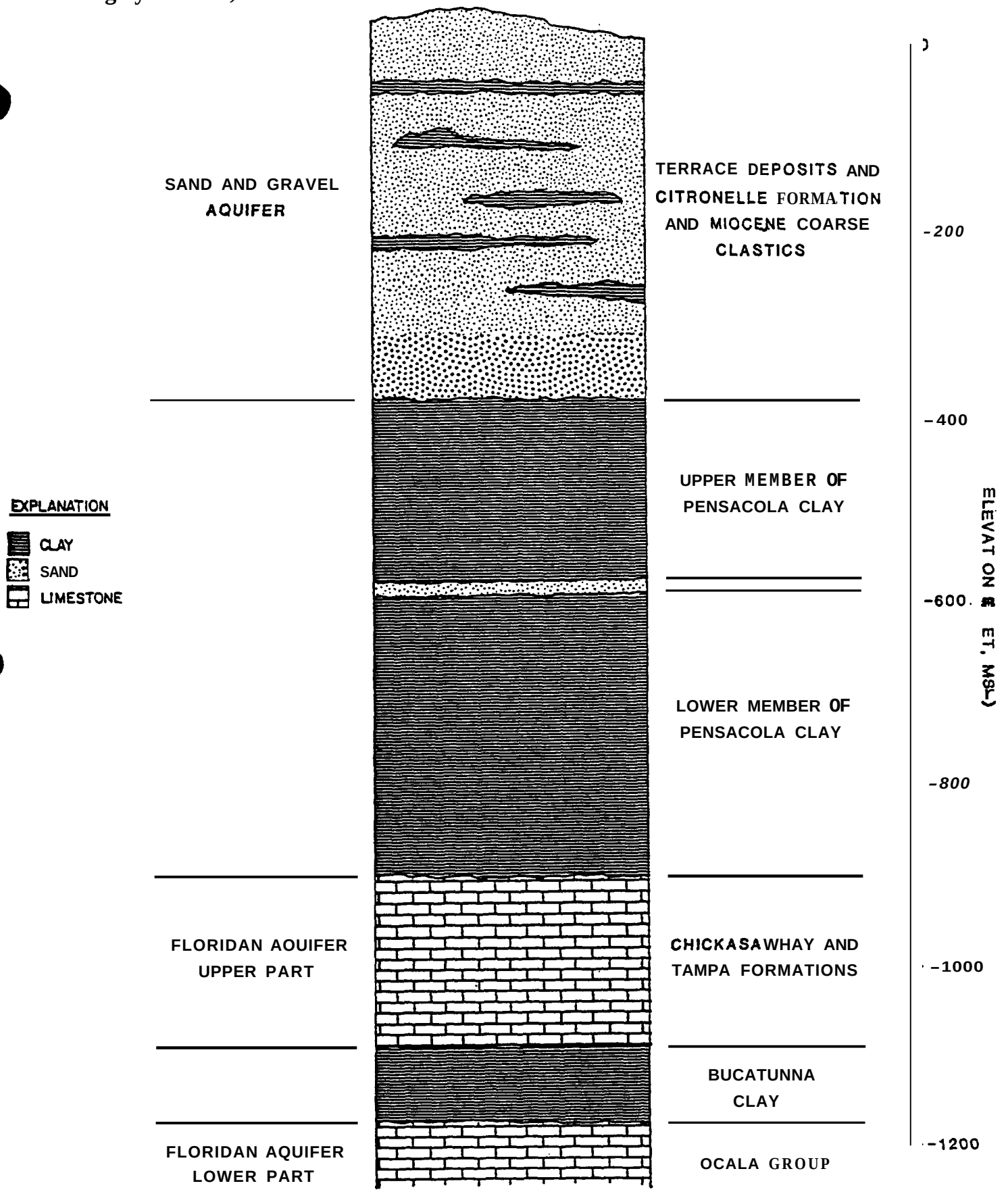


Figure 2. Generalized Geologic Column for the NAS Pensacola Area.

Sand and Gravel Aquifer

The sand and gravel aquifer consists of poorly-sorted, fine to coarse sands with gravel, and lenses of clay which range from a few inches to as much as 60 ft in thickness. The formation contains lensatic zones within the sand, known locally as "hardpan," which are cemented by iron oxide minerals.

Logs of borings from various locations at NAS Pensacola show that the surficial sands extend from ground surface to a depth of approximately -35 ft msl below which is a 15 ft thick marine clay, the continuity of which is uncertain. Underlying the clay is more sand with numerous clay lenses, the depths and dimensions of which are not well defined. Presented in Figures 3 and 4 are geologic cross sections showing the uppermost hydrologic units at the NAS Pensacola.

Most of the wells in the Pensacola area, including the supply wells at NAS Pensacola, are screened within an approximate depth interval of 150 to 350 ft. Water from this zone at NAS Pensacola is undesirable because of high iron content and therefore the three supply wells tapping the upper part of this unit are used only to supplement the supply from Corry Field.

Horizontal movement of ground water in the surficial aquifer is generally from topographic highs to areas of discharge such as Pensacola Bay and Bayou Grande. Ground-

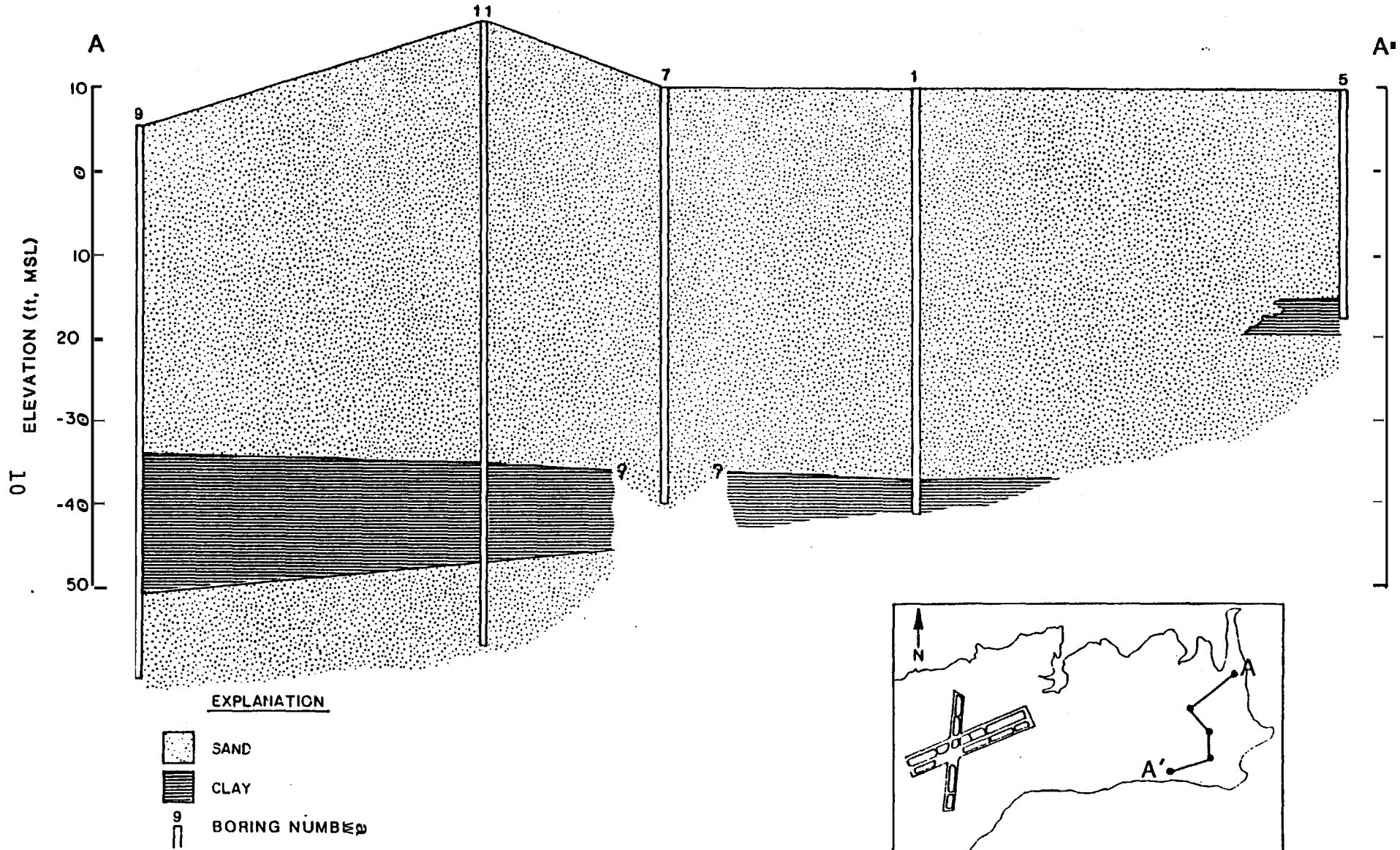


Figure 3. Geologic Cross-Section A-A'.

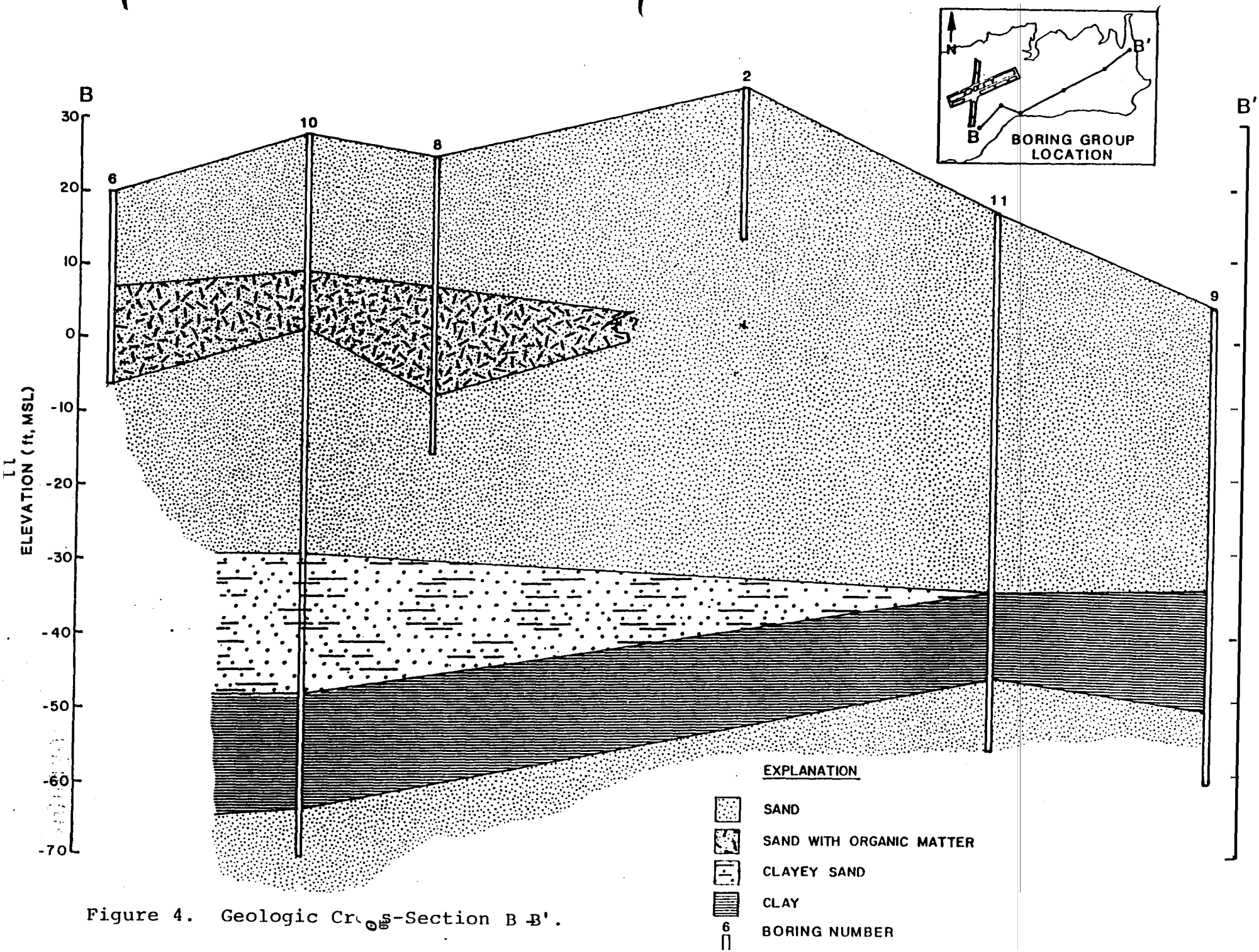


Figure 4. Geologic Cross-Section B-B'.

water flow patterns at each site have bee:: delineated and are included in the individual site evaluations. Although hydraulic variations occur throughout the uppermost layers of the sand and gravel aquifer, the hydraulic. conductivities were determined to generally range from about 5.3×10^{-3} to 2.2×10^{-2} cm/sec (centimeters per second) or 100 to 423 gpd/ft^2 (gallons per day per square foot). Using these values and other pertinent parameters, ground-water flow rates are presented in each separate site discussion.

Floridan Aquifer

The deep limestone layers comprise the regionally extensive Floridan aquifer, which in this area is divided into an upper and lower part separated by the Bucatunna clay. The upper Floridan aquifer is an important source of water in areas east of Escambia County; however, in the Pensacola area, it is highly mineralized and not used as a water supply. The lower Floridan aquifer is also highly mineralized and is, in fact, designated for use as an injection zone for waste disposal in this area.

WORK PERFORMED

Monitor-Well Installation

From April 22 to June 6, 1985, 18 additional shallow ground-water monitor wells were installed into the surficial sands at locations which are presented in the individual site evaluations. These wells were installed to depths ranging from 12.5 to 26 ft. Six deeper monitor wells were installed below the clay layer that occurs between the depth interval of about 40 to 60 ft. The depths of these wells ranged from 58 to 114.5 ft and were located adjacent to some of the shallow wells. In all, 24 ground-water monitor wells were installed during the characterization study.

A typical monitor well is shown schematically in Figure 5, and construction 'details for each monitor well are presented in Table 2. The method employed to install the monitor wells was either by mud-rotary drilling using a 6-inch-diameter bit or by a 6-inch-diameter hollow-stem auger. The wells were constructed with 2-inch-diameter Schedule 40 PVC pipe and screen, which were joined by threaded fittings to preclude the use of PVC bonding cement. Each well was outfitted with a 4-inch-diameter steel security cap with locking hinged cover except for two wells in site 34 which, because of their location, required manhole covers.

Upon completion, each well was developed a sufficient amount of time by the surge-block method to ensure clear,

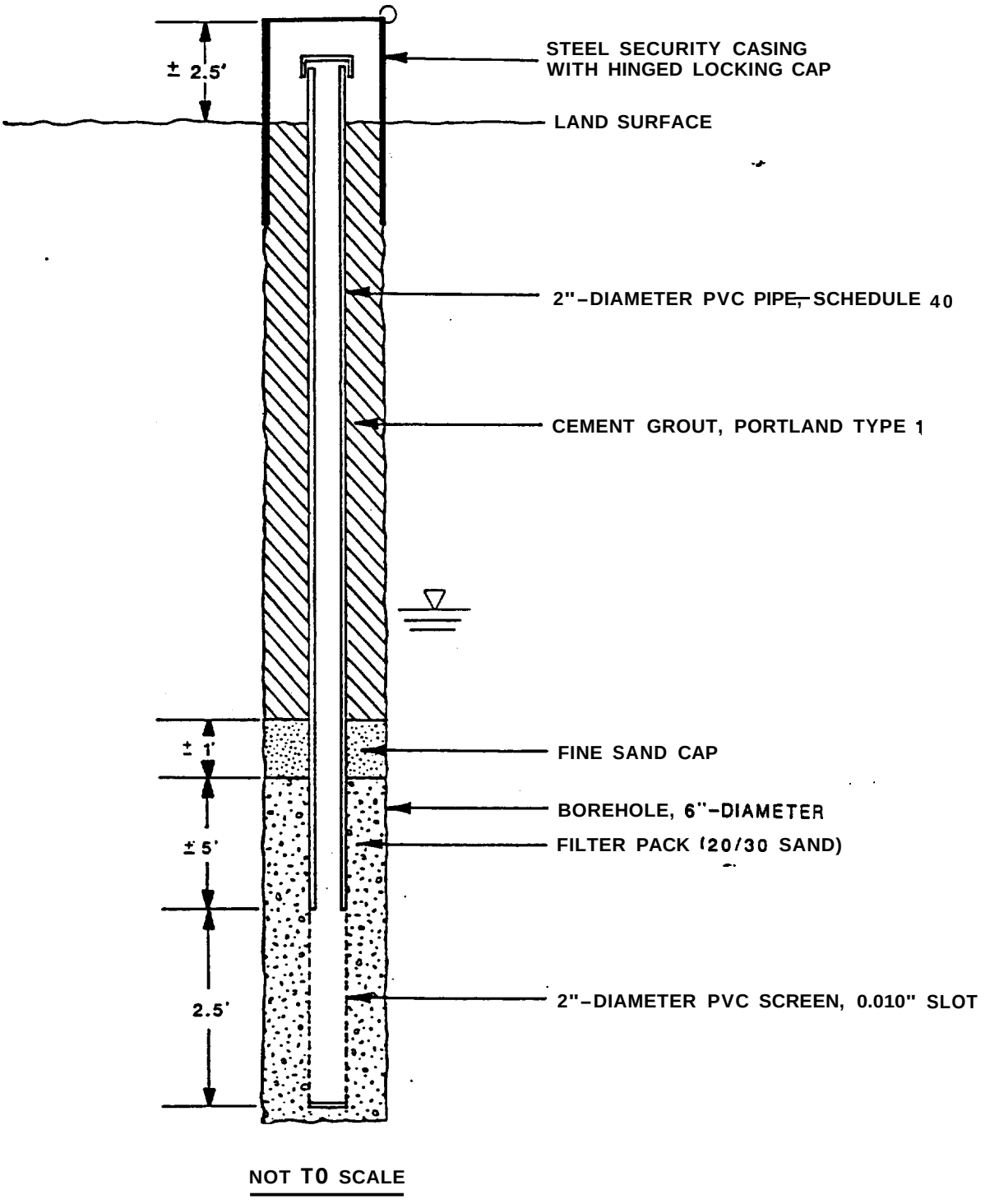


Figure 5. Schematic Diagram Showing Typical Construction Details of the Monitor Wells.

Table 2. Construction Details of Monitor Wells Installed During Characterization Study at NAS Pensacola

Well Designation	Surface Elevation (ft msl)	TOC Elevation (ft msl)	Total Depth Drilled (ft)	Screened Interval (ft)	Depth to Filter Pack (ft)
M-38	18.1	20.83	15.0	12.5 - 15.0	11.0
GM-39	5.8	8.24	15.0	12.5 - 15.0	10.0
GM-40	11.8	14.34	15.0	12.5 - 15.0	9.0
GM-41	1.5	3.96	15.0	12.5 - 15.0	10.0
GM-42	13.5	14.48	16.5	14.0 - 16.5	10.0
GM-43*	6.7	9.13	68.0	63.0 - 68.0	52.0
GM-44*	18.5	21.04	58.0	53.0 - 58.0	47.0
GM-45*	19.0	20.51	107.0	102.0 - 107.0	97.0
GM-46	9.7	12.17	15.0	12.5 - 15.0	8.0
GM-47	5.2	7.73	15.0	12.5 - 15.0	8.0
GM-48	6.4	8.90	15.0	12.5 - 15.0	8.0
GM-49	4.9	7.36	15.0	12.5 - 15.0	8.0
GM-50	3.2	5.71	15.0	12.5 - 15.0	7.0
GM-51*	2.3	4.84	63.0	58.0 - 63.0	55.0
GM-52	3.2	5.65	15.0	12.5 - 15.0	6.0
GM-53	3.7	6.20	15.0	12.5 - 15.0	6.0
GM-54*	23.5	24.01	114.5	109.5 - 114.5	100.0
GM-55	29.8	32.32	26.0	23.5 - 26.0	18.0
GM-56	9.3	8.98	12.5	10.0 - 12.5	4.0
GM-57	9.6	9.31	12.5	10.0 - 12.5	4.0
GM-58	30.7	33.22	25.5	23.0 - 25.5	15.0
GM-59	16.0	16.54	17.0	14.5 - 17.0	8.0
GM-60	15.0	17.51	15.0	12.5 - 15.0	10.0
GM-61*	9.3	8.91	87.5	82.5 - 87.5	76.0

*Deep wells

sediment-free water. Afterwards, the tops of the wells were surveyed for elevations and referenced to the same datum as the verification study wells.

Soil-Test Borings

During the drilling of the deep monitor wells, soil samples were collected by using a split-spoon or Shelby tube sampler at 5-foot intervals or at changes in lithology. During the drilling of the shallow wells, the sediments encountered were examined on-site and their mineral and physical characteristics were describe2 by a G&M representative. Presented in Appendix A are lithologic loss of the borings drilled during the characterization study.

Hydraulic Testing

Vertical hydraulic conductivity tests were performed in a soils-testing laboratory on four samgles of the clay layer found at a depth of approximately 40 to 70 ft. Vertical hydraulic conductivity values ranged from 1.5 x 10^{-8} cm/sec (marine clay) to 3.5 x 10^{-5} cm/sec (marine clayey sand with shells). In addition, slug tests (using a transducer) were performed at several of the monitor wells to obtain drawdown and recovery values for use.in estimating the hydraulic conductivities of the sediments tapped by the monitor wells.

Water-level measurements in all wells were obtained on ssveral different occasions in order to determine both the horizontal and vertical ground-water flow directions and

gradients. Water-level measurements and hydraulic conductivity data are presented in Appendix B.

Soil and Water Chemical Analyses

Ground-water samples were collected from monitor wells installed during both the verification and characterization stages of the confirmation study. The individual site evaluations explain in detail the analyses performed, but in general, the types of analyses included VOCs (volatile organic compounds), metals, arsenic, and pesticides. Prior to sampling with a teflon bailer, the monitor wells were pumped using a peristaltic pump to remove at least three well casing volumes. Also, samples from all three base supply wells were analyzed for the presence of VOCs.

Surface-water samples were collected midstream in the ditch near site 34, using a teflon Sailer, and were analyzed for VOCs. Six shallow soil borings were collected from Site 15, using a hand auger, and arsenic (EP toxicity) analyses were conducted. Characterization study water-quality and soil data are presented in Appendix C, as well as in the individual site evaluations, which also contain summaries of the results of the water-quality analyses performed during the verification study.

All samples were collected in accordance with EPA standard operating and quality-assurance procedures. Field measurements of temperature, pH, and specific conductance

were obtained at the time of sample collection. Samples were preserved on ice until delivery to Pioneer Laboratory, Inc., Pensacola, Florida, for analysis; soil permeability tests were conducted by Pensacola Testing Laboratories, Inc., Pensacola, Florida.

NAS SUPPLY WELLS

Water samples from all three supply wells were collected and analyzed for the presence of VOCs. No VOCs were detected in any of the supply wells.

SANITARY LANDFILL (SITE 1)

Background

The landfill northeast of Fort Redoubt was used from the early 1950's until 1976 (Figure 1). During this tine, nearly all solid waste generated on base, in addition to waste from outlying Navy installations, was deposited here. During its early use, wastes were burned before being covered. The area of active landfilling at this site shifted over the years.

In 1974, a drain tile was found to be discharging leachate from the landfill into a pond on the golf course, creating an odor nuisance and concern about health risks. The drain outlet was temporarily plugged, causing the water table to rise and leachate to appear at the surface, eventually resulting in the closing of the landfill.

Verification Study

Findings

Based on water levels measured in eight monitor wells (GM-3, GM-4, GM-5, and GM-31 through GM-35) installed during the verification study, shallow ground water at this site moves northward toward Bayou Grande as well as eastward toward the golf course ponds and toward an arm of Bayou Grande to the west. Thus, leachate-contaminated ground water originating in the landfill, moves toward these surface-water discharge areas. Shallow ground water has been affected

primarily by VOCs. The highest concentrations of organic constituents occurred generally in the central part of the landfill area (see Table 3). Further investigation was recommended to better delineate the extent of ground-water contamination and to ascertain the composition of ground water discharging into nearby surface waters.

Characterization Study

Findings

Five additional shallow monitor wells (GN-38 through GM-42) and three deep wells (GM-43 through GM-45) were installed during the characterization study. Figure 6 shows the locations of these wells and also a water-table contour map constructed from water-level elevations in the monitor wells. Shallow ground-water movement is northwesterly toward an arm of Bayou Grande and northeasterly toward the golf course ponds and Bayou Grande. The rate of lateral shallow ground-water flow was calculated to be from 190 to 275 ft/yr (feet per year) based upon a hydraulic conductivity of 142 gpd/ft^2, an, effective porosity of 0.20, and a hydraulic gradient range of 0.0048 to 0.007. Water levels in the deep wells indicate a slight gradient to the south.

Laboratory evaluation tests of clays collected at a depth of 50-60 ft during the drilling of wells GM-43 through GM-45, indicate a hydraulic conductivity range of 5.7 x to 3.5 x 10^{-5} cm/sec. The differences in water levels

Table 3. Summary of Chemical Analyses of Ground-Water Samples, Verification Study, Site 1

Compound	GM-3	GM-4	GM-5	GM-31	GM-32	GM-33	GM-34	GM-35
VOLATILES, ug/l								
Methylene chloride	11000	TR	TR	TR	TR	2400	-	430
1,1-dichloroethene	-	-	-	TR	-	-	-	TR
1,1,1-trichloroethane	-	59	-	TR	-	-	44	-
Chloroethane	-	TR	27	-	-	-	165	TR
1,1-dichloroethane	-	-	TR	-	-	-	-	TR
Trans-1,2-dichloroethene	-	-	55	-	-	-	-	TR
Trichloroethene	-	-	TR	-	-	-	-	-
Chloromethane	-	-	-	-	-	-	-	TR
Chlorobenzene	-	-	-	-	-	-	-	20
Benzene	-	-	-	-	-	-	-	-
Ethyl benzene	-	-	-	-	-	-	-	-
Vinyl chloride	-	-	-	-	-	-	-	-
Methyl chloride	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
ACID EXTRACTABLES, ug/l								
2,4-dimethylphenol	-	-	-	-	-	-	-	TR
BASE-NEUTRAL EXTRACTABLES, ug/l								
1,4-dichlorobenzene	-	TR	-	-	-	15	TR	TR
Naphthalene	-	TR	-	-	-	TR	TR	47
1,2-dichlorobenzene	-	-	-	-	-	-	TR	TR
Diethyl phthalate	-	-	-	-	-	TR	-	TR
2 methyl naphthalene	-	-	-	-	-	-	14	TR
TOTAL VOCs, ug/l	11000	68	84	8	2	2425	243	546
PESTICIDES/PCBs, ug/l	-	-	-	-	-	-	-	-
METALS, mg/l	All below EPA Primary Drinking-Water Standards							
FIELD PARAMETERS								
pH	6.5	6.4	5.4	5.7	6.2	6.2	6.1	6.0
Specific Conductance (umhos/cm)	235	420	90	125	235	595	480	480

TR = trace [<10 ug/l (ppb)]
\- = none detected

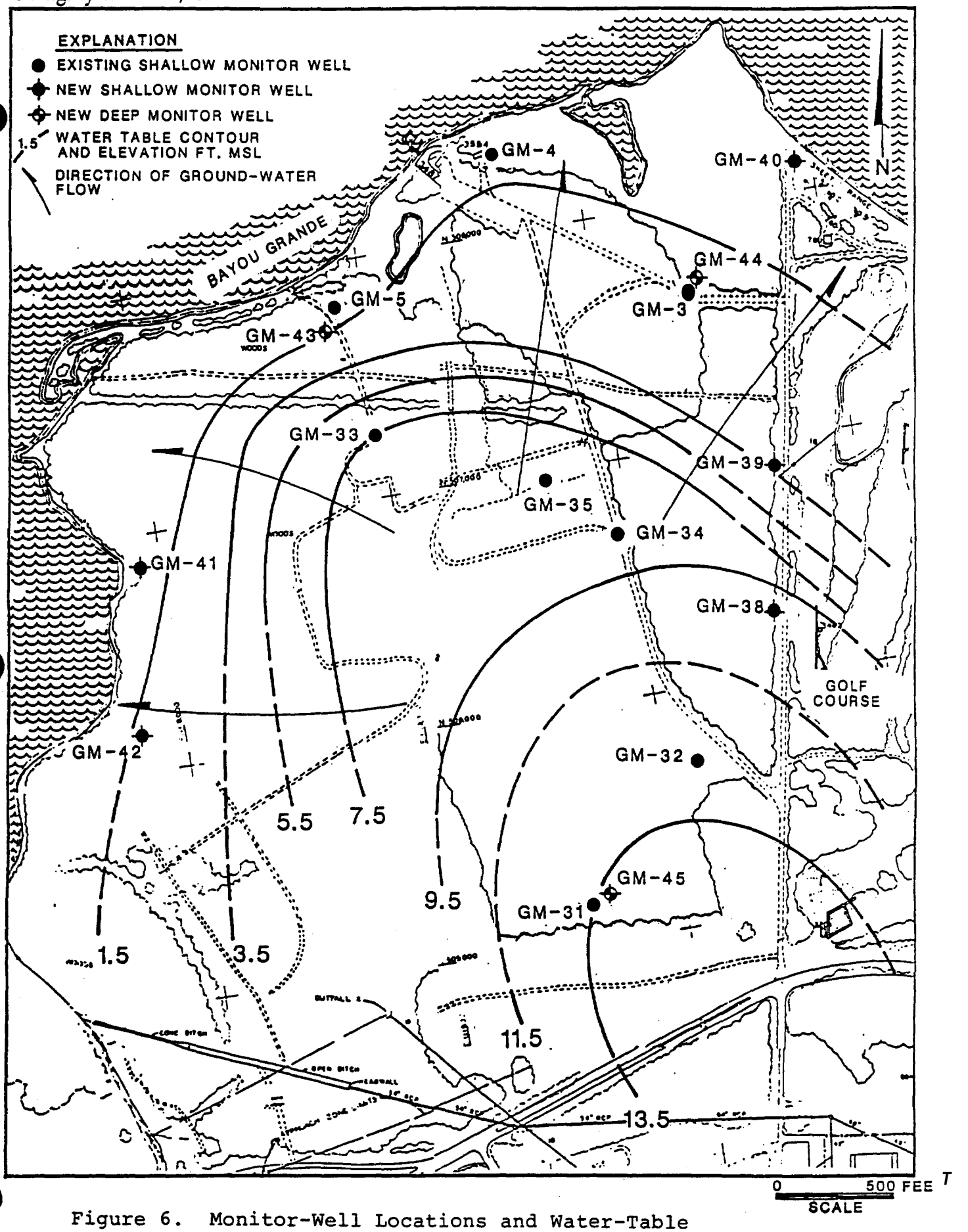


Figure 6. Monitor-Well Locations and Water-Table Contours (Site1).

between adjacent shallow and deep monitor wells (clustered wells) indicate a downward hydraulic gradient between the upper and lower sand units in the interior of the site (wells GX-31 and GM-45), and an upward gradient at the coastline (wells GM-5 and GM-43).

Ground-water samples from the wells installed during the verification study (GM-3, GM-4, GM-5, and GM-31 through GM-35) were analyzed for the presence of VOCs, and the results are summarized in Table 4. The wells installed during the characterization study were analyzed for EPA's list of organic priority pollutants including VOCs, acid and base/neutral extractables, pesticides, and polychlorinated biphenyls (PCBs). These results are summarized in Table 5. Figure 7 illustrates an areal distribution of total organic concentrations detected in the shallow ground-water aquifer at this site. No acid or base/neutral extractable organic compounds or pesticides/PCBs were detected in any of the wells, and the VOCs present in the shallow wells were most predominant in the central portion of the site (wells GM-33, 34, 38, 4, 5). The VOCs detected in the shallow wells during the verification study differed significantly from those detected during characterization. Low levels of VOCs were detected in two of the three deep wells (GM-44, 45). At these particular sites, the adjacent shallow monitor wells exhibited trace to low levels of VOCs (GM-31 and GM-5, respectively), and no VOCs (GM-3). Measurements of pH did not vary greatly among the wells monitored. Specific

Table 4. Summary of Chemical Analyses of Ground-Water Samples, Characterization Study, Site 1

Compound	GM-3	GM-4	GM-5	GM-31	GM-32	GM-33	GM-34	GM-35
VOLATILES, ug/l								
Methylene chloride	-	-	-	-	-	-	-	-
1,1-dichloroethene	-	-	-	-	-	-	-	-
1,1,1-trichloroethane	-	-	-	-	-	-	-	-
Chloroethane	-	-	-	-	-	-	-	-
1,1-dichloroethane	-	-	-	-	-	-	-	-
Trans-1,2-dichloroethene	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-
Chloromethane	-	-	-	-	-	-	-	-
Chlorobenzene	-	TR	-	-	TR	1	TR	TR
Benzene	-	TR	-	-	-	TR	43	10
Ethyl benzene	-	TR	-	-	-	20	14	TR
Vinyl chloride	-	TR	56	TR	TR	TR	250	TR
Methyl chloride	-	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-	-
TOTAL VOCs, ug/l	-	21	56	1	3	35	310	27
FIELD PARAMETERS								
pH	6.9	7.1	6.8	6.9	6.2	6.8	6.8	6.2
Specific Conductance (umhos/cm)	280	535	75	88	250	400	575	510

TR = trace [<10 ug/l (ppb)]
\- = none detected

Table 5. Summary of Chemical Analyses of Ground-Water Samples, Characterization Study, Site 1

Compound	GH-38	GM-39	GM-40	GM-41	GM-42	GM-43	GM-44	GM-45
VOLATILES, ug/l								
Methylene chloride	-	-	-	-	-	-	-	-
1,1-dichloroethene	-	-	-	-	-	-	-	-
1,1,1-trichloroethane	-	-	-	-	-	-	-	-
Chloroethane	-	TR	-	-	-	-	-	-
1,1-dichloroethane	-	-	-	-	-	-	-	-
Trans-1,2-dichloroethene	-	-	-	-	-	-	-	-
Trichloroethene	-	-	-	-	-	-	-	-
Chloromethane	-	-	-	-	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-	-
Benzene	41	-	-	-	TR	-	76	67
Ethyl benzene	-	-	-	-	-	-	TR	-
Vinyl chloride	-	30	-	-	TR	-	-	-
Methyl chloride	-	TR	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	TR	TR
ACID EXTRACTABLES, ug/l	-	-	-	-	-	-	-	-
BASE-NEUTRAL EXTRACTABLES	-	-	-	-	-	-	-	-
TOTAL VOCs, ug/l	41	40	-	-	13	-	85	63
PESTICIDES/PCBs, ug/l	-	-	-	-	-	-	-	-
FIELD PARAMETERS								
pH	6.5	6.8	7.5	5.1	5.9	6.7	6.6	6.9
Specific Conductance (umhos/cm)	120	420	80	110	140	185	280	240

TR = trace [<10 ug/l (ppb)]
- = none detected

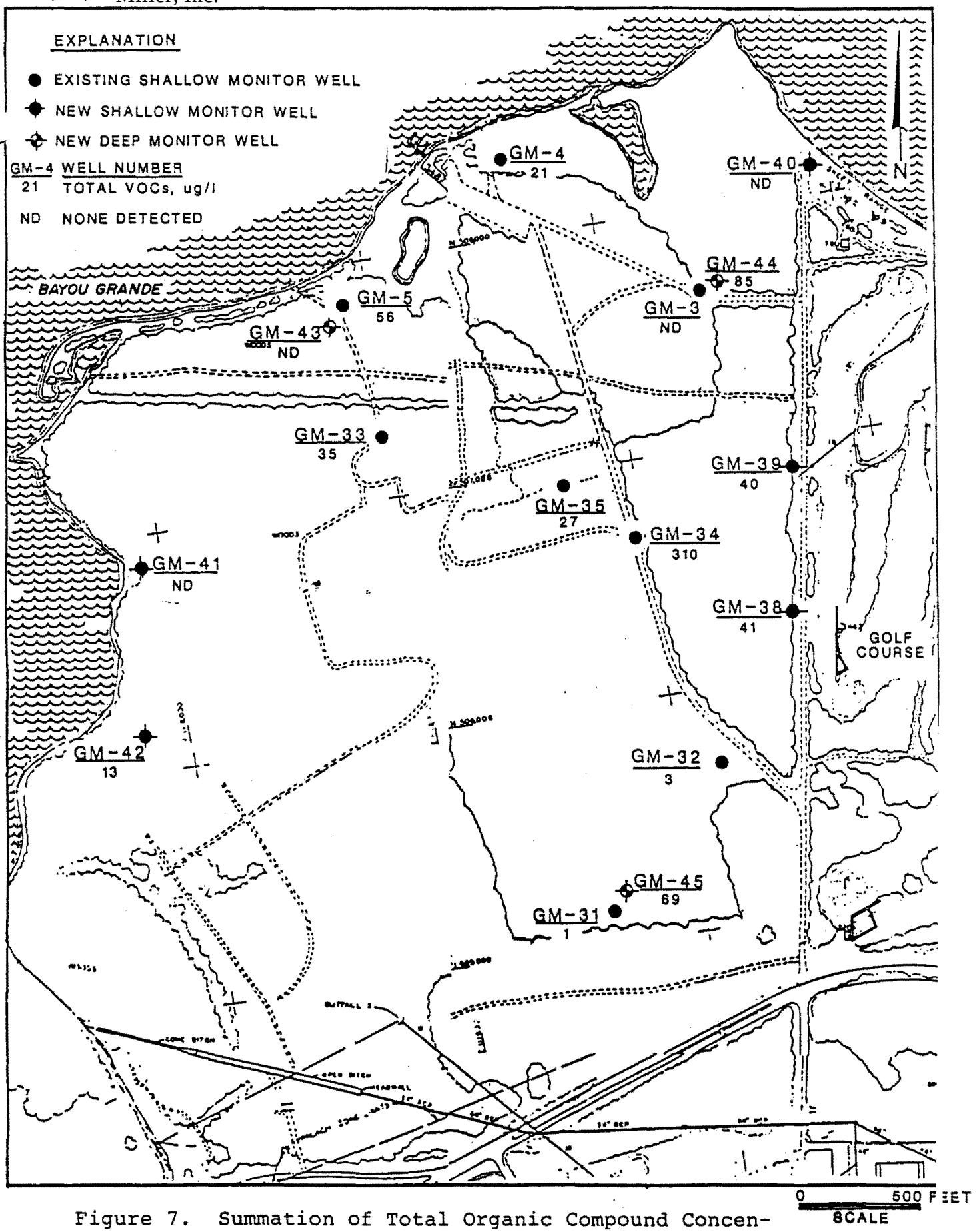


Figure 7. Summation of Total Organic Compound Concentrations (in ug/l) in the Shallow Ground Water (Site 1).

conductance values were generally less than 595 umhos/cm (micromhos per centimeter).

Recommendations

The current data base indicates the presence of organic chemical contamination primarily in the east-central portion of the site. Significant differences were found in the types and concentrations of organic compounds detected between the two sampling events (verification study and characterization study). Therefore, it is recommended that ground-water samples from all wells at this site be analyzed for EPA's list of priority pollutants. After these results are received, the wells should again be tested for the presence of VOCs and any other organics detected in significant concentrations during the first round. The results of these two sampling events along with the existing data will provide the data base for assessing the potential risks associated with the no-action alternative and the feasibility of implementing remedial measures to minimize potential risks.

PESTICIDE RINSEATE DISPOSAL AREA (SITE 151

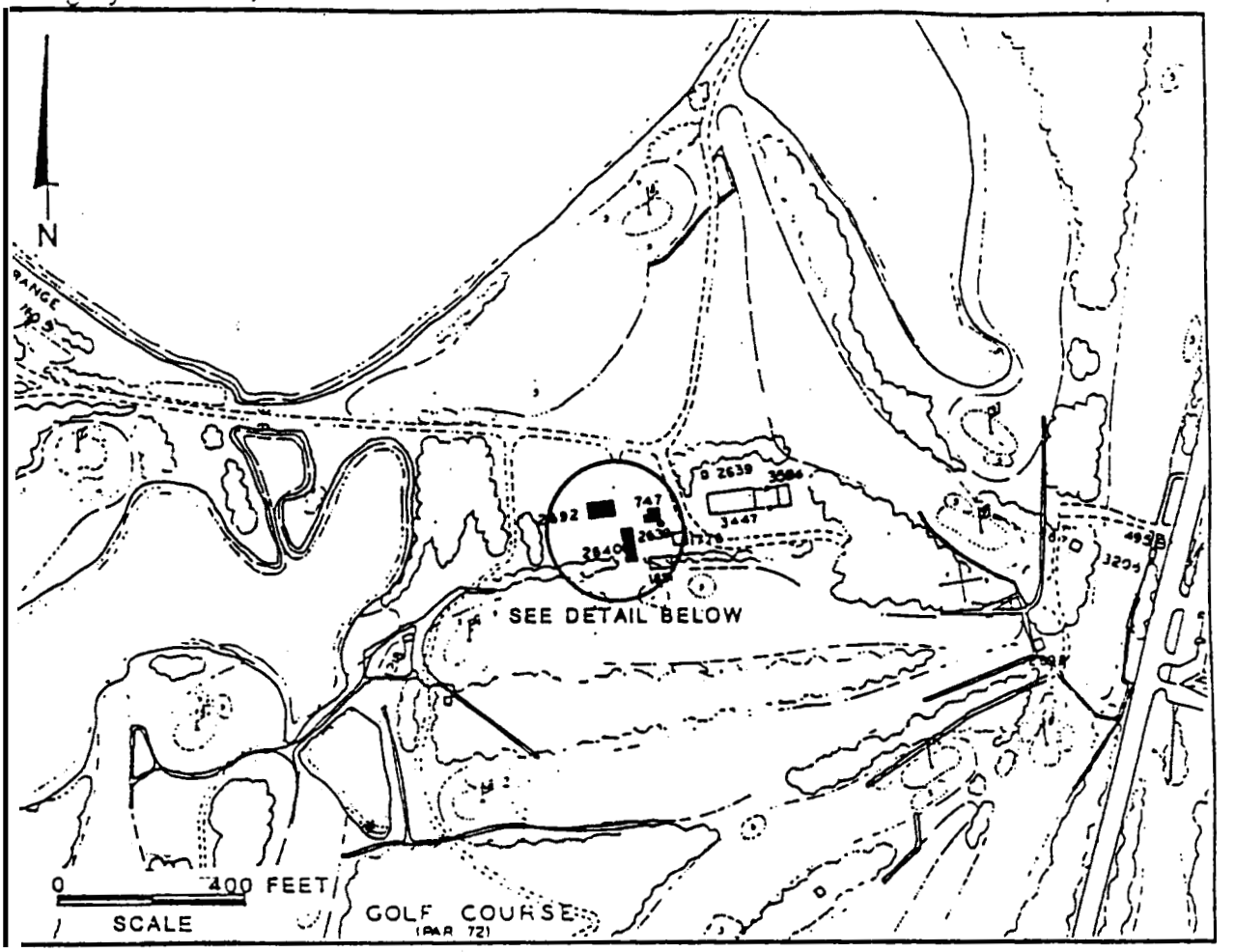
Backqround

This site, which is located in. the golf course maintenance area (Figure 1), was used between 1963 and 1979 for disposal of rinse water from the cleaning of pesticide mixing and spray equipment.- During cleaning operations, dilute rinseate solutions, reportedly containing organic phosphates, chlorinated hydrocarbons, carbaryl and carbamates, were poured directly onto the ground. Pesticides were stored outside just east of Building 2692 and equipment was rinsed on an asphalt wash pad located near the northwest corner of Building 2640 (see Figure 8).

Verification Study

Findings

Soil samples were collected from various depths at three locations (sample numbers 15-1, 15-2, 15-3) from these two areas. The samples were analyzed for total concentrations of pesticides and arsenic. Arsenic and organic pesticides were detected in the soil samples and show a rather consistent decrease in concentration with depth. Total arsenic concentrations ranged from 1.6 to 31 mg/l (see Table 6 for a summary of results). Further study was recommended to define the area of contaminated soil and to determine if ground water was affected.



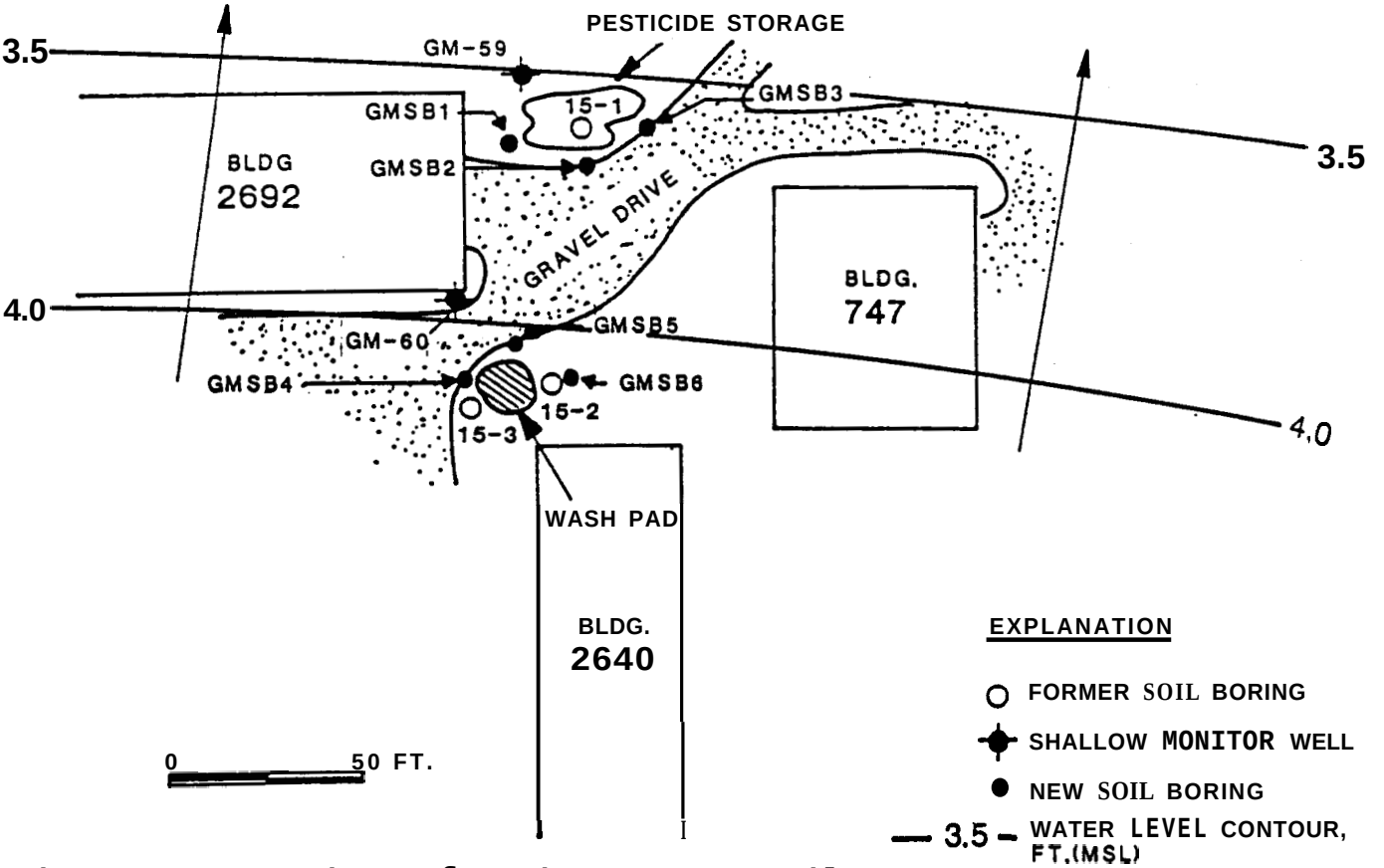


Figure 8. Locations of Monitor Wells, Soil-Test Borings, Including Generalized Water-Table Surface (Site 15)

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Table 6. Summary of Chemical Analyses of Soil Samples, Verification Study, Site 15

Compound	15–1–1	15–1–12	15–1–24	15–2–1	15–2–12	15–2–24	15–3–1	15–3–12	15–3–24
PESTICIDES AND PCBs									
Chlordane	21.0	6.3	0.41	1.1	0.59	–	0.29	0.06	–
4,4' – DDT	1.2	0.79	0.01	0.69	0.40	0.01	–	–	–
4,4' – DDE	1.2	–	–	–	0.19	–	–	–	–
Heptachlor*									
Heptachlor epoxide	–	0.16	0.03	–	–	–	–	–	–
Dieldrin	–	–	–	0.17	0.1	0.01	0.10	0.44	0.02
4,4' – WID	–	–	–	–	9.03	–	–	0.01	–
BHC – beta	–	–	–	–	0.03	–	–	–	–
TOTAL PESTICIDES AND PCBs	23.4	7.25	0.45	1.96	1.34	0.02	0.39	0.51	0.02
TOTAL ARSENIC	15.0	8.0	3.2	15.0	19.0	19.0	31.0	1.6	2.4

NOTE: Concentrations in ug/gm (ppm), dry weight.

* Heptachlor is a constituent of chlordane and is present in all samples containing chlordane

– = Not detected

5-1)-1 = (Soil sample no.) – depth of sample, in inches

Characterization Studv

Findings

Two shallow ground-water monitor wells (GM-59, 60) were installed at locations downgradient from the sites shown in Figure 8. Also illustrated in this figure is a general water-table contour map constructed from water-level elevations in the monitor wells. Shallow ground-water movement is northward toward Bayou Grande. The rate of lateral shallow ground-water flow is estimated to be 20 ft/yr using a hydraulic conductivity value of 100 gpd/ft^2, an assumed effective porosity of 0.20 and a hydraulic gradient of 0.0007.

Ground-water samples were analyzed for the presence of pesticides, PCBs, and arsenic. Soil samples collected from depths of 1 inch, 12 inches, and 24 inches,. at six locations, were analyzed for arsenic levels (EP toxicity). Table 7 summarizes the results of the soil analyses. No pesticides or PCBs were detected in the ground-water samples. Low .levels of arsenic were detected in well GM-59 (0.153 mg/l). In 2 of the 18 soil samples, arsenic levels exceeded the EP toxicity maximum contaminant level of 5 mg/l (GMSB-2-1 with a value of 12.7 mg/l and GMSB-2-12 with a value of 5.2 mg/l).

Recommendations

The results of the EP toxicity tests of soil samples at boring location GMSB-2 indicate that the soil in this area is

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Table 7. Summary of Chemical Analyses of Soil Samples, Characterization Study, Site 15

Sample Number	EP Toxicity - Arsenic [mg/l]
GMSB-1-1	0.521
GMSB-1-12	4.4
GMSB-1-24	0.016
GMSB-2-1	12.7
GMSB-2-12	5.2
GMSB-2-24	0.615
GMSB-3-1	0.046
GHSB-3-12	-
GWSB-3-24	-
GMSB-4-1	-
GMSB-4-12	-
GMSB-4-24	-
GMSB-5-1	0.026
GMSB-5-12	0.043
GMSB-5-24	-
GMSB-6-1	-
GMSB-6-12	0.127
GMSB-6-24	0.036

(GMSB-1)-1 = (Soil sample no.) - depth of sample, in inches
- = none detected

considered to be a hazardous waste. Therefore, this contaminated soil will have to be removed. It is recommended that a soil program be undertaken in the vicinity of GMSB-2 to delineate the areal extent of contaminated soil. Figure 9 shows the proposed locations of soil borings; three soil samples should be collected from each of the eight 3-ft deep borings. The first sample will be a composite of the soil from a depth of 1 ft, the second sample from a 2-ft depth, and the third sample from a 3-ft depth. These 24 soil samples will then be analyzed for arsenic levels (EP toxicity) to delineate the area and depth of the soil to be removed. In addition, it is recommended that water samples be collected from the two monitor wells and analyzed for arsenic.

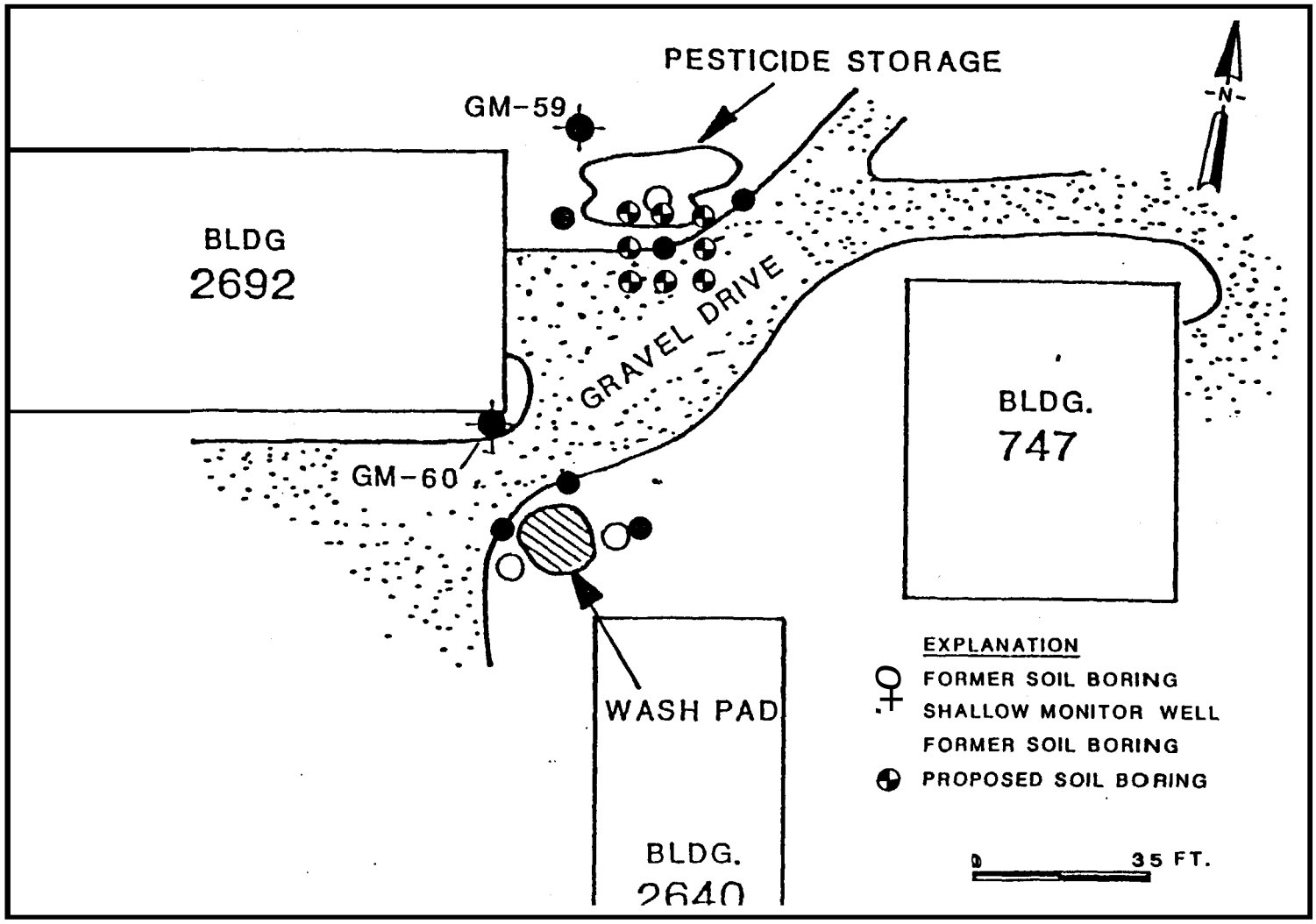

Figure 9. Locations of Proposed Soil Borings at the Pesticide Rinseate Disposal Area (Site 15).

SOLVENT SPILL SITE (SITE 34)

Background

During May 1984, a leak occurred in a pipeline carrying a solvent detergent solution used to clean aircraft. The leak was at the north end of Building 3557, Site 34 in Figure 1, and involved the loss of about 45,000 gallons of the solution. The solution reportedly contained 1.7% chlorinated aromatic hydrocarbon solvent.

Verification Study

Findings

Water-level data from nearby monitor wells indicate that shallow ground water is moving toward the paved ditch west of Chevalier' Field. Although VOCs were not detected in ground-water samples from the monitor wells, some VOCs were found in low concentrations in the ditch downstream from the site (Table 8).

Characterization Study

Findings

Three shallow monitor wells (GM-53, 56, 57) and one deep well (GM-61) were installed at the locations shown in Figure 10. Water-level elevations from the shallow monitor wells indicate that shallow ground-water flow is northwestward toward the paved ditch west of Chevalier Field. The rate of

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Table 8. Summary of Chemical Analyses of Surface and Ground-Water Samples, Verification Study, Site 34

Compound	S-1*	S-2*	S-3*	GM-6	GM-7	GM-29	GM-30
VOLATILES, ug/l							
Methylene chloride	TR	TR	TR	-	-	-	-
1,1-dichloroethene	TR	TR	TR	-	-	-	-
Trans-1,2-dichloro-ethene	TR	TR	19	-	-	-	-
1,2-dichloroethane	TR	TR	10	-	-	-	-
1,1,1-trichloro-ethane	TR	TR	TR	-	-	-	-
Trichloroethene	TR	TR	41	-	-	-	-
Tetrachloroethene	-	-	TR	-	-	-	-
Chlorobenzene	-	-	-	-	-	-	-
Vinyl chloride	-	-	-	-	-	-	-
Benzene	-	-	-	-	-	-	-
Toluene	-	-	-	-	-	-	-
TOTAL VOLATILES	15	16	85	-	-	-	-
METALS, mg/l	-	-	-				
FIELD PARAMETERS							
pH	6.67	6.66	6.74	6.5	7.5	7.2	6.4
Specific conductance (umhos/cm)	170	270	650	105	130	210	110

- = none detected
TR = trace [<10 ug/l (ppb)]
* = surface-water samples

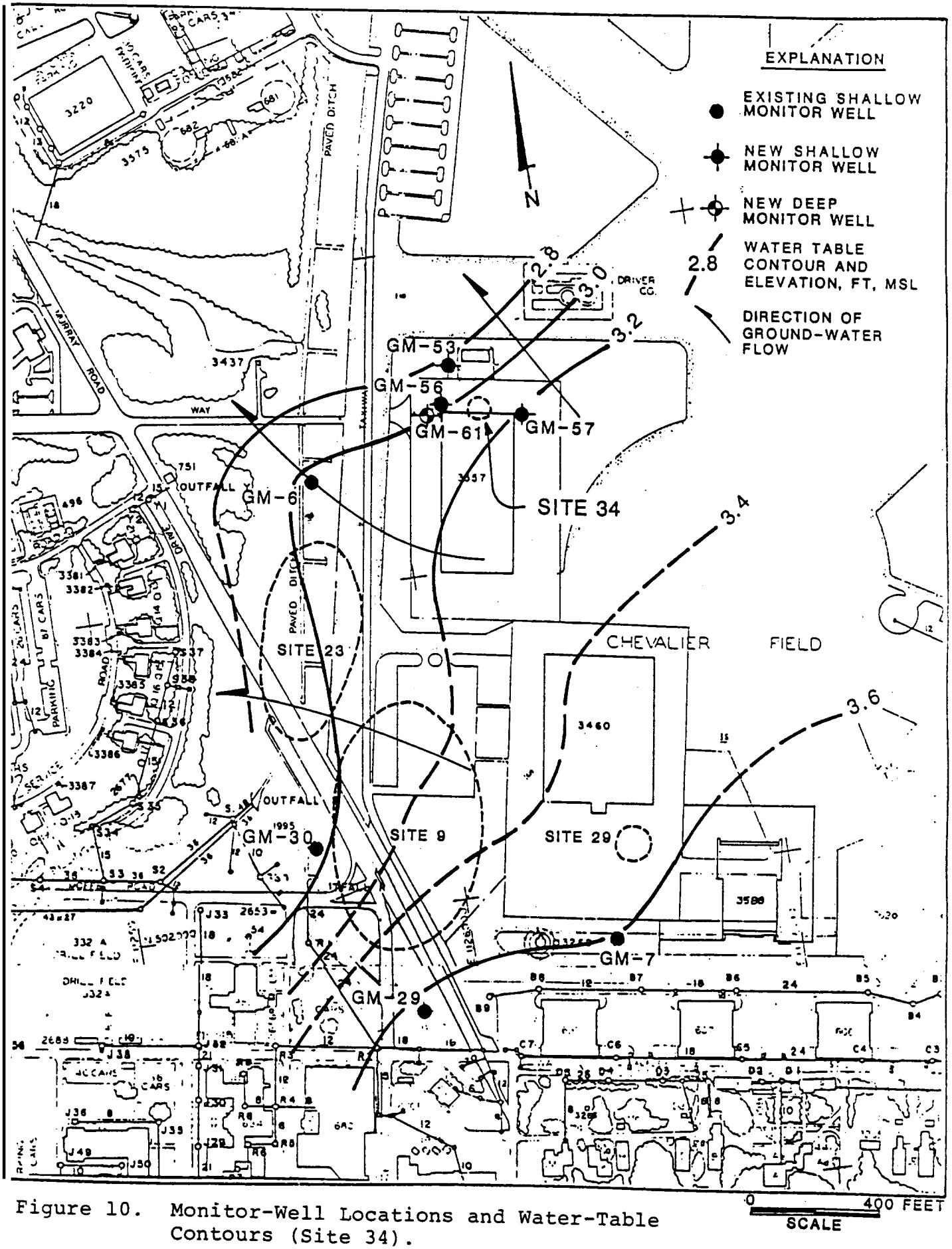

Figure 10. Monitor-Well Locations and Water-Table Contours (Site 34).

lateral shallow ground-water flow was calculated to be 35 ft/yr based on an assumed porosity of 0.20, a hydraulic gradient of 0.0003, and a hydraulic conductivity of 423 gpd/ft^2. Laboratory analysis of the clay layer found at a depth of 50 ft at this site, indicates a hydraulic conductivity of 1.5 x 10^{-8} cm/sec for this unit.

Ground-water samples from all four new wells and existing well GM-6 were analyzed for the presence of VOCs. Three surface-water samples (S-1, S-2, S-3) were also collected from the ditch downstream of the site and analyzed for VOCs. Table 9 summarizes the results of the chemical analyses performed on the wells at this site during characterization. This data was then used to prepare Figures 11 and 12, which show the areal distribution of total VOCs detected at each monitor well and in the surface waters, respectively. VOCs were only detected in shallow well GM-53 (2 ug/l of benzene and 4 ug/l of toluene) and in all three surface-water samples, 2 to 42 ug/l total VOCs. However, the types of VOCs detected in ground water and surface waters were different, suggesting that the source of VOCs in the surface waters is not related to Site 34. Specific conductance values were highest for surface-water sample S-3 (8,000 umhos/cm), and deep monitor well GM-61 (900 umhos/cm).

Recommendations

VOCs were detected in only one of the four monitor wells (GM-53) installed at the solvent spill site and the concen-

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Table 9. Summary of Chemical Analyses of Surface and Ground-Water Samples, Characterization Study, Site 34

Compound	S-1*	S-2*	S-3*	GM-53	GM-56	GM-57	GM-61	GM-6
VOLATILES, ug/l								
Methylene chloride	-	-	-	-	-	-	-	-
1,1-dichloroethene	TR	-	-	-	-	-	-	-
Trans-1,2-dichloroethene	-	TR	-	-	-	-	-	-
1,2-dichloroethane	-	-	-	-	-	-	-	-
1,1,1-trichloroethane	TR	-	-	-	-	-	-	-
Trichloroethene	TR	-	-	-	-	-	-	-
Tetrachloroethene	-	-	-	-	-	-	-	-
Chlorobenzene	TR	TR	-	-	-	-	-	-
Vinyl chloride	TR	32	TR	-	-	-	-	-
Benzene	-	-	-	TR	-	-	-	-
Toluene	-	-	-	TR	-	-	-	-
TOTAL VOLATILES	19	42	2	6	-	-	-	-
FIELD PARAMETERS								
pH	6.3	6.3	6.3	6.1	6.7	6.4	8.0	6.27
Specific Conductance (umhos/cm)	180	900	8000	225	590	150	900	130

\- = None detected
TR = Trace [<10 ug/l (ppb)]
* = surface-water samples

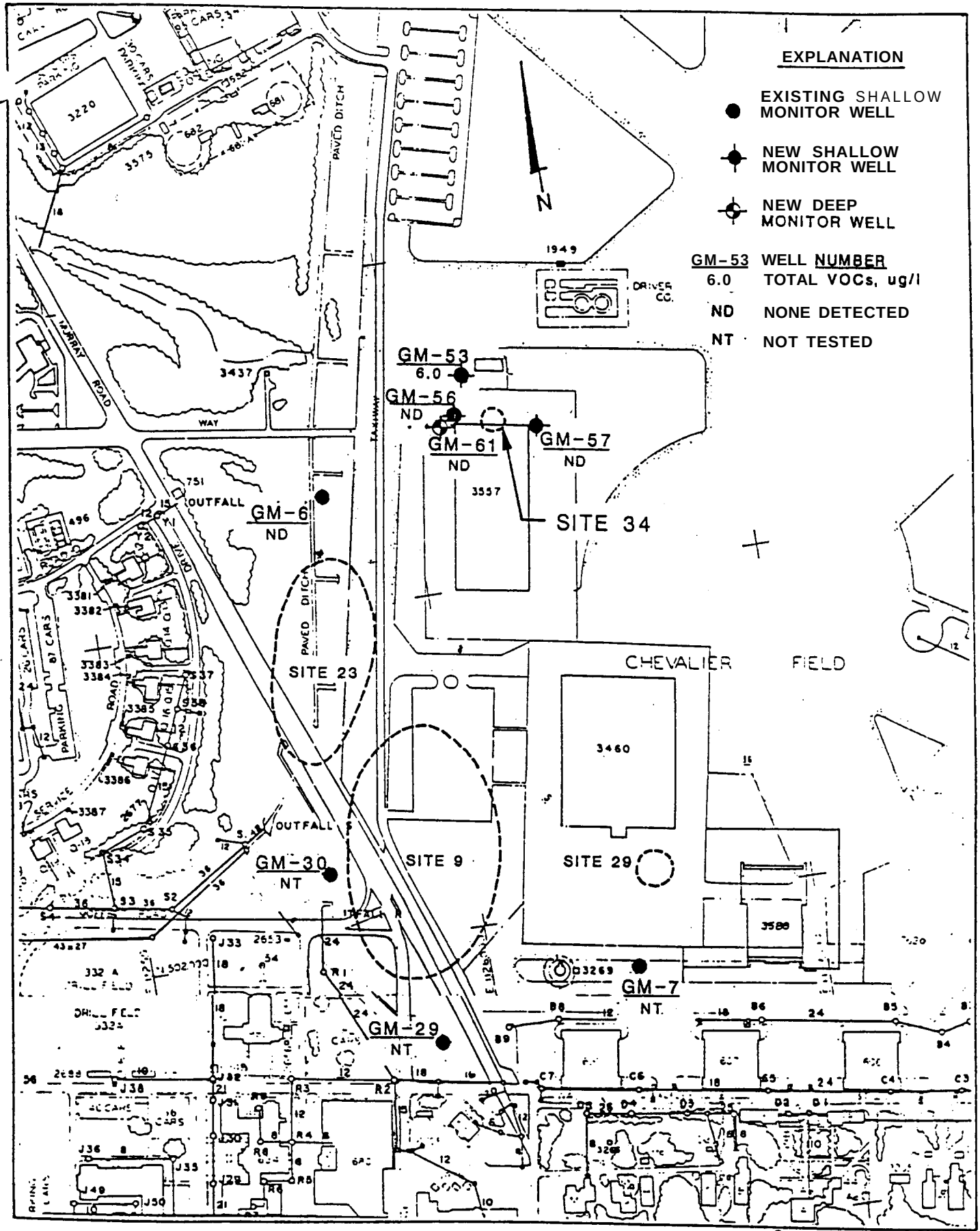

Figure 11. Summation of Total Organic Compound Concentrations (in ug/l) in the Shallow Ground Water (Site 34).

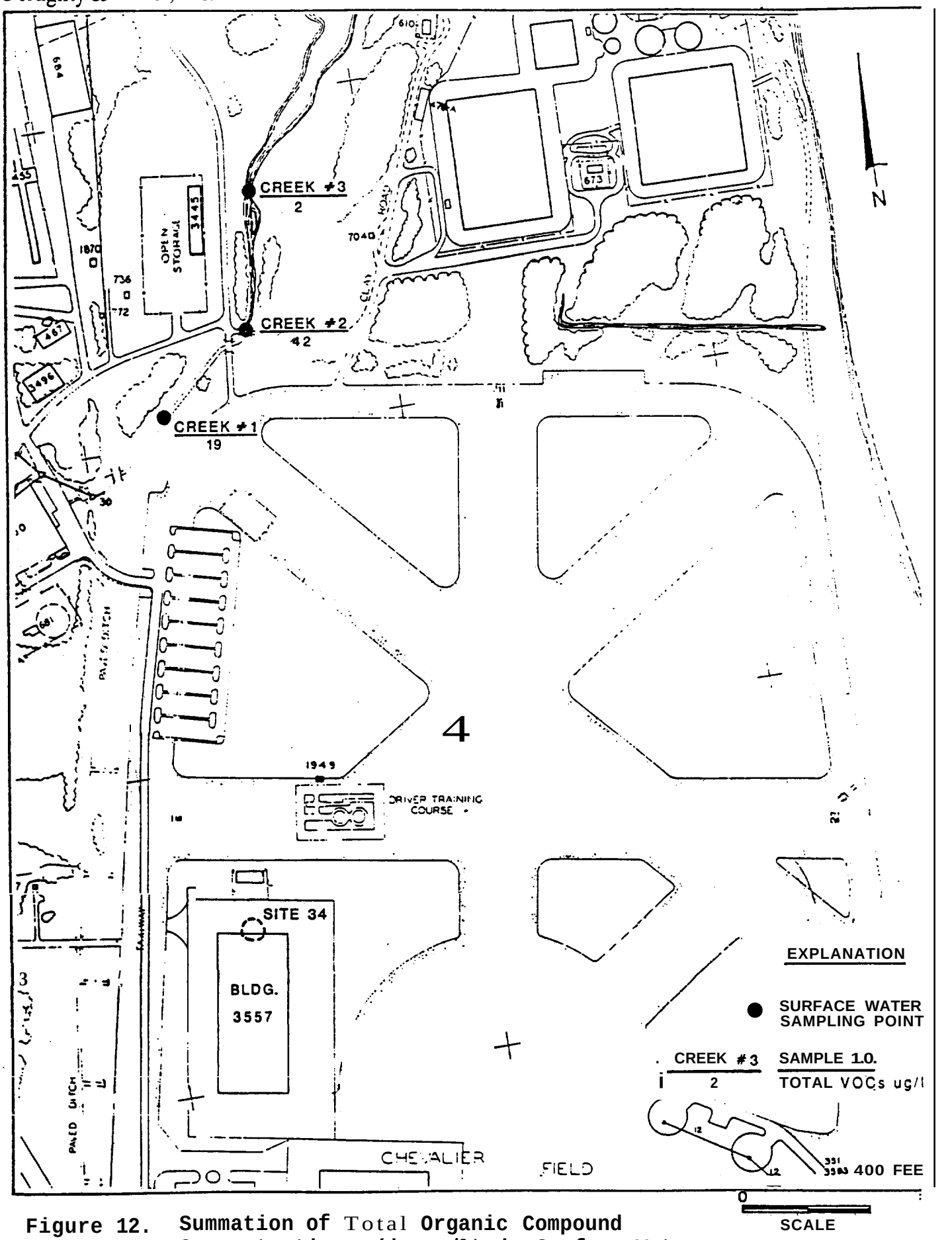

Figure 12. Summation of Total Organic Compound Concentrations (in ug/l) in Surface Water (Site 34).

trations were low at 6 ug/l. This site does not appear to pose a threat to human health or the environment; therefore, no further action is recommended.

NORTH CHEVALIER FIELD DISPOSAL AREA (SITE 11) AND SUPPLY DEPARTMENT'S OUTSIDE STORAGE (SITE 26)

Background

From the late 1930's until the mid 1940's, industrial waste and general refuse were disposed of and burned in a low swampy area along an arm of Bayou Grande north of Chevalier Field (Site 11). Approximately 24 cubic yards per day of waste, including various types of waste oils, were deposited in this area.

Until 1964, a 30 by 30 ft area on the south side of Building 684 was used by the Supply Department to store incoming paint strippers and acids (Site 26). Containers of these materials were placed outside on steel matting where leaks sometimes occurred. During the IAS, soil samples were taken and analyzed for the presence of metals (E? toxicity). The analyses did not show any samples to exceed EP toxicity limits. Because Site 11 is hydraulically downgradient from Site 26 (see Figure 1), both sites were studied as one during characterization.

Verification Study

.Findings

VOCs were found only at monitor wells GM-15, GM-26, and GM-28 and at these locations no constituent was found in a concentration greater than 22 ug/l (see Table 10). The EP toxicity levels for the sediment samples from Bayou 'Grande

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Table 10. Summary of Chemical Analyses of Ground-Water Samples, Verification Study, Sites 11 and 26

Compound	GM-15	GM-26	GM-27	GM-28	GM-36
VOLATILES, ug/l					
Methylene chloride	TR	TR	-	TR	-
Trans-1,2-dichloroethene	-	-	-	TR	-
Chloroforn	-	22	-	-	-
1,1,1-trichloroethane	-	TR	-	-	-
Trichloroethene	TR	TR	-	TR	-
1,2-dichloroethane	TR	-	-	-	-
Tetrachloroethene	TR	-	-	-	-
Benzene	-	-	-	-	-
Toluene	-	-	-	-	-
Vinyl chloride	-	-	-	-	-
Chloroform	-	-	-	-	-
Ethyl benzene	-	-	-	-	-
1,1-dichloroethane	-	-	-	-	-
TOTAL VOLATILES, ug/l	11	32	0	10	0
METALS, mg/l All below FDER's Primary Drinking-Water Standards					
FIELD PARAMETERS					
pH	6.8	10.2	7.2	9.5	7.3
Specific Conductance(umhos/cm)	405	295	195	245	185

- = not detected
TR = trace [<10 ug/l (ppb)]

were low although the surface-water samples contained concentrations of chromium, lead, iron, silver, nickel., copper, and manganese, which were somewhat higher than typical values for sea water. Metals concentrations in the ground-water samples did not exceed the FDER's primary drinking-water standards. Water-level measurements from the monitor wells indicate that ground water flow is eastward toward Bayou Grande; therefore, further investigation was recommended to determine the composition of ground water entering the Bayou.

Characterization Study

Findings

Six shallow ground-water monitor wells (GM-46 through GM-50 and GM-52) and one deep well (GM-51) were installed at the locations shown in Figure 13. Due to its proximity to Site 11, monitor well GM-52 was included in the study of this site (instead of Sites 27 and 31). Water-level elevations at the shallow monitor wells show that shallow ground-water flow is eastward and north-eastward toward the Bayou. The rate of horizontal shallow ground-water flow was calculated to be 130 ft/yr based on an assumed porosity of 0.20, a hydraulic gradient of 0.0019, and a hydraulic conductivity of 253 gpd/ft^2.

Ground-water samples from all the new wells and existing wells GM-26, GM-28, and GM-36 were analyzed for the presence

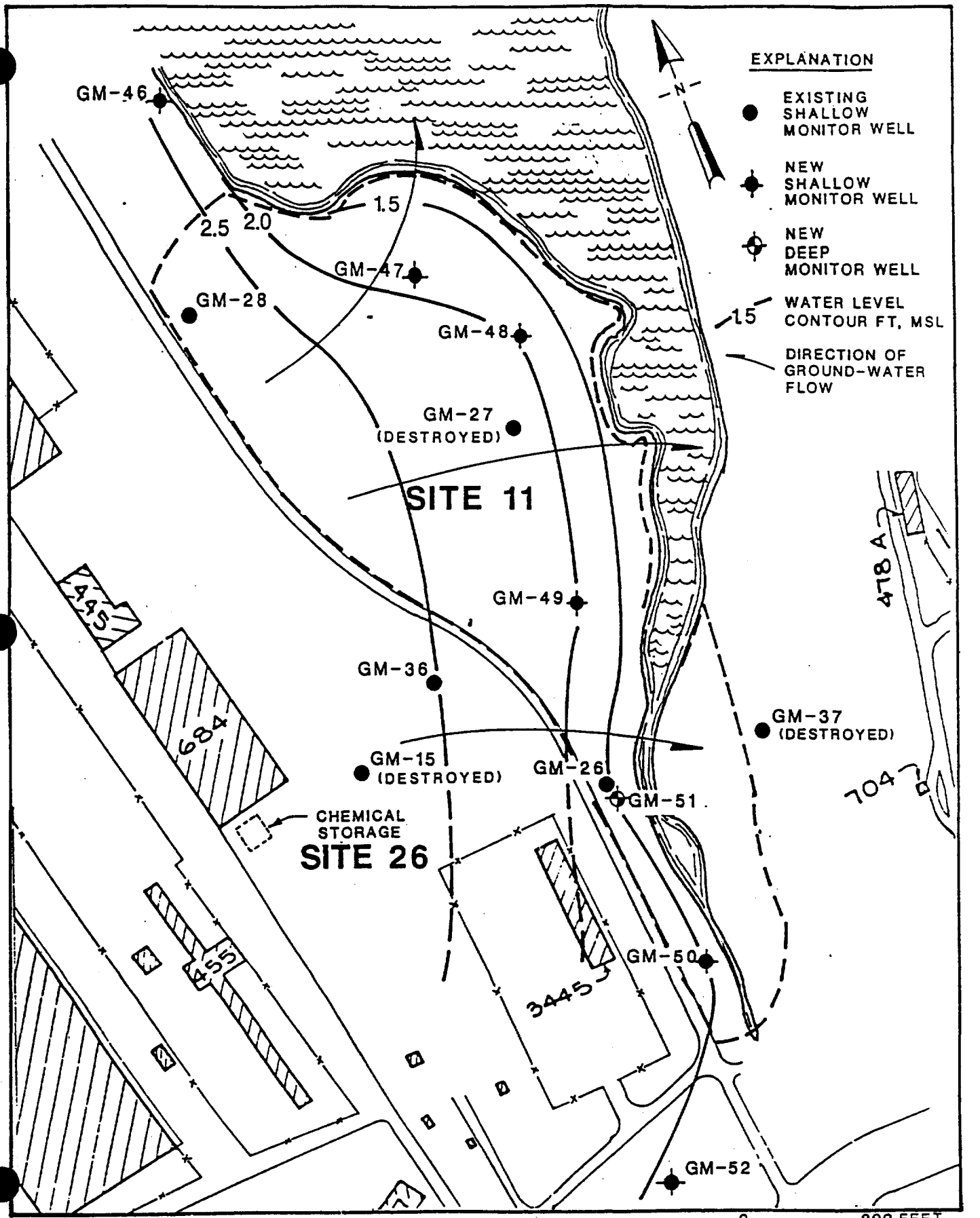

Figure 13. Monitor-Well Locations and Water-Table Contours (Sites 11 & 26).

of VOCs and metals. Monitor wells GM-15, 27, and 37 were found to be damaged or destroyed, and could not be sampled. Monitor well GM-52 was only analyzed for VOCs. Table 11 summarizes the results of these tests and Figure 14 shows the areal distribution of total concentrations of organic compounds detected throughout the site. The metals concentrations were generally low, although the lead content detected in the ground-water sample from deep well GM-51 slightly exceeds primary drinking-water standards (0.05 ug/l) at 0.069 ug/l. Also exceeded was the mercury level in well GM-47 at 0.0027 ug/l, which exceeds the primary drinking-water standard (0.002 ug/l). Specific conductance in the ground-water samples was generally low, below 450 umhos/cm, except for the sample from deep monitor well GM-51, which had a specific conductance of 7750 umhos/cm. VOCs (27 to 813 ug/l) were detected in all shallow wells except GM-36, 46, and 49; trace VOCs were found in deep well GM-51 at 4 ug/l. The data seems to suggest that there are two general areas of contamination. One area is in the vicinity of wells GM-28, GM-47, GM-48, and the other area is in the vicinity of wells GM-26, GM-50, GM-51, and GM-52.

Recommendations

To expand the current data base, all functioning monitor wells at this site should be resampled and analyzed for VOCs. In addition, piezometers should be installed in the vicinity of well GM-52 to define ground-water flow patterns more

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Table 11. Summary of Chemical Analyses of Ground-Water Samples, Characterization Study, Sites 11 and 26

Compound	GM-26	GM-28	GM-36	GM-46	GM-47	GM-48	GM-49	GM-50	GM-51	GM-52
VOLATILES, ug/l										
Methylene chloride	-	-	-	-	-	-	-	-	-	-
Trans-1,2-dichloroethene	TR	TR	-	-	TR	-	-	39	-	530
Chloroform	-	TR	-	-	-	-	-	-	-	-
1,1,1-trichloroethane	-	-	-	-	-	-	-	-		-
Trichloroethene	-	-	-	-	-	-	-	-	-	21
1,2-dichloroethane	-	-	-	-	-	-	-	-	-	-
Tetrachloroethene	-	-		-	-	-	-	-	-	-
Benzene	32	21	-	-	59	18	-	TR	TR	-
Toluene	TR	TR	-	-	21	-	-	-	-	-
Vinyl chloride	16	54	-	-	14	TR	-	390	TR	73
Ethyl benzene	-	-	-	-	33	-	-	-	-	-
1,1-dichloroethane	-	-	-	-	-	-	-	TR	-	-
TOTAL VOLATILES, ug/l	65	94	-	-	132	27	-	437	4	813
METALS, mg/l										
Lead	-	-	-	-	-	-	-	-	0.064	NT
Mercury	-	-	-	-	0.0027	-	-	-	-	NT
FIELD PARAMETERS										
pH	6.9	6.4	6.3	6.6	5.7	6.9	7.5	5.3	5.5	6.6
Specific Conductance (umhos/cm)	315	230	250	170	80	450	255	238	7750	200

- = not detected
TR = trace [<10 ug/l (ppb)]
NT = not tested

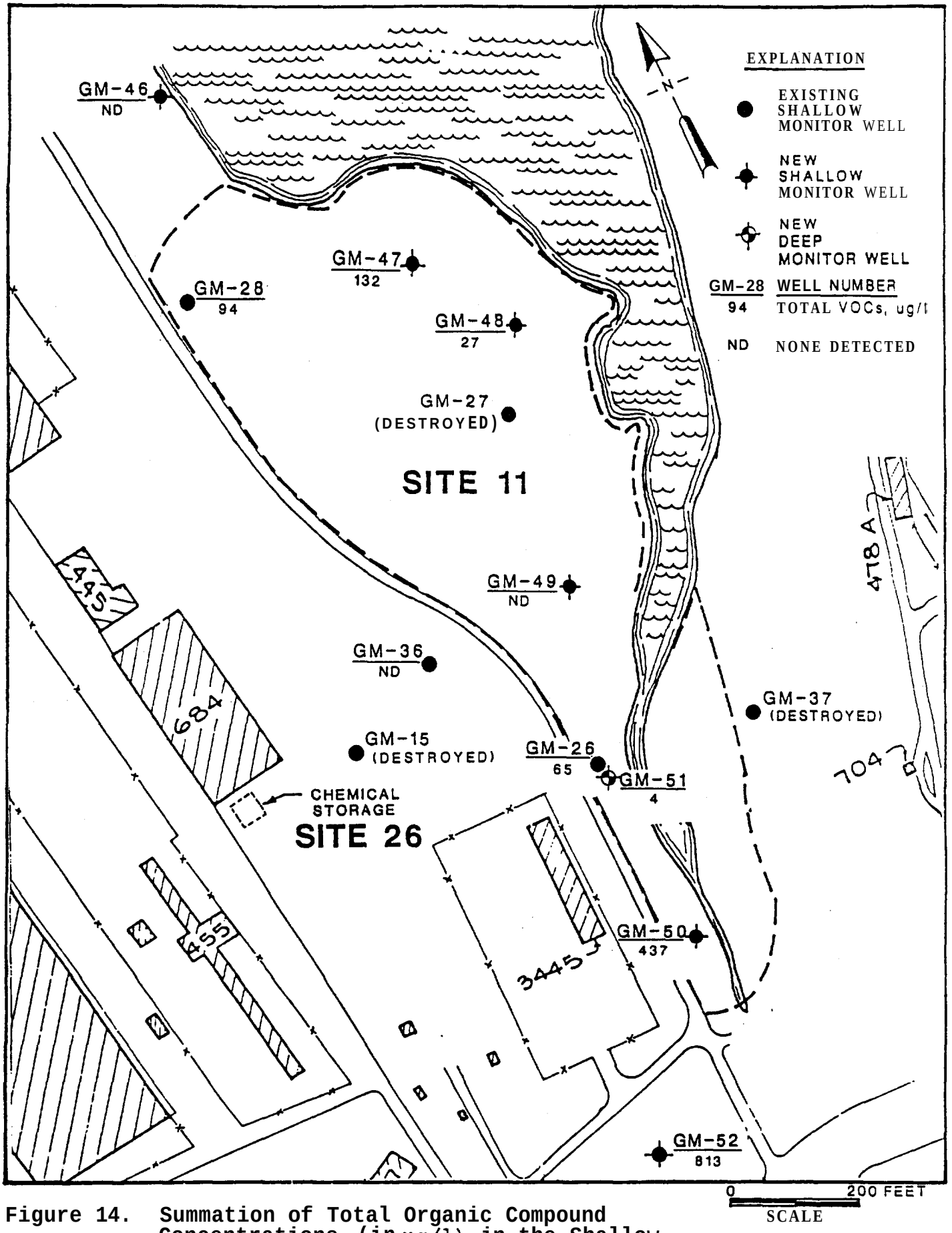

Figure 14. Summation of Total Organic Compound Concentrations (in ug/l) in the Shallow Ground Water (Sites 11 & 26).

precisely in this area. This additional data along with the existing data will form the basis for determining the potential risks associated with the no-action alternative and the feasibility of implementing remedial measures to reduce these risks.

RADIUM DIAL SHOP (SITE 27) AND BUILDING 648 (SITE 31)

Background

Sites 27 and 31 are combined because of their proximity to each other. Building 709 (Site 27) was used from the 1940's until 1975 for reworking luminous instrument dials. A routine disposal operation in Building 709 was to wash spent cleaning solutions and luminous paint down the drains and into the sanitary sewer.

Building 709 was dismantled in 1976, at which time Radiological Affairs Support Office (RASO) personnel surveyed the site and adjacent area. The drain pipe was found to 'be contaminated with a dose rate of 1.2 mR/hr (millirems per hour). The drain pipe was excavated and removed to a depth of 18 inches and the remaining, underground portion was capped and covered with concrete.

Building 648 (site 31) has been used for painting operations since 1949. From 1949 until 1973, an estimated 20,000 gallons of waste paint and thinner were poured onto the ground just north of Building 648. An estimated 8,600 gallons of paint sludges from paint booths were also dumped adjacent to the building. Figure 1 shows the locations of both sites.

verification Studv

Findings

The level of gross alpha in GM-2 was found to be below the FDER's primary drinking-water standard; however, various chlorinated hydrocarbons were found in concentrations as high as 29 ug/l. Analysis 'of the ground water in GW-1 shows low concentrations of five VOCs (see Table 12). Further investigation was recommended to determine the composition of ground water entering the Bayou from the creek just east of the site.

Characterization Studv

Findings

Two shallow ground-water monitoring wells, GM-55 and GM-58, and one deep well, GM-54, were installed at locations shown in Figure 15 (GM-52 was included in the evaluation of Sites 11 and 26). Based on water-level elevations at each well, the inferred direction of ground-water flow is north-northeast and toward the drainage ditch. The differences in water levels between shallow well GM-2, and deep well GM-54, indicate a 7-foot downward head difference between the upper and lower sand units at these sites.

Ground-water samples were collected from the new wells and the two existing wells and analyzed for the presence of VOCs. Table 13 summarizes the results and Figure 16 shows an

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Table 12. Summary of Chemical Analyses of Ground-Water Samples, Verification Study, Sites 27 and 31

Compound	GM-1	GM-2
VOLATILES, ug/l		
Methylene chloride	TR	-
1,1-dichloroethene	TR	-
Chloroform	TR	TR
1,2-dichloroethane	-	29
1,1,1-trichloroethane	TR	TR
Trichloroethene	-	TR
Tetrachloroethene	TR	TR
Trans-1,2-dichloroethene	-	-
Vinyl chloride	-	-
TOTAL VOLATILES	9	41
GROSS ALPHA, pCi/l		6.5±1.8
FIELD PARAMETERS		
pH	7.9	8.0
Specific conductance (umhos/cm)	180	225

- = none detected
TR = trace [<10 ug/l (ppb)]

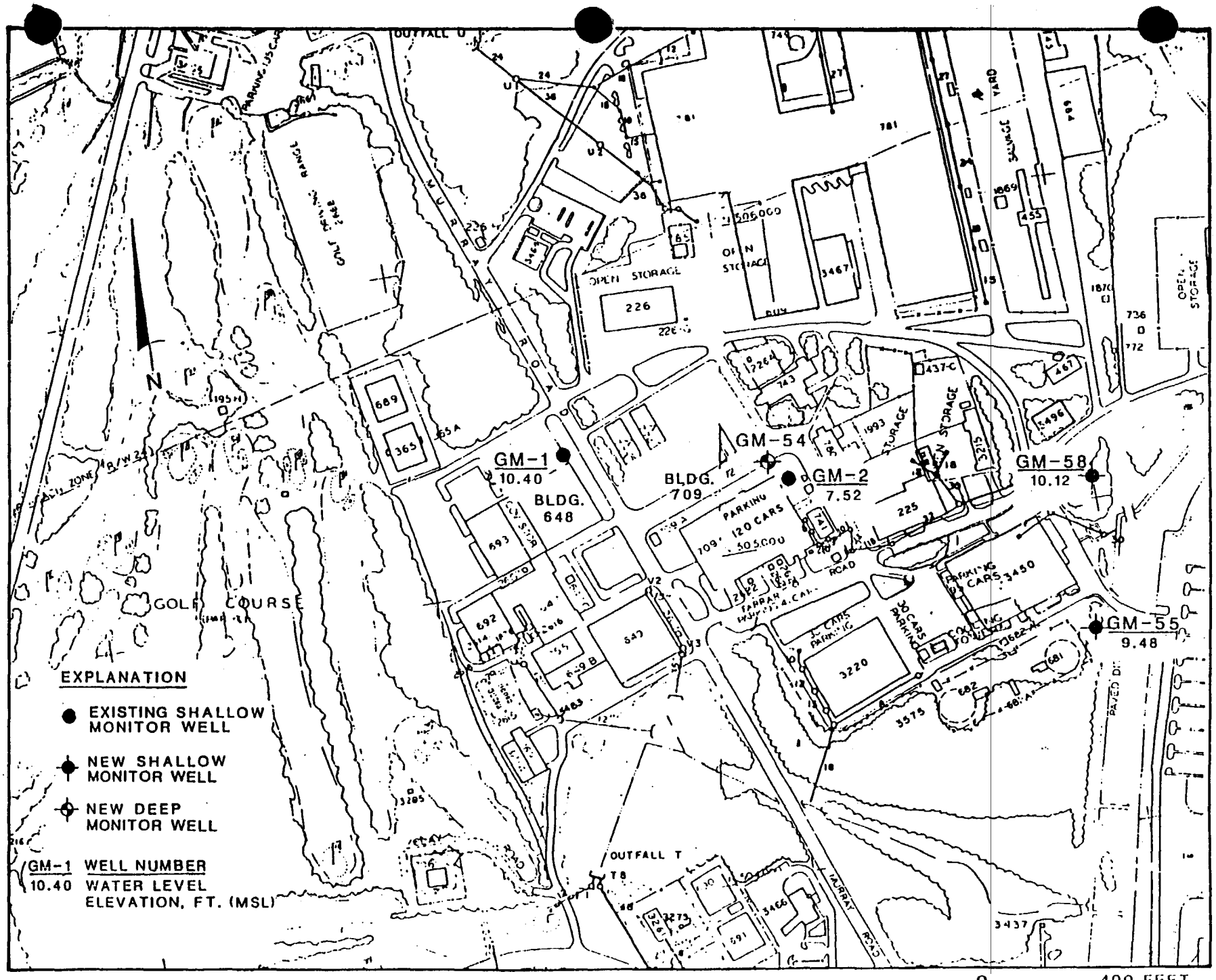

Figure 15. Monitor-Well Locations and Water-Level Elevations, ft msl (Sites 27 and 31).

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Table 13. Summary of Chemical Analyses of Ground-Water Samples, Characterization Study, Sites 27 and 31

Compound	GM-1	GM-2	GM-54	GM-55	GM-58
VOLATILES, ug/l					
Methylene chloride	-	-	-	-	-
1,1-dichloroethene	-	-	-	-	-
Chloroform	-	-	-	-	-
1,2-dichloroethane	-	-	-	-	-
1,1,1-trichloroethane	-	-	-	-	TR
Trichloroethene	-	TR	-	-	-
Tetrachloroethene	-	-	-	-	-
Trans-1,2-dichloro-ethene	-	-	-	-	-
Vinyl chloride	-	-	-	-	-
TOTAL VOLATILES	-	3	-	-	8
FIELD PARAMETERS					
pH	6.0	5.9	9.1	5.9	6.4
Specific conductance (umhos/cm)	120	140	290	260	1S0

- = none detected
TR = trace [<10 ug/l (ppb)]

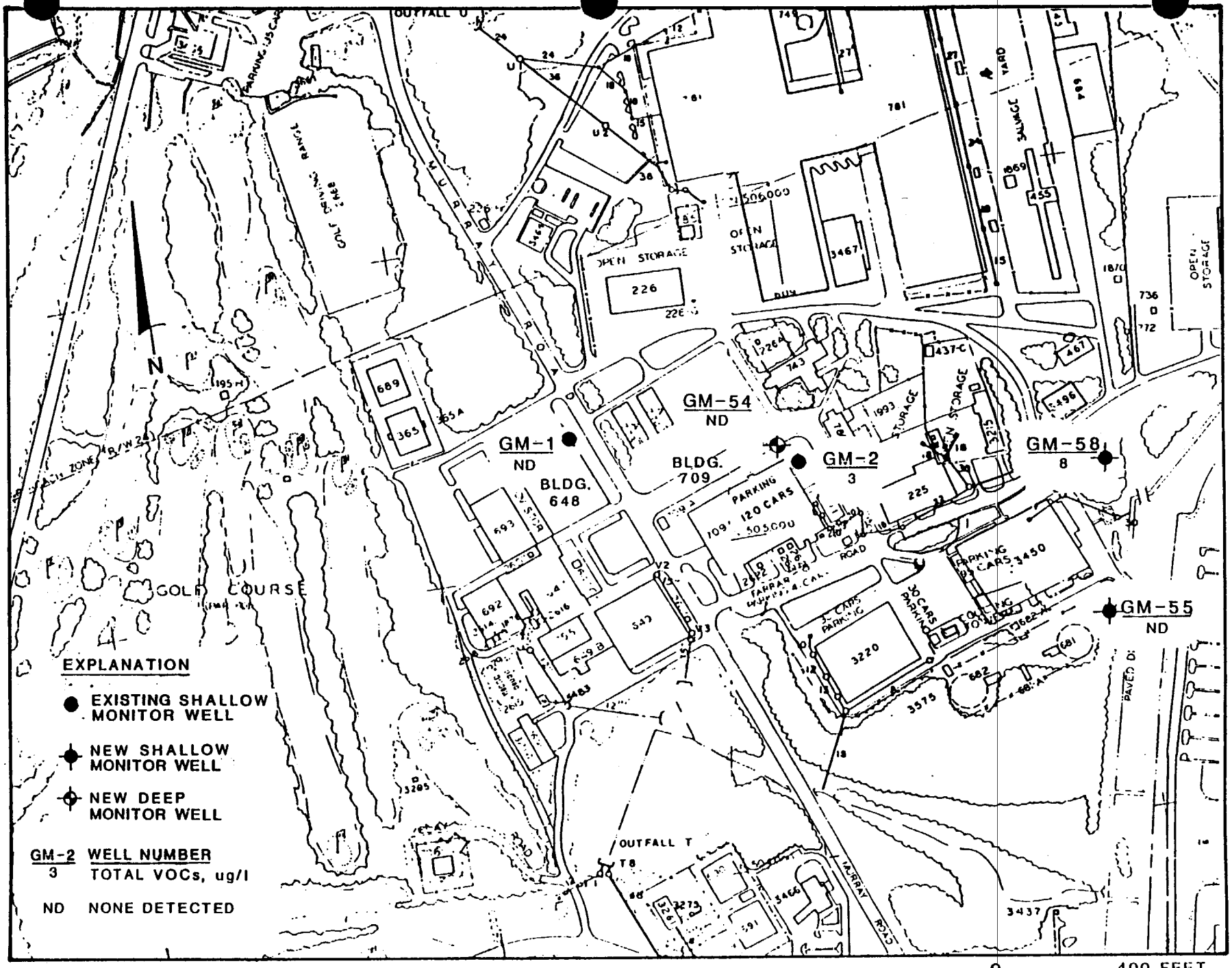

Figure 16. Summation of Total Organic Compound Concentrations (in ug/l) in the Shallow Ground Water (Sites 27 & 31).

areal distribution of total organic compound concentrations detected in the samples. VOCs were not detected in wells GM-1, GM-54, and GM-55, and low concentrations of VOCs were observed in wells GM-2 and GM-58.

Recommendations

Based on the data collected to date, only trace to low levels of VOCs have been detected in ground-water samples at this site. Therefore, this site does not appear to pose an imminent hazard to human health or the environment and no further action is recommended.

FUEL FARM PIPELINE LEAK (SITE 19)

Batkqround

In 1958, a leak occurred in the pipeline which leads from the fuel farm to the aircraft refueling facility at Forrest Sherman Field. This leak resulted in the discharge of several hundred thousand gallons of JP-4 fuel oil, killing vegetation in an area of about 200 ft by 400 ft. Land surface in the area of the leak is flat and the water table is shallow (see Figure 1).

Verification Studv

Findings

Eleven borings were drilled in order to determine the extent of the fuel floating on the water table. Four shallow monitor wells were also installed to measure the thickness of the free fuel. Fuel odor in the soil samples was detected only within the area of the dead trees and no free product was found floating on the water table at any of the borings or monitor wells.

Because the water table is shallow and is sometimes above ground level in much of the spill area, it was postulated that free product had been exposed to the atmosphere and volatilized during the 25 years since the spill. Nevertheless, the FDER requested that water samples

be collected from the monitor wells and analyzed for BTX (benzene, toluene, xylene).

Characterization Study

Findings

The locations of the four existing ground-water monitor wells (GM-16 through GM-19) are shown in Figure 17. Also illustrated is a water-table contour map constructed from water-level elevations in the monitor wells which shows that the shallow ground-water movement is southward. The rate of lateral shallow ground-water flow was calculated to be about 130 ft/yr, based on an assumed porosity of 0.20, a hydraulic gradient of 0.004, and a hydraulic conductivity value of 120 gpd/ft^2.

Ground-water samples from all four wells were collected and analyzed for the presence of benzene, toluene, and xylene and the results are shown in Table 14. No toluene was detected. However, benzene was detected in three of the four wells: GM-16 (422 ug/l), GM-18 (30 ug/l), GM-19 (146 ug/l). The xylene levels in wells GM-16 and GM-19 were 818 ug/l and 577 ug/l, respectively.

Recommendations

The data collected to date indicates benzene and xylene is present in the shallow ground-water system at Site 19. It is recommended that several surface-water samples be

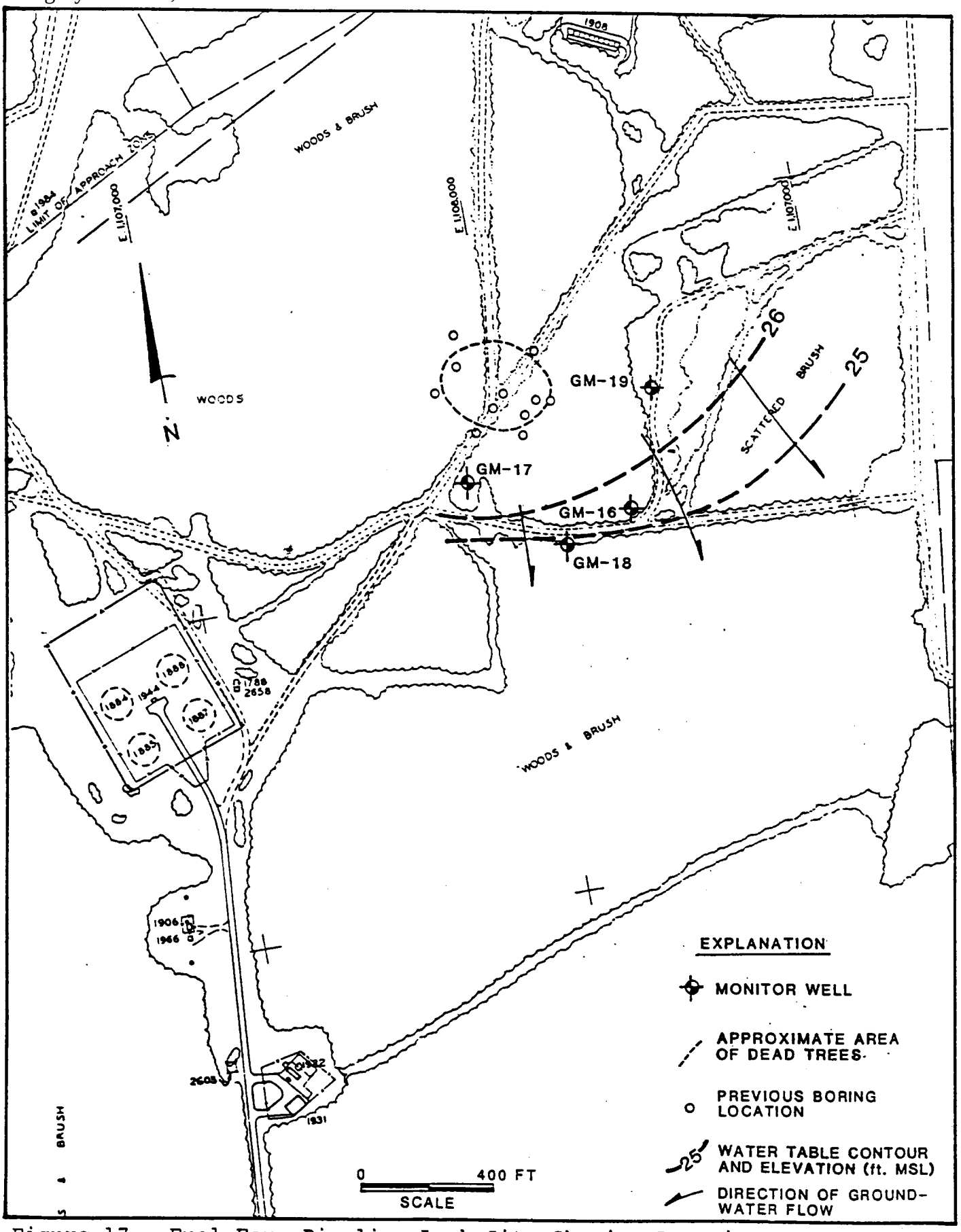

Figure 17. Fuel Farm Pipeline Leak Site Showing Locations of Borings and Monitor Wells and Water-Table Contours (Site 19).

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Table 14. Summary of Chemical Analyses of Ground-Water Samples, Characterization Study, Site 19

Compound	GM-16	GM-17	GM-18	GM-19
VOLATILES, ug/l				
Benzene	422	-	30	146
Toluene	-	-	-	-
Xylene	818	-	-	577
TOTAL VOLATILES	1240	-	30	723
FIELD PARAMETERS				
pH	4.0	4.3	4.2	4.7
Specific Conductance (umhos/cm)	220	200	89	80

- = none detected

collected from an area south of the site and that ground-water samples be collected, using a mini-well point sampler, at about 10 locations between the spill site and the swampy area. This should be analyzed for the presence of BTX. This data will form the basis for assessing the potential risks associated with the no-action alternative and the feasibility of implementing remedial measures to reduce these risks.

APPENDIX A

Lithologic Logs of Borings

LITHOLOGIC LOG FOR MONITOR WELL GM-38

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, tan to light brown.....	0 - 5	5
Sand, medium-grained, buff to tan.....,....	5 - 15	10

LITHOLOGIC LOG FOR MONITOR WELL GM-39

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, brown; minor organics.....	0 - 5	5
Sand, fine to medium-grained, brown.....	5 - 15	10

LITHOLOGIC LOG FOR MONITOR WELL GM-40

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, tan.....	0 - 5	5
Sand, fine to medium-grained, buff to white.....	5 - 15	10

LITHOLOGIC LOG FOR MONITOR WELL GM-41

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, buff and tan	0 - 15	15

LITHOLOGIC LOG FOR MONITOR WELL GM-42

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, tan to buff	0 - 15	15

LITHOLOGIC LOG FOR MONITOR WELL GM-43

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, tan and brown.....	0 - 15	15
Sand, fine to coarse-grained, brown.....	15 - 27	12
Clay, sandy, silty, gray.....	27 - 29	2
Sand, medium-grained, gray.....	29 - 32	3
Clay, sandy silt, gray: marine fossils....	32 - 43	8
Clay, gray: fine to coarse, sand: marine fossils: Shelby tube at 48'-50'.....	40 - 60	20
Sand, fine to coarse, white to gray: gray and brown silt; chunks of preserved wood..	60 - 70	10

LITHOLOGIC LOG FOR MONITOR WELL GM-44

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, tan.....	0 - 40	40
Clay, silt and sand, gray: shell material.	40 - 48	8
Sand, fine to coarse-grained, gray, brown: silt.....	48 - 60	12

LITHOLOGIC LOG FOR MONITOR GM-45

Description	Depth (ft)	Thickness (ft)
Sand, fine-grained, brown.....	0 - 5	5
Sand, fine to medium-grained, buff.....	5 - 15	10
Sand, fine to medium-grained, brown.....	15 - 30	15
Sand, fine to medium-grained, gray, brown.	30 - 55	25
Sand, fine-grained, silt and clay.....	55 - 60	5
Clay, silt and sand, gray; shell material.	60 - 80	20
Clay, gray: tree bark.....	80 - 100	20
Sand, fine to medium-grained, gray.....	100 - 110	10

LITHOLOGIC LOG FOR MONITOR WELL GM-46

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, buff.....	0 - 5	5
Sand, fine to medium-grained, buff to gray	5 - 15	10

LITHOLOGIC LOG FOR MONITOR WELL GM-47

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, white, gray and brown.....	0 - 5	5
Sand, fine to medium-grained, brown;.brown silt; miscellaneous material.....	5 - 10	5
Silt, brown to black: fine to medium-grained brown sand.....	10 - 15	5

LITHOLOGIC LOG FOR MONITOR WELL GM-48

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, brown.....	0 - 5	5
Sand, fine to medium-grained, brown; brown silt; H_2S odor.....	5 - 10	5
Sand, fine-grained, brown; silt; H_2S odor.	10 - 15	5

LITHOLOGIC LOG FOR MONITOR WELL GY-49

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, gray; silt: hydrocarbon odm.....	0 - 5	5
Silt, brown; hydrocarbon odor.....	5 - 15	10

LITHOLOGIC LOG FOR MONITOR WELL GM-50

Description	Depth (ft)	Thickness (ft)
Sand, fine-grained, brown; hydrocarbon odr.....	'0 - 5	5
Concrete rubble.....	5 - 10	5
Sand, fine-grained, tan: silt.....	10 - 15	5

LITHOLOGIC LOG FOR MONITOR WELL GM-51

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, browh.....	0 - 5	5
Sand, fine to medium-grained, buff.....	5 - 43	38
Clay, gray; sand; shell material.....	43 - 53	10
Sand, fine to medium-grained, gray.....	53 - 63	10
Clay, gray.....	63 - 70	7

LITHOLOGIC LOG FOR MONITOR WELL GM-52

Description	Depth (ft)	Thickness (ft)
Sand, fine-grained, brown; silt.....	0 - 15	15

LITHOLOGIC LOG FOR MONITOR WELL GM-53

Description	Depth (ft)	Thickness (ft)
Sand, fine-grained, brown and gray.....	0 - 15	15

LITHOLOGIC LOG FOR MONITOR WELL GM-54

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, tan and brown.....	0 - 63	60
Clay, gray to black; fine to medium-grained sand: shell fragments.....	60 - 63	3
Sand, fine to medium-grained, gray, brown.	63 - 73	10
Silt, green, mottled, clayey; fine-grained sand: shell material.....	73 - 78	5
Silt, green, mottled, clayey.....	78 - 90	12
Silt, sandy, green to gray; shell material	90 - 103	13
Sand.....	103 - 104	1
Silt, sandy.....	104 - 107	3
Sand, fine-grained, gray.....	107 - 120	13

LITHOLOGIC LOG FOR MONITOR WELL GY-55

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, tan.....	0 - 20	20
Sand, fine to medium-grained, white...,...	20 - 25	5

LITHOLOGIC LOG FOR MONITOR WELL GM-56

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, white and tan; hydrocarbon odor.....	0 - 10	10
Sand, very fine to fine-grained, silty, dark brown to black.....	10 - 15	5

LITHOLOGIC LOG FOR MONITOR WELL GM-57

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, tan to brown	0 - 5	5
Sand, fine to medium-grained, white to tan	5 - '10	5
Sand, silty, very fine to fine-grained, brown to black.....	10 - 15	5

LITHOLOGIC LOG FOR MONITOR WELL GM-58

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, buff to tan.	0 - 25	25

LITHOLOGIC LOG FOR MONITOR WELL GM-59

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, tan.....	0 - 15	15

LITHOLOGIC LOG FOR MONITOR WELL GM-60

Description	Depth (ft)	Thickness (ft)
Sand, fine to medium-grained, buff to tan.	0 - 15	15

LITHOLOGIC LOG FOR MONITOR WELL GM-61

Description	Depth (ft)			Thickness (ft)
Concrete pad (cored).....	0	-	1	1
Sand, fine to medium-grained, white and tan: hydrocarbon odor.....	1	-	5	4
Sand, fine to medium-grained, white and tan; hydrocarbon odor.....	5	-	10	5
Sand, very fine to fine-grained, silty; dark brown to black.....	10	-	15	5
Sand, fine to medium-grained, buff to gray.....	15	-	20	5
Sand, fine to medium-grained, buff to gray.....	20	-	25	5
Sand, medium-grained, gray to brown.....	25	-	30	5
Sand, fine to medium-grained, buff to light brown.....	30	-	35	5
Sand, fine to medium-grained, buff to light brown.....	35	-	40	5
Sand, fine to medium-grained, buff to light brown.....	40	-	45	5
Sand, fine to medium-grained, buff to light brown.....	45	-	50	5
Sand, fine-grained; gray clay; shell material.....	50	-	55	5
Sand, fine-grained; gray clay: shell material.....	55	-	60	5
Sand, fine-grained; gray clay; shell material.....	60	-	62	2
Clay, gray; wood chips.....	62	-	65	3
Clay, gray: wood chips...	65	-	70	5
Clay, gray: wood chips....	70	-	75	5
Clay, gray: wood Chips.....;.	75	-	77	2

LITHOLOGIC LOG FOR MONITOR WELL GM-61 CON'T

Description	Depth (ft)	Thickness (ft)
Sand, medium to coarse-grained, gray; shell material.....	77 - 80	3
Sand, medium to coarse-grained, gray; shell material.....	S0 - 85	5
Sand, medium to coarse-grained, gray; shell material.....	85 - 87	2

LITHOLOGIC LOG FOR SOIL BORING GMSB1

Description	Depth (in)	Thickness (in)
Sand, fine-grained, brown; organic material.....	1	1
Sand, fine-grained, brown; organic material.....	12	12
Sand, fine to medium-grained, tan.....	24	24

LITHOLOGIC LOG FOR SOIL BORING GMSB2

Description	Depth (in)	Thickness (in)
Sand, fine-grained, brown; organic material	1	1
Sand, fine-grained, brown; organic material	12	12
Sand, fine to medium-grained, brown to tan: organic material.....	24	24

LITHOLOGIC LOG FOR SOIL BORING GMSB3

Description	Depth (in)	Thickness (in)
Sand, fine-grained, tan to brown: organic 'material.....	1	1
Sand, fine-grained, tan: organic material..	12	12
Sand, fine to medium-grained, tan; organic material.....	24	24

LITHOLOGIC LOG FOR SOIL BORING GMSB4

Description	Depth (in)	Thickness (in)
Sand, fine to medium-grained, tan; organic material.....	1	1
Sand, fine to medium-grained, tan; organic material.....	12	12
Sand, fine to medium-grained, tan.....	24	24

LITHOLOGIC LOG FOR SOIL BORING GMSB5

Description	Depth (in)	Thickness (in)
Sand, fine-grained, tan; organic material.	1	1
Sand, fine to medium-grained, tan; organic material.....	12	12
Sand, fine to medium-grained, tan: organic material.....	24	24

LITHOLOGIC LOG FOR SOIL BORING GMSB6

Description	Depth (in)	Thickness (in)
Sand, fine-grained, brown; organic material.....	1	1
Sand, fine to medium-grained, tan; organic material.....	12	12
Sand, fine to medium-grained, tan; organic material.....	24	24

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APPENDIX B

HYDRAULIC DATA

Water Level Elevations

Permeability Tests

Hydraulic Conductivity Data

Table B-1. Water-Level Elevations, Ft Msl

Well Number	Date 6/11/85	6/14/85	6/23/85	6/25/85	7/11/85
Cluster Wells					
GN-3 (SH)	1.93	1.88	2.08	2.03	1.93
GM-44 (DP)	1.29	0.31	1.32	1.38	1.72
GM-5 (SH)	1.35	1.42	1.45	1.45	1.37
GM-43 (DP)	1.25	-1.06	1.31	1.31	1.83
GM-31 (SH)	13.55	13.28	13.30	13.60	13.54
GM-45 (DP)	1.00	-0.49	0.06	1.05	1.22
GM-26 (SH)	0.63	0.59		1.69	1.53
GM-51 (DP)	-2.40	-0.66		0.43	1.01
GN-2 (SH)		7.17		7.18	7.52
GN-54 (DP)		-2.47		0.16	0.71
GM-56 (SH)	2.78	2.77		2.78	2.90
GM-61 (DP)	-2.07	-2.87		1.01	0.74
Shallow Wells					
		9.94		10.14	10.40
	1.18	1.16	1.33	1.23	1.16
	3.10	3.10		3.11	3.11
	3.58	3.57		3.62	3.62
	1.41	1.32		4.43	3.68
	3.68	3.67		3.68	3.68
	2.92	2.92		2.93	2.94
	12.95	12.64	12.69	13.02	12.96
	7.65	7.48	7.75	7.71	7.51
	8.24	8.05	8.15	8.29	8.27
	8.15	7.98	8.10	8.26	8.26
	2.27	2.25		2.45	2.51
	10.48	10.18	16.03	10.50	10.44
	3.45	3.38	3.46	3.46	3.40
	1.27	0.05	1.09	1.09	0.70
	-0.53	-0.54	-0.33	-0.49	-0.71
	1.57	2.48	2.62	1.63	1.57
	2.07	2.04		2.08	2.30
	1.63	1.57		1.53	1.78
	1.72	1.65		1.71	1.85
	1.86	1.86		1.94	2.04
	1.53	1.51		1.50	1.53
		1.30		1.14	1.30
	2.69	2.65		2.71	2.75
		9.52		9.54	9.48
	3.01	2.99		3.03	3.15
		10.00		9.92	10.12
	3.24	3.09	3.63	3.63	3.56
	3.73	3.58	4.01	4.01	3.93

Table B-2 Constant Head Permeability Tests

217 E. BRENT LANE
PENSACOLA, FLA.
PHONE 477-5100

PENSACOLA TESTING LABORATORIES, INC.

REPORT OF CONSTANT HEAD PERMEABILITY TESTS

For GERAGHTY & MILLER, INC.
P.O. BOX 271173, TAMPA, FLORIDA 33688

Report No. 69375-1 pm

Sample identification SHELBY TUBE SOIL SAMPLES

Date JUNE 27, 1985
Purchase Order No.

Samples Submitted by CLIENT Tested by JOHNNIE D. SIMS Date 6-26-85

SAMPLE NO.	DATE SAMPLED	PROJECT/SITE	DEPTH(FT)	SAMPLE DESCRIPTION	PERMEABILITY VALUE CM/SEC	HEAD PRESSURE USED FOR TEST/CM
GM 43	4-26-85	T290 PN2 SITE 1	50-52.5	GRAY MARINE CLAYEY SAND WITH SHELLS	3.5×10^{-5}	211
GM 44	4-36-85	T290 PN2 SITE 1	41-43.5	GRAY MARINE CLAY WITH SAND SEAMS	6.8×10^{-7}	422
GM 45	5-3-85	T290 PN2 SITE 1	60-62.5	GRAY MARINE CLAY	5.7×10^{-8}	563
GM 61	5-30-85	PENSACOLA NAS SITE 34	69-71.5	GRAY MARINE CLAY	1.5×10^{-8}	844

This report submitted for the exclusive use of the person, partnership, or corporation to whom it is addressed, and neither the report nor the name of this laboratory nor of any members of its staff may be used in connection with the advertising or sale of any product or process without written authorization.

Reports to: 3 - GERAGHTY & MILLER, INC.

PENSACOLA TESTING LABORATORIES

REVIEWED BY: M. Johnson P.E.

By Patrick A. Wheeler

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Table B-3. Hydraulic Conductivity For Surficial Sand at NAS Pensacola as Determined From Slug Tests, Characterization Study

Well No.	Hydraulic Conductivity	
CM-18 (Site 19)	6.4×10^{-3} cm/sec	120 gpd/ft^2
GM-39 (Site 1)	6.25×10^{-3} cm/sec	118 gpd/ft^2
GM-40 (Site 1)	1.08×10^{-2} cm/sec	203 gpd/ft^2
GM-41 (Site 1)	8.75×10^{-3} cm/sec	165 gpd/ft^2
GM-49 (Site 11)	1.3×10^{-2} cm/sec	253 gpd/ft^2
GM-56 (Site 34)	2.2×10^{-2} cm/sec	423 gpd/ft^2

Table B-4. Estimates of Hydraulic Conductivity for Surficial Sand at NAS Pensacola, Verification Study.

Source	Hydraulic Conductivity (cm/sec)	Directional Component	Type of Analysis	Location	Boring or Well Number	Depth (ft)
Thompson, 1984	4.1×10^{-3}	Vertical	Constant head permemeter	Fuel Farm	B-1	5
Thanpson, 1984	2×10^{-2}	Vertical	Constant head permemeter	Fuel Farm	B-1	14
Thanpson, 1984	2.4×10^{-3}	Vertical	Constant head permemeter	Fuel Farm	B-2	5
Thanpson, 1984	1×10^{-2}	Vertical	Constant head permeameter	Fuel Farm	B-2	14
Thanpson, 1984	6.8×10^{-3}	Vertical	Constant head permemeter	Fuel Farm	E-3	7
Missimer, 1983	2.2×10^{-2}	Nondirectional	Grain-size analysis	Wastewater Plant	?	0-10
Geraghty & Miller, 1984 (verification study)	1.96×10^{-2}	Horizontal	Slug injection	Wastewater Plant	GM-12	10
Geraghty & Miller, 1984 (verification study)	8.5×10^{-3}	Horizontal	Slug injection	Fuel farm pipeline (Site 19)	GM-18	10
Geraghty & Miller, 1964 (verification study)	6.1×10^{-3}	Horizontal	Slug injection	Sanitary Landfill (Site 1)	a - 5	10

APPENDIX C

WATER QUALITY

Laboratory Data

Table C-1 Site 1 - GM-3 Volatiles

Lab I.D. 85-1744-21
GM 3

Pioneer LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene		BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
Laboratory Director

Table C-2 Site 1 - GM-4 Volatiles

Lab I.D. 85-1744-18

GM 4

Pioneer LABORATORY, INC.

11 EAST OLIVE ROAD PHONE (904) 474-1001

PENSACOLA, FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	7
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	5
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-l,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	6
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BGL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluormethane	5	BDL
Vinyl Chloride	1	3
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Notes Results are reported in ppb.
ppb = parte per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-3 Site 1 - GM-5 Volatiles

Lab I.D. 85-1744-16

GM5

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	56
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-4 Site 1 - GM-31 Volatiles

Lab I.D. 85-1744-23
GM 31

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU FLORIDA 325 14

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	1
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by

Table C-5 Site 1 - GM-32 Volatiles

Lab I.D. 85-1744-22
GM 32

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	1
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	2
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by _____
W. E. Powers
Laboratory Director

Table C-6 Site 1 - GM-33 Volatiles

Lab I.D. 85-1744-17

GM 33

Pioneer LABORATORY, INC.
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	3
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	10
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochlorornethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	20
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	2
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Result8 are reported in ppb.
ppb = parts *per* billion
BDL = Below Detection Limits

W. F. Bowers

Approved by W. F. Bowers
Laboratory Director

Table C-7 Site 1 - GM-34 Volatiles

Lab I.D. 85-1744-20
GM 34

Pioneer
PL LABORATORY, INC.
11 EAST OLIVE ROAD
PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	43
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromornethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	3
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	14
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	250
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parte pet billion
BDL = Below Detection Limits

Approved by W. F. Bowers
Laboratory Director

Table C-8 Site 1-GM-35 Volatiles

Lab I.D. 85-1744-19

GM 35

Pioneer Laboratory, Inc.
11 EAST OLIVE ROAD
PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	10
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	7
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	7
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	3
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by

Table C-9 Site 1 - GM-38 Volatiles

Pioneer LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Lab I.D. 85-1757 GM38

PRIORITY POLLUTANT ANALYSIS*

VOLATILES

		Reported in ppb	Detection Limit ppb
1V	Acrolein	BDL	100
2V	Acrylonitrile	RDL.	100
3V	Benzene	41	1
4V	Bis(chloromethyl)ether	BDL	5
5V	Bromoform	BDL	5
6V	Carbon Tetrachloride	BDL	3
7V	Chlorobenzene	BDL	1
8V	Chlorodibromomethane	BDL	5
9V	Chloroethane	BDL	5
10V	2-Chloroethylvinyl Ether	BDL	5
11V	Chloroform	BDL	5
12V	Dichlorobromomethane	BD	5
13V	Dichlorodifluoromethane	BDL	5
14V	1,1-Dichloroethane	BDL	5
15V	1,2-Dichloroethane	BDL	3
16V	1,1-Dichloroethylene	BDL	5
17V	1,2-Dichloropropane	BDL	5
18V	1,2-Dichloropropylene	BDL	5
19V	Ethylbenzene	BDL	5
20V	Methyl Bromide	BDL	5
21V	Methyl Chloride	BDL	1
22V	Methylene Chloride	BDL	5
23V	1,1,2,2-Tetrachloroethane	BDL	5
24V	Tetrachloroethylene	BDL	3
25V	Toluene	BDL	1
26V	1,2-trans-Dichloroethylene	BDL	5
27V	1,1,1-Trichloroethane	BDL	5
28V	1,1,2-Trichloroethane	BDL	5
29V	Trichloroethylene	BDL	1
30V	Trichlorofluoromethane	BDL	5
31V	Vinyl Chloride	BDL	1

*EPA Method 624 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved By W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-9 (cont.) Site 1 - GM-38 Base Neutral Extract

Pioneer LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Lab I.D. - 7
GM38

PRIORITY POLLUTANT ANALYSIS*

BASE NEUTRAL EXTRACTABLES

		Reported in ppb	Detection Limit ppb			Reported in ppb	De' Li pp
1B	Acenaphthene	BDL	10	24B	Diethylphthalate	BDL	10
2B	Acenaphthylene	BDL	10	25B	Dimethylphthalate	BDL	10
3B	Anthracene	BDL	10	26B	Di-n-Butyl Phthalate	BDL	10
4B	Benzidine	BDL	10	27B	2,4-Dinitrotoluene	BDL	10
5B	Benzo(a)anthracene	BDL	10	28B	2,6-Dintrotoluene	BDL	10
6B	Benzo(a)pyrene	BDL	10	29B	Di-n-Octyl-Phthalate	BDL	10
7B	3,4-Benzofluoranthene	BDL	10	30B	1,2-Diphenylhydrazine	BDL	10
8B	Benzo(ghi)perylene	BDL	10	31B	Fluoranthene	BDL	10
9B	Benzo(k)fluoranthane	BDL	10	32B	Fluorene	BDL	10
10B	Bis(2-chloroethoxy)methane	BDL	10	33B	Hexachlorobenzene	BDL	10
11B	Bis(2-chloroethyl)ether	BDL	10	34B	Hexachlorobutadiene	BDL	10
[illegible]	Bis(2-chloroisopropyl)ether	BDL	10	35B	Hexachlorocyclopentadiene	BDL	10
13B	Bis(2-ethylhexyl)phthalate	BDL	10	36B	Hexachloroethane	BDL	10
14B	4-Bromophenyl Phenyl Ether	BDL	10	37B	Indeno(1,2,3-cd)pyrene	BDL	10
15B	Butylbenzyl Phthalate	BDL	10	38B	Isophorone	BDL	10
16B	2-Chloronaphthalene	BDL	10	39B	Naphthalene	BDL	10
17B	4-Chlorophenyl Phenyl Ether	BDL	10	40B	Nitrobenzene	BDL	10
18B	Chrysene	BDL	10	41B	N-Nitrosodimethylamine	BDL	10
19B	Dibenzo(a,h)anthracene	BDL	25	42B	N-Nitrosodi-n-propylamine	BDL	10
20B	1,2-Dichlorobenzene	BDL	10	43B	N-Nitrosodiphenylamine	BDL	10
21B	1,3-Dichlorobenzene	BDL	10	44B	Phenanthrene	BDL	10
22B	1,4-Dichlorobenzene	BDL	10	45B	Pyrene	BDL	10
23B	3,3-Dichlorobenzidine	BDL	10	46B	1,2,4-Trichlorobenzene	BDL	10

*EPA Method 625 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limit

Approved by W. F. Bowers
W. F. Bowers
Laboratory

Table C-9 (cont.) Site 1 - GM-38 Acid Extract

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU, FLORIDA 32514

Lab I.D. 85-1757
GM38

PRIORITY POLLUTANT ANALYSIS*

ACID EXTRACTABLES

		Reported in ppb	Detection Limit ppb
1A	2-Chlorophenol	BDL	15
2A	2,4-Dichlorophenol	BDL	10
3A	2,4-Dimethylphenol	BDL	5
4A	4,6-Dinitro-o-Cresol	BDL	50
SA	2,4-Dinitrophenol	BDL	30
6A	2-Nitrophenol	BDL	10
7A	4-Nitrophenol	BDL	20
OA	p-Chloro-m-Cresol	BDL	25
9A	Pentachlorophenol	BDL	30
10A	Phenol	BDL	5
11A	2,4,6-Trichlorophenol	BDL	20

*EPA Method 604 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

W. F. Bowers

Approved by _____
W. F. Bowers
Laboratory Director

Table C-9 (cont.) Site 1 - GM-38 Pesticides

Pioneer
PL LABORATORY. INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Lab I.D. 85-1757

G?I 38

PRIORITY POLLUTANT ANALYSIS*

PESTICIDES

		Reported in ppb	Detection Limit ppb
1P	Aldrin	BDL	0.01
2P	a-BHC	BDL	0.01
3P	b-BHC	BDL	0.01
4P	g-BHC	BDL	0.01
5P	d-BHC	BDL	0.01
6P	Chlorodane	BDL	0.01
7P	4,4'-DDT	BDL	0.01
8P	4,4'-DDE	BDL	0.01
9P	4,4'-DDD	BDL	0.01
10P	Dieldrin	BDL	0.01
11P	a-Endosulfan I	BDL	0.01
12P	b-Endosulfan II	BDL	0.01
13P	Endosulfan Sulfate	BDL	0.01
14P	Endrin	BDL	0.07
15P	Endrin Aldehyde	BDL	0.03
16P	Heptachlor	BDL	0.01
17P	Heptachlor Epoxide	BDL	0.01
18P	PCB-1242	BDL	0.2
19P	PCB-1254	BDL	0.2
20P	PCB-1221	BDL	0.2
21P	PCB-1232	BDL	0.2
22P	PCB-1248	BDL	0.2
23P	PCB-1260	BDL	0.2
24P	PCB-1016	BDL	0.2
25P	Toxaphene	BDL	1

*EPA Method 608 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

W. F. Bowers

Approved by W. F. Bowers
Laboratory Dir.

Table C-10 Site 1- GM-39 Volatiles

Pioneer LABORATORY, INC
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1759
GM39

PRIORITY POLLUTANT ANALYSIS*

VOLATILES

		Reported in ppb	Detection Limit ppb
1V	Acrolein	BDL	100
2V	Acrylonitrile	BDL	100
3V	Benzene	BDL	1
4V	Bis (chloromethyl)ether	BDL	5
5V	Bromoform	BDL	5
6V	Carbon Tetrachloride	BDL	3
7V	Chlorobenzene	BDL	1
8V	Chlorodibromomethane	BDL	5
9V	Chloroethane		5
10V	2-Chloroethylvinyl Ether	BDL	5
11V	Chloroform	BDL	5
12V	Dichlorobromomethane	BDL	5
13V	Dichlorodifluoromethane	BDL	5
14V	1,1-Dichloroethane	BDL	5
15V	1,2-Dichloroethane	BDL	3
16V	1,1-Dichloroethylene	BDL	5
17V	1,2-Dichloropropane	BDL	5
18V	1,2-Dichloropropylene	BDL	5
19V	Ethylbenzene	BDL	1
20V	Methyl Bromide	BDL	5
21V	Methyl Chloride	2	5
22V	Methylene Chloride	BDL	5
23V	1,1,2,2-Tetrachloroethane	BDL	5
24V	Tetrachloroethylene	BDL	3
25V	Toluene	BDL	1
26V	1,2-trans-Dichloroethylene	BDL	5
27V	1,1,1-Trichloroethane	BDL	5
28V	1,1,2-Trichloroethane	BDL	5
29V	Trichloroethylene	BDL	1
30V	Trlchlorofluoromethane	BDL	5
31V	Vinyl Chloride	30	1

*EPA Method 624 - Reference: Method for Organic Chemical Analysis of Municipal and-Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detectfon Limits

Approved by W. F. Bowers
F. Bowers
Laboratory Director

Table C-10 (cont.) Site 1 - GM-39 Base Neutral Extract.

Pioneer
PL LABORATORY. INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU FLORIDA 32514

Lab I.D. 85-1759
GM39

PRIORITY POLLUTANT ANALYSIS*

BASE NEUTRAL EXTRACTABLES

		Reported in ppb	Detection Limit ppb			Reported in ppb	Det Lim ppb
1B	Acenaphthene	BDL	10	24B	Diethylphthalate	BDL	10
2B	Acenaphthylene	BDL	10	2SB	Dimethylphthalate	BDL	10
3B	Anthracene	BDL	10	26B	Di-n-Butyl Phthalate	BDL	10
4B	Benzidine	BDL	10	27B	2,4-Dinitrotoluene	BDL	10
SB	Benzo (a)anthracene	BDL	10	28B	2,6-Dintrotoluene	BDL	10
6B	Benzo (a)pyrene	BDL	10	29B	Di-n-Octyl-Phthalate	BDL	10
7B	3,4-Benzofluoranthene	BDL	10	30B	1,2-Diphenylhydrazine	BDL	10
8B	Benzo(ghi)perylene	BDL	10	31B	Fluoranthene	BDL	10
9B	Benzo(k)fluoranthane	BDL	10	32B	Fluorene	BDL	10
10B	Bis(2-chloroethoxy)methane	BDL	10	33B	Hexachlorobenzene	BDL	10
11B	Bis(2-chloroethyl)ether	BDL	10	34B	Hexachlorobutadiene	BDL	10
12B	Bis(2-chloroisopropyl)ether	BDL	10	35B	Hexachlorocyclopentadiene	BDL	10
13	Bis(2-ethylhexyl)phthalate	BDL	10	36B	Hexachloroethane	BDL	10
14B	4-Bromophenyl Phenyl Ether	BDL	10	37B	Indeno(1,2,3-cd)pyrene	BDL	10
15B	Butylbenzyl Phthalate	BDL	10	38B	Isophorone	BDL	10
16B	2-Chloronaphthalene	BDL	10	39B	Naphthalene	BDL	10
17B	4-Chlorophenyl Phenyl Ether	BDL	10	40B	Nitrobenzene	BDL	10
188	Chrysene	BDL	10	41B	N-Nitrosodimethylamine	BDL	10
19B	Dibenzo(a,h)anthracene	BDL	25	42B	N-Nitrosodi-n-propylamine	BDL	10
20B	1,2-Dichlorobenzene	BDL	10	43B	N-Nitrosodiphenylamine	BDL	10
21B	1,3-Dichlorobenzene	BDL	10	448	Phenanthrene	BDL	10
22B	1,4-Dichlorobenzene	BDL	10	45B	Pyrene	BDL	10
23B	3,3-Dichlorobenzidine	BDL	10	46B	1,2,4-Trichlorobenzene	BDL	10

*EPA Method 625 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limit

Approved by W. F. Bowers
W. F. Bowers
Labo[illegible] Director

Table C-10 (cont.) Site 1 - GM-39 Acid Extract.

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Lab I.D. 85-1759

GM39

PRIORITY POLLUTANT ANALYSIS*

ACID EXTRACTABLES

		Reported in ppb	Detection Limit ppb
1A	2-Chlorophenol	BDL	15
2A	2,4-Dichlorophenol	BDL	10
3A	2,4-Dimethylphenol	BDL	5
4A	4,6-Dinitro-o-Cresol	BDL	50
5A	2,4-Dinitrophenol	BDL	30
6A	2-Nitrophenol	BDL	10
7A	4-Nitrophenol	BDL	20
8A	p-Chloro-m-Cresol	BDL	25
9A	Pentachlorophenol	BDL	30
10A	Phenol	BDL	5
11A	2,4,6-Trichlorophenol	BDL	20

* Method 604 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1759
GM39

PRIORITY POLLUTANT ANALYSIS*

PESTICIDES

		Reported in ppb	Detection Limit ppb
1P	Aldrin	BDL	0.01
2P	a-BHC	BDL	0.01
3P	b-BHC	BDL	0.01
4P	g-BHC	BDL	0.01
5P	d-BHC	BDL	0.01
6P	Chlorodane	BDL	0.01
7P	4,4'-DDT	BDL	0.01
8P	4,4'-DDE	BDL	0.01
9P	4,4'-DDD	BDL	0.01
10P	Dieldrin	BDL	0.01
11P	a-Endosulfan I	BDL	0.01
12P	b-Endosulfan II	BDL	0.01
13P	Endosulfan Sulfate	BDL	0.01
14P	Endrin	BDL	0.07
15P	Endrin Aldehyde	BDL	0.03
16P	Heptachlor	BDL	0.01
17P	Heptachlor Epoxide	BDL	0.01
18P	PCB-1242	BDL	0.2
19P	PCB-1254	BDL	0.2
20P	PCB-1221	BDL	0.2
21P	PCB-1232	BDL	0.2
22P	PCB-1248	BDL	0.2
23P	PCB-1260	BDL	0.2
24P	PCB-1016	BDL	0.2
2SP	Toxaphene	BDL	1

*EPA Method 608 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved by W. F. Bowers
Laboratory

Table C-11 Site 1 - GM-40 Base Neutral Extract.

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1908
GM 40

PRIORITY POLLUTANT ANALYSIS*

BASE NEUTRAL EXTRACTABLES

		Reported in ppb	Detection Limit ppb			Reported in ppb	Det Lir ppb
1B	Acenaphthene	BDL	10	24B	Diethylphthalate	BDL	10
2B	Acenaphthylene	BDL	10	25B	Dimethylphthalate	BDL	10
3B	Anthracene	BDL	10	26B	Di-n-Butyl Phthalate	BDL	10
4B	Benzidine	BDL	10	27B	2,4-Dinitrotoluene	BDL	10
SB	Benzo(a)anthracene	BDL	10	28B	2,6-Dintrotoluene	BDL	10
6B	Benzo(a)pyrene	BDL	10	29B	Di-n-Octyl-Phthalate	BDL	10
7B	3,4-Benzofluoranthene	BDL	10	30B	1,2-Diphenylhydrazine	BDL	10
8B	Benzo(ghi)perylene	BDL	10	31B	Fluoranthene	BDL	10
9B	Benzo(k)fluoranthane	BDL	10	32B	Fluorene	BDL	10
10B	Bis(2-chloroethoxy)methane	BDL	10	33B	Hexachlorobenzene	BDL	10
11B	Bis(2-chloroethyl)ether	BDL	10	34B	Hexachlorobutadiene	BDL	10
12	Bis(2-chloroisopropyl)ether	BDL	10	35B	Hexachlorocyclopentadiene	BDL	10
13	Bis(2-ethylhexyl)phthalate	BDL	10	36B	Hexachloroethane	BDL	10
14B	4-Bromophenyl Phenyl Ether	BDL	10	37B	Indeno(1,2,3-cd)pyrene	BDL	10
15B	Butylbenzyl Phthalate	BDL	10	38B	fsophorone	BDL	10
16B	2-Chloronaphthalene	BDL	10	39B	Naphthalene	BDL	10
17B	4-Chlorophenyl Phenyl Ether	BDL	10	40B	Nitrobenzene	BDL	10
18B	Chrysene	BDL	10	41B	N-Nitrosodimethylamine	BDL	10
19B	Dibenzo(a,h)anthracene	BDL	25	42B	N-Nitrosodi-n-propylamine	BDL	10
20B	1,2-Dichlorobenzene	BDL	10	43B	N-Nitrosodiphenylamine	BDL	10
21B	1,3-Dichlorobenzene	BDL	10	44B	Phenanthrene	BDL	10
22B	1,4-Dichlorobenzene	BDL	10	45B	Pyrene	BDL	10
23B	3,3-Dichlorobenzidine	BDL	10	46B	1,2,4-Trichlorobenzene	BDL	10

*EPA Method 625 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limit

Table C-11 Site 1 - GM-40 Volatiles

Pioneer LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Lab I.D. 85-1908

GM 40

PRIORITY POLLUTANT ANALYSIS*

VOLATILES

		Reported in ppb	Detection Limit ppb
1V	Acrolein	BDL	100
2V	Acrylonitrile	BDL	100
3V	Benzene	BDL	1
4V	Bis (chloromethyl)ether	BDL	5
5V	Bromoform	BDL	5
6V	Carbon Tetrachloride	BDL	3
7V	Chlorobenzene	BDL	1
8V	Chlorodibromomethane	BDL	5
9V	Chloroethane	BDL	5
10V	2-Chloroethylvinyl Ether	BDL	5
11V	Chloroform	BDL.	5
12V	Dichlorobromomethane	BDL	5
13V	Dichlorodifluoromethane	BDL	5
14V	1,1-Dichloroethane	BDL	5
15V	1,2-Dichloroethane	BDL	3
16V	1,1-Dichloroethylene	BDL	5
17V	1,2-Dichloropropane	BDL	5
18V	1,2-Dichloropropylene	BDL	5
19V	Ethylbenzene	BDL	1
20V	Methyl Bromide	BDL	5
21V	Hethyl Chloride	BDL	5
22V	Hethylene Chloride	BDL	5
23V	1,1,2,2-Tetrachloroethane	BDL	5
24V	Tetrachloroethylene	BDL	3
2SV	Toluene	BDL	1
26V	1,2-trans-Dichloroethylene	BDL	5
27V	1,1,1-Trichloroethane	BDL	5
28V	1,1,2-Trichloroethane	BDL	5
29V	Trichloroethylene	BDL	1
30V	Trichlorofluoromethane	BDL	5
31V	Vinyl Chloride	BDL	1

*EPA Method 624 - References Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parte per billion
BDL - Below Detection Limits

Table C-11 Site 1 - GM-40 Acid Extract

Pioneer LABORATORY, INC
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Lab I.D. -85-1908
GM 40

PRIORITY POLLUTANT ANALYSIS*

ACID EXTRACTABLES

		Reported in ppb	Detection 'Limit ppb
1A	2-Chlorophenol	BDL	15
2A	2,4-Dichlorophenol	BDL	10
3A	2,4-Dimethylphenol	BDL	5
4A	4,6-Dinitro-o-Cresol	BDL	50
SA	2,4-Dinitrophenol	BDL	30
6A	2-Nitrophenol	BDL	10
7A	4-Nitrophenol	BDL	20
8A	p-Chloro-m-Cresol	BDL	25
9A	Pentachlorophenol	BDL	30
10A	Phenol	BDL	5
11A	2,4,6-Trichlorophenol	BDL	20

*EPA Method 604 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Table C-11 Site 1 - GM-40 Pesticides

Pioneer LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1908
GM 40

PRIORITY POLLUTANT ANALYSIS*

PESTICIDES

		Reported in ppb	Detection Limit ppb
1P	Aldrin	BDL	0.01
2P	a-BHC	BDL	0.01
3P	b-BHC	BDL	0.01
4P	g-BHC	BDL	0.01
5P	d-BHC	BDL	0.01
6P	Chlorodane	BDL	0.01
7P	4,4'-DDT	BDL	0.01
8P	4,4'-DDE	BDL	0.01
9P	4,4'-DDD	BDL	0.01
10P	Dieldrin	BDL	0.01
11P	a-Endosulfan I	BDL	0.01
12P	b-Endosulfan II	BDL	0.01
13P	Endosulfan Sulfate	BDL	0.01
14P	Endrin	BDL	0.07
15P	Endrin Aldehyde	BDL	0.03
16P	Heptachlor	BDL	0.01
17P	Heptachlor Epoxide	BDL	0.01
18P	PCB-1242	BDL	0.2
19P	PCB-1254	BDL	0.2
20P	PCB-1221	BDL	0.2
21P	PCB-1232	BDL	0.2
22P	PCB-1248	BDL	0.2
23P	PCB-1260	BDL	0.2
24P	PCB-1016	BDL	0.2
2SP	Toxaphene	BDL	1

*EPA Method 608 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Table C-12 Site 1 - GM-41 Volatiles

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1909
GM 41

PRIORITY POLLUTANT ANALYSIS*

VOLATILES

		Reported in ppb	Detection Limit ppb
1V	Acrolein	BDL	100
2V	Acrylonitrile	BDL	100
3V	Benzene	BDL	1
4V	Bis(chloromethyl)ether	BDL	5
5V	Bromoform	BDL	5
6V	Carbon Tetrachloride	BDL	3
7V	Chlorobenzene	BDL	1
8V	Chlorodibromomethane	BDL	5
9V	Chloroethane	BDL	5
10V	2-Chloroethylvinyl Ether	BDL	5
11V	Chloroform	BDL	5
12V	Dichlorobromomethane	BDL	5
13V	Dlchlorodifluoroatethane	BDL	5
14V	1,1-Dichloroethane	BDL	5
15V	1,2-Dichloroethane	BDL	3
16V	1,1-Dichloroethylene	BDL	5
17V	1,2-Dichloropropane	BDL	5
18V	1,2-Dichloropropylene	BDL	5
19V	Ethylbenzene	BDL	1
20V	Hethyl Bromide	BDL	5
21V	Hethyl Chloride	BDL	5
22V	Hethylene Chloride	BDL	5
23V	1,1,2,2-Tetrachloroethane	BDL	5
24V	Tetrachloroethylene	BDL	3
25V	Toluene	BDL	1
26V	1,2-trans-Dichloroethylene	BDL	5
27V	1,1,1-Trichloroethane	BDL	5
28V	1,1,2-Trichloroethane	BDL	5
29V	Trichloroethylene	BDL	1
30V	Trichlorofluoromethane	BDL	5
31V	Vinyl Chloride	BDL	1

*EPA Method 624 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Table C-12 Site 1 - GM-41 Base Neutral Extract.

Pioneer LABORATORY, INC
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1909

GM 41

PRIORITY POLLUTANT ANALYSIS*

BASE NEUTRAL EXTRACTABLES

		Reported in ppb	Detection Limit ppb			Reported in ppb	Det Lim ppb
1B	Acenaphthene	BDL	10	24B	Diethylphthalate	BDL	10
2B	Acenaphthylene	BDL	10	25B	Dimethylphthalate	BDL	10
3B	Anthracene	BDL	10	26B	Di-n-Butyl Phthalate	BDL	10
4B	Benzidine	BDL	10	27B	2,4-Dinitrotoluene	BDL	10
SB	Benzo(a)anthracene	BDL	10	28B	2,6-Dintrotoluene	BDL	10
68	Benzo(a)pyrene	BDL	10	29B	Di-n-Octyl-Phthalate	BDL	10
7B	3,4-Benzofluoranthene	BDL	10	30B	1,2-Diphenylhydrazine	BDL	10
8B	Benzo(ghi)perylene	BDL	10	31B	Fluoranthene	BDL	10
9B	Benzo(k)fluoranthane	BDL	10	32B	Fluorene	BDL	10
10B	Bis(2-chloroethoxy)methane	BDL	10	33B	Hexachlorobenzene	BDL	10
11B	Bis(2-chloroethyl)ether	BDL	10	34B	Hexachlorobutadiene	BDL	10
1[illegible]	Bis(2-chloroisopropyl)ether	BDL	10	35B	Hexachlorocyclopentadiene	BDL	10
13B	Bis(2-ethylhexyl)phthalate	BDL	10	36B	Hexachloroethane	BDL	10
14B	4-Bromophenyl Phenyl Ether	BDL	10	37B	Indeno(1,2,3-cd)pyrene	BDL	10
15B	Butylbenzyl Phthalate	BDL	10	38B	Isophorone	BDL	10
16B	2-Chloronaphthalene	BDL	10	39B	Naphthalene	BDL	10
17B	4-Chlorophenyl Phenyl Ether	BDL	10	40B	Nitrobenzene	BDL	10
18B	Chrysene	BDL	10	41B	N-Nitrosodimethylamine	BDL	10
19B	Dibenzo(a,h)anthracene	BDL	25	42B	N-Nitrosodi-n-propylamine	BDL	10
20B	1,2-Dichlorobenzene	BDL	10	43B	N-Nitrosodiphenylamine	BDL	10
21B	1,3-Dichlorobenzene	BDL	10	44B	Phenanthrene	BDL	10
22B	1,4-Dichlorobenzene	BDL	10	45B	Pyrene	BDL	10
238	3,3-Dichlorobenzidine	BDL	10	46B	1,2,4-Trichlorobenzene	BDL	10

*EPA Method 625 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limit

Table C-12 Site 1 - GM-41 Acid Extract.

Pioneer
PL LABORATORY, INC.
11 EAST OLIVE ROAD
PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Lab I.D. 85-1909
GM41

PRIORITY POLLUTANT ANALYSIS*

ACID EXTRACTABLES

		Reported in ppb	Detection Limit ppb
1A	2-Chlorophenol	BDL	15
2A	2,4-Dichlorophenol	BDL	10
3A	2,4-Dimethylphenol	BDL	5
4A	4,6-Dinitro-o-Cresol	BDL	50
SA	2,4-Dinitrophenol	BDL	30
6A	2-Nitrophenol	BDL	10
7A	4-Nitrophenol	BDL	20
8A	p-Chloro-m-Cresol	BDL	25
9A	Pentachlorophenol	BDL	30
10A	Phenol	BDL	5
11A	2,4,6-Trichlorophenol	BDL	20

*EPA Method 604 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Table C-12 Site 1 - GM-41 Pesticides

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1909
GM 41

PRIORITY POLLUTANT ANALYSIS*

PESTICIDES

		Reported in ppb	Detection Limit ppb
1P	Aldrin	BDL	0.01
2P	a-BHC	BDL	0.01
3P	b-BHC	BDL	0.01
4P	g-BHC	BDL	0.01
5P	d-BHC	BDL	0.01
6P	Chlorodane	BDL	0.01
7P	4,4'-DDT	BDL	0.01
8P	4,4'-DDE	BDL	0.01
9P	4,4'-DDD	BDL	0.01
10P	Dieldrin	BDL	0.01
11P	a-Endosulfan I	BDL	0.01
12P	b-Endosulfan II	BDL	0.01
13P	Endosulfan Sulfate	BDL	0.01
14P	Endrin	BDL	0.07
15P	Endrin Aldehyde	BDL	0.03
16P	Heptachlor	BDL	0.01
17P	Heptachlor Epoxide	BDL	0.01
18P	PCB-1242	BDL	0.2
19P	PCB-1254	BDL	0.2
20P	PCB-1221	BDL	0.2
21P	PCB-1232	BDL	0.2
22P	PCB-1248	BDL	0.2
23P	PCB-1260	BDL	0.2
24P	PCB-1016	BDL	0.2
2SP	Toxaphene	BDL	1

*EPA Method 608 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Table C-13 Site 1 - GM-42 Volatiles

Pioneer LABORATORY, INC
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1762
GM 42

PRIORITY POLLUTANT ANALYSIS*

VOLATILES

		Reported in ppb	Detection Limit ppb
1V	Acrolein	BDL	100
2v	Acrylonitrile	BDL	100
3v	Benzene	6	1
4v	Bis (chloromethyl)ether	BDL	5
5V	Bromoform	BDL	5
6V	Carbon Tetrachloride	BDL	3
7V	Chlorobenzene	BDL	1
8V	Chlorodibromomethane	BDL	5
9V	Chloroethane	BDL	5
10V	2-Chloroethylvinyl Ether	BDL	5
11V	Chloroform	BDL	5
12V	Dichlorobromomethane	BDL	5
13V	Dichlorodifluoromethane	BDL	5
14V	1,1-Dichloroethane	BDL	5
15V	1,2-Dichloroethane	BDL	3
16V	1,1-Dichloroethylene	BDL	5
17V	1,2-Dichloropropane	BDL	5
18V	1,2-Dichloropropylene	BDL	5
19V	Ethylbenzene	BDL	1
20v	Methyl Bromide	BDL	5
21V	Methyl Chloride	BDL	5
22v	Methylene Chloride	BDL	5
23V	1,1,2,2-Tetrachloroethane	BDL	5
24V	Tetrachloroethylene	BDL	3
25V	Toluene	BDL	1
26V	1,2-trans-Dichloroethylene	BDL	5
27V	1,1,1-Trichloroethane	BDL	5
28V	1,1,2-Trichloroethane	BDL	5
29V	Trichloroethylene	BDL	1
30V	Trichlorofluoromethane	BDL	5
31V	Vinyl Chloride	7	1

*EPA Method 624 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved By W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-13 Site 1 - GM-42 Base Neutral Extract.

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1762

GM 42

PRIORITY POLLUTANT ANALYSIS*

BASE NEUTRAL EXTRACTABLES

		Reported in ppb	Detection Limit ppb			Reported in ppb	Det Lim ppb
1B	Acenaphthene	BDL	10	24B	Diethylphthalate	BDL	10
2B	Acenaphthylene	BDL	10	258	Dimethylphthalate	BDL	10
38	Anthracene	BDL	10	26B	Di-n-Butyl Phthalate	BDL	10
4B	Benzidine	BDL	10	27B	2,4-Dinitrotoluene	BDL	10
5B	Benzo(a)anthracene	BDL	10	28B	2,6-Dintrotoluene	BDL	10
68	Benzo(a)pyrene	BDL	10	29B	Di-n-Octyl-Phthalate	BDL	10
7B	3,4-Benzofluoranthene	BDL	10	30B	1,2-Diphenylhydrazine	BDL	10
8B	Benzo(ghi)perylene	BDL	10	31B	Fluoranthene	BDL	10
98	Benzo(k)fluoranthane	BDL	10	32B	Fluorene	BDL	10
10B	Bis(2-chloroethoxy)methane	BDL	10	33B	Hexachlorobenzene	BDL	10
11B	Bis(2-chloroethyl)ether	BDL	10	34B	Hexachlorobutadiene	BDL	10
[illegible]	Bis(2-chloroisopropyl)ether	BDL	10	35B	Hexachlorocyclopentadiene	BDL	10
[illegible]	Bis(2-ethylhexyl)phthalate	BDL	10	36B	Hexachloroethane	BDL	10
14B	4-Bromophenyl Phenyl Ether	BDL	10	378	Indeno(1,2,3-cd)pyrene	BDL	10
15B	Butylbenzyl Phthalate	BDL	10	388	Isophorone	BDL	10
16B	2-Chloronaphthalene	BDL	10	398	Naphthalene	BDL	10
17B	4-Chlorophenyl Phenyl Ether	BDL	10	40B	Nitrobenzene	BDL	10
18B	Chrysene	BDL	10	41B	N-Nitrosodimethylamine	BDL	10
19B	Dibenzo(a,h)anthracene	BDL	25	42B	N-Nitrosodi-n-propylamine	BDL	10
20B	1,2-Dichlorobenzene	BDL	10	438	N-Nitrosodiphenylamine	BDL	10
21B	1,3-Dichlorobenzene	BDL	10	44B	Phenanthrene	BDL	10
22B	1,4-Dichlorobenzene	BDL	10	45B	Pyrene	BDL	10
238	3,3-Dichlorobenzidine	BDL	10	46B	1,2,4-Trichlorobenzene	BDL	10

*EPA Method 625 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limit

W. F. Bowers

Approved by W. F. Bowers
Laboratory Director

Table C-13 Sitel - GM-42 Acid Extract.

Pioneer
LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 8:-1762

GM 42

PRIORITY POLLUTANT ANALYSIS*

ACID EXTRACTABLES

		Reported in ppb	Detection Limit ppb
1A	2-Chlorophenol	BDL	15
2A	2,4-Dichlorophenol	BDL	10
3A	2,4-Dimethylphenol	BDL	5
4A	4,6-Dinitro-o-Cresol	BDL	50
SA	2,4-Dinitrophenol	BDL	30
6A	2-Nitrophenol	BDL	10
7A	4-Nitrophenol	BDL	20
8A	p-Chloro-m-Cresol	BDL	25
9A	Pentachlorophenol	BDL	30
10A	Phenol	BDL	5
11A	2,4,6-Trichlorophenol	BDL	20

*A Method 604 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-13 Site 1 - GM-42 Pesticides

Pioneer LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1762
GM 42

PRIORITY POLLUTANT ANALYSIS*

PESTICIDES

		Reported in ppb	Detection Limit ppb
1P	Aldrin	BDL	0.01
2P	a-BHC	BDL	0.01
3P	b-BHC	BDL	0.01
4P	g-BHC	BDL	0.01
5P	d-BHC	BDL	0.01
6P	Chlorodane	BDL	0.01
7P	4,4'-DDT	BDL	0.01
8P	4,4'-DDE	BDL	0.01
9P	4,4'-DDD	BDL	0.01
10P	Dieldrin	BDL	0.01
11P	a-Endosulfan I	BDL	0.01
12P	b-Endosulfan II	BDL	0.01
13P	Endosulfan Sulfate	BDL	0.01
14P	Endrin	BDL	0.07
15P	Endrin Aldehyde	BDL	0.03
16P	Heptachlor	BDL	0.01
17P	Heptachlor Epoxide	BDL	0.01
18P	PCB-1242	BDL	0.2
19P	PCB-1254	BDL	0.2
20P	PCB-1221	BDL	0.2
21P	PCB-1232	BDL	0.2
22P	PCB-1248	BDL	0.2
23P	PCB-1260	BDL	0.2
24P	PCB-1016	BDL	0.2
25P	Toxaphene	BDL	1

*EPA Method 608 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved by W. F. Bowers
Laboratory Director

Table C-14 Site 1- GM-43 Volatiles

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1763

GM 43

PRIORITY POLLUTANT ANALYSIS*

VOLATILES

		Reported in ppb	Detection Limit ppb
1V	Acrolein	BDL	100
2V	Acrylonitrile	BDL	100
3V	Benzene	BDL	1
4V	Bis (chloromethyl)ether	BDL	5
5V	Bromoform	BDL	5
6V	Carbon Tetrachloride	BDL	3
7V	Chlorobenzene	BDL	1
8V	Chlorodibromomethane	BDL	5
9V	Chloroethane	BDL	5
10V	2-Chloroethylvinyl Ether	BDL	5
11V	Chloroform	BDL	5
12V	Dichlorobromomethane	BDL	5
13V	Dichlorodifluoromethane	BDL	5
14V	1,1-Dichloroethane	BDL	5
15V	1,2-Dichloroethane	BDL	3
16V	1,1-Dichloroethylene	BDL	5
17V	1,2-Dichloropropane	BDL	5
18V	1,2-Dichloropropylene	BDL	5
19V	Ethylbenzene	BDL	1
20V	Methyl Bromide	BDL	5
21V	Methyl Chloride	BDL	5
22V	Methylene Chloride	BDL	5
23V	1,1,2,2-Tetrachloroethane	BDL	5
24V	Tetrachloroethylene	BDL	3
25V	Toluene	BDL	1
26V	1,2-trans-Dichloroethylene	BDL	5
27V	1,1,1-Trichloroethane	BDL	5
28V	1,1,2-Trichloroethane	BDL	5
29V	Trichloroethylene	BDL	1
30V	Trichlorofluoromethane	BDL	5
31V	Vinyl Chloride	BDL	1

*EPA Method 624 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-14 Site 1-GM-43 Base Neutral Extract.

Pioneer
PL LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1763
GM 43

PRIORITY POLLUTANT ANALYSIS*

BASE NEUTRAL EXTRACTABLES

		Reported in ppb	Detection Limit ppb			Reported in ppb	Det Lim ppb
1B	Acenaphthene	BDL	10	24B	Diethylphthalate	BDL	10
2B	Acenaphthylene	BDL	10	2SB	Dimethylphthalate	BDL	10
30	Anthracene	BDL	10	26B	Di-n-Butyl Phthalate	BDL	10
4B	Benzidine	BDL	10	27B	2,4-Dinitrotoluene	BDL	10
SB	Benzo(a)anthracene	BDL	10	28B	2,6-Dintrotoluene	BDL	10
6B	Benzo(a)pyrene	BDL	10	29B	Di-n-Octyl-Phthalate	BDL	10
7B	3,4-Benzofluoranthene	BDL	10	30B	1,2-Diphenylhydrazine	BDL	10
8B	Benzo(ghi)perylene	BDL	10	31B	Fluoranthene	BDL	10
9B	Benzo(k)fluoranthane	BDL	10	32B	Fluorene	BDL	10
10B	Bis(2-chloroethoxy)methane	BDL	10	33B	Hexachlorobenzene	BDL	10
11B	Bis(2-chloroethyl)ether	BDL	10	34B	Hexachlorobutadiene	BDL	10
[illegible]	Bis(2-chloroisopropyl)ether	BDL	10	35B	Hexachlorocyclopentadiene	BDL	10
[illegible]	Bis(2-ethylhexyl)phthalate	BDL	10	36B	Hexachloroethane	BDL	10
14B	4-Bromophenyl Phenyl Ether	BDL	10	37B	Indeno(1,2,3-cd)pyrene	BDL	10
15B	Butylbenzyl Phthalate	BDL	10	38B	Isophorone	BDL	10
16B	2-Chloronaphthalene	BDL	10	39B	Naphthalene	BDL	10
17B	4-Chlorophenyl Phenyl Ether	BDL	10	40B	Nitrobenzene	BDL	10
18B	Chrysene	BDL	10	41B	N-Nitrosodimethylamine	BDL	10
19B	Dibenzo(a,h)anthracene	BDL	25	42B	N-Nitrosodi-n-propylamine	BDL	10
20B	1,2-Dichlorobenzene	BDL	10	43B	N-Nitrosodiphenylamine	BDL	10
21B	1,3-Dichlorobenzene	BDL	10	44B	Phenanthrene	BDL	10
22B	1,4-Dichlorobenzene	BDL	10	45B	Pyrene	BDL	10
238	3,3-Dichlorobenzidine	BDL	10	46B	1,2,4-Trichlorobenzene	BDL	10

*EPA Method 625 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parte per billion
BDL - Below Detection Limit

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-14 Site 1 - GM-43 Acid Extract

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1763

GM 43

PRIORITY POLLUTANT ANALYSIS*

ACID EXTRACTABLES

		Reported in ppb	Detection Limit ppb
1A	2-Chlorophenol	BDL	15
2A	2,4-Dichlorophenol	BDL	10
3A	2,4-Dimethylphenol	BDL	5
4A	4,6-Dinitro-o-Cresol	BDL	50
5A	2,4-Dinitrophenol	BDL	30
6A	2-Nitrophenol	BDL	10
7A	4-Nitrophenol	BDL	20
8A	p-Chloro-m-Cresol	BDL	25
9A	Pentachlorophenol	BDL	30
10A	Phenol	BDL	5
11A	2,4,6-Trichlorophenol	BDL	20

*EPA Method 604 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-14 Site 1 - GM-43 Pesticides

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1763
GM 43

PRIORITY POLLUTANT ANALYSIS*

PESTICIDES

		Reported in ppb	Detection Limit ppb
1P	Aldrin	BDL	0001
2P	a-BHC	BDL	0.01
3P	b-BHC	BDL	0.01
4P	g-BHC	BDL	0.01
5P	d-BHC	BDL	0.01
6P	Chlorodane	BDL	0.01
7P	4,4'-DDT	BDL	0.01
8P	4,4'-DDE	BDL	0.01
9P	4,4'-DDD	BDL	0.01
10P	Dieldrin	BDL	0.01
11P	a-Endosulfan I	BDL	0.01
12P	b-Endosulfan II	BDL	0.01
13P	Endosulfan Sulfate	BDL	0.01
14P	Endrin	BDL	0.07
15P	Endrin Aldehyde	BDL	0.03
16P	Heptachlor	BDL	0.01
17P	Heptachlor Epoxide	BDL	0.01
18P	PCB-1242	BDL	0.2
19P	PCB-1254	BDL	002
20P	PCB-1221	BDL	0.2
21P	PCB-1232	BDL	0.2
22P	PCB-1248	BDL	002
23P	PCB-1260	BDL	002
24P	PCB-1016	BDL	002
25P	Toxaphene	BDL	1

*EPA Method 608 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-15 Site 1 - GM-44 Volatiles

Pioneer
PL LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1764

GM 41

PRIORITY POLLUTANT ANALYSIS*

YOLATILES

		Reported in ppb	Detection Limit ppb
1V	Acrolein	BDL	100
2v	Acrylonitrile	BDL	100
3v	Benzene	76	1
4v	Bis (chloromethyl)ether	BDL	5
5V	Bromoform	BDL	5
6V	Carbon Tetrachloride	BDL	3
7V	Chlorobenzene	BDL	1
8V	Chlorodibromomethane	BDL	5
9V	Chloroethane	BDL	5
10V	2-Chloroethylvinyl Ether	BDL	5
11V	Chloroform	BDL	5
12v	Dichlorobromomethane	BDL	5
13V	Dichlorodifluoromethane	BDL	5
14V	1,1-Dichloroethane	BDL	5
15V	1,2-Dichloroethane	BDL	3
16V	1,1-Dichloroethylene	BDL	5
17V	1,2-Dichloropropane	BDL	5
18V	1,2-Dichloropropylene	BDL	5
19V	Ethylbenzene	8	1
20v	Methyl Bromide	BDL	5
21V	Methyl Chloride	BDL	5
22v	Methylene Chloride	BDL	5
23V	1,1,2,2-Tetrachloroethane	BDL	5
24V	Tetrachloroethylene	BDL	3
25V	Toluene	1	1
26V	1,2-trans-Dichloroethylene	BDL	5
27V	1,1,1-Trichloroethane	BDL	5
28V	1,1,2-Trichloroethane	BDL	5
29V	Trichloroethylene	BDL	1
30V	Trichlorofluoromethane	BDL	5
31V	Vinyl Chloride	BDL	1

*EPA Method 624 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved By

Table C-15 Site 1-GM-44 Base Neutral Extract

Pioneer LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1764

GM 44

PRIORITY POLLUTANT ANALYSIS*

BASE NEUTRAL EXTRACTABLES

		Reported in ppb	Detection Limit ppb			Reported in ppb	De Li pp
1B	Acenaphthene	BDL	10	24B	Diethylphthalate	BDL	10
2B	Acenaphthylene	BDL	10	25B	Dimethylphthalate	BDL	10
3B	Anthracene	BDL	10	26B	Di-n-Butyl-Phthalate	BDL	10
4B	Benzidine	BDL	10	27B	2,4-Dinitrotoluene	BDL	10
5B	Benzo(a)anthracene	BDL	10	28B	2,6-Dintrotoluene	BDL	10
6B	Benzo(a)pyrene	BDL	10	29B	Di-n-Octyl-Phthalate	BDL	10
7B	3,4-Benzofluoranthene	BDL	10	30B	1,2-Diphenylhydrazine	BDL	10
8B	Benzo(ghi)perylene	BDL	10	31B	Fluoranthene	BDL	10
9B	Benzo(k)fluoranthane	BDL	10	32B	Fluorene	BDL	10
10B	Bis(2-chloroethoxy)methane	BDL	10	33B	Hexachlorobenzene	BDL	10
11B	Bis(2-chloroethyl)ether	BDL	10	34B	Hexachlorobutadiene	BDL	10
12B	Bis(2-chloroisopropyl)ether	BDL	10	35B	Hexachlorocyclopentadiene	BDL	10
13B	Bis(2-ethylhexyl)phthalate	BDL	10	36B	Hexachloroethane	BDL	10
14B	4-Bromophenyl Phenyl Ether	BDL	10	37B	Indeno(1,2,3-cd)pyrene	BDL	10
15B	Butylbenzyl Phthalate	BDL	10	38B	Isophorone	BDL	10
16B	2-Chloronaphthalene	BDL	10	39B	Naphthalene	BDL	10
17B	4-Chlorophenyl Phenyl Ether	BDL	10	40B	Nitrobenzene	BDL	10
18B	Chrysene	BDL	10	41B	N-Nitrosodimethylamine	BDL	10
19B	Dibenzo(a,h)anthracene	BDL	25	42B	N-Nitrosodi-n-propylamine	BDL	10
20B	1,2-Dichlorobenzene	BDL	10	43B	N-Nitrosodiphenylamine	BDL	10
21B	1,3-Dichlorobenzene	BDL	10	44B	Phenanthrene	BDL	10
22B	1,4-Dichlorobenzene	BDL	10	45B	Pyrene	BDL	10
23B	3,3-Dichlorobenzidine	BDL	10	46B	1,2,4-Trichlorobenzene	BDL	10

*EPA Method 625 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limit

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-15 Site 1- GM-44 Acid Extract

Pioneer LABORATORY, INC
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Lab I.D. 85-1764
GM 44

PRIORITY POLLUTANT ANALYSIS*

ACID EXTRACTABLES

		Reported in ppb	Detection 'Limit ppb
1A	2-Chlorophenol	BDL	15
2A	2,4-Dichlorophenol	BDL	10
3A	2,4-Dimethylphenol	BDL	5
4A	4,6-Dinitro-o-Cresol	BDL	50
5A	2,4-Dinitrophenol	BDL	30
6A	2-Nitrophenol	BDL	10
7A	4-Nitrophenol	BDL	20
8A	p-Chloro-m-Cresol	BDL	25
9A	Pentachlorophenol	BDL	30
10A	Phenol	BDL	5
11A	2,4,6-Trichlorophenol	BDL	20

*EPA Method 604 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-15 Site 1 - GM-44 Pesticides

Pioneer
PLI LABORATORY, INC
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU, FLORIDA 32514

Lab I.D. 85-1764

GM 44

PRIORITY POLLUTANT ANALYSIS*

PESTICIDES

		Reported in ppb	Detection Limit ppb
1P	Aldrin	BDL	0.01
2P	a-BHC	BDL	0.01
3P	b-BHC	BDL	0.01
4P	g-BHC	BDL	0.01
SP	d-BHC	BDL	0.01
6P	Chlorodane	BDL	0.01
7P	4,4'-DDT	BDL	0.01
8P	4,4'-DDE	BDL	0.01
9P	4,4'-DDD	BDL	0.01
10P	Dieldrin	BDL	0.01
11P	a-Endosulfan I	BDL	0.01
12P	b-Endosulfan II	BDL	0.01
13P	Endosulfan Sulfate	BDL	0.01
14P	Endrin	BDL	0.07
15P	Endrin Aldehyde	BDL	0.03
16P	Heptachlor	BDL	0.01
17P	Heptachlor Epoxide	BDL	0.01
18P	PCB-1242	BDL	0.2
19P	PCB-1254	BDL	0.2
20P	PCB-1221	BDL	0.2
21P	PCB-1232	BDL	0.2
22P	PCB-1248	BDL	0.2
23P	PCB-1260	BDL	0.2
24P	PCB-1016	BDL	0.2
25P	Toxaphene	BDL	1

*EPA Method 608 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved by W. F. Bowers
Laboratory Director

Table C-16 Site 1- GM-45 Volatiles

Pioneer
PL LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU FLORIDA 32514

Lab I.D. 85-1765

GM 45

PRIORITY POLLUTANT ANALYSIS*

VOLATILES

		Reported in ppb	Detection Limit ppb
1V	Acrolein	BDL	100
2v	Acrylonitrile	BDL	100
3v	Benzene	67	1
4v	Bis (chloromethyl)ether	BDL	5
5v	Bromoform	BDL	5
6V	Carbon Tetrachloride	BDL	3
7V	Chlorobenzene	BDL	1
8V	Chlorodibromomethane	BDL	5
9V	Chloroethane	BDL	5
10V	2-Chloroethylvinyl Ether	BDL	5
11V	Chloroform	BDL	5
12V	Dichlorobromomethane	BDL	5
13V	Dichlorodifluoromethane	BDL	5
14V	1,1-Dichloroethane	BDL	5
15V	1,2-Dichloroethane	BDL	3
16V	1,1-Dichloroethylene	BDL	5
17V	1,2-Dichloropropane	BDL	5
18V	1,2-Dichloropropylene	BDL	5
19V	Ethylbenzene	BDL	1
20V	Methyl Bromide	BDL	5
21V	Methyl Chloride	BDL	5
22V	Methylene Chloride	BDL	5
23V	1,1,2,2-Tetrachloroethane	BDL	5
24V	Tetrachloroethylene	BDL	3
25V	Toluene	2	1
26V	1,2-trans-Dichloroethylene	BDL	5
27V	1,1,1-Trichloroethane	BDL	5
28V	1,1,2-Trichloroethane	BDL	5
29V	Trichloroethylene	BDL	1
30V	Trichlorofluoromethane	BDL	5
31V	Vinyl Chloride	BDL	1

*EPA Method 624 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved by

Table C-16 Site 1 - GM-45 Base Neutral Extract.

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 1765
GM 45

PRIORITY POLLUTANT ANALYSIS*

BASE NEUTRAL EXTRACTABLES

		Reported in ppb	Detection Limit ppb			Reported in ppb	De Li PP'
1B	Acenaphthene	BDL	10	24B	Diethylphthalate	BDL	10
2B	Acenaphthylene	BDL	10	25B	Dimethylphthalate	BDL	10
3B	Anthracene	BDL	10	26B	Di-n-Butyl Phthalate	BDL	10
4B	Benzidine	BDL	10	27B	2,4-Dinitrotoluene	BDL	10
5B	Benzo(a)anthracene	BDL	10	28B	2,6-Dintrotoluene	BDL	10
6B	Benzo(a)pyrene	BDL	10	29B	Di-n-Octyl-Phthalate	BDL	10
7B	3,4-Benzofluoranthene	BDL	10	30B	1,2-Diphenylhydrazine	BDL	10
8B	Benzo(ghi)perylene	BDL	10	31B	Fluoranthene	BDL	10
9B	Benzo(k)fluoranthane	BDL	10	32B	Fluorene	BDL	10
10B	Bis(2-chloroethoxy)methane	BDL	10	33B	Hexachlorobenzene	BDL	10
[illegible]	Bis(2-chloroethyl)ether	BDL	10	34B	Hexachlorobutadiene	BDL	10
[illegible]	Bis(2-chloroisopropyl)ether	BDL	10	35B	Hexachlorocyclopentadiene	BDL	10
13B	Bis(2-ethylhexyl)phthalate	BDL	10	36B	Hexachloroethane	BDL	10
14B	4-Bromophenyl Phenyl Ether	BDL	10	37B	Indeno(1,2,3-cd)pyrene	BDL	10
15B	Butylbenzyl Phthalate	BDL	10	38B	Isophorone	BDL	10
16B	2-Chloronaphthalene	BDL	10	39B	Naphthalene	BDL	10
17B	4-Chlorophenyl Phenyl Ether	BDL	10	40B	Nitrobenzene	BDL	10
18B	Chtysene	BDL	10	41B	N-Nitrosodimethylamine	BDL	10
19B	Dibenzo(a,h)anthracene	BDL	25	42B	N-Nitrosodi-n-propylamine	BDL	10
20B	1,2-Dichlorobenzene	BDL	10	43B	N-Nitrosodiphenylamine	BDL	10
21B	1,3-Dichlorobenzene	BDL	10	44B	Phenanthrene	BDL	10
22B	1,4-Dichlorobenzene	BDL	10	45B	Pyrene	BDL	10
23B	3,3-Dichlorobenzidine	BDL	10	46B	1,2,4-Trichlorobenzene	BDL	10

*EPA Hethod 625 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limit

Table C-16 Site 1- GM-45 Acid Extract

Pioneer
LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1765
GM 45

PRIORITY POLLUTANT ANALYSIS*

ACID EXTRACTABLES

		Reported in ppb	Detection Limit ppb
1A	2-Chlorophenol	BDL	15
2A	2,4-Dichlorophenol	BDL	10
3A	2,4-Dimethylphenol	BDL	5
4A	4,6-Dinitro-o-Cresol	BDL	50
5A	2,4-Dinitrophenol	BDL	30
6A	2-Nitrophenol	BDL	10
7A	4-Nitrophenol	BDL	20
8A	p-Chloro-m-Cresol	BDL	25
9A	Pentachlorophenol	BDL	30
10A	Phenol	BDL	5
11A	2,4,6-Trichlorophenol	BDL	20

*EPA Method 604 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-16 Site 1-GM-45 Pesticides

Pioneer
PLI LABORATORY INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1765
GM 43

PRIORITY POLLUTANT ANALYSIS*

PESTICIDES

		Reported in ppb	Detection Limit ppb
1P	Aldrin	BDL	0.01
2P	a-BHC	BDL	0.01
3P	b-BHC	BDL	0.01
4P	g-BHC	BDL	0.01
5P	d-BHC	BDL	0.01
6P	Chlorodane	BDL	0.01
7P	4,4'-DDT	BDL	0.01
8P	4,4'-DDE	BDL	0.01
9P	4,4'-DDD	BDL	0.01
10P	Dieldrin	BDL	0.01
11P	a-Endosulfan I	BDL	0.01
12P	b-Endosulfan II	BDL	0.01
13P	Endosulfan Sulfate	BDL	0.01
14P	Endrin	BDL	0.07
15P	Endrin Aldehyde	BDL	0.03
16P	Heptachlor	BDL	0.01
17P	Heptachlor Epoxide	BDL	0.01
18P	PCB-1242	BDL	0.2
19P	PCB-1254	BDL	0.2
20P	PCB-1221	BDL	0.2
21P	PCB-1232	BDL	0.2
22P	PCB-1248	BDL	0.2
23P	PCB-1260	BDL	0.2
24P	PCB-1016	BDL	0.2
25P	Toxaphene	BDL	1

*EPA Hethod 608 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

Table C-17 Sites 11 & 26 - GM-26 Volatiles Lab I.D. 85-1744-28
GM 26

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	32
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	9
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	8
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	16
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-17 Sites 11 & 26 - GM-26 Metals, Cyanide & Phenols

Lab I.D. 85-1744-28

GM 26

Pioneer LABORATORY, INC.

11 EAST OLIVE ROAD PHONE (904) 474-1001

PENSACOU FLORIDA 32514

PRIORITY POLLUTANT ANALYSIS

Priority Pollutant Compound	Sample Identification Priority Pollutant Concentration in ppm
Metals, Cyanide and Phenols	
1M Antimony	0.04
2M Arsenic	< 0.005
3M Beryllium	< 0.001
4M Cadmium	0.002
5M Chromium	0.006
6M Copper	0.002
7M Lead	0.011
8M Mercury	0.0004
9M Nickel	0.005
10M Selenium	< 0.010
11M Silver	< 0.001
12M Thallium	0.01
13M Zinc	0.010
14 Cyanide	< 0.005
15 Phenols	0.010

<= less than

Approved by W. F. Bowers

W. F. Bowers
Laboratory Director

Table C-18 Sites 11 & 26 - GM-28 Volatiles

Lab I.D. 85-1744-2

GM 28

Pioneer Laboratory, Inc.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	21
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	a
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	6
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachloroethene	3	BDL
Toulene	1	5
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	54
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-18 Sites 11 & 26 61-28 Metals, Cyanide & Phenols

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1744-2
GM 28

PRIORITY POLLUTANT ANALYSIS

Priority Pollutant Compound	Sample Identification Priority Pollutant Concentration in ppm
Metals, Cyanide and Phenols	
1M Antimony	0.04
2M Arsenic	< 0.005
3M Beryllium	< 0.001
4M Cadmium	0.004
5M Chromium	0.005
6M Copper	0.004
7M Lead	0.014
8M Mercury	0.0007
9M Nickel	0.007
10M Selenium	< 0.010
11M Silver	< 0.001
12M Thallium	< 0.01
13M Zinc	0.010
14 Cyanide	< 0.005
15 Phenols	0.010

<= less than

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-19 Sites 11 & 26 GI-36 Volatiles Lab I.D. 85-1744-24

GM 36

Pioneer LABORATORY, INC.

11 EAST OLIVE ROAD PHONE (904) 474-1001

PENSACOLA, FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethy'ivinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlboethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Result6 are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Brown

Table C-19 Sites 11 & 26 GM-36 Metals, Cyanide & Phenols

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1744-24
GM 36

PRIORITY POLLUTANT ANALYSIS

Priority Pollutant Compound	Sample Identification Priority Pollutant Concentration in ppm
Metals, Cyanide and Phenols	
1M Antimony	0.18
2M Arsenic	< 0.005
3M Beryllium	< 0.001
4M Cadmium	0.002
5M Chromium	0.006
6M Copper	0.004
7M Lead	0.016
8M Mercury	0.0009
9M Nickel	0.009
10M Selenium	< 0.010
11M Silver	< 0.001
12M Thallium	< 0.01
13M Zinc	0.024
14 Cyanide	< 0.005
15 Phenols	0.013

< = less than

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-20 Sites 11 & 26, GM-46 Volatiles

Lab I.D. 85-1744-26

GM 46

Pioneer
PL LABORATORY. INC.

11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

W. F. Bowers

Approved by W. F. Bowers
Laboratory Director

Table C-20 Sites 11 & 26 GM-46 Metals, Cyanide & Phenols

Pioneer
PLI LABORATORY. INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1744-26
GM 46

PRIORITY POLLUTANT ANALYSIS

Priority Pollutant Compound	Sample Identification Priority Pollutant Concentration in ppm
Metals, Cyanide and Phenols	
1M Antimony	0.05
2M Arsenic	40.005
3M Beryllium	< 0.001
4M Cadmium	0.003
5M Chromium	0.006
6M Copper	0.004
7M Lead	0.014
8M Mercury	0.0009
9M Nickel	0.012
10M Selenium	< 0.010
11M Silver	< 0.001
12M Thallium	< 0.01
13M Zinc	0.017
14 Cyanide	< 0.005
15 Phenols	0.007

< = less than

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-21 Sites 11 & 26 GM-47 Volatiles

Lab I.D 85-1744-1

GM47

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	59
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	5
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	33
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	21
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	.14
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

W. F. Bowers

Approved by W. F. Bowers
Laboratory Director

Table C-21 Sites 11 & 26 GM-47 Metals, Cyanide & Phenols

Pioneer
PL LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1744-1
GM 47

PRIORITY POLLUTANT ANALYSIS

Priority Pollutant Compound	Sample Identification Priority Pollutant Concentration in ppm
Metals, Cyanide and Phenols	
1M Antimony	0.04
2M Arsenic	< 0.005
3M Beryllium	< 0.001
4M Cadmium	0.002
5M Chromium	0.005
6M Copper	0.002
7M Lead	0.003
8M Mercury	0.0027
9M Nickel	0.040
10M Selenium	< 0.010
11M Silver	< 0.001
12M Thallium	< 0.01
13M Zinc	0.024
14 Cyanide	< 0.005
15 Phenols	0.016

< =less than

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-22 Sites 11 & 26 GM-48 Volatiles

Lab I.D. [illegible]

GM 48

Pioneer
PLI LABORATORY, INC
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	18
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	9
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-22 Sites 11 & 26 GM-48 Metals, Cyanide & Phenols

Lab. I.D. 85-1744-29

GM 48

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU FLORIDA 32514

PRIORITY POLLUTANT ANALYSIS

Priority Pollutant Compound	Sample Identification Priority Pollutant Concentration in ppm
Metals, Cyanide and Phenols	
1M Antimony	0.07
2M Arsenic	< 0.005
3M Beryllium	< 0.001
4M Cadmium	0.003
5M Chromium	0.006
6M Copper	0.008
7M Lead	0.023
8M Mercury	0.0004
9M Nickel	0.017
10M Selenium	< 0.010
11M Silver	< 0.001
12M Thallium	0.01
13M Zinc	0.020
14 Cyanide	< 0.005
3' Phenols	0.008

<= less than

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-23 Sites 11 & 26 GM-49 Volatiles

Pioneer
PLI LABORATORY. INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU FLORIDA 32514

Lab I.D. 85-1744-25
GM 49

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. B.
W. F. Bowers
Laboratory Director

Table C-23 Sites 11 & 26 GM-49 Metals, Cyanide & Phenols

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1744-25
GM 49

PRIORITY POLLUTANT ANALYSIS

Priority Pollutant Compound	Sample Identification Priority Pollutant Concentration in ppm
Metals, Cyanide and Phenols	
1M Antimony	0.02
2M Arsenic	< 0.005
3M Beryllium	< 0.001
4M Cadmium	0.002
5M Chromium	0.007
6M Copper	0.019
7M Lead	0.020
8M Mercury	0.0005
9M Nickel	0.003
10M Selenium	< 0.010
11M Silver	< 0.001
12M Thallium	L0.01
13M Zinc	0.088
14 Cyanide	< 0.005
15 Phenols	0.007

< = less than

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Lab I.D. 85-1744-27

GM 50

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	2
Bromodichloromethane	S	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	S	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	S	BDL
1,3-Dichlorobenzene	S	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	6
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	39
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	390
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-24 Sites 11 & 26 CM-50 Metals, Cyanide & Phenols

Pioneer
PL LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Lab I.D. 85-1744-27

CM 50

PRIORITY POLLUTANT ANALYSIS

Priority Pollutant Compound	Sample Identification Priority Pollutant Concentration in ppm
Metals, Cyanide and Phenols	
1M Antimony	0.07
2M Arsenic	< 0.005
3M Beryllium	< 0.001
4M Cadmium	0.004
5M Chromium	0.006
6M Copper	0.004
7M Lead	0.013
8M Mercury	0.0001
9M Nickel	0.010
10M Selenium	< 0.010
11M Silver	< 0.001
12M Thallium	< 0.01
13M Zinc	0.041
14 Cyanide	< 0.005
Phenols	0.020

< = less than

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-25 Sites 11 & 26 GM-51 Volatiles

Lab I.D. 85-1744-30

GM 51

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD
PENSACOU. FLORIDA 32514
PHONE (904) 474-1001

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	2
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl eth.er	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	~~5~~	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	~~1~~	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	2
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-25 Sites 11 & 26 GM-51 Metals, Cyanide & Phenols

Lab I.D. 85-1744-30
GM 51

Pioneer
PLI LABORATORY. INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

PRIORITY POLLUTANT ANALYSIS

Priority Pollutant Compound	Sample Identification Priority Pollutant Concentration in ppm
Metals, Cyanide and Phenols	
1M Antimony	0.21
2M Arsenic	< 0.005
3M Beryllium	< 0.001
4M Cadmium	0.007
5M Chromium	0.016
6M Copper	0.023
7M Lead	0.069
8M Mercury	0.0007
9M Nickel	0.036
10M Selenium	< 0.010
11M Silver	< 0.001
12M Thallium	0.06
13M Zinc	0.021
14 Cyanide	< 0.005
15 Phenols	0.003

<= less than

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-26 Site 34 Surface #1 Volatiles

Lab I.D. 85-1744-14

Surface #1

Pioneer LABORATORY, INC.

11 EAST OLIVE ROAD PHONE (904) 474-1001

PENSACOU. FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	1
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	6
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	2
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	4
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	6
Dlchlorodffluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

W. F. Bowers

Approved by W. F. Bowers
Laboratory Director

Table C-27 Site 34 Surface #2 Volatiles

Lab I.D. 85-1744-15
Surface #2

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	3
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	8
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	32.
Dichlorodif luoro Methane	5	BDL
Chlorobenzone	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

W F Bowers

Approved by W. F. Bowers
Laboratory Director

Table C-28 Site 34 Surface #3 Volatiles

Lab I.D. 85-1744-31
Surface #3

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD
PENSACOLA, FLORIDA 32514
PHONE (904) 474-1001

Volatile Organics
Method 601 & 602

	Detection Limits	
Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	2
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parte'per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Lab I.D. 85-2401-1

Table C-29 Site 34 GM-6 Volatiles GM6

Pioneer LABORATORY, INC.

11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU FLORIDA 32514

Volatile Organics
Method 601 & 602

	Detection Limits	Results
Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	1	BDL
Ethyl benzene	5	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Table C-30 Site 34 GM-53 Volatiles

Lab I.U. 85-1744-12
GM 53

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	2
Bromodfchloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tctrachlooethene	3	BDL
Toulene	1	4
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-31 Site 34 GM-56 Volatiles

Lab I.D: ~~85-1744-11~~
GM56

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

W. F. Bowers

Approved by W. F. Bowers
Laboratory Director

Table C-32 Site 34 GM-57 Volatiles

Lab I.D. 85-1744-13

GM 57

Pioneer LABORATORY, INC.

11 EAST OLIVE ROAD PHONE (904) 474-1001

PENSACOU. FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W F Bowers
W. F. Bowers
Laboratory Director

Table C-33 Site 34 GM-61 Volatiles

Lab I.D. 1744-10

GM 61

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	7	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Hethylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-34 Sites 27 & 31 GM-1 Volatiles

Lab I.D. 85-1744-3
GM1

Pioneer
PL LABORATORY. INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-35 Sites 27 & 31 GM-2 Volatiles

Lab I.D. 85-1744-4
GM2

Pioneer
PLI LABORATORY. INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

Volatile Organics
Method 601 & 602

	Detection Limits	
Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	3
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-36 Sites 27 & 31 GM-52 Volatiles

Lab I.D. 85-1744-8

GM 52

Pioneer
PL LABORATORY. INC.

11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA. FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	530
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	210
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	73
Dlchlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-37 Sites 27 & 31 GM-54, Volatiles

Lab I.D. 85-1744-6

GM 54

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
-Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
Laboratory Director

Table C-38 Sites 27 & 31 GM-55 Volatiles

Pioneer
PL LABORATORY. INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA. FLORIDA 32514

Lab I.D. 85-1744-5
GM 55

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichiorbpropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-39 Sites 27 & 31, GM-58 Volatiles

Lab I.D. 85-1744-7
GM 58

Pioneer
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU FLORIDA 32514

Volatile Organics
Hethod 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	8
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Resulte are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-40 Site 15 GM-59 Pesticides

Pioneer LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 325 14

Lab I.D. 85-1766
GM 59

PRIORITY POLLUTANT ANALYSIS*

PESTICIDES

		Reported in ppb	Detection Limit ppb
1P	Aldrin	BDL	0.01
2P	a-BHC	BDL	0.01
3P	b-BHC	BDL	0.01
4P	g-BHC	BDL	0.01
5P	d-BHC	BDL	0.01
6P	Chlorodane	BDL	0.01
7P	4,4'-DDT	BDL	0.01
8P	4,4'-DDE	BDL	0.01
9P	4,4'-DDD	BDL	0.01
10P	Dieldrin	BDL	0.01
11P	a-Endosulfan I	BDL	0.01
12P	b-Endosulfan II	BDL	0.01
13P	Endosulfan Sulfate	BDL	0.01
14P	Endrin	BDL	0.07
15P	Endrin Aldehyde	BDL	0.03
16P	Heptachlor	BDL	0.01
17P	Heptachlor Epoxide	BDL	0.01
18P	PCB-1242	BDL	0.2
19P	PCB-1254	BDL	0.2
20P	PCB-1221	BDL	0.2
21P	PCB-1232	BDL	0.2
22P	PCB-1248	BDL	0*2
23P	PCB-1260	BDL	0*2
24P	PCB-1016	BDL	0.2
25P	Toxaphene	BDL	1

*EPA Method 608 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

-we

Approved by W. F. Bowers
Laboratory Director

Table C-40 Site 15 GM-59 Arsenic

I.D. # 85-1766

Pioneer LABORATORY, INC.

11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

TO Geraphty & Miller
13902 North Dale Mabry Highway
Tampa, Florida 33618

REPORTS TO BE MAILED TO:
Ralph Moon

Phone

June 26. 1985
Date of Order

R. Baker
Sampled by

TR9OPN2
Customer's Order Number

Job Name/Number

GM 59
Sample Identification/Location

Job Phone

Starting Date

July 15, 1985
Date Completed

Date Report Mailed

Arsenic Analysis

0.153

Note: Results are reported in mg/l.
mg/l = parts per million
< = less than

Notes:

W. F. Bowers

Analysis by Approved by W. F. Bowers
Laboratory Director

Work Authorized by Technician

FORM 8107—METRO PRINTING INC. HUNTSVILLE, AL 35801

Table C-41 Site 15 GM-60 Pesticides

Pioneer LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU FLORIDA 32514

Lab I.D. 8'-1767
GM 60

PRIORITY POLLUTANT ANALYSIS*

PESTICIDES

		Reported in ppb	Detection Limit ppb
1P	Aldrin	BDL	0.01
2P	a-BHC	BDL	0.01
3P	b-BHC	BDL	0.01
4P	g-BHC	BDL	0.01
5P	d-BHC	BDL	0.01
6P	Chlorodane	BDL	0.01
7P	4,4'-DDT	BDL	0.01
8P	4,4'-DDE	BDL	0.01
9P	4,4'-DDD	BDL	0.01
10P	Dieldrin	BDL	0.01
11P	a-Endosulfan I	BDL	0.01
12P	b-Endosulfan II	BDL	0.01
13P	Endosulfan Sulfate	BDL	0.01
14P	Endrin	BDL	0.07
15P	Endrin Aldehyde	BDL	0.03
16P	Heptachlor	BDL	0.01
17P	Heptachlor Epoxide	BDL	0.01
18P	PCB-1242	BDL	0.2
19P	PCB-1254	BDL	0.2
20P	PCB-1221	BDL	0.2
21P	PCB-1232	BDL	0.2
22P	PCB-1248	BDL	0.2
23P	PCB-1260	BDL	0.2
24P	PCB-1016	BDL	0.2
25P	Toxaphene	BDL	1

*EPA Method 608 - Reference: Method for Organic Chemical Analysis of Municipal and Industrial Wastewater, EPA-600/4-82-057, July 1982.

Notes: ppb - parts per billion
BDL - Below Detection Limits

W. F. Bowers

Approved by W. F. Bowers
Laboratory Director

Table C-41 Site 15 GM-60 Arsenic

Pioneer LABORATORY, INC.

I.D. # 85-1767

11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

TO ~~Geraghty & Miller~~
13902 North Dale Mabry Highway
Tampa, Florida 33618

REPORTS TO BE MAILED TO
Ralph Moon

Phone
Date of Order: June 26, 1985
Sampled by: R. Baker
Customer's Order Number
Job Name/Number: GM 60
Sample Identification/Location
Job Phone
Starting Date: July 15, 1985
Date Completed
Date Report Mailed

Arsenic Analysis

<0.005

Note: Results are reported in mg/l.
mg/l = parts per million
< = less than

Notes

W. F. Bowers

Analysis by Approved by W. F. Bowers
Laboratory

Work Authorized by

Technician

107—METRO PRINTING INC HUNTSVILLE, AL 35801

Table C-42 Site 15 Soil Borings Arsenic

I.D. # 85-1521

Pioneer LABORATORY, INC.

11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU. FLORIDA 32514

TO Geraghty & Miller

13902 North Dale Mabry Highway

Tampa, Florida 33618

Phone

Date of Order: Jure 7, 1985

Sampled by

Customer's Order Number: T290PN2

Job Name/Number: NAS - [illegible]

Sample Identification/Location

REPORTS TO BE MAILED TO:

Ralph Moon

Job Phone

Starting Date

Date Completed: June 27, 1985

Date Report Mailed

E.P. Toxicity for Arsenic

Pioneer I.D.	Sample I.D.	Results
85-1521-1	Soil Boring 6-1	<0.005
85-1521-2	Soil Boring 6-12	0.127
85-1521-3	Soil Boring 6-24	0.036
85-1521-4	Soil Boring 5-1	0,026
85-1521-5	Soil Boring 5-12	0.043
85-1521-6	Soil Boring 5-24	<0.005
85-1521-7	Soil Boring 4-1	<0.005
85-1521-8	Soil Boring 4-12	<0.005
85-1521-9	Soil Boring 4-24	<0.005
85-1521-10	Soil Boring 3-1	0.046
85-1521-11	Soil Boring 3-12	<0.005
85-1521-12	Soil Boring 3-24	<0.005
85-1521-13	Soil Boring 2-1	12.7
85-1521-14	Soil Boring 2-12	5.2
85-1521-15	Soil Boring 2-24	0.615
85-1521-16	Soil Boring 1-1	0,521
85-1521-17	Soil Boring 1-12	4.4
85-1521-18	Soil Boring 1-24	0.016

Note: All results are reported in mg/l.
mg/l = parts per million
< = less than

Notes:

Analysis by W. F. Bowers

Work Authorized by

Technician

Approved by W. F. Bowers

FORM #107—METRO PRINTING INC., HUNTSVILLE, AL 35801

Table C-43 Site 19 BTXs

Pioneer LABORATORY, INC.

I.D. # 85-2401

11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

TO Geraghty & Miller
13902 North Dale Mabry Highway
Tampa, Florida 33618

Phone

Date of Order: August 37, 1985

Sampled by: Bob Baker

Customer's Order Number

Job Name/Number

Sample Identification/Location

REPORTS TO BE MAILED TO:
Bill Vocskocsky

Job Phone

Starting Date

Date Completed

Date Report Mailed: September 4 1985

Pioneer I.D.	Sample I.D.	Benzene	Toluene	Xylene
85-2401-2	GM 16	422	BDL	818
85-2401-3	GM 17	BDL	BDL	BDL
85-2401-4	GM 18	29.5	BDL	EDL
85-2401-5	GM 19	146	BDL	577
Detection Limits		1	1	5

Note: All results are reported in ug/l (ppb)
ppb = parts per billion
BDL = Below detection limits

Notes:

Analysis by

Approved by W. F. Bowers

Work Authorized by

Technician

Laboratory Director

FORM #107—METRO PRINTING INC., HUNTSVILLE, AL 35801

Table C-43 Site 19 pH & Conductivity

Pioneer LABORATORY, INC.

I.D. # 85-2401

11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

TO Geraghty & Miller
13902 North Dale Mabry Highway
Tampa, Florida 33618

Phone: BoB Baker
Sampled by

Date of Order: August 27, 1985
Customer's Order Number

Job Name/Number

Sample Identification/Location

REPORTS TO BE MAILED TO:
Bill Vocskocsky

Job Phone

Starting Date: September 4, 1985

Date Completed

Date Report Mailed

Pioneer I. D.	Sample I.D.	pH	Conductivity
85-2401-1	GM 6	6.27	130
85-2401-2	GM 16	4.07	220
85-2401-3	GM 17	4.31	200
85-2401-4	GM 18	4.21	89
85-2401-5	GM 19	4.75	80
85-2401-6	Supply Well #1	6.93	160
85-2401-7	Supply Well #3	7.13	170

Note: pH is reported in units.
Conductivity is reported in microhoms/cm.

Notes:

Analysis by

Work Authorized by

Technician

FORM a107—METRO PRINTING INC., HUNTSVILLE, AL 35801

Lab I.D. 85-2401-6

Table C-44 Supply Well #1 Volatiles

Supply Well #1

Pioneer
PLI LABORATORY. INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU FLORIDA 32514

Volatile Organics
Method 601 & 602

	Detection Limits	Results
Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BI
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	I
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Table C-44. Supply Well #2 - Volatiles

Lab I.D. 85-1744-9
Supply #2

Pioneer
LABORATORY. INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA. FLORIDA 32514

Volatile Organics
Method 601 & 602

Detection Limits

Benzene	1	BDL
Bromodichloromethane	5	BDL
Bromofrom	5	BDL
Bromomethane	5	BDL
Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Approved by W. F. Bowers
W. F. Bowers
Laboratory Director

Table C-44 Supply Well #3 - Volatiles

Lab I.D. 85-2401-
Supply Well #

Pioneer LABORATORY, INC.
PLI LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOU FLORIDA 32514

volatile Organics
Method 601 & 602

	Detection Limits	Results
Benzene	1	BDL
Bromodichloromethane	5	BDL
Bramofrom	5	BDL
Bromomethane	5	BDL
,Carbon tetrachloride	3	BDL
Chlorobenzene	1	BDL
Chloroethane	5	BDL
2-Chloroethylvinyl ether	5	BDL
Chloroform	5	BDL
Chloromethane	5	BDL
Dibromochloromethane	5	BDL
1,2-Dichlorobenzene	5	BDL
1,3-Dichlorobenzene	5	BDL
1,4-Dichlorobenzene	5	BDL
1,1-Dichloroethane	5	BDL
1,2-Dichloroethane	3	BDL
1,1-Dichloroethene	5	BDL
trans-1,2,-Dichloroethene	5	BDL
1,2-Dichloropropane	5	BDL
cis-1,3-Dichloropropene	5	BDL
trans-1,3-Dichloropropene	5	BDL
Ethyl benzene	1	BDL
Methylene Chloride	5	BDL
1,1,2,2-Tetrachloroethane	5	BDL
Tetrachlooethene	3	BDL
Toulene	1	BDL
1,1,1-Trichloroethane	5	BDL
1,1,2-Trichloroethane	5	BDL
Trichloroethene	1	BDL
Trichlorofluoromethane	5	BDL
Vinyl Chloride	1	BDL
Dichlorodifluoro Methane	5	BDL
Chlorobenzene	1	BDL

Note: Results are reported in ppb.
ppb = parts per billion
BDL = Below Detection Limits

Table C-44 Supply Wells - pH and Conductivity

Pioneer LABORATORY, INC.
11 EAST OLIVE ROAD PHONE (904) 474-1001
PENSACOLA, FLORIDA 32514

I.D. # 85-2401

TO Geraghty & Miller
13902 North Dale Mabry Highway
Tampa, Florida 33618

REPORTS TO BE MAILED TO
Bill Vocskocsky

Phone
Date of Order: August 27, 1985
Sampkd by: BoB Baker
Customer's Order Number
Job Name/Number
Sample Identification/Location
Job Phone
Starting Date: September 4, 1985
Date Completed
Date Report Mailed

Pioneer I.D.	Sample I.D.	pH	Conductivity
85-2401-1	GM 6	6.27	130
85-2401-2	GM 16	4.07	220
85-2401-3	GM 17	4.31	200
85-2401-4	GM 18	4.21	89
85-2401-5	GM 19	4.75	80
85-2401-6	supply Well #1	6.93	160
85-2401-7	Supply Well 53	7.13	170

Note: pH is reported in units.
Conductivity is reported in microhoms/cm.

Notes:

Analysis by

Work Authorized by

Technician

FORM #107—METRO PRINTING INC., HUNTSVILLE, AL 35801