

SITE CHARACTERIZATION RAPID REFUEL PIT NO. 1

Roosevelt Roads Naval Station
Ceiba, Puerto Rico

Contract Number N62470-93-4021

June 1995



BLASLAND, BOUCK & LEE, INC.
ENGINEERS & SCIENTISTS



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ENGINEERS & SCIENTISTS

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June 14, 1995

Mr. John G. Kresky
Code 1821, Bldg. A
Atlantic Division
Naval Facilities Engineering Command
6500 Hampton Boulevard
Norfolk, VA 23508-1297

Re: Site Characterization Report
Rapid Refuel Pit No. 1
Roosevelt Roads Naval Station
Ceiba, Puerto Rico
Contract Number N62470-93-4021
Order Number 0020

No: 399.19

Dear Mr. Kresky:

Blasland, Bouck & Lee, Inc. (BB&L) is pleased to submit the final copies of the Site Characterization Report for the above-referenced site. In addition, final copies have been sent to Mr. Pedro Ruiz at the Roosevelt Roads U.S. Naval Station.

Based on the information derived from the investigation activities, small areas of contaminated soil exist at the site with TPH concentrations above Puerto Rico Environmental Quality Board (PREQB) target levels. The extent of the soil contamination has been defined. Dissolved petroleum hydrocarbons were not detected in groundwater samples obtained from monitor wells at levels above the PREQB target levels.

Based on the relative immobility of the contamination in the soil, the risk of potential human contact with the compounds of concern is extremely low, unless construction activities in the area would disturb or expose the soils. If construction activities are performed in the area that would disturb the soils, appropriate health and safety measures should be considered.

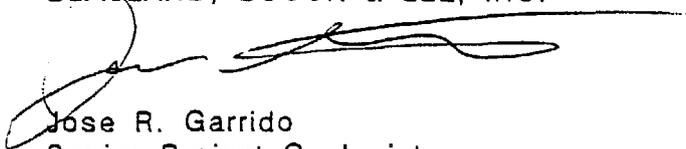
The monitor wells will be monitored for BTEX and TPH on a semi-annual basis. No further assessments will be conducted at this site.

Mr. John G. Kresky
Code 1821
June 14, 1995
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If you have any questions or comments regarding this report, please do not hesitate to call Ms. Kathy Lukasiewicz at (407) 994-2711 or myself.

Sincerely,

BLASLAND, BOUCK & LEE, INC.



Jose R. Garrido
Senior Project Geologist
3495852.AR2



Kathy Lukasiewicz
Manager, Hydrogeology

Enclosure

cc: Mr. Pedro Ruiz, Roosevelt Roads U.S. Naval Station (w/ enclosures)

SITE CHARACTERIZATION
RAPID REFUEL PIT No. 1

U.S. NAVAL STATION
ROOSEVELT ROADS
CEIBA, PUERTO RICO

MAY 1995

PREPARED FOR
UNITED STATES NAVY
CONTRACT NUMBER N62470-93-D-4021
ORDER NUMBER 0019

BLASLAND, BOUCK & LEE, INC.
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EXECUTIVE SUMMARY

Blasland, Bouck & Lee, Inc. (BB&L) conducted a site characterization (SC) for contamination found during the replacement of fuel lines at the Rapid Refuel Pit No. 1 at the Roosevelt Roads U.S. Naval Station (NAVSTA Roosevelt Roads), located near the town of Ceiba, Puerto Rico. The SC evaluated the potential impact of JP-5 fuel on soils and groundwater in the area of the refuel pit, which is located on the Naval Station airfield. The site provides JP-5 fueling facilities for tankers trucks and aircraft used in air and sea operations conducted at the Naval Station.

The SC field investigation included collecting soil samples from 19 soil borings, performing field screening of 102 soil samples, performing laboratory analysis of 59 soil samples, performing two slug tests, measuring groundwater elevations, installing and sampling six groundwater monitoring wells, and collecting information to prepare a qualitative risk assessment.

The objective of this investigation was to define the areas of soil and groundwater contamination. Petroleum hydrocarbons were detected in soil samples from the site at concentrations above Puerto Rico Environmental Quality Board (PREQB) target levels for underground storage tanks (UST) [greater than 100 milligrams per kilogram (mg/Kg)]. The laboratory analytical results from this investigation indicate that TPH concentrations in soil ranged from 2,300 mg/Kg to below detection limits. In addition, a free product sheen on the water introduced during the coring of the concrete was observed during the advancement of four soil borings at the site.

Dissolved petroleum hydrocarbons were not detected at concentrations above the PREQB target levels in any groundwater samples obtained from the monitoring wells installed at the site by BB&L. These target levels are 5 micrograms per liter (ug/L) for benzene, 50 ug/L for total BTEX, or 50 milligrams

per liter (mg/L) for TPH. Results of the qualitative risk assessment indicate that the human health risks associated with the Rapid Refuel Pit No. 1 are low.

Based on the results of this SC, the contaminated soil will remain in place due to the low health hazards associated with it and the logistic difficulties associated with excavating around the fuel pits and aircraft at the airfield. Natural biodegradation and dissolution of the free product will be monitored by sampling the perimeter wells for BTEX and TPH on a semi-annual basis.



SECTION 1

SECTION 1.0 - INTRODUCTION

Pursuant to Contract Number N62470-93-D-4021, Blasland, Bouck & Lee, Inc. (BB&L) was authorized by the U.S. Navy to conduct a site characterization (SC) of contamination resulting from JP-5 fuel at the Rapid Refuel Pit No. 1, U.S. Naval Station - Roosevelt Roads, Ceiba, Puerto Rico. The purpose of the SC was to determine the degree and extent of potential soil and groundwater contamination by petroleum products. This report presents a summary of the work completed, results of the SC field investigation, and recommendations for semi-annual sampling of the perimeter monitoring wells at the site.

1.1 Site Location

The Rapid Refuel Pit No. 1 is located in the U.S. Naval Station - Roosevelt Roads (NAVSTA Roosevelt Roads), near the town of Ceiba on the eastern end of Puerto Rico (**Figure 1-1**). The approximate location of the Naval Station is 18° 15' 00" latitude and 65° 39' 30" longitude. The area of interest for this SC is illustrated in **Figure 1-2**.

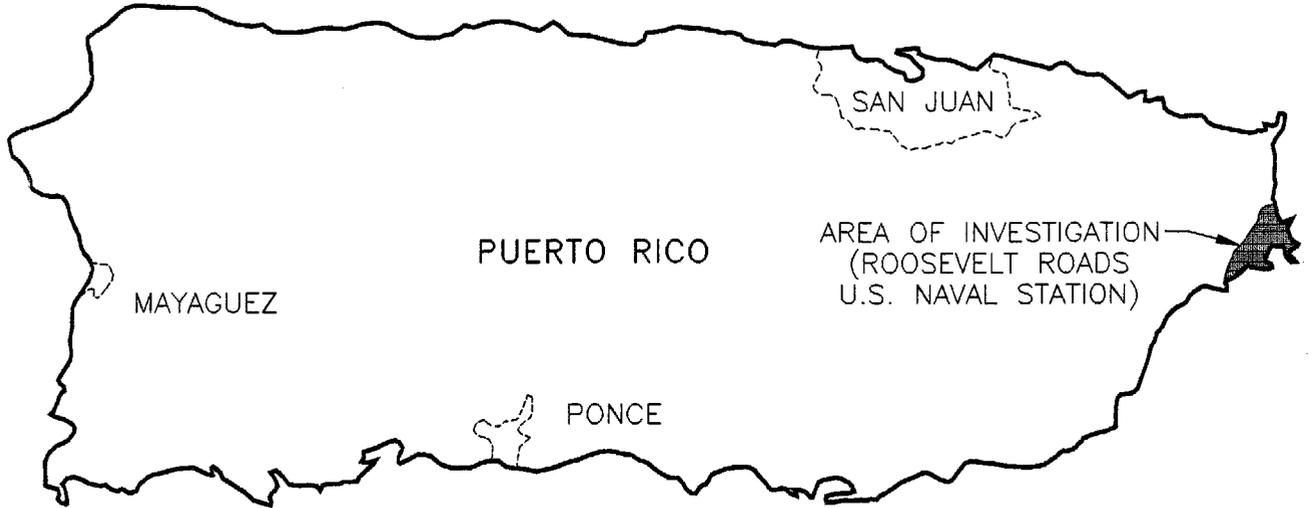
1.2 Site Background

According to information supplied by the U.S. Navy, contamination was detected when portions of the concrete apron were removed to replace the JP-5 fuel lines leading to the fuel pits. During the removal of the fuel lines, soil contamination and free product were detected in the excavation. Before replacement of the fuel lines, contaminated soil was removed from the excavated areas (new concrete area), which were backfilled with clean fill.

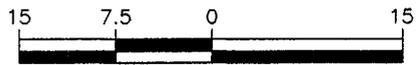
The contamination in the area is attributed to overflow when tanker trucks and aircraft are fueled at the Rapid Refuel Pits. The amount of fuel that



ATLANTIC OCEAN



CARRIBEAN SEA



(IN MILES)
1 INCH = 15 MILES (APPROXIMATE)



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RAPID REFUEL PIT NO. 1
CEIBA, PUERTO RICO

SITE LOCATION

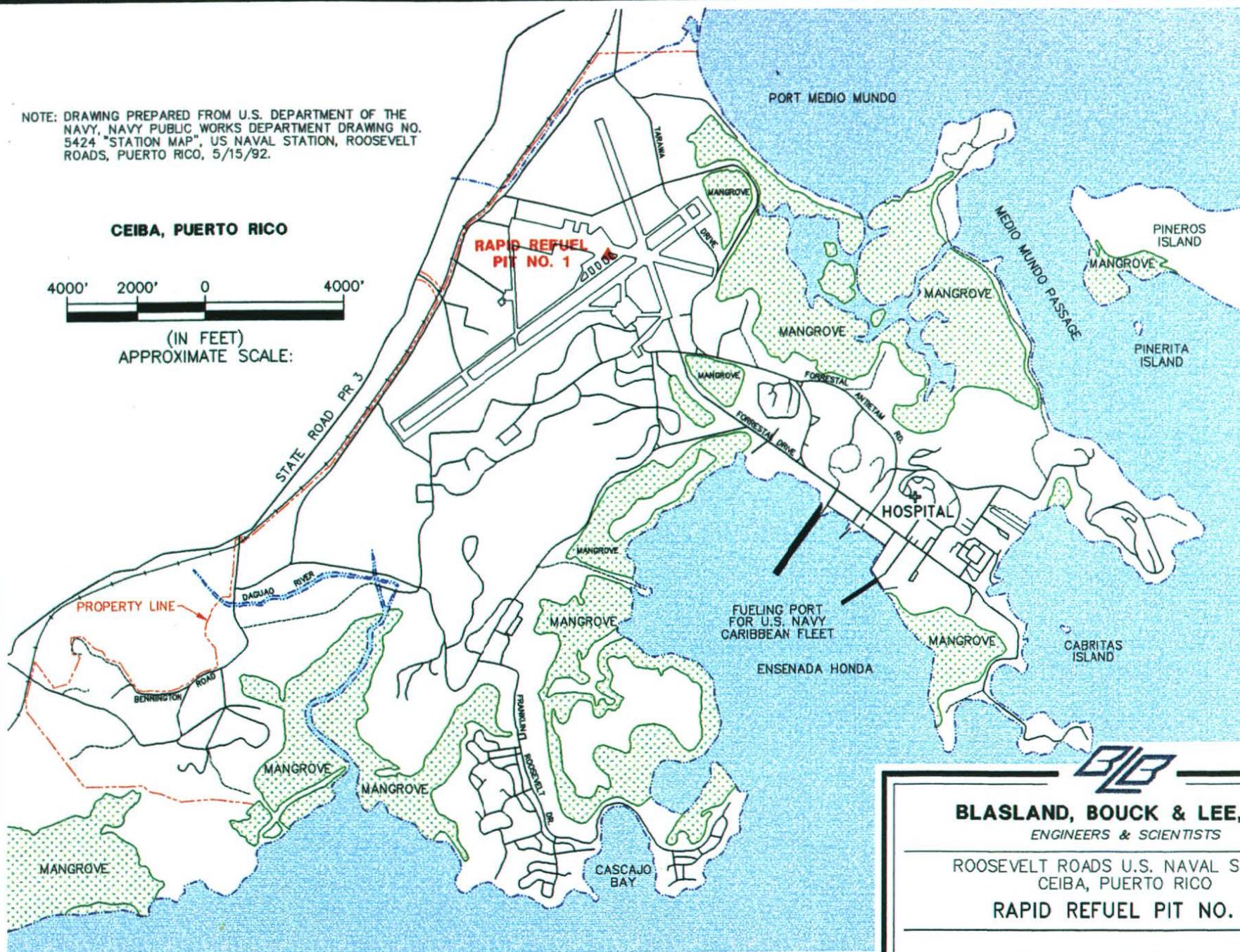
FIGURE
1-1

NOTE: DRAWING PREPARED FROM U.S. DEPARTMENT OF THE NAVY, NAVY PUBLIC WORKS DEPARTMENT DRAWING NO. 5424 "STATION MAP", US NAVAL STATION, ROOSEVELT ROADS, PUERTO RICO, 5/15/92.

CEIBA, PUERTO RICO



(IN FEET)
APPROXIMATE SCALE:



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RAPID REFUEL PIT NO. 1

STUDY AREA

FIGURE
1-2

overflowed and the dates when the overflows occurred are not known. Integrity testing has been performed on the lines leading from the fuel storage tanks (located southeast of the refuel pits) to the refuel pits. Results of the integrity test indicate that the lines are not leaking fuel.

1.3 Previous Investigations

No prior investigations have been conducted at this site. Petroleum contamination was detected in 1994, during the removal of the fuel lines, leading the Navy to commission a site characterization to further investigate the presence of petroleum hydrocarbons at the site.

1.4 Project Objectives

The main objective of BB&L's investigation was to delineate the extent of soil and groundwater contamination present at the site. This was accomplished by installing soil borings and monitoring wells, and by collecting and analyzing soil and groundwater samples.

The SC field investigation consisted of installing 19 soil borings, constructing six monitoring wells, measuring groundwater elevations in the monitoring wells, conducting field and laboratory analyses of soil and groundwater samples, and performing slug tests. Analytical screening of soil and groundwater samples was performed on site prior to making decisions regarding placement of monitoring wells.

Screening was conducted by a chemist operating a gas chromatograph (GC) and a total petroleum hydrocarbon (TPH) analyzer. This approach enabled the field crew to define the extent of contamination in a single mobilization phase. The work completed and field procedures followed at the site are described in this report.



SECTION 2

SECTION 2.0 - SITE GEOLOGY

2.1 Regional Geology

According to M'Gonigle (1979), the geology of the Roosevelt Roads Naval Station consists of sequences of intrusive and extrusive volcanics and volcanoclastic rocks of lower Cretaceous age. Much of the Roosevelt Roads study area is underlain by the Daguoa formation. The Daguoa formation is characterized by interbedded volcanic breccia, lava, subordinate volcanic sandstone, and crystal tuff. The largest hills and ridges on the base are composed of the Daguoa formation, with the highest elevations approaching 300 feet above mean sea level (MSL). The hills are flanked by Quaternary and Holocene fanglomerate and swamp deposits. The broad low-lying areas of the Naval Station surrounding the airfield are composed of Quaternary alluvium, slopewash, and fanglomerate deposits.

2.2 Site Geology

The site elevation was determined by surveying monitor well elevations relative to a known benchmark on April 11, 1995. Surveyed elevations ranged from a high of 27.39 feet MSL at monitoring well MW4 to a low of 23.20 feet MSL at monitoring well MW2, indicating a gently, southerly sloping surface topography. Surface runoff on the site would be expected to follow this southerly trend.

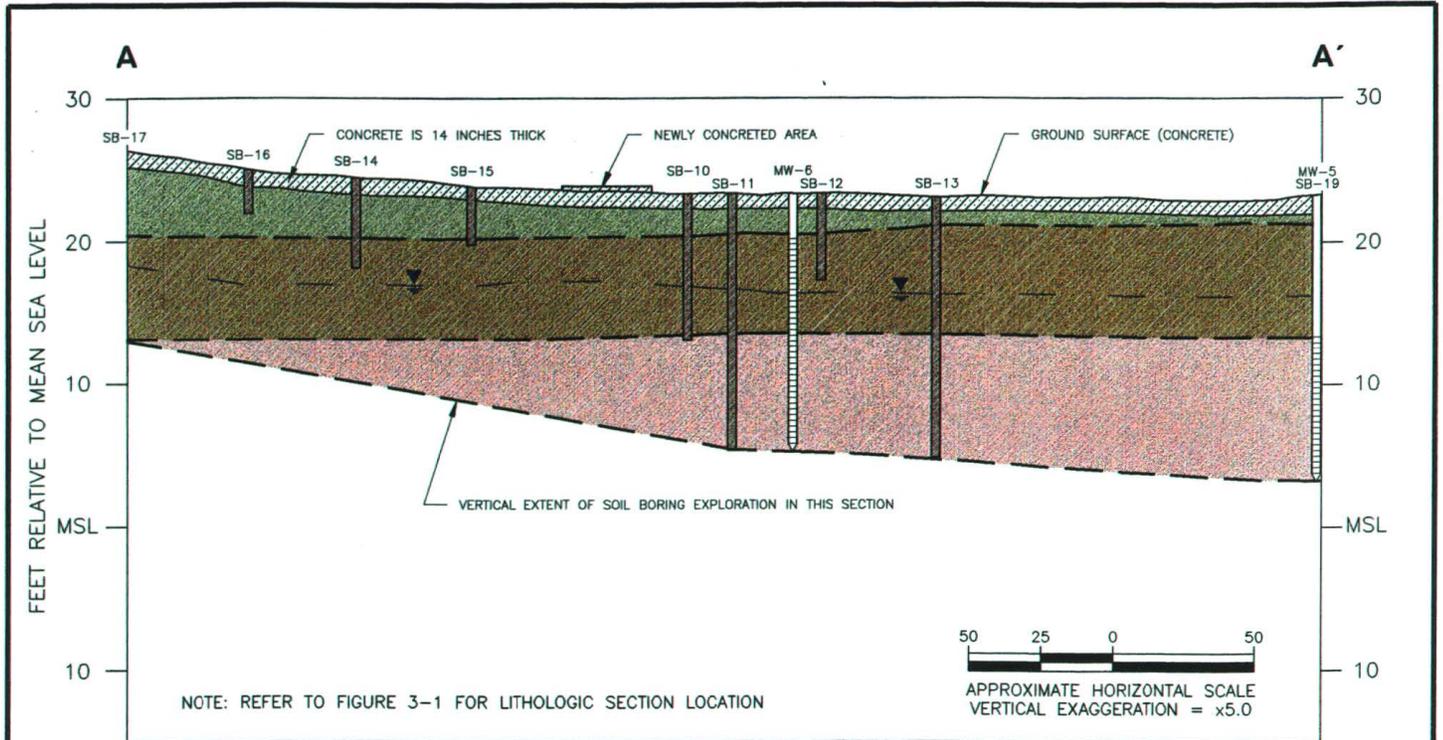
The average depth to the zone of permanent water saturation, as determined from monitoring well measurements on May 15, 1995, was 7.53 feet below land surface (BLS). Survey data of similar monitoring wells completed on April 11, 1995, indicates that the general direction of groundwater flow was to the southeast at that time.

Site lithology was determined through the field examination and description of soil samples retrieved from a total of 19 soil borings completed within the study area from March 14, 1995, to April 11, 1995. These descriptions are detailed in soil boring log tables, monitoring well construction data sheets, and lithologic logs presented in **Appendices A and B**. Lithologic cross-sections A-A' and B-B', presented as **Figures 2-1 and 2-2**, graphically generalize and depict physical lithological changes in the samples examined.

Correlation of these various lithotypes, observed in the field, to those documented in Puerto Rican geologic literature by M'Gonigle (1979) and others suggests that subsurface samples collected from below the 14-inch thick concrete slab to a depth of 26 feet BLS represent detrital deposits of Quaternary age. Within the study area, these deposits are predominantly clays with incorporated pebble-to-gravel sized detritus as follows:

1. From 14 inches BLS to 4 feet BLS is dark, greenish gray clay with pebble-to-gravel sized fill.
2. From 4 feet BLS to 8 feet BLS is dark brown to dark yellowish-brown clay with occasional pebble-sized fill.
3. From 8 feet BLS to 26 feet BLS is dark red or brown, gray, white, and yellow mottled red clays, with occasional black pebble-sized fill.

The wide variance in clay color is attributed to the varying extent of oxidation of the iron minerals contained in the sediments, which were derived from weathered volcanic rock. The colors described were determined in the field by chart comparison with Munsell color standards. Apart from color and texture differences, no significant lithologic changes were apparent that may suggest preference or impedance to groundwater flow, such as fault planes or volcanic intrusions, or that would also affect the indicated groundwater flow patterns and hence contaminant transport.



LEGEND

- INTERPRETED LITHOLOGIC BOUNDARY
- ▽ — DEPTH TO THE WATER TABLE (MEASURED 5/15/95)
- MW-5 MONITORING WELL LOCATION
- SB-19 SOIL BORING LOCATION
- █ DARK GREENISH GRAY CLAY W/PEBBLE-GRAVEL SIZED FILL
- █ DARK BROWN-DARK YELLOWISH BROWN, VERY STIFF CLAYS W/OCCASIONAL PEBBLES
- █ DARK RED-MOTTLED RED/YELLOWISH TO OCCASIONALLY BLACK CLAYS W/PEBBLES



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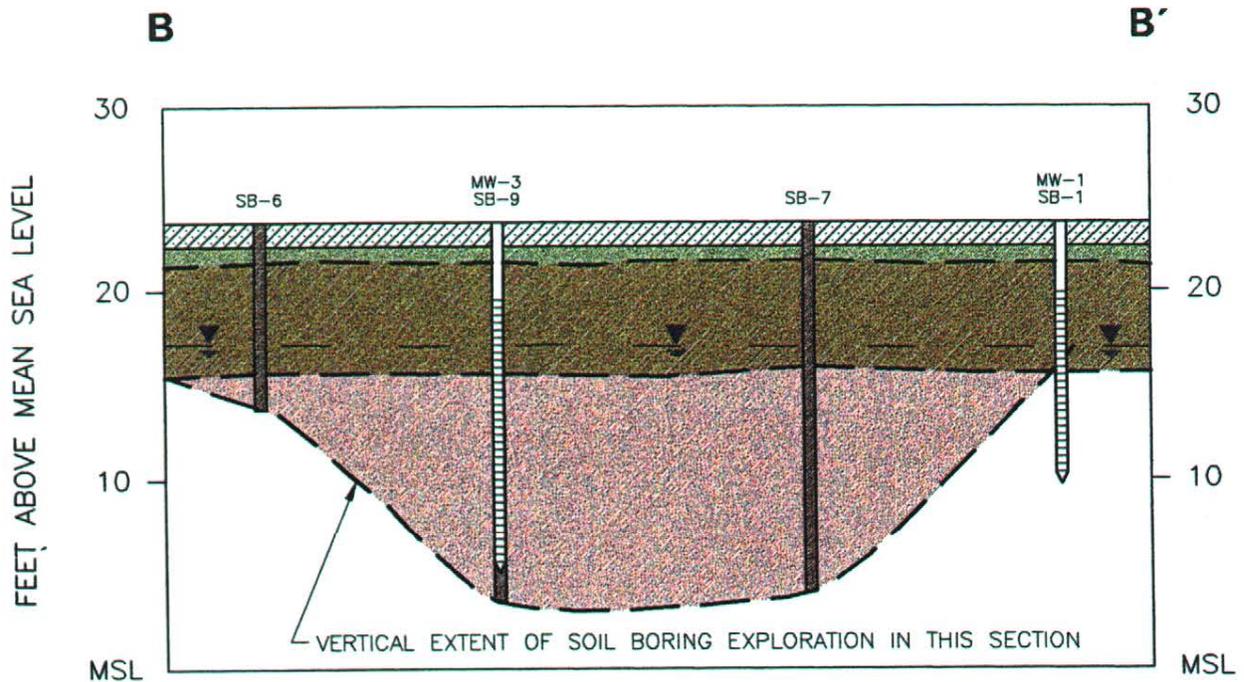
ROOSEVELT ROADS U.S. NAVAL STATION
RAPID REFUEL PIT NO. 1
CEIBA, PUERTO RICO

**GENERALIZED LITHOLOGIC
CROSS-SECTION A-A'**

FIGURE
2-1

5/24/95 27 JHD
3991901R/399119006.DWG

SOURCE: B&L 1995



NOTE: REFER TO FIGURE 3-1 FOR LITHOLOGIC SECTION LOCATION

LEGEND

- INTERPRETED LITHOLOGIC BOUNDARY
- ▽ — DEPTH TO THE WATER TABLE (MEASURED 5/15/95)
- MW-5 MONITORING WELL LOCATION
- SB-19 SOIL BORING LOCATION
- █ DARK GREENISH GRAY CLAY W/PEBBLE-GRAVEL SIZED FILL
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**GENERALIZED LITHOLOGIC
CROSS-SECTION B-B'**

FIGURE
2-2



SECTION 3

SECTION 3.0 - FIELD INVESTIGATION

The SC field investigation was conducted intermittently from February 23 through May 18, 1995, to avoid disruption of the air traffic activity and exercises at the airfield. Soil assessment activities included field screening with an organic vapor analyzer (OVA), field testing using a portable GC and a TPH analyzer, and laboratory analysis.

Groundwater assessment activities included collection of groundwater samples for field analysis from soil borings advanced to the water table, collection of groundwater samples for laboratory analysis from the monitoring wells, and determination of groundwater elevations. In addition, lithologic data were collected during soil boring and monitoring well installation.

3.1 Drilling

The soil boring and monitoring well program is summarized in this section. Technical details related to the drilling program have been organized in **Appendix C** as follows:

<u>Appendix</u>	<u>Contents</u>
C-1	Utility Location/Well Permits
C-2	Equipment Decontamination
C-3	Air Monitoring
C-4	OVA Field Screening Methodology
C-5	Monitoring Well Construction
C-6	Monitoring Well Development

Prior to installing soil borings and monitoring wells at the site, the proper well permits were obtained from the Puerto Rico Department of Natural Resources (**Appendix C-1**). A utility location check was also performed prior to any drilling activities.

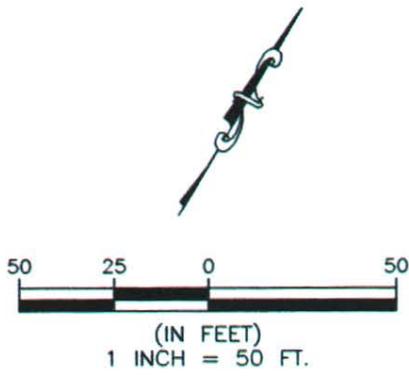
The equipment decontamination procedures used for drilling and the air monitoring conducted during all drilling activities are discussed in **Appendices C-2 and C-3**, respectively.

3.1.1 Soil Boring Installation

Nineteen soil borings (RRP No. 1-SB1 through RRP No. 1-SB19) were installed (**Figure 3-1**) to determine and delineate the extent of soil and groundwater contamination. Soil borings were advanced to the water table using a 2-foot long, stainless-steel, split-spoon sampler inside a hollow-stem auger. Standard penetration test procedures, in accordance with ASTM D-1586, were followed during collection of soil samples. Soil samples were collected continuously at 2-foot intervals to the water table. Rock and soil types were described in accordance with the Unified Soil Classification System (USCS). Soil boring lithologic logs are presented in **Appendix A**.

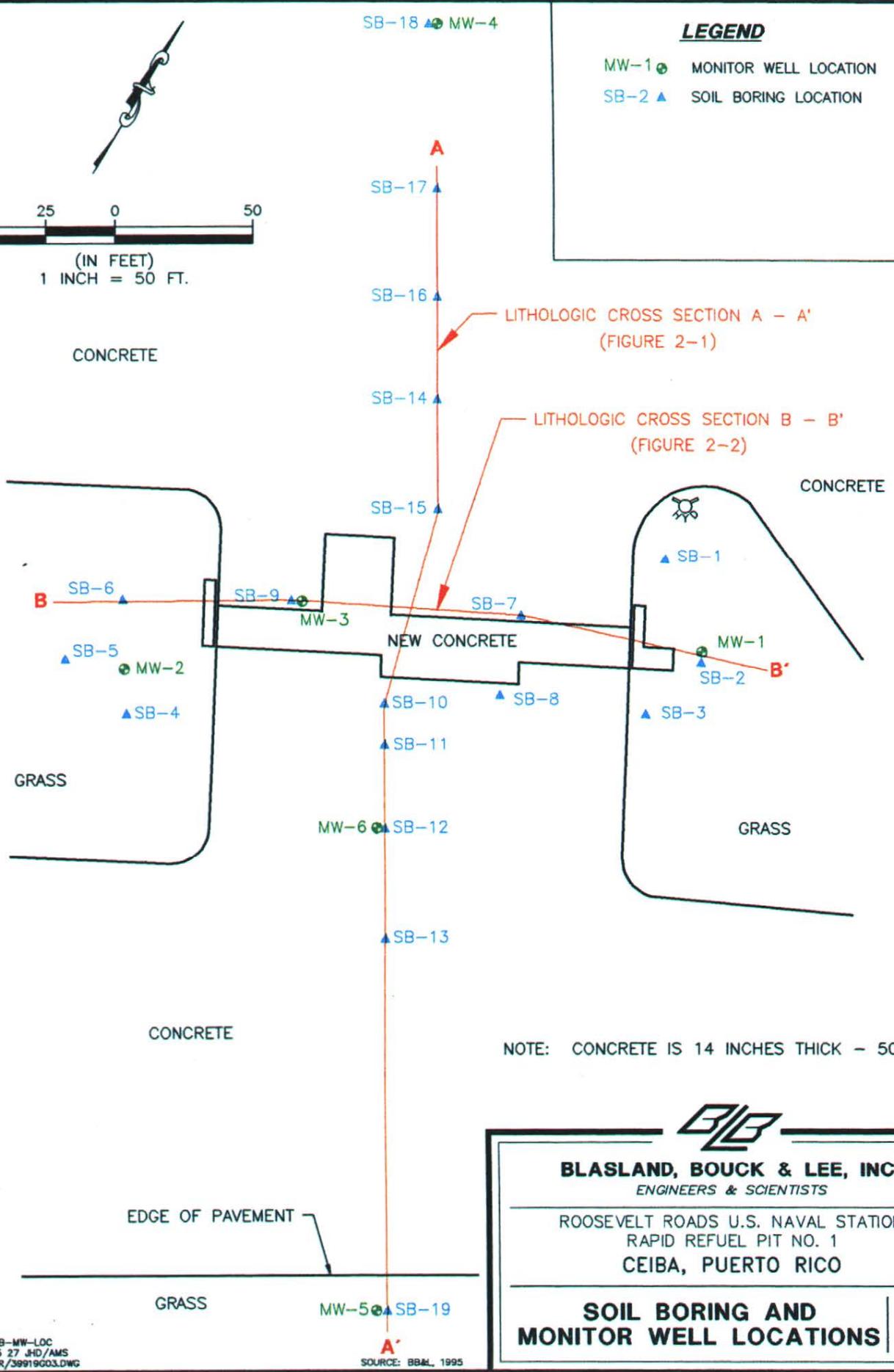
3.1.2 Soil Field Screening and Sampling

Soil samples were collected at 2-foot intervals until the soil/water interface was encountered. Soil samples were collected in 16-ounce glass jars, covered by a sheet of aluminum foil, and securely capped. Once collected, each soil sample was analyzed within five minutes using an organic vapor analyzer (OVA). In addition, field analysis utilizing a GC and TPH analyzer equipment was performed on selected samples from each soil boring. The methodology used for the OVA screening is described in detail in **Appendix C-4**. The OVA screening results, summarized in **Table 3-1**, indicate that of the 102 soil samples screened with an OVA, 72 samples produced detectable vapors. Thirteen of those 72 samples contained concentrations of total petroleum hydrocarbon vapors above 100 parts per million (ppm).



LEGEND

- MW-1 ● MONITOR WELL LOCATION
- SB-2 ▲ SOIL BORING LOCATION



NOTE: CONCRETE IS 14 INCHES THICK - 5000 PSI



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SOIL BORING AND MONITOR WELL LOCATIONS | **FIGURE 3-1**

LAYER: SB-MW-LOC
5/24/95 27 JHD/AMS
3991901R/39919003.DWG

SOURCE: B&L, 1995

**TABLE 3-1
ORGANIC VAPOR ANALYSIS OF SOIL**

**Rapid Refuel Pit No. 1
Roosevelt Roads, U.S. Naval Station
Ceiba, Puerto Rico**

Sample Designation	Date Sampled	Sample Depth (ft BLS)	Total Organic Vapors (ppm)	Total Methane Vapors* (ppm)	Total Petroleum Hydrocarbon Vapors (ppm)
RRP#1-SB1	3/14/95	0-2	0	0	0
		2-4	2	2	0
		4-6	8	3	5
		6-8	2	1	1
		8-10	1	0.4	0.6
		10-12	1.6	0.6	1
		12-14	2	0.4	1.6
		14-16	0.6	0	0.6
		16-18	0.6	0	0.6
		18-20	1.0	0.4	0.6
		20-22	0.4	0.2	0.2
		22-24	0	0	0
24-26	0	0	0		
RRP#1-SB2	3/14/95	0-2	0	0	0
		4-6	40	35	5
		6-8	3	2	1
RRP#1-SB3	3/15/95	0-2	0	0	0
		2-4	0	0	0
		4-6	28	22	6
		6-8	3.4	2.6	0.8
		8-10	1.8	1.2	0.6
RRP#1-SB4	3/15/95	0-2	0.4	0	0.4
		2-4	1.4	1	0.4
		4-6	0.4	0	0.4
		6-8	0	0	0
RRP#1-SB5	3/15/95	0-2	0	0	0
		2-4	0	0	0
		4-6	0.2	0.2	0
		6-8	0	0	0
RRPNo.1-SB6	3/15/95	0-2	0	0	0
		2-4	0	0	0
		4-6	0.4	0	0.4
		6-8	0.2	0	0.2
		8-10	0	0	0
RRP#1-SB7	3/16/95	0-2	0	0	0
		2-4	20	16	4
		4-6	50	36	14
		6-8	22	20	2
		8-10	1.2	1.0	0.2
		10-12	0.2	0.2	0
		12-14	0	0	0
		14-16	0	0	0
		16-18	0	0	0
		18-20	0	0	0

**TABLE 3-1 Continued
ORGANIC VAPOR ANALYSIS OF SOIL**

Sample Designation	Date Sampled	Sample Depth (ft BLS)	Total Organic Vapors (ppm)	Total Methane Vapors* (ppm)	Total Petroleum Hydrocarbon Vapors (ppm)
RRP#1-SB8	3/16/95	0-2	0	0	0
		2-4	8.4	8.4	0
		4-6	2.8	2.6	0.2
		8-10	4.8	4.6	0.2
		10-12	1.4	1.4	0
		12-14	1.0	0.8	0.2
		14-16	0.4	0.4	0
		16-18	0.4	0.4	0
RRP#1-SB9	3/17/95	0-2	180	24	156
		2-4	12	3	8
		4-6	20	4	16
		6-8	2	1.8	0.2
		8-10	0	0	0
		10-12	0	0	0
		12-14	0.2	0	0.2
		14-16	0.8	0.6	0.2
16-18	0.2	0.2	0		
RRP#1-SB10	3/21/95	0-2	32	10	21
		2-4	16	8.2	7.8
		4-6	200	12	188
		6-8	1.8	1	0.8
RRP#1-SB11	3/22/95	0-2	26	4	22
		2-4	220	14	206
		4-6	140	4.4	135.6
		6-8	200	28	172
		8-10	24	1.2	22.8
		10-12	46	2	44
		12-14	0	0	0
		14-16	0.2	0	0.2
16-18	0	0	0		
RRP#1-SB12	3/24/95	0-2	300	28	272
		2-4	500	18	482
		4-6	>1,000	10	>990
RRP#1-SB13	4/3/95	0-2	1.2	1.2	0
		2-4	160	34	126
		4-6	>1,000	220	>880
		6-8	>1,000	96	>904
		8-10	4.4	2.2	2.2
		10-12	2.6	1	1.6
		12-14	0	0	0
		14-16	0	0	0
		16-18	0	0	0
RRP#1-SB14	4/4/95	0-2	96	5	91
		2-4	54	18	36
		4-6	4.8	2.6	2.2
RRP#1-SB15	4/4/95	0-2	>1,000	20	>980
RRP#1-SB16	4/4/95	0-2	140	5.4	134.6
RRP#1-SB17	4/10/95	0-2	NA	NA	NA

**TABLE 3-1 Continued
ORGANIC VAPOR ANALYSIS OF SOIL**

Sample Designation	Date Sampled	Sample Depth (ft BLS)	Total Organic Vapors (ppm)	Total Methane Vapors* (ppm)	Total Petroleum Hydrocarbon Vapors (ppm)
RRP#1-SB18	4/10/95	0-2	0	0	0
		2-4	2	2	0
		4-6	12	8	4
		6-8	12	5	7
		8-10	10	3	7
		10-12	5	3	2
RRP#1-MW9	3/20/95	0-2	0	0	0
		2-4	0	0	0
		4-6	0.8	0.6	0.2
		6-8	0.2	0.2	0
NOTE: See Figure 3-1 for sample locations.					
ppm parts per million ft BLS feet below land surface * Although methane is the primary organic vapor detected, other naturally occurring vapors may be included in this measurement.					

Source: Blasland, Bouck & Lee, Inc., 1995.

Selected soil samples that were tested using the OVA were subjected to additional field screening by modified EPA Method 602 for benzene, ethylbenzene, toluene, and xylenes (BTEX) using a GC; and by modified EPA Method 418.1 for TPH using a TPH analyzer. Based on the field screening analysis results (**Appendix D**), selected soil samples were collected for laboratory confirmation analyses by EPA Methods 602, Modified 8015, and 418.1. Samples that exhibited TPH concentrations above 100 mg/Kg when analyzed by EPA Method 418.1 were analyzed for TPH by Modified EPA Method 8015 for the diesel range organics (DRO). At least two samples from each boring were selected for laboratory analysis. Samples for laboratory analysis were chosen based on elevated OVA concentrations and field screening results. In the absence of detectable hydrocarbons, one sample was taken within 5 feet of land surface and one within 5 feet of the water table. Field screening and laboratory analytical results are presented and compared in **Section 4.1**.

3.1.3 Groundwater Field Screening

At the time of boring installation, the depth to water across the site ranged from approximately 6 feet BLS to 18 feet BLS. After each soil boring was completed to the water table, the hollow-stem auger was advanced an additional 2 feet. Groundwater samples were then collected from the open borehole (except where a free product sheen was present) with a disposable bailer. The samples were analyzed with a GC for total BTEX (sum of benzene, toluene, ethylbenzene, and xylenes) using modified EPA Method 602, and with a TPH analyzer for TPH using modified EPA Method 418.1. Samples were tested within 24 hours of collection to assist in determining the permanent locations of the monitoring wells.

A free product sheen was detected on the water introduced during concrete coring in four soil borings at the site. Groundwater field screening was not

performed on these soil borings. The soil borings containing a free product sheen on the water introduced during coring were RRP#1-SB12A, RRP#1-SB12, RRP#1-SB16, and RRP#1-SB17. At boring RRP#1-SB12, free product was observed dripping from the split spoon at the 4 to 6-foot depth interval during soil boring advancement. Boring RRP#1-SB12 was converted to a monitoring well to measure and monitor the extent and thickness of free product, if present at the site.

Four groundwater samples collected from soil borings where no traces of free product were present produced detectable BTEX concentrations. Of those, the groundwater sample collected from soil boring RRP#1-SB10 had a detectable BTEX concentration of 147 micrograms per liter (ug/L), which is above the PREQB target level of 50 ug/L. All other groundwater samples screened in the field for benzene and total BTEX produced results below detection limits.

The groundwater field screening reports are included in **Appendix D**. Based on the field screening results and observations made in the field, five soil borings (RRP No. 1 SB2, RRP No. 1 SB9, RRP No. 1 SB18, RRP No. 1 SB19, and RRP No. 1 SB12) were redrilled and converted to monitoring wells. A sixth monitor well was installed in addition to these wells.

3.1.4 Monitoring Well Construction

Six 2-inch monitoring wells (RRP#1-MW1 through RRP#1-MW6) were constructed to define the maximum horizontal extent of dissolved petroleum hydrocarbons at the site (see **Figure 3-1**).

The wells were installed under the observation of BB&L personnel and were constructed to allow for representative sampling of groundwater and free product at the site. All well materials and well installation equipment were thoroughly decontaminated prior to installation of each well. Wells were developed by

pumping with a centrifugal pump to remove fine-grained sediments (**Table 3-2**). A detailed description of monitoring well construction and development procedures is presented in **Appendices C-5 and C-6**, respectively. A monitoring well completion summary is included in **Table 3-3**. Monitoring well construction diagrams are presented in **Appendix B**.

3.2 Slug Tests

Slug tests were performed on May 19, 1995, in monitoring wells RRP#1-MW1 and RRP#1-MW2, to determine the aquifer characteristics beneath the site. Slug tests were performed by quickly removing a slug of water from the well using a centrifugal pump and measuring the recovery rate with a Hermit data logger and associated pressure transducer. The slug test results were plotted on semi-logarithmic graphs and analyzed using the Bouwer and Rice method (Bouwer and Rice, 1976). The hydraulic conductivities calculated from the slug tests ranged from 2.2×10^{-1} feet per day (ft/day) to 6.7×10^{-2} ft/day. The slug test raw data, graphs, and calculations are presented in **Appendix E**. The slug tests indicate that the surficial clays at this site have low hydraulic conductivities.

3.3 Water Elevation Measurements

The top-of-casing elevations of the six monitoring wells at the site were surveyed by a licensed surveyor and referenced to mean sea level.

On April 12 and May 15, 1995, the depths to water were measured from the top of each well casing with an electronic interface probe, which is accurate to within 0.01 feet. Depth to water measurements and monitoring well elevations are presented in **Table 3-4**.

**TABLE 3-2
MONITORING WELL DEVELOPMENT SUMMARY**

**Rapid Refuel Pit No. 1
Roosevelt Roads, U.S. Naval Station
Ceiba, Puerto Rico**

Well	Development Method	Development Date	Approximate Gallons Developed	Number of Well Volumes Developed
RRP#1-MW1	Centrifugal Pump	4/7/95	20	14
RRP#1-MW2	Centrifugal Pump	4/7/95	14	10
RRP#1-MW3	Centrifugal Pump	4/12/95	110	56
RRP#1-MW4	Centrifugal Pump	4/12/95	110	65
RRP#1-MW5	Centrifugal Pump	4/12/95	25	16
RRP#1-MW6	Centrifugal Pump	5/11/95	33	19

Source: Blasland, Bouck & Lee, Inc., 1995.

**TABLE 3-3
MONITORING WELL COMPLETION SUMMARY**

**Rapid Refuel Pit No. 1
Roosevelt Roads, U.S. Naval Station
Ceiba, Puerto Rico**

Well Designation	RRP#1-MW1	RRP#1-MW2	RRP#1-MW3	RRP#1-MW4	RRP#1-MW5	RRP#1-MW6
Date Installed	3/20/95	3/20/95	3/21/95	4/11/95	4/11/95	4/18/95
Total Well Depth (ft)	14.20	14.20	19	20	20	18
Top of Casing Elevation (ft, msl)	24.11	23.20	23.96	27.39	23.25	23.44
Type of Completion (Stick Up or Flush)	Flush	Flush	Flush	Flush	Flush	Flush
Casing Type	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC
Casing Length(s) (ft)	4.2	4.2	4	5	10	3
Screen Type	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC
Screen Slot Size (in)	0.010	0.010	0.010	0.010	0.010	0.010
Screen Length (ft)	10	10	15	15	10	15
Screen Interval (ft, bls)	4.2 - 14.2	4.2 - 14.2	4 - 19	5 - 20	10 - 20	3 - 18
NOTE:	in ft msl bls	inch feet mean sea level below land surface				

Source: Blasland, Bouck & Lee, Inc., 1995.

**TABLE 3-4
WATER LEVEL DATA**

**Rapid Refuel Pit No. 1
Roosevelt Roads, U.S. Naval Station
Ceiba, Puerto Rico**

Well Designation	Elevation of Top of Casing (ft, MSL)	April 12, 1995				May 15, 1995			
		Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Water Level Elevation (ft MSL)	Depth to Water (ft)	Depth to Product (ft)	Product Thickness (ft)	Water Level Elevation (ft MSL)
RRP#1-MW1	24.11	6.64	ND	ND	17.47	6.81	ND	ND	17.30
RRP#1-MW2	23.20	5.94	ND	ND	17.26	6.17	ND	ND	17.03
RRP#1-MW3	23.96	6.70	ND	ND	17.26	6.91	ND	ND	17.05
RRP#1-MW4	27.39	8.41	ND	ND	18.98	8.67	ND	ND	18.72
RRP#1-MW5	23.25	10.02	ND	ND	13.23	9.74	ND	ND	13.51
RRP#1-MW6	23.44	NA	ND	ND	NA	7.01	ND	ND	16.43

NOTE: Top-of-casing elevations referenced to MSL
MSL mean sea level ND None detected
NA Not Available

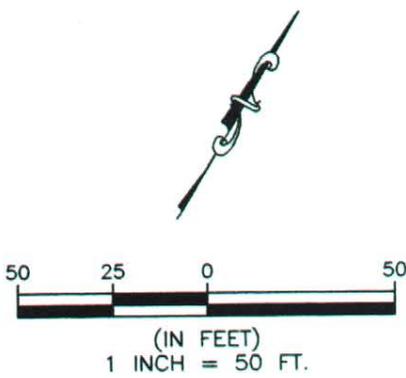
Source: Blasland, Bouck & Lee, Inc., 1995.

The April 12, and May 15, 1995 fluid level measurements were used to generate groundwater elevation contour maps. As illustrated on the two maps (**Figures 3-2 and 3-3**), the groundwater flow in the vicinity of the site is toward the southeast. The average groundwater gradient is 0.0144.

3.4 Groundwater Sampling

On April 13, 14, and May 12, 1995 groundwater samples were collected to assess the presence or absence of dissolved petroleum hydrocarbons and other constituents in the groundwater at the site. Groundwater samples were collected from the six monitoring wells, then transported on ice to a certified laboratory via overnight courier for analysis by EPA Method 418.1 (TPH) and EPA Method 602 (BTEX). Selected groundwater samples were also analyzed by EPA Method 610 (polynuclear aromatic hydrocarbons) and EPA Method 239.1 (lead).

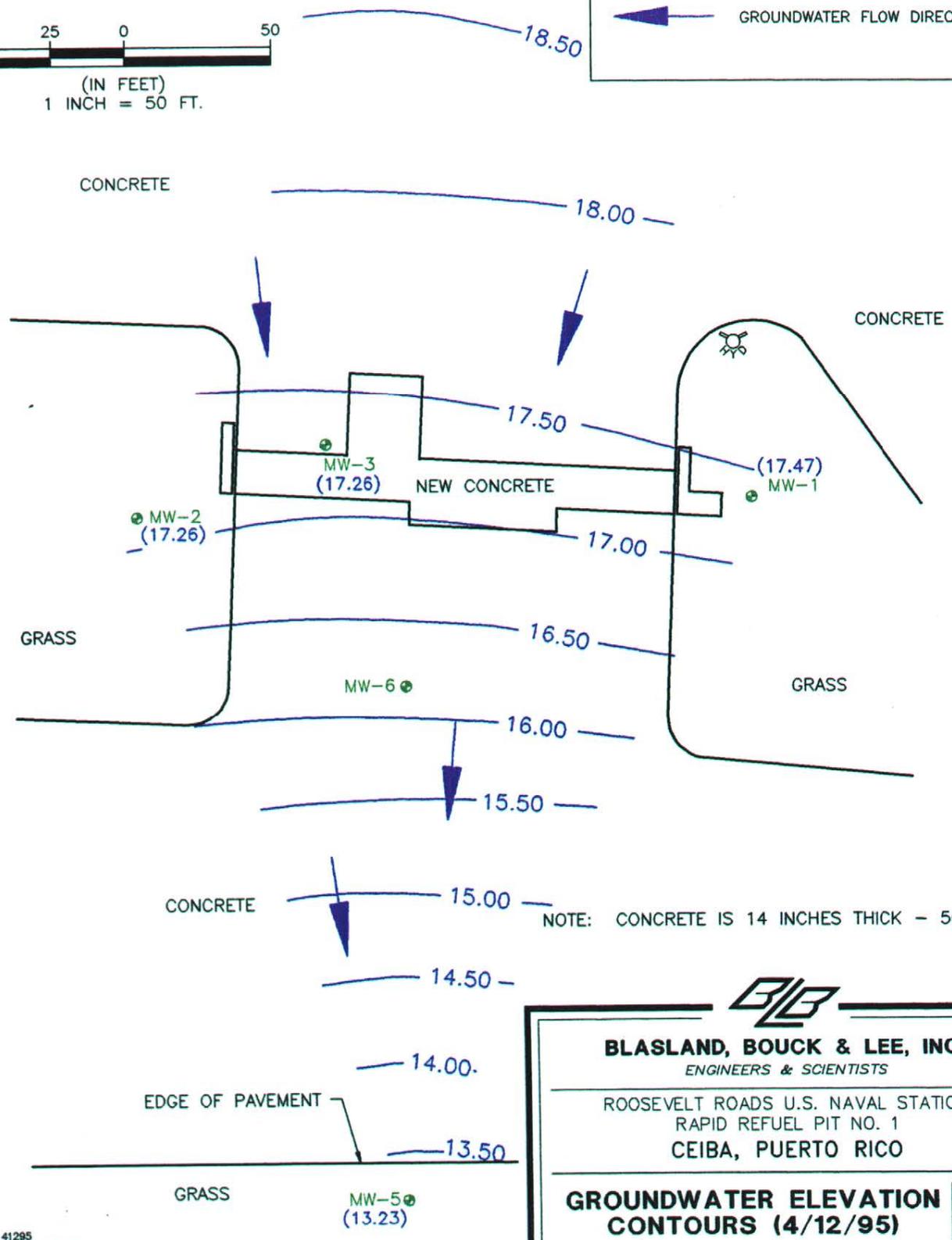
To ensure that contaminants were not introduced to the groundwater samples before, during, or after sample collection, auger blanks, field blanks, equipment blanks, and trip blanks were also collected. Groundwater sampling procedures and Quality Assurance/Quality Control (QA/QC) guidelines are detailed in **Appendix F**.



MW-4
(18.98)

LEGEND

- MW-1 ● MONITOR WELL LOCATION
- (18.98) GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
- 18.00 — GROUNDWATER ELEVATION CONTOUR LINE (FT. ABOVE MEAN SEA LEVEL)
- ▲ GROUNDWATER FLOW DIRECTION



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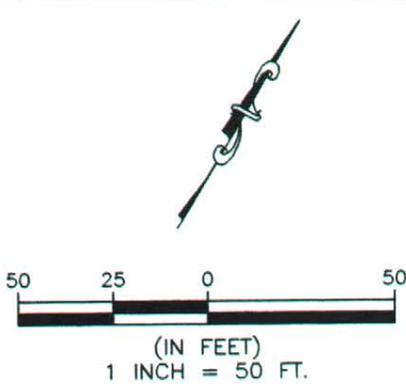
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GROUNDWATER ELEVATION CONTOURS (4/12/95)

FIGURE
3-2

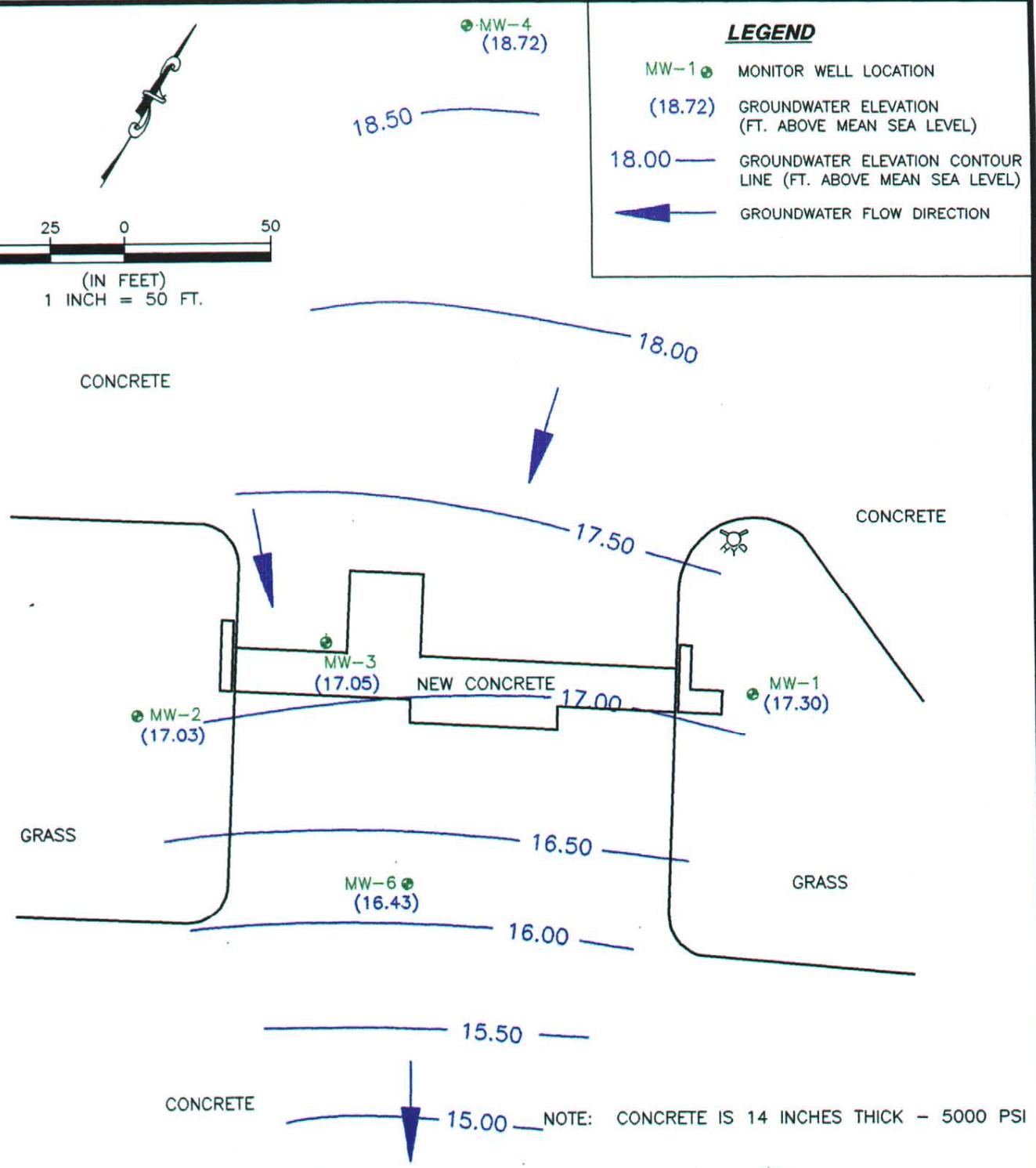
LAYER: 41295
5/24/95 27 JHD/AMS
3991901R/3991903.DWG

SOURCE: BB&L, 1995



LEGEND

- MW-1 ● MONITOR WELL LOCATION
- (18.72) GROUNDWATER ELEVATION (FT. ABOVE MEAN SEA LEVEL)
- 18.00 — GROUNDWATER ELEVATION CONTOUR LINE (FT. ABOVE MEAN SEA LEVEL)
- ▲ GROUNDWATER FLOW DIRECTION



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GROUNDWATER ELEVATION CONTOURS (5/15/95)

FIGURE
3-3

LAYER: 51595
5/24/95 27 JHD/AMS
3991901R/3991903.DWG

SOURCE: BB&L, 1995



SECTION 4

SECTION 4.0 - LABORATORY ANALYTICAL RESULTS

4.1 Soil Analytical Results

Table 4-1 summarizes field screening analytical results, and **Table 4-2** summarizes the laboratory analytical results for TPH and BTEX in soil samples collected during this investigation. Complete results of soil field screening performed by BB&L personnel are presented in **Appendix D**, and laboratory analytical reports of samples collected by BB&L personnel are presented in **Appendix G**.

As shown in **Table 4-2**, the TPH data collected by BB&L were used to determine the estimated maximum horizontal and vertical extent of soil contamination, which is illustrated on **Figure 4-1**. Four soil samples collected by BB&L personnel for laboratory analysis contained TPH concentrations above the PREQB target level of 100 milligrams per kilogram (mg/Kg). The TPH analytical results ranged from 2,300 mg/Kg to below detection limits (see **Table 4-2**). The soil TPH contamination appears to be limited to the area under the concrete apron. As illustrated in **Table 4-2** and **Figure 4-2**, laboratory soil analytical results were below the method detection limits for 24 of the 32 soil samples collected by BB&L personnel and analyzed for total BTEX. The BTEX analytical results ranged from 1,990 micrograms per kilogram (ug/Kg) to below detection limit. PREQB does not have standards for BTEX contamination in soils. A summary of the soil QA/QC laboratory analytical results is included in **Table 4-2**.

Hazardous waste characterization was performed to determine the status of the drill cuttings. As determined by the analytical results, the drill cuttings are classified as non-hazardous. A copy of the analytical results is provided in **Appendix G**.

**TABLE 4-1
SUMMARY OF ECG SOIL ANALYTICAL RESULTS
FOR BTEX AND TPH**

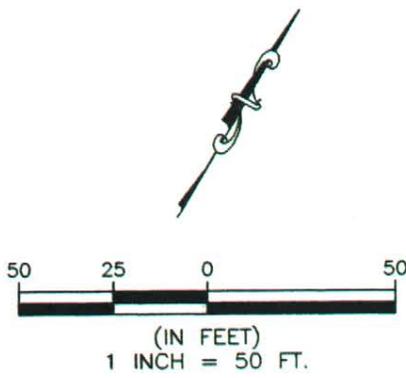
**Rapid Refuel Pit No. 1
Roosevelt Roads, U.S. Naval Station
Ceiba, Puerto Rico**

Soil Boring	ECG Laboratories (Field Screening)	
	Modified EPA Method 418.1 TPH (mg/Kg)	Modified EPA Method 8020 Total BTEX (ug/Kg)
RRP#1-SB1 (4'-6')	<10	<50
RRP#1-SB2 (4'-6')	<10	<50
RRP#1-SB3 (2'-4')	<10	<50
RRP#1-SB3 (4'-6')	<10	<50
RRP#1-SB4 (2'-4')	<10	<50
RRP#1-SB4 (4'-6')	<10	<50
RRP#1-SB5 (2'-4')	<10	<50
RRP#1-SB5 (4'-6')	<10	<50
RRP#1-SB6 (2'-4')	<10	10
RRP#1-SB6 (4'-6')	<10	<50
RRP#1-SB7 (4'-6')	<10	<50
RRP#1-SB7 (8'-10')	<10	<50
RRP#1-SB8 (2'-4')	<10	<50
RRP#1-SB8 (10'-12')	<10	<50
RRP#1-SB9 (2'-4')	<10	<50
RRP#1-SB9 (6'-8')	<10	<50
RRP#1-SB10 (4'-6')	<10	70
RRP#1-SB10 (6'-8')	<10	20
RRP#1-SB11 (2'-4')	2,510	100
RRP#1-SB11 (8'-10')	<10	48
RRP#1-SB12 (2'-4')	261	<50
RRP#1-SB12 (4'-6')	481	<50
RRP#1-SB13 (0'-2')	<10	<50
RRP#1-SB13 (4'-6')	<10	384
RRP#1-SB14 (0'-2')	569	<50
RRP#1-SB14 (0'-2')	<10	<50
RRP#1-SB15 (0'-2')	21	<50
RRP#1-SB18 (4'-6')	<10	25
RRP#1-SB18 (10'-12')	<10	54
RRP#1-SB19 (4'-6')	<10	<50
RRP#1-19 (16'-18')	<10	16
Puerto Rico EQB ¹ UST Target Levels	100	-
NOTES:	EQB ¹ = Environmental Quality Board TPH = Total petroleum hydrocarbons Total BTEX = Sum of benzene, toluene, ethylbenzene, and xylenes ug/Kg = micrograms per kilogram mg/Kg = milligrams per kilogram NA = not analyzed UST = underground storage tank	

**TABLE 4-2
SUMMARY OF SAVANNAH LABORATORIES SOIL ANALYTICAL RESULTS
FOR BTEX AND TPH**

**Rapid Refuel Pit No. 1
Roosevelt Roads, U.S. Naval Station
Ceiba, Puerto Rico**

Soil Boring	Savannah Laboratories		
	Modified EPA Method 8015 DRO (mg/Kg)	EPA Method 418.1 TPH (mg/Kg)	Total BTEX (ug/Kg)
RRP#1-SB1 (4'-6')	NA	<10	<20
RRP#1-SB2 (4'-6')	NA	<10	<20
RRP#1-SB3 (2'-4')	NA	<10	<20
RRP#1-SB3 (4'-6')	NA	<10	<20
RRP#1-SB4 (2'-4')	NA	<10	<20
RRP#1-SB4 (4'-6')	NA	<10	<20
RRP#1-SB5 (2'-4')	NA	<10	<20
RRP#1-SB5 (4'-6')	NA	<10	<20
RRP#1-SB6 (2'-4')	NA	<10	<20
RRP#1-SB6 (4'-6')	NA	<10	NA
RRP#1-SB7 (4'-6')	NA	<10	NA
RRP#1-SB7 (8'-10')	NA	<10	NA
RRP#1-SB8 (2'-4')	NA	<10	NA
RRP#1-SB8 (10'-12')	NA	<10	NA
RRP#1-SB9 (2'-4')	NA	<10	NA
RRP#1-SB9 (6'-8')	NA	<10	NA
RRP#1-SB10 (4'-6')	NA	<10	<20
RRP#1-SB10 (6'-8')	NA	<10	<20
RRP#1-SB11 (2'-4')	950	120	220
RRP#1-SB11 (4'-6')	NA	52	52
RRP#1-SB11 (8'-10')	NA	<10	13
RRP#1-SB12 (2'-4')	930	400	390
RRP#1-SB12 (4'-6')	340	1,200	161
RRP#1-SB13 (0'-2')	NA	<10	<20
RRP#1-SB13 (4'-6')	NA	86	1,990
RRP#1-SB14 (0'-2')	2,100	2,300	914
RRP#1-SB14 (4'-6')	NA	<10	<20
RRP#1-SB15 (0'-2')	NA	12	<20
RRP#1-SB18 (4'-6')	NA	<10	<20
RRP#1-SB18(10'-12')	NA	<10	<20
RRP#1-SB19 (4'-6')	NA	<10	14
RRP#1-SB19 (16'-15')	NA	<10	<20
RRP#1-DUP1 (SB4 4'-6')	NA	<10	<20
RRP#1-DUP2	NA	<10	<20
Puerto Rico EQB ¹ UST Target Levels	100	100	NS
NOTES:	EQB ¹ = Environmental Quality Board TPH = total petroleum hydrocarbons DRO = Diesel range organics (modified EPA Method 8015 - extractables) Total BTEX = Sum of benzene, toluene, ethylbenzene, and xylenes ug/Kg = micrograms per kilogram mg/Kg = milligrams per kilogram NA = not analyzed UST = underground storage tank		

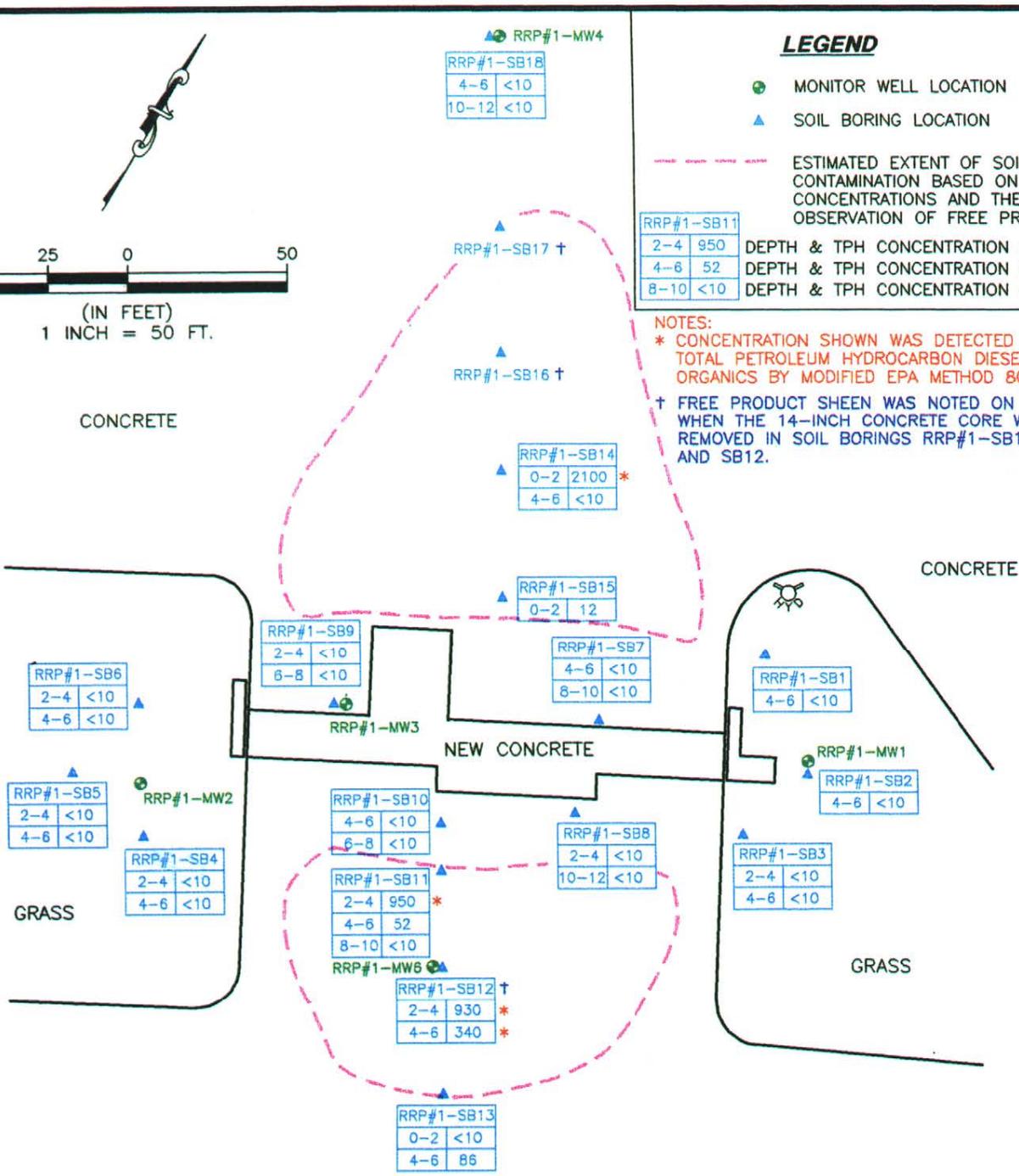


LEGEND

- MONITOR WELL LOCATION
- ▲ SOIL BORING LOCATION
- ESTIMATED EXTENT OF SOIL CONTAMINATION BASED ON TPH CONCENTRATIONS AND THE FIELD OBSERVATION OF FREE PRODUCT

RRP#1-SB11	2-4	950	DEPTH & TPH CONCENTRATION (mg/Kg)
	4-6	52	DEPTH & TPH CONCENTRATION (mg/Kg)
	8-10	<10	DEPTH & TPH CONCENTRATION (mg/Kg)

NOTES:
 * CONCENTRATION SHOWN WAS DETECTED IN THE TOTAL PETROLEUM HYDROCARBON DIESEL RANGE ORGANICS BY MODIFIED EPA METHOD 8015 DRO.
 † FREE PRODUCT SHEEN WAS NOTED ON THE SOIL WHEN THE 14-INCH CONCRETE CORE WAS REMOVED IN SOIL BORINGS RRP#1-SB17, SB16 AND SB12.



NOTE: CONCRETE IS 14 INCHES THICK - 5000 PSI

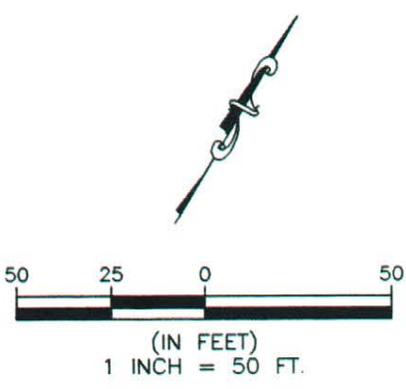


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SOIL LABORATORY TPH CONCENTRATIONS
 (CONCENTRATIONS DETECTED ABOVE WATER TABLE)

FIGURE
4-1

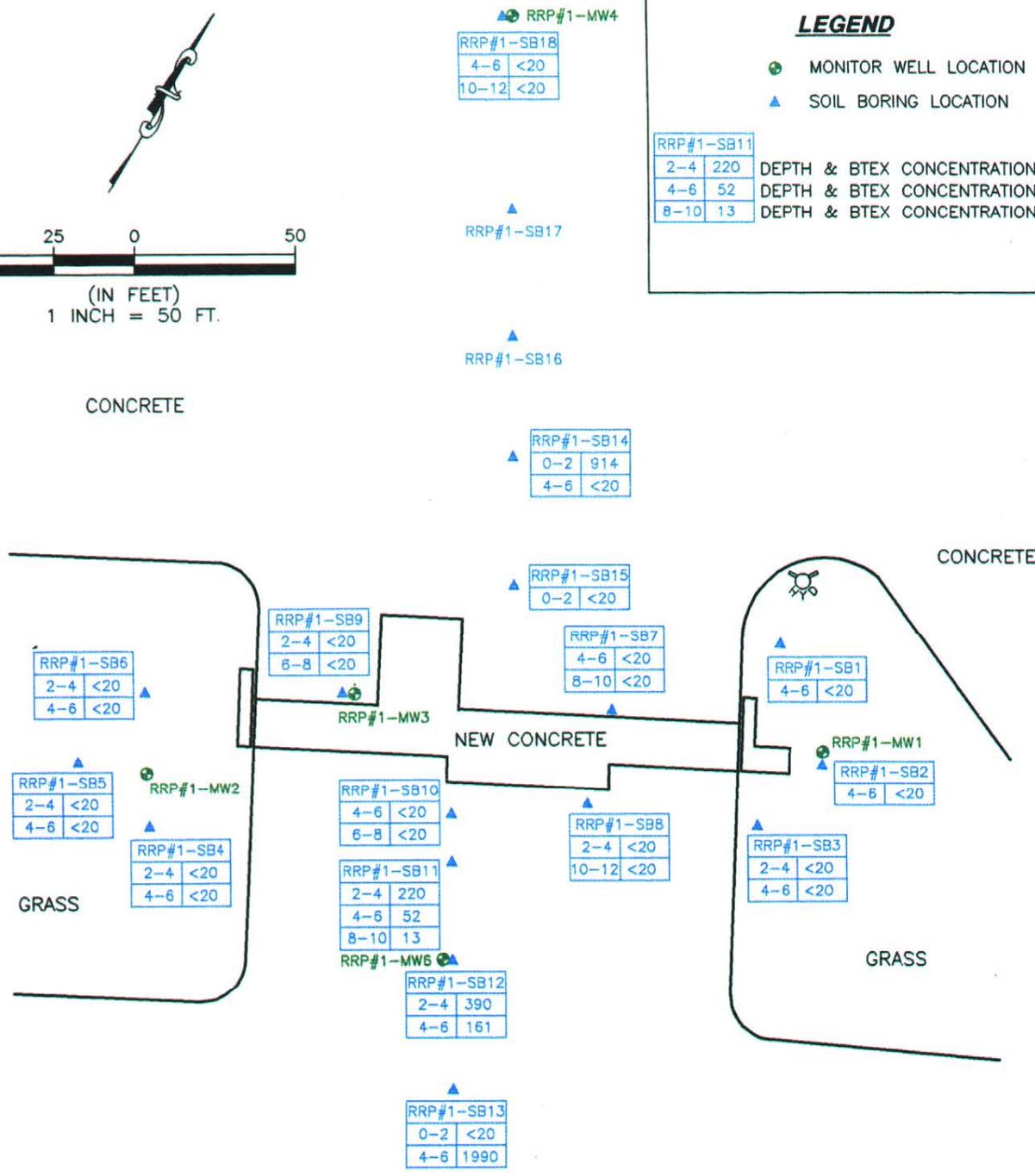


LEGEND

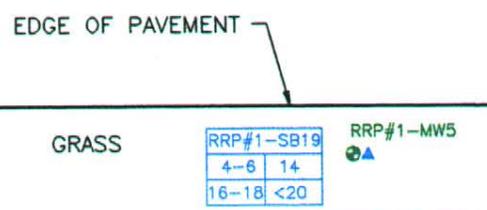
- MONITOR WELL LOCATION
- ▲ SOIL BORING LOCATION

RRP#1-SB11	
2-4	220
4-6	52
8-10	13

DEPTH & BTEX CONCENTRATION (ug/Kg)
 DEPTH & BTEX CONCENTRATION (ug/Kg)
 DEPTH & BTEX CONCENTRATION (ug/Kg)



NOTE: CONCRETE IS 14 INCHES THICK - 5000 PSI



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SOIL LABORATORY BTEX CONCENTRATIONS
(CONCENTRATIONS DETECTED ABOVE WATER TABLE)

FIGURE 4-2

LAYER: FIG4-2
5/24/95 27 JHD/AMS
3991901R/3991903.DWG

SOURCE: BB&L, 1995

4.2 Groundwater Analytical Results

Groundwater laboratory analytical results (**Table 4-3**) indicated no dissolved concentrations of benzene, BTEX, or TPH above the PREQB groundwater standards for UST sites. PREQB defines groundwater contamination on a site-by-site basis, but groundwater typically is considered contaminated if it contains benzene concentrations above 5 micrograms per liter (ug/L), total BTEX concentrations above 50 ug/L, or TPH concentrations above 50 milligrams per liter (mg/L). **Figure 4-3** illustrates the benzene, total BTEX, and TPH concentrations in the groundwater determined from the laboratory analytical results.

A summary of the QA/QC laboratory analytical results is presented in **Table 4-4**. The soil, groundwater, and QA/QC laboratory analytical reports are provided in **Appendix G**.

Groundwater analytical results and liquid level data obtained from monitoring well RRP#1-MW6 indicate that dissolved petroleum hydrocarbons and free product were not detected in this well. However, free product was detected dripping from the split spoon when the 4 to 6-foot interval was collected during the advancement of soil boring RRP#1-SB12. This boring was used for the construction of monitoring well RRP#1-MW6. The presence of free product during soil boring advancement but not in the monitoring well may be explained by the lithology of the site. Because the soils have very low permeability and have been compacted for construction of the airfield, small quantities of free product may be trapped in the soils near the surface as a result of historic fueling operations and overspills. Also, soil conditions may prevent the migration of contaminants and dissolution downward to the deeper intervals where the wells are screened. A lack of vertical movement was observed during soil sampling, when contaminated soil was detected only in the upper intervals, and contamination decreased as the borings were advanced.

**TABLE 4-3
SUMMARY OF GROUNDWATER ANALYTICAL RESULTS**

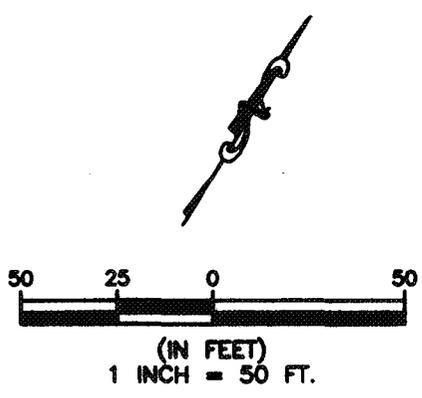
**Rapid Refuel Pit No. 1
Roosevelt Roads, U.S. Naval Station
Ceiba, Puerto Rico**

Parameter (units)	Puerto Rico EQB Target Levels	U.S. EPA MCL	RRP No.1-MW1	RRP No.1-MW2	RRP No.1-MW3	RRP No.1-MW4	RRP No.1-MW5	RRP No.1-MW6
Date Sampled			4/13/95	4/13/95	4/14/95	4/14/95	4/13/95	5/16/95
Benzene (ug/L)	5	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene (ug/L)	NS	1,000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene(ug/L)	NS	700	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes (ug/L)	NS	10,000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total BTEX (ug/L)	50	NS	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
MTBE (ug/L)	NS	NS	<10	<10	<10	<10	<10	<10
PAH (ug/L)	NS	NS	NA	NA	<10	<10	<10	<10
Total Naphthalenes (ug/L)	NS	NS	NA	NA	<10	<10	<10	<10
Lead (mg/L)	NS	0.015	NA	NA	<0.005	NA	<0.005	<0.005
TPH (mg/L)	50	NS	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

NOTE:

ug/L = micrograms per liter
mg/L = milligrams per liter
MTBE = methyl-tert-butyl ether
Total BTEX = sum of benzene, toluene, ethylbenzene, and xylenes
PAH = Polynuclear Aromatic Hydrocarbons (excluding naphthalenes)
TPH = Total Petroleum Hydrocarbons by EPA Method 418.1
NA = Not analyzed
NS = No Standard
MCL = Maximum Contaminant Level (drinking water supplies)
Total Naphthalenes = Sum of naphthalene and methylnaphthalenes

Source: Blasland, Bouck & Lee, Inc.; Savannah Laboratories, Inc., 1995.



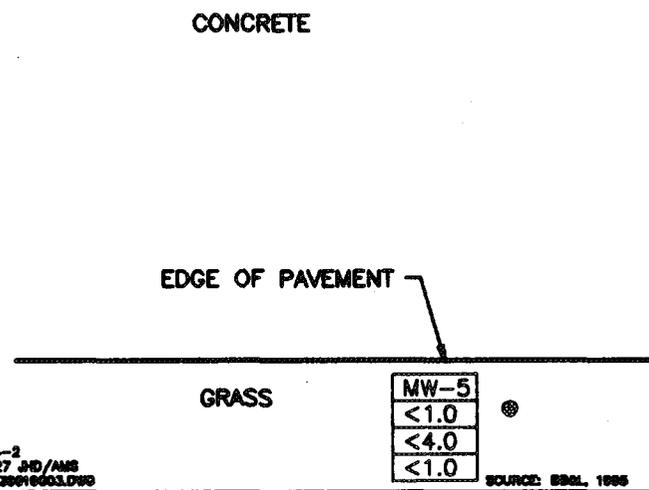
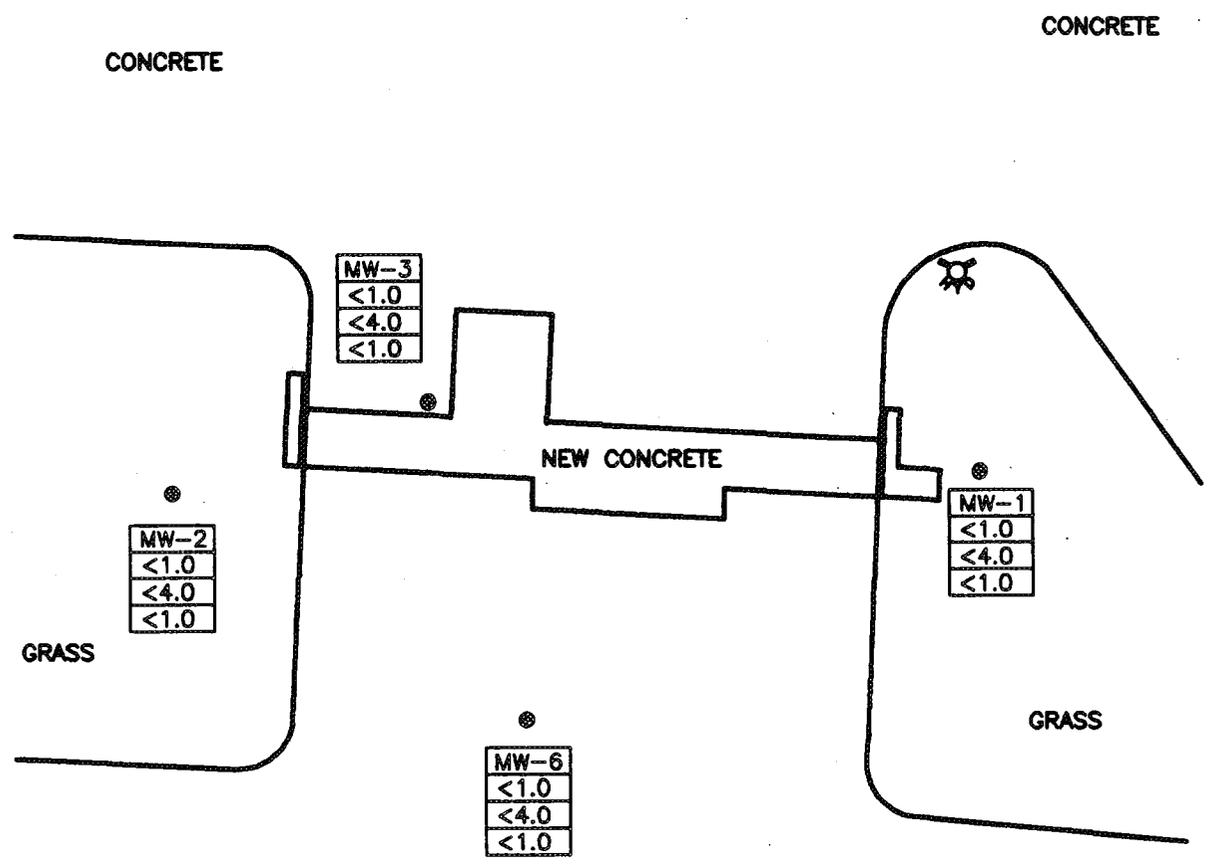
MW-4
<1.0
<4.0
<1.0

LEGEND

MW-1 ● MONITOR WELL LOCATION

MW-2
<1.0
<4.0
<1.0

BENZENE CONCENTRATION (ug/L)
 TOTAL BTEX CONCENTRATION (ug/L)
 TPH CONCENTRATION (mg/L)



NOTE: CONCRETE IS 14 INCHES THICK - 5000 PSI

BIB

BLASLAND, BOUCK & LEE, INC.
 ENGINEERS & SCIENTISTS

ROOSEVELT ROADS U.S. NAVAL STATION
 RAPID REFUEL PIT NO. 1
 CEIBA, PUERTO RICO

GROUNDWATER LABORATORY
BENZENE, BTEX AND TPH
CONCENTRATIONS

FIGURE
4-3

**TABLE 4-4
SUMMARY OF GROUNDWATER QA/QC ANALYTICAL RESULTS**

**Rapid Refuel Pit No.1
Roosevelt Roads, U.S. Naval station
Celba, Puerto Rico**

Parameter (units)	Puerto Rico EQB Target Levels	U.S. EPA MCL	Dup RRPNo.1	Equipment Blank (Baller)	Equipment Blank Split Spoon	Field Blank	Trip Blank	Decon Water
Date Sampled			4/13/95	4/13/95	3/16/95	4/13/95		3/16/95
Benzene (ug/L)	5	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Toluene (ug/L)	NS	1,000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene(ug/L)	NS	700	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Xylenes (ug/L)	NS	10,000	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Total BTEX (ug/L)	50	NS	<4.0	<4.0	<4.0	<4.0	<4.0	<4.0
MTBE (ug/L)	NS	NS	<10	<10	<10	<10	<10	<10
PAH (ug/L)	NS	NS	NA	<10	NA	NA	NA	NA
Total Naphthalenes (ug/L)	NS	NS	NA	<10	NA	NA	NA	NA
Lead (ug/L)	NS	0.015	NA	<0.005	NA	NA	NA	NA
TPH (mg/L)	50	NS	<1.0	<1.0	NA	NA	NA	NA

NOTE:

- ug/L = micrograms per liter
- mg/L = milligrams per liter
- MTBE = methyl-tert-butyl ether
- Total BTEX = sum of benzene, toluene, ethylbenzene, and xylenes
- PAH = Polynuclear Aromatic Hydrocarbons (excluding naphthalenes)
- TPH = Total Petroleum Hydrocarbons by EPA Method 418.1
- NA = Not analyzed
- NS = No standard
- MCL = Maximum Contaminant Level (drinking water supplies)
- QA/QC = Quality Assurance/Quality Control



SECTION 5

SECTION 5.0 - QUALITATIVE RISK ASSESSMENT (QRA)

This Qualitative Risk Assessment (QRA) identifies the population potentially at risk of exposure to chemicals present in, or released from, soil and groundwater at the site. The QRA contains a discussion of exposure pathways and includes a qualitative evaluation of the magnitude of the risk. An exposure pathway describes the path by which a chemical migrates from the source of contamination to a human receptor. The chemicals of concern, possible transport media, exposure "routes" (means by which a chemical comes in contact with a receptor), and an analysis of the potential receptors are taken into account to determine an exposure pathway.

The results of the QRA are utilized to qualitatively determine the health risk to potential receptors of contaminants found at the site.

5.1 Nature and Extent of Release

Based on field and laboratory information pertaining to the soil borings and monitoring wells sampled during this SC investigation, dissolved petroleum hydrocarbons were detected in soil samples at concentrations above PREQB target levels for UST sites (see **Tables 4-1, 4-2, and 4-3**).

5.2 Chemicals of Concern

Although petroleum products contain a large number of compounds, those compounds present in the groundwater that represent a potential risk to human health and the environment are volatile organic aromatics [consisting of benzene, toluene, ethylbenzene, and xylenes (BTEX)], naphthalenes, and lead. Of those compounds listed, only benzene and lead are known human carcinogens; toluene, ethylbenzene, xylene, and naphthalenes are non-carcinogenic system toxicants. These compounds were not detected above laboratory method detection limits in

the groundwater samples collected from the monitoring wells sampled at the site. A free product sheen was observed on the water introduced during the concrete coring of four soil borings at the site; however, no free product was detected in any of the six monitoring wells later installed at the site.

The qualitative risk assessment will, therefore, focus on the qualitative human health impacts of benzene and lead (present in JP-5 fuel) that may dissolve onto the groundwater.

5.3 Exposure Assessment

An exposure assessment describes the potential receptors of the compounds of concern and pathways that the compounds of concern may follow.

5.3.1 Human Receptors

Human receptors on the Naval Station include personnel working in and around the site itself. The nearest residences on NAVSTA Roosevelt Roads are more than one-half mile southeast of the site. The nearest residences off-site from NAVSTA Roosevelt Roads are approximately 1 mile northwest of the site.

The potential for human contact with the compounds of concern is low because the compounds exist beneath the ground surface and access to the site is typically limited to personnel working in the fuels department who know to avoid potential contact with petroleum products that have leaked from the lines into the soils and groundwater.

5.3.2 Environmental Receptors

The potential for migration of compounds of concern to environmental receptors is primarily due to movement of groundwater off the site. However, even though free product was detected during the advancement of soil borings, dissolved petroleum hydrocarbon in the groundwater were not detected at the

site. The measured direction of groundwater flow at the site is primarily to the southeast, and eventually toward Ensenada Honda, the fueling port for the Naval Station. If groundwater contamination were detected at a future date, Ensenada Honda would, therefore, be the only potential environmental receptor of the compounds of concern.

Migration of soil contamination from the site is not likely, since the soil contamination is primarily covered by concrete or thick grass, which limits the spreading of soil by wind action.

5.3.3 Exposure Pathways

An exposure pathway is the route a compound follows from its source to an exposed potential receptor (human population) and describes a mechanism by which the population can come into contact with the compound. Four elements must be present to complete an exposure pathway:

1. a source and mechanism of release for a compound of concern (e.g., storage tank leak);
2. a feasible environmental transport route (e.g. dissolved groundwater constituents);
3. an exposure point of potential contact with receptors (e.g. a potable well);
4. an exposure route allowing receptors to come into contact with the compound(s) (e.g., inhalation of vapors, ingestion of ground water).

If any one of these four elements is missing, the exposure pathway is considered incomplete and, therefore, does not contribute to the potential exposure from the site. The first element, a source/release mechanism (storage tank leak and/or spills) has been shown to exist at the site. Petroleum hydrocarbon detected in soil borings wells indicate that soil contamination exists at the site. The other three conditions are discussed below.

5.3.4 Groundwater Consumption Pathway

Potable water in eastern Puerto Rico is primarily recovered from the nearby rain forest, El Yunque. El Yunque is located approximately 5 miles west of NAVSTA Roosevelt Roads. Based on conversations with U.S. Navy personnel, Puerto Rico Department of Natural Resources personnel, and water supply personnel in the town of Fajardo (Fajardo is located approximately 7 miles northwest of the Naval Station), the potable water supply for the Naval Station, the town of Ceiba, (**Figure 1-2**) and Fajardo is from surface-water sources in El Yunque. The Naval Station has a gravity feed distribution system from the rain forest to the water treatment plant on the Naval Station. Due to the availability of surface water in eastern Puerto Rico, groundwater is not exploited as a source of potable water; therefore, a potential groundwater exposure point does not exist.

5.3.5 Ingestion Pathway

A potential ingestion pathway for the compounds of concern would exist at the site only if excavation activities were to occur. If this were to occur, the potential for worker exposure is possible through direct contact with the soil during excavation. No other potential ingestion pathways are present.

5.3.6 Inhalation Pathway

Inhalation of the compounds of concern may potentially occur by vaporization of compounds from the soil and groundwater into the air, and by wind action picking up contaminated soil at the surface. The potential for either of these pathways is low, because the contaminated soil is typically several feet or more below ground surface.

5.4 Risk Evaluation

The results of the risk assessment indicate that due to incomplete exposure pathways, the potential for human contact with the compounds of concern is low. As described in this section, each viable exposure pathway is missing one or two of the four elements necessary to complete an exposure pathway. The missing elements are a viable exposure point and/or a viable exposure route. The contaminants of concern, therefore, do not present a hazard to personnel who visit, work, or live at the NAVSTA Roosevelt Roads.



SECTION 6

SECTION 6.0 - REMEDIATION ASSESSMENT

This remediation assessment presents the possible corrective action alternatives for soil contamination, and describes the advantages/disadvantages at the site. Petroleum hydrocarbon constituents detected in the soil are above PREQB standards. However, due to the low health hazards, soil remediation activities will not be conducted at this site. The perimeter monitor wells will be sampled on a semi-annual basis for BTEX and TPH.

6.1 Soil Remediation

There are three common methods of soil remediation; soil excavation and disposal, soil vapor extraction (SVE), and bioremediation. The advantages and limitations of each method are discussed below and summarized in **Table 6-1**.

6.1.1 Soil Excavation and Disposal

Soils containing hydrocarbons can be disposed at PREQB-approved landfill facilities in Puerto Rico (e.g. BFI in Ponce, Puerto Rico). Hydrocarbon-affected soils can be disposed at BFI as long as the soil does not exhibit any of the RCRA waste characteristics as defined in 40 CFR 261. However, excavation of hydrocarbon-affected soil is not a viable option due to the disruption caused by the excavation to the fueling operations and the air traffic in the area.

6.1.2 Soil Vapor Extraction

SVE could be an effective means of *in-situ* soil treatment; however, the low permeability of soils beneath the site would inhibit effective remediation by this method.

TABLE 6-1
 COMPARISON OF REMEDIAL ALTERNATIVES
 ROOSEVELT ROADS, U.S. NAVAL STATION
 CEIBA, PUERTO RICO

TECHNOLOGY	MATRIX	ADVANTAGES	LIMITATIONS	APPROXIMATE UNIT COSTS
Soil Excavation	Soil	Fast, effective on all soil contaminants, inexpensive for small volumes	Disruptive, expensive for large volumes of soil, difficult near buildings and utilities	\$45.00
Vapor Extraction	Soil	Minimal surface disruption, effective on volatile hydrocarbons	Expensive for small volumes, treated compounds must be volatile	\$35.00
Bioremediation	Soil/Ground Water	"natural" remediation, residual remedial effect	Low operational control, not a well established technology	Highly Variable

6.1.3 Bioremediation

Bioremediation is a method of enhancing the natural biodegradation of dissolved and other residual hydrocarbon phases in soils. Bioremediation could potentially treat the soils *in-situ*, but the low permeability of soils beneath the site would inhibit effective remediation by this method.

6.1.4 No-Action

At the site, the soil impacts extend under the Rapid Refuel Pit No. 1 and the taxi-ways used by the military aircraft; therefore, soil excavation is not a viable option. The effectiveness of both SVE and bioremediation techniques would also be extremely limited due to the low permeability of soils at the site. Low permeability soils significantly retard air migration toward SVE wellpoints and limit mobility of bioremediation organisms used for soil remediation activities.

Based on the data collected during the field investigation, the laboratory analytical results, and the remediation methods discussed above, a monitoring plan, consisting of sampling the perimeter monitor wells on a semi-annual basis for BTEX and TPH, will be implemented.



SECTION 7

SECTION 7.0 - CONCLUSIONS AND RECOMMENDATIONS

7.1 Conclusions

This Site Characterization was conducted to evaluate the presence of petroleum hydrocarbons in the soil and groundwater resulting from the discovery of soil contamination during the replacement of the JP-5 fuel line.

Information obtained during this investigation indicates that petroleum hydrocarbons were detected in the soils above PREQB target levels for UST sites. The laboratory analytical results indicate that TPH concentrations greater than 100 mg/Kg exist in soil samples obtained from the site. The area of soil contamination is defined and appears to be limited to the area underneath the concrete apron.

Traces of free product sheen and free product were detected in four soil borings at the site. Dissolved petroleum hydrocarbons, however, were not detected in groundwater samples at levels above method detection limits in any of the monitoring wells sampled at the site.

The free product and soil contamination at the site do not present a threat to human health based on the lack of a complete exposure pathway as discussed in the Qualitative Risk Assessment.

7.2 Recommendations

Based on the information contained in this report, soil excavation is not feasible or recommended because of the fueling operations and air traffic in the area. *In-situ* remediation methods are not recommend either, due to the low permeability conditions presented by the clays underlying the site. Natural biodegradation processes are expected to reduce the levels of petroleum

contaminants in the soils and groundwater at the site. Dissolution of the free product will be monitored by sampling the perimeter wells for BTEX and TPH on a semi-annual basis.



SECTION 8

SECTION 8.0 REFERENCES

- Bates, R.L. and Jackson, J.A., Editors, Dictionary of Geologic Terms, Third Edition, 1984.
- Bouwer, H. and R.C. Rice, "A Slug Test for Determining Hydraulic Conductivity of Unconfined Aquifers with Completely Penetrating Wells". Water Resources Research, Vol. 12, No. 3, 1976.
- M'Gongile, J.W., Geologic Map of the NAGUABO and Part of the Puntal Puenca Quadrangles, Puerto Rico, United States Geologist Survey Miscellaneous Investigations Series, Map I-1099, 1979.



APPENDIX A

APPENDIX A
SOIL BORING LITHOLOGIC LOGS

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>				Location <div style="text-align: center;">Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico</div>	
Date: <u>3/20/95</u>				Water Table <div style="text-align: center;">~ 6.13 ft Below TOC</div>	
Boring No.: <u>MW-2</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Rig</u>					
Weather: <u>Sunny, 80°, breezy</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
MW-2	SPT	0	2	10 15 15 26	7.5 YR 5/6 strong brown clay with pebble to gravel sized rock (dry)
MW-2	SPT	2	4	16 12 8 6	10 YR 4/4 dark yellowish brown clay with gravel sized rock
MW-2	SPT	4	6	4 7 7 7	5 Y 3/1 very dark gray clay, soft (moist)
MW-2	SPT	6	8	3 4 5 8	2.5 Y light olive brown clay (moist)
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u> Date: <u>3/14/95</u> Boring No.: <u>MW-2</u> Recorded By: <u>M. Bauer</u> Drill Type: <u>Trailer Mounted Rig</u> Weather: <u>Sunny, 80°, breezy, partly cloudy</u>		Location <p style="text-align: center;">Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico</p> Water Table <p style="text-align: center;">~ 7.25 BLS</p>			
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-1	pH	0	2	NA	10 YR 4/4 sandy clay, dark yellowish brown with pebble to cobble sized rock
SB-1	pH	2	4	NA	5 Y 4/2 dark olive gray clay with pebble sized rock
SB-1	SPT	4	6	3,6,8,10	5 Y 3/2 dark olive gray clay with pebble sized rock
SB-1	SPT	6	8	2,5,7,9	5 Y 3/2 dark olive gray clay
SB-1	SPT	8	10	1,4,12,19	2.5 Y 4/6 dark red clay, very dark, brittle
SB-1	SPT	10	12	14,24,26,30	2.5 Y and 7.5 YR 5/4 mottled clay with pebble sized rock, very dark
SB-1	SPT	12	14	16,26,34,50	Same as above with 10 YR 6/1 gray clay, very dark with pebbles
SB-1	SPT	14	16	12,23,36,50	Same as above but gray increased to 50%, clay is moist
SB-1	SPT	16	18	10,23,36,50	Same as above but gray increased to 80%, very hard, moist
SB-1	SPT	18	20	13,18,28,38	10 YR 4/6 red and 7.5 Y 5/6 strong brown clay, outside of spoon is dripping water, top 1' of clay wet
SB-1	SPT	20	22	2,12,23,28	10 YR 6/6 brownish yellow and 10 YR 6/2 light brownish gray, clay moist (top 1' of spoon is mud)
SB-1	SPT	22	24	6,8,14,17	Same as above
SB-1	SPT	24	26	5,7,12,16	Same as above mottled clay with streaks of black clay in bottom 1' of spoon
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>				Location Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico	
Date: <u>3/14/95</u>				Water Table ~6.05 BLS	
Boring No.: <u>SB-2</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Mounted Rig</u>					
Weather: <u>Ptly sunny, ptly cloudy, 80°, breezy</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-2	SPT	0	2	25 37 43 33	10 YR 5/4 sandy clay very dry, 90% rock
SB-2	SPT	2	4	21 18 20 20	No recovery on spoon, rocks plugging end
SB-2	SPT	4	6	3 7 10 11	2.5 Y 3/2 very dark grayish brown clay
SB-2	SPT	6	8	11 14 5 4	2.5 Y 4/3 olive brown and 2.5 YR 4/4 dusty red clay, saturated water pouring out of spoon
SB-2	SPT	8	10	3 3 5 4	Same as above
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>				Location <div style="text-align: center;">Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico</div>	
Date: <u>3/15/95</u>				Water Table <div style="text-align: center;">~9.13 BLS</div>	
Boring No.: <u>SB-3</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Mounted Rig</u>					
Weather: <u>Ptly cloudy, 80°, breezy</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-3	SPT	0	2	36 24 15 10	7.5 YR 4/6 strong brown clay with pebble to cobble sized rocks (50% rock)
SB-3	SPT	2	4	5 6 8 10	10 YR 3/6 dark yellowish brown clay with pebble to cobble sized rocks (25% rock)
SB-3	SPT	4	6	5 8 10 11	5 Y 2.5/1 black clay, firm, moist no rocks
SB-3	SPT	6	8	4 8 11 18	10 YR 4/4 dark yellowish brown clay with pebbles, firm, moist
SB-3	SPT	8	10	10 21 30 50	7.5 YR 4/6 strong brown and 2.5 YR 4/4 dusky red clay, dry, firm
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>				Location Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico	
Date: <u>3/15/95</u>				Water Table ~ 7.91 BLS	
Boring No.: <u>SB-4</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Mounted Rig</u>					
Weather: <u>Ptly cloudy, 80°, breezy</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-1	SPT	0	2	24 20 13 11	7.5 YR 4/6 strong brown clay with gravel, gravel is ~ 50%
SB-1	SPT	2	4	9 9 12 10	10 YR 4/4 dark yellowish brown clay with gravel, gravel is ~ 25%
SB-1	SPT	4	6	3 2 4 5	7.5 YR 3/3 dark brown clay with carbon, pebbles (lab sample and dupe #1) moist
SB-1	SPT	6	8	12 13 10 15	7.5 YR 4/3 brown sandy clay (wet)
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u> <hr/> Date: <u>3/15/95</u> Boring No.: <u>SB-5</u> Recorded By: <u>M. Bauer</u> Drill Type: <u>Trailer Mounted Rig</u> Weather: <u>Ptly cloudy, 80°, breezy</u>	Location <p align="center">Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico</p> Water Table <p align="center">~ 5.76 BLS</p>
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Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-5	SPT	0	2	13 20 35 18	10 YR 4/4 dark yellowish brown clay with gravel sized rock
SB-5	SPT	2	4	11 16 12 8	10 YR 3/6 dark yellowish brown clay with pebble to gravel sized rock
SB-5	SPT	4	6	2 3 6 10	10 YR 4/6 dark yellowish brown clay with pebble sized rock (moist)
SB-5	SPT	6	8	15 13 13 13	7.5 YR 4/4 brown clay with pebble sized rock (very moist)

*Remarks
PH - post hole
SPT - standard penetration test

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>				Location <div style="text-align: center;">Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico</div>	
Date: <u>3/15/95</u>				Water Table <div style="text-align: center;">~ 6.11 BLS</div>	
Boring No.: <u>SB-6</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Rig</u>					
Weather: <u>Ptly cloudy, 80°, breezy</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-6	SPT	0	2	13 25 24 15	10 YR 4/3 brown clay with pebble sized rock, very stiff (slightly moist)
SB-6	SPT	2	4	6 9 10 10	10 YR 4/6 dark yellowish brown clay with little fine to coarse gravel (moist) soft
SB-6	SPT	4	6	5 10 15 17	10 YR 4/6 dark yellowish brown clay (moist) very stiff
SB-6	SPT	6	8	5 8 10 6	10 YR 4/3 brown clay (moist) soft and 2.5 YR 4/8 dark red clay (moist) very stiff
SB-6	SPT	8	10	1 5 3 1	10 YR 4/6 red clay, 10 YR 4/6 dark yellowish brown clay 5 Y 5/1 gray clay, 5 Y 8/1 white clay (wet) very soft
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u> <hr/> Date: <u>3/16/95</u> Boring No.: <u>SB-7</u> Recorded By: <u>M. Bauer</u> Drill Type: <u>Trailer Rig</u> Weather: <u>Sunny, 80°, light breeze</u>	Location <p align="center">Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico</p> Water Table <p align="center">~ 15.30 BLS</p>
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Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-7	SPT	0	2	9 15 10 11	7.5 YR 4/4 brown clay with gravel (50%) (moist) moisture probably from core drill
SB-7	SPT	2	4	5 9 10 14	10 Y 2/2 very dark brown clay, firm
SB-7	SPT	4	6	3 4 9 12	5 Y 3/2 dark olive gray, firm, no rocks (lab sample taken)
SB-7	SPT	6	8	3 5 5 5	7.5 YR 4/4 brown clay, firm, no rocks
SB-7	SPT	8	10	10 20 30 50(5")	2.5 Y 3/6 dark red and 7.5 YR 4/6 strong brown clay, very dry, brittle
SB-7	SPT	10	12	17 43 50(5")	Same as above, very dry
SB-7	SPT	12	14	14 30 45 50(5")	Same as above with about 10% 2.5 Y 6/1 gray clay
SB-7	SPT	14	16	14 30 31 40	Same as above but gray increased to 50%
SB-7	SPT	16	18	13 21 28 33	Same as above, (slightly moist)
SB-7	SPT	18	20	8 15 27 28	Same as above but gray content decreased to 25%

*Remarks
PH - post hole
SPT - standard penetration test

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>			Location Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico		
Date: <u>3/16/95</u>			Water Table ~ 17.83 BLS		
Boring No.: <u>SB-8</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Rig</u>					
Weather: <u>Sunny, 80°, light breeze</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-8	SPT	0	2	13 18 17 15	7.5 YR 4/4 brown clay with pebble to gravel sized rock (moist) probably from core drill
SB-8	SPT	2	4	9 11 13 11	10 Y 3/2 very dark grayish brown clay with pebbles
SB-8	SPT	4	6	5 7 7 6	10 Y 4/4 dark yellowish brown clay with pebbles, (moist)
SB-8	SPT	6	8	6 6 6 4	No recovery in spoon
SB-8	SPT	8	10	8 14 16 14	7.5 YR 5/6 strong brown and 10 YR 4/6 red clay (very dry) no rocks
SB-8	SPT	10	12	7 18 25 44	Same as above with 10% 2.5 Y 7/1 light gray clay (very dry)
SB-8	SPT	12	14	14 23 36 50(5")	Same as above but gray increased to 50%
SB-8	SPT	14	16	12 18 23 28	Same as above but gray increased to 80%
SB-8	SPT	16	18	13 18 28 30	7.5 YR 5/6 strong brown and 2.5 Y 7/1 light gray clay (gray is about 25%), moist, no rocks
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u> <hr/> Date: <u>3/17/95</u> Boring No.: <u>SB-9 / MW-3</u> Recorded By: <u>M. Bauer</u> Drill Type: <u>Trailer Rig</u> Weather: <u>Sunny, 80°, breezy</u>	Location Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico Water Table SB-9 - 10.12' BLS MW-3 - 6.42' Below TOC
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Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-9	SPT	0	2	8 6 50 (3")	2.5 YR 4/2 dark grayish brown clay with pebble to gravel sized rock (moist)
SB-9	SPT	2	4	7 9 15 16	10 Y 4/4 dark yellowish brown clay with pebble to gravel sized rock (dry)
SB-9	SPT	4	6	3 7 14 16	7.5 Y 4/6 strong brown clay with pebble sized pieces of carbon
SB-9	SPT	6	8	5 8 10 50	5 YR 4/6 yellowish red clay, soft (moist)
SB-9	SPT	8	10	32 16 32 41	5 YR 4/6 yellowish brown and 2.5 YR 4/6 dark red clay (Motteled)
SB-9	SPT	10	12	10 22 26 32	Same as above with 10% 2.5 YR 7/1 light gray clay, firm (dry, slightly moist)
SB-9	SPT	12	14	8 16 19 25	Same as above with gray increasing to 25%
SB-9	SPT	14	16	8 14 18 22	Same as above but gray decreased to 10%, soft (moist)
SB-9	SPT	16	18	6 10 12 15	Same as above
SB-9	SPT	18	20	4 9 12 18	10 YR 5/6 yellowish brown and 2.5 Y 7/1 light gray clay motteled, very soft, very moist

*Remarks
PH - post hole
SPT - standard penetration test

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>			Location <div style="text-align: center;">Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico</div>		
Date: <u>3/17/95</u>			Water Table <div style="text-align: center;">N/A</div>		
Boring No.: <u>SB-9 (A1)</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Rig</u>					
Weather: <u>Sunny, 80°, breezy</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-9 (A-1)	SPT	0	1.5	8 6 50 (3')	2.5 Y 4/2 dark grayish brown clay with pebble to gravel sized pieces of rock. Drillers hitting concrete at 1.5' moving boring
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>			Location Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico		
Date: <u>3/21/95</u>			Water Table ~ 8.21 BLS		
Boring No.: <u>SB-10</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Rig</u>					
Weather: <u>Sunny, 80°, breezy</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-10	SPT	0	2	9 15 18 20	4/5 GY dark greenish gray clay with pebble to gravel sized fill
SB-10	SPT	2	4	15 10 10 12	10 YR 4/4 dark yellowish brown clay in bottom 1' of spoon, top 1' same as above
SB-10	SPT	4	6	3 5 6 9	7.5 YR 3/4 dark brown clay with gravel sized rocks
SB-10	SPT	6	8	2 3 3 2	10 YR 5/6 yellowish brown clay (moist)
SB-10	SPT	8	10	7 11 15 25	5 Y 6/2 olive gray, 7.5 YR 4/6 strong brown, and 10 R 3/4 dusky red clay, mottled, (wet)
*Remarks					
PH - post hole					
SPT - standard penetration test					
SAA - Same as above					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>				Location <div style="text-align: right; padding-right: 20px;"> Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico </div>	
Date: <u>3/17/95</u>				Water Table <div style="text-align: right; padding-right: 20px;"> N/A </div>	
Boring No.: <u>SB-10 (A1)</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Rig</u>					
Weather: <u>Sunny, 80°, breezy</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-10 (A-1)	SPT	0	1.0	50	Drillers hitting concrete at 1-foot moving boring location
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>	Location Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico
Date: <u>3/22/95</u>	Water Table ~ 14.05 BLS
Boring No.: <u>SB-11</u>	
Recorded By: <u>M. Bauer</u>	
Drill Type: <u>Trailer Rig</u>	
Weather: <u>Sunny, 80°, breezy</u>	

Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-11	SPT	0	2	11 13 15 19	4/10 Y dark greenish gray clay with gravel fill
SB-11	SPT	2	4	14 12 24 32	Top 1-foot of spoon same as above, bottom 1-foot - 10 YR 4/4 dark yellowish brown clay with gravel fill
SB-11	SPT	4	6	20 22 20 26	2.5 Y 4/2 dark grayish brown clay with 90% gravel sized rocks (moist)
SB-11	SPT	6	8	6 12 25 40	5 YR 4/6 yellowish red clay, (moist)
SB-11	SPT	8	10	5 7 21 40	10 YR 5/6 yellowish brown clay (dry)
SB-11	SPT	10	12	4 9 21 27	2.5 YR 4/6 dark red, 10 YR 5/6 yellowish brown and 6/N gray clay (dry) gray ~ 10%
SB-11	SPT	12	14	5 8 21 30	Same as above but gray increased to 25%
SB-11	SPT	14	16	5 10 15 25	Same as above
SB-11	SPT	16	18	5 11 17 25	Same as above but gray increased to 50% (moist)

*Remarks
PH - post hole
SPT - standard penetration test
SAA - same as above

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>			Location Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico		
Date: <u>3/23/95</u>			Water Table ~ 2' BLS		
Boring No.: <u>SB-12 (A-1)</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Rig</u>					
Weather: <u>Sunny, 80°, breezy</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-12 (A-1)	SPT	0	2	22 27 17 12	Gravel and sand fill with 5%, 5 Y 4/1 dark gray clay. Terminated boring due to water with sheen on it in hole.
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u> <hr/> Date: <u>3/24/95</u> Boring No.: <u>SB-12</u> Recorded By: <u>M. Bauer</u> Drill Type: <u>Trailer Rig</u> Weather: <u>Sunny, 80°, breezy</u>	Location Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico Water Table N/A
---	---

Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-12	SPT	0	2	4 4 3 7	4/5 GY dark greenish gray clay with gravel sized fill (moist)
SB-12	SPT	2	4	12 36 10 13	Top 1' of spoon same as above, bottom 1' - 10 YR 4/4 dark yellowish brown clay with above gravel sized fill (dry)
SB-12	SPT	4	6	2 5 9 11	7.5 YR 5/6 strong brown clay with carbon pebbles. Free product dripping from spoon

PH - post hole

SPT - standard penetration test

SAA - Same as above

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>			Location <div style="text-align: right;">Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico</div>		
Date: <u>4/3/95</u>			Water Table <div style="text-align: right;">~ 15.52' BLS</div>		
Boring No.: <u>SB-13</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Rig</u>					
Weather: <u>Sunny, 80°, breezy</u>					

Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-13	pH	0	2	N/A	4/10 Y dark greenish gray clay with pebble to gravel sized fill
SB-13	SPT	2	4	5 4 6 8	Top 1-foot 10 YR 4/4 dark yellowish brown clay, bottom 6" 4/5B dark bluish gray clay (wet)
SB-13	SPT	4	6	5 10 12 17	7.5 YR 4/3 brown clay, soft (moist)
SB-13	SPT	6	8	5 5 8 12	10 YR 4/3 brown clay, firm (slightly moist)
SB-13	SPT	8	10	7 15 20 22	7.5 YR 5/6 strong brown clay with carbon pebbles, firm (slightly moist)
SB-13	SPT	10	12	5 7 17 15	2.5 YR 4/6 dark red, 10 YR 4/6 dark yellowish brown and 2.5 Y 7/1 light gray clay (mottled) gray ~ 10%
SB-13	SPT	12	14	6 21 29 31	Same as above but gray increased to 50%
SB-13	SPT	14	16	10 16 25 33	Same as above but gray decreased to 25% (moist) soft
SB-13	SPT	16	18	13 20 31 20	5 YR 4/6 yellowish red clay with carbon pebbles (moist) soft

*Remarks
PH - post hole
SPT - standard penetration test
SAA - same as above

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>				Location <div style="text-align: center;"> Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico </div>	
Date: <u>4/4/95</u>				Water Table <div style="text-align: center;"> ~ 3' BLS </div>	
Boring No.: <u>SB-15</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Rig</u>					
Weather: <u>Sunny, 80°, breezy</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-15	pH	0	2	N/A	10 YR 4/1 dark gray sub-annular, sub-rounded fine sand with 4/10 Y dark green clay
SB-15	pH	2	4	N/A	4/10 Y dark green clay (wet)
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>				Location <p style="text-align: center;">Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico</p>	
Date: <u>4/4/95</u>				Water Table <p style="text-align: center;">N/A</p>	
Boring No.: <u>SB-16</u>					
Recorded By: <u>M. Bauer</u>					
Drill Type: <u>Trailer Rig</u>					
Weather: <u>Sunny, 80°, breezy</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-16	pH	0	2	N/A	10 YR 4/1 dark gray fine sand and gravel fill
SB-16	pH	2	3	N/A	All gravel fill. Gravel has a sheen on it, terminated boring.
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>				Location <div style="text-align: center;">Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico</div>	
Date: <u>4/10/95</u>				Water Table <div style="text-align: center;">N/A</div>	
Boring No.: <u>RRP #1 - SB-17</u>					
Recorded By: <u>Julie Skidmore</u>					
Drill Type: <u>CME-55</u>					
Weather: <u>Overcast, 80°, humid</u>					
Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
1		0	2	-	Abandoned boring after concrete was cored
*Remarks					
PH - post hole					
SPT - standard penetration test					

SOIL BORING LOG

Exploration for: <u>Site Characterization</u>	Location Rapid Fuel Pit #1 Roosevelt Roads - U.S. Naval Station Ceiba, Puerto Rico
Date: <u>4/10/95</u>	Water Table ~ 12.72 BLS
Boring No.: <u>SB-18</u>	
Recorded By: <u>M. Bauer</u>	
Drill Type: <u>Trailer Mounted Rig</u>	
Weather: <u>Sunny, 80°, breezy</u>	

Sample No.	Type	Depth		No. of Blows	Soil Description and Boring Log
		From	To		
SB-18	N/A	0	14"	N/A	Cored concrete
SB-18	SPT	14"	2'	7 12 10 6	Silty clay, mottled, brownish yellow 10 YR 6/8 and olive brown 2.5 YR 4/4
SB-18	SPT	2	4	12 50-5"	Silty clay, greenish gray, 10y 5/1 pebble sized rock fragments (fill) moist
SB-18	SPT	4	6	13 34 10 8	Silty clay, greenish black, 10y 2.5/1, some rock fragments, pebble to cobble sized
SB-18	SPT	6	8	9 10 12 13	Silty clay, brown 10 YR 4/3 streaked with gray, 10YR 4/1 very stiff
SB-18	SPT	8	10	4 8 9 11	Same as above
SB-18	SPT	10	12	3 10 11 14	Same as above but also streaked with black 10 YR 1/2
SB-18	SPT	12	14	7 11 16 23	Same as above (wet)

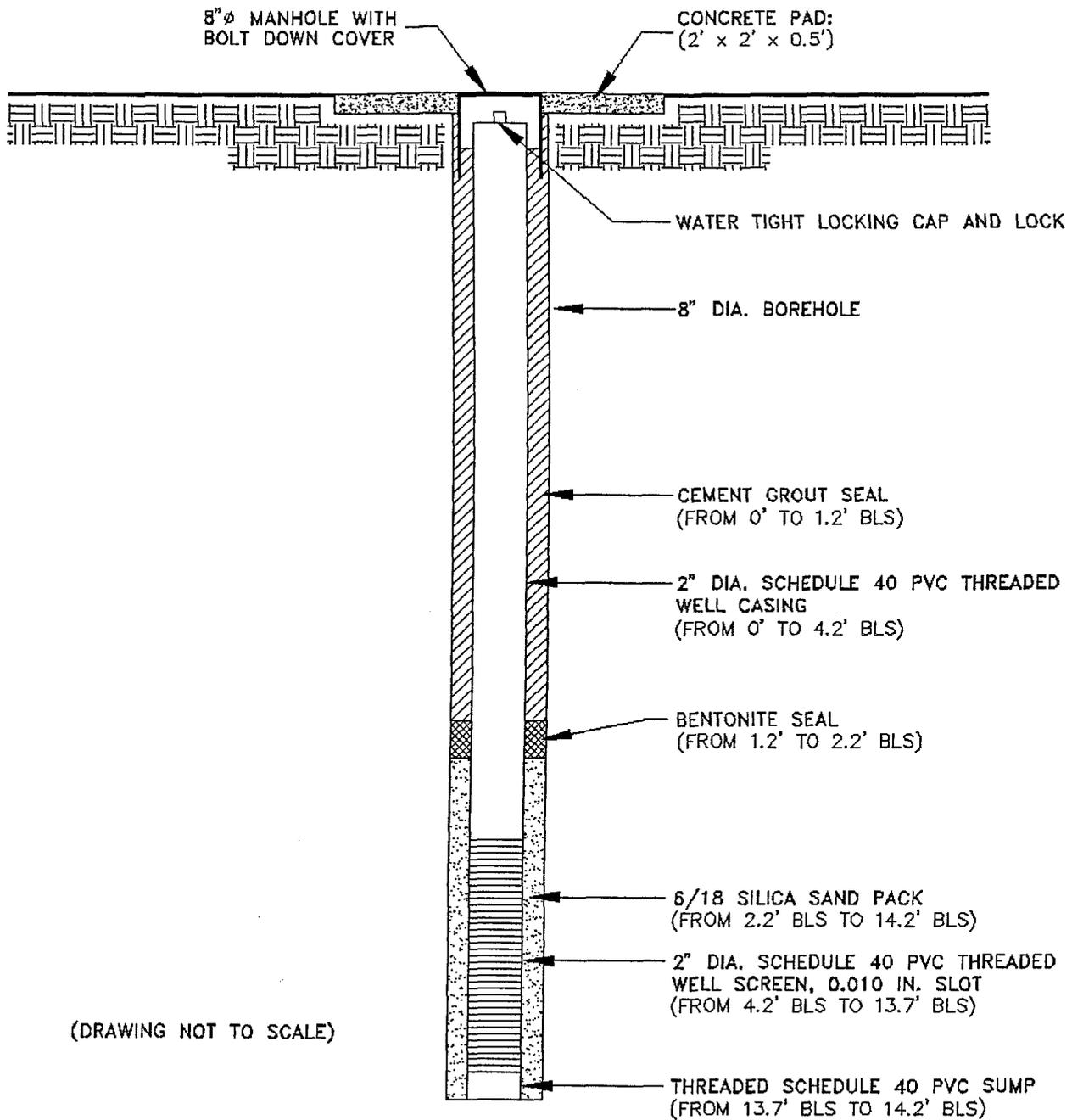
*Remarks
PH - post hole
SPT - standard penetration test



APPENDIX B

APPENDIX B
MONITORING WELL CONSTRUCTION DIAGRAMS

MW-1



(DRAWING NOT TO SCALE)

PROJECT NO.: 399.19
WELL NO.: MW-1
BY: M. BAUER
DATE: 3/20/95
CASING ELEVATION: 24.111 FEET
DEPTH TO WATER UPON COMPLETION: 6.12 FEET
UNIT MONITORED: SURFICIAL AQUIFER

DRILLER: SOIL TECH, INC.
DRILLING METHOD: HOLLOW STEM AUGER
TOTAL DEPTH: 14.2 FEET
SAMPLE TYPE: SPLIT SPOON
SAMPLE INTERVAL: CONTINUOUS

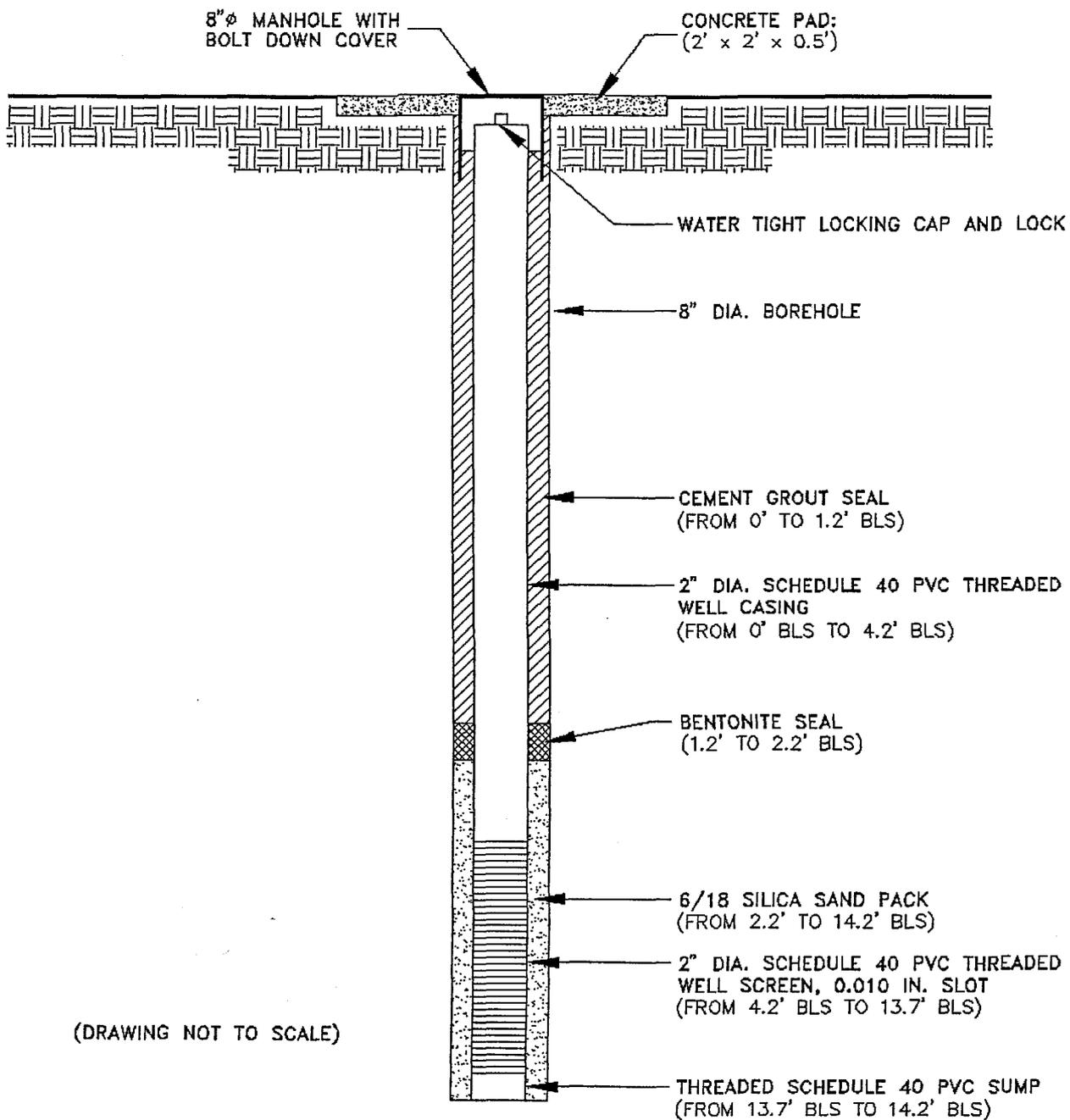


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ENGINEERS & SCIENTISTS

ROOSEVELT ROADS U.S. NAVAL STATION
RAPID REFUEL
CEIBA, PUERTO RICO

**MONITORING WELL MW-1
CONSTRUCTION DETAIL**

MW-2



(DRAWING NOT TO SCALE)

PROJECT NO.: 399.19
WELL NO.: MW-2
BY: M. BAUER
DATE: 3/20/95
CASING ELEVATION: 23.195 FEET
DEPTH TO WATER UPON COMPLETION: 6.13 FEET
UNIT MONITORED: SURFICIAL AQUIFER

DRILLER: SOIL TECH, INC.
DRILLING METHOD: HOLLOW STEM AUGER
TOTAL DEPTH: 14.2 FEET
SAMPLE TYPE: SPLIT SPOON
SAMPLE INTERVAL: CONTINUOUS

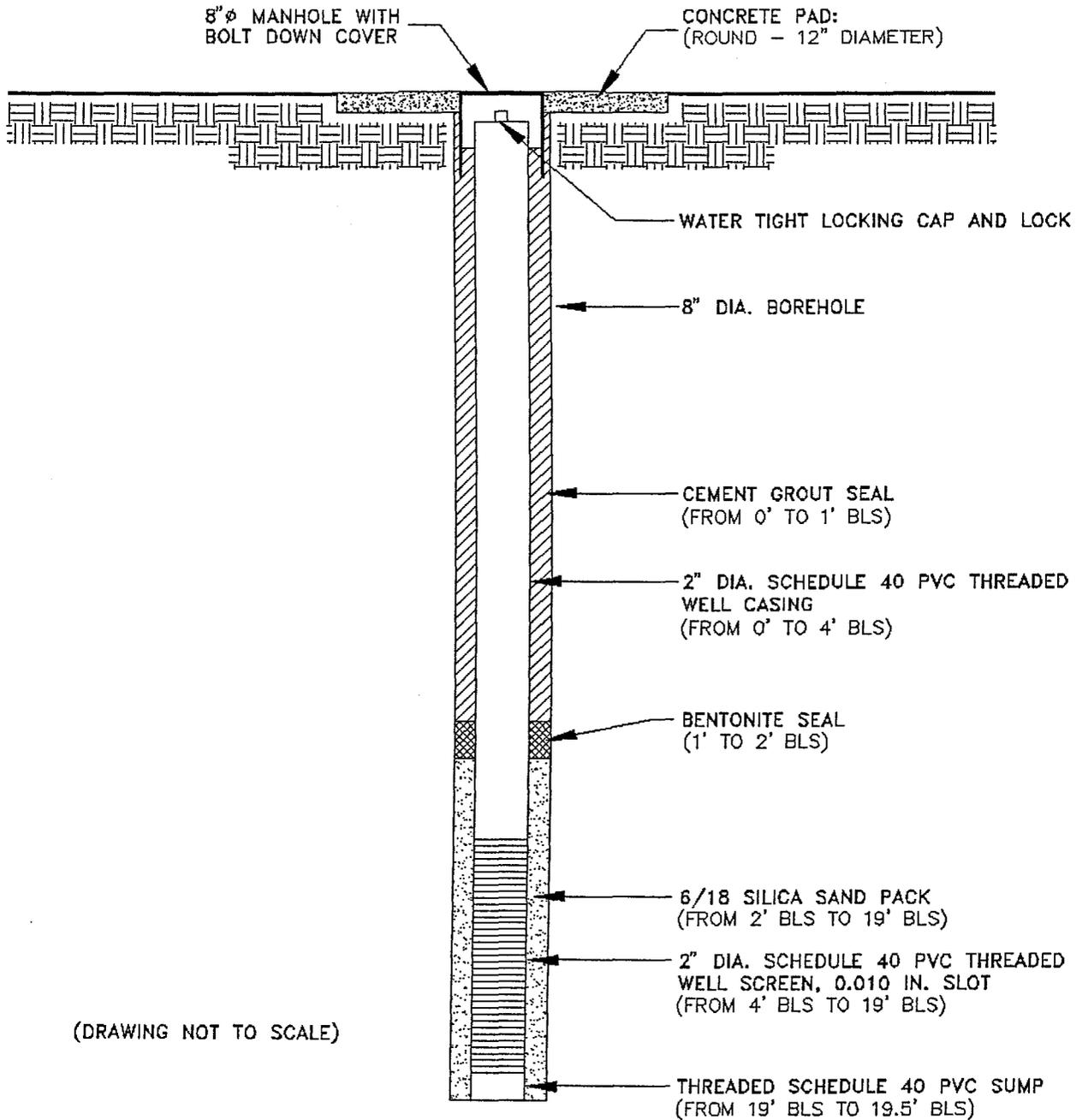


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MONITORING WELL MW-2
CONSTRUCTION DETAIL

MW-3



(DRAWING NOT TO SCALE)

PROJECT NO.: 399.19
WELL NO.: MW-3
BY: M. BAUER
DATE: 3/22/95
CASING ELEVATION: 23.963 FEET
DEPTH TO WATER UPON COMPLETION: 14.00 FEET
UNIT MONITORED: SURFICIAL AQUIFER

DRILLER: SOIL TECH, INC.
DRILLING METHOD: HOLLOW STEM AUGER
TOTAL DEPTH: 19.5 FEET
SAMPLE TYPE: SPLIT SPOON
SAMPLE INTERVAL: CONTINUOUS

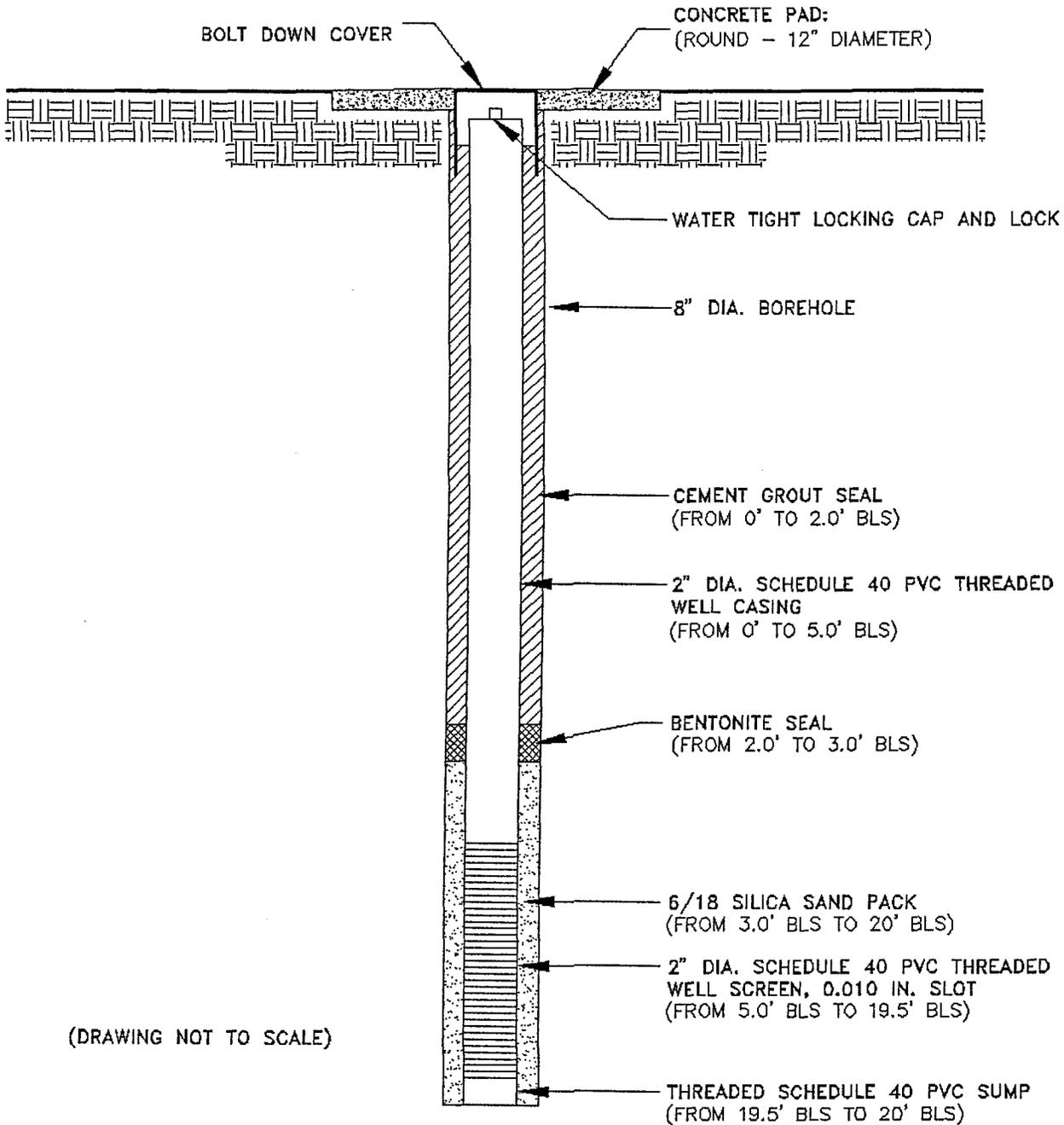


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CEIBA, PUERTO RICO

MONITORING WELL MW-3
CONSTRUCTION DETAIL

MW-4



(DRAWING NOT TO SCALE)

PROJECT NO.: 399.19
WELL NO.: MW-4
BY: J. Skidmore
DATE: 4/11/95
CASING ELEVATION: 27.391 FEET
DEPTH TO WATER UPON COMPLETION: 14.00 FEET
UNIT MONITORED: SURFICIAL AQUIFER

DRILLER: SOIL TECH, INC.
DRILLING METHOD: HOLLOW STEM AUGER
TOTAL DEPTH: 20 FEET
SAMPLE TYPE: SPLIT SPOON
SAMPLE INTERVAL: CONTINUOUS

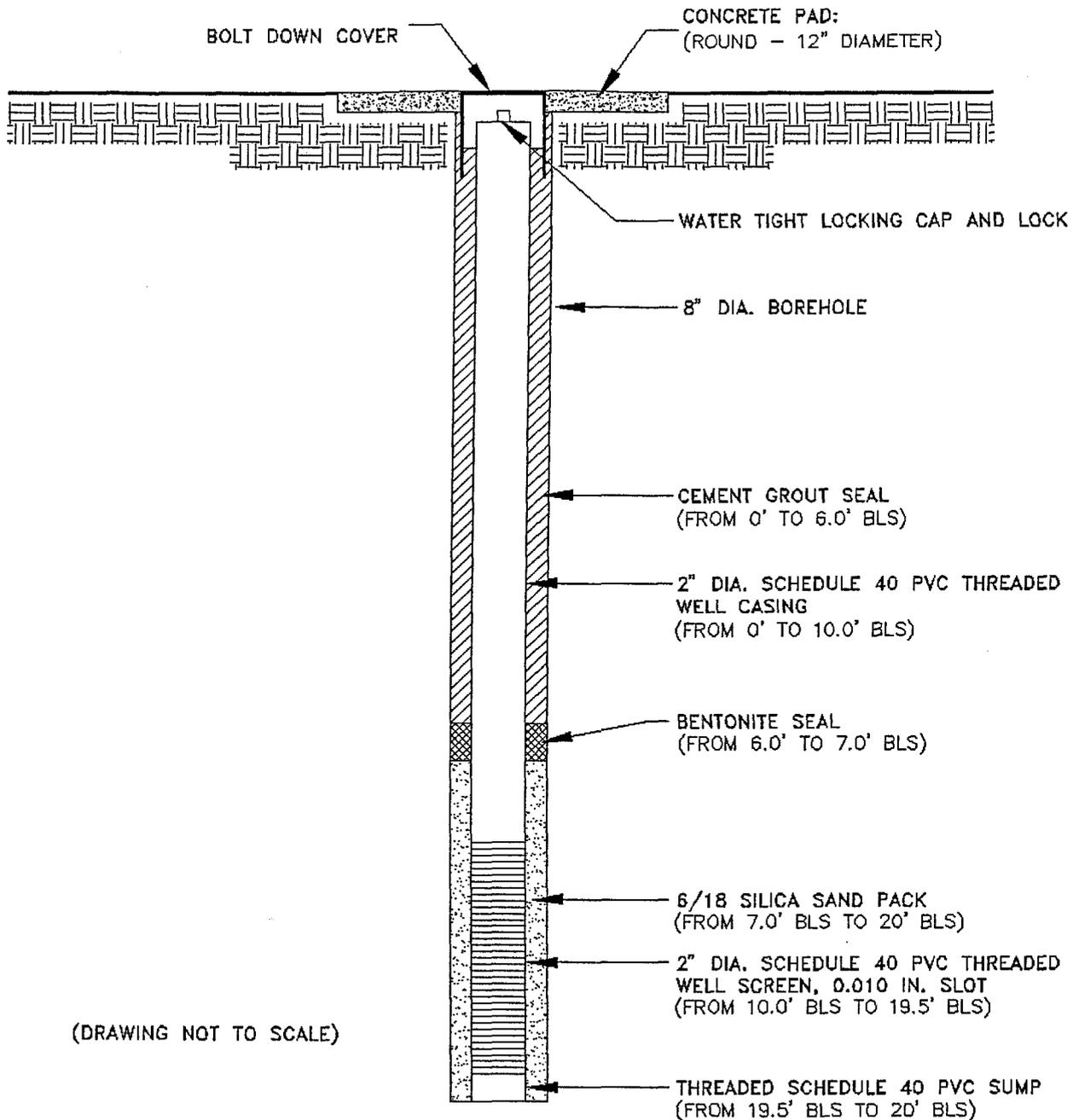


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Rapid Refuel
Ceiba, Puerto Rico

**MONITORING WELL MW-4
CONSTRUCTION DETAIL**

MW-5



(DRAWING NOT TO SCALE)

PROJECT NO.: 399.19
WELL NO.: MW-5
BY: J. SKIDMORE
DATE: 4/11/95
CASING ELEVATION: 23.251 FEET
DEPTH TO WATER UPON COMPLETION: 14.00 FEET
UNIT MONITORED: SURFICIAL AQUIFER

DRILLER: SOIL TECH, INC.
DRILLING METHOD: HOLLOW STEM AUGER
TOTAL DEPTH: 20 FEET
SAMPLE TYPE: SPLIT SPOON
SAMPLE INTERVAL: CONTINUOUS

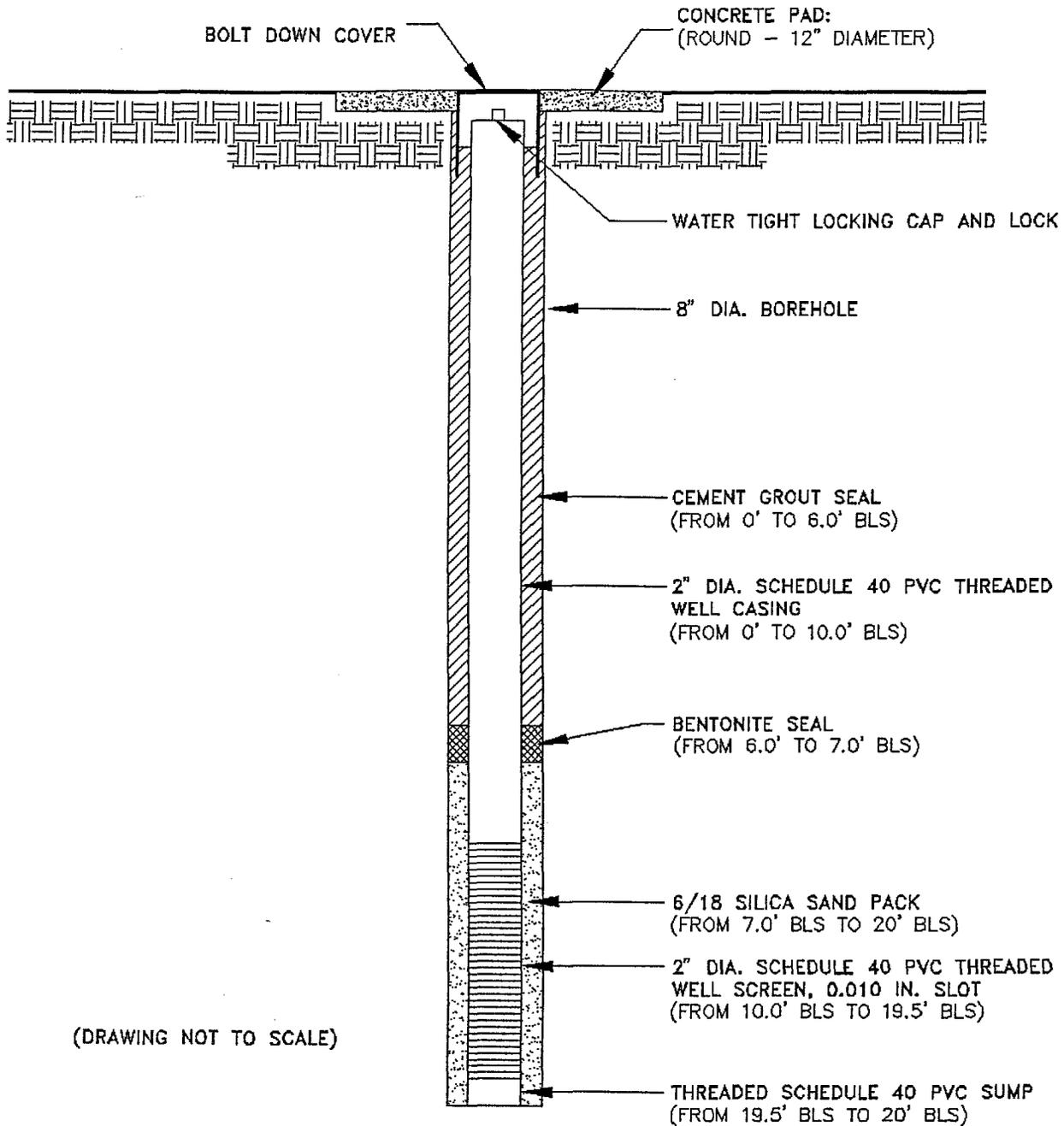


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RAPID REFUEL
CEIBA, PUERTO RICO

MONITORING WELL MW-5
CONSTRUCTION DETAIL

MW-6



PROJECT NO.: 399.19
WELL NO.: MW-6
BY: J. SKIDMORE
DATE: 4/11/95
CASING ELEVATION: 23.251 FEET
DEPTH TO WATER UPON COMPLETION: 14.00 FEET
UNIT MONITORED: SURFICIAL AQUIFER

DRILLER: SOIL TECH, INC.
DRILLING METHOD: HOLLOW STEM AUGER
TOTAL DEPTH: 20 FEET
SAMPLE TYPE: SPLIT SPOON
SAMPLE INTERVAL: CONTINUOUS



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Roosevelt Roads U.S. Naval Station
Rapid Refuel
Ceiba, Puerto Rico

MONITORING WELL MW-6
CONSTRUCTION DETAIL



APPENDIX C

APPENDIX C-1
UTILITY LOCATION/WELL PERMITS

Prior to initiating field work, the proposed soil boring and monitoring well locations were provided to Mr. Pedro Ruiz (NAVSTA Roosevelt Roads - Environmental Engineering Division/Public Works Department). Mr. Ruiz arranged a utility check in the proposed work area prior to initiation of the SC field investigation. As a safety precaution, whenever possible, the first 4 feet of each soil boring and monitoring well were installed with a hand auger to avoid accidentally puncturing underground pipes/conduits.

Well construction permits were obtained from the Puerto Rico Department of Natural Resources, prior to initiating the field investigation.

4330
NO2C-A411
08 FEB 95

MEMORANDUM

From: Facilities Management Division, PWD
To: BLASLAND, BOUCK & LEE, JOSE GARRIDO

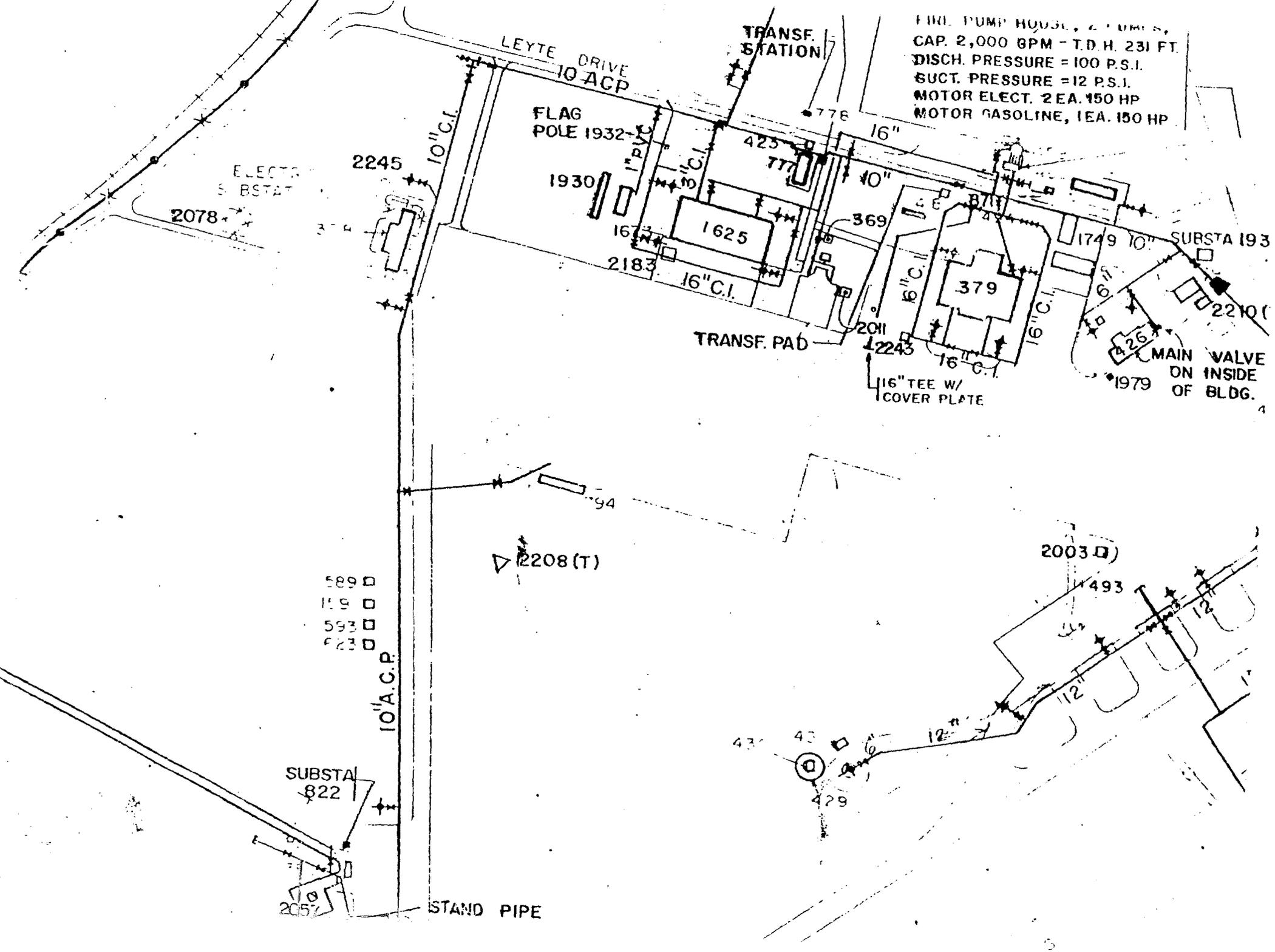
Subj: EXCAVATION PERMIT FOR SOIL BORRINGS AT 460 AND REF. PIT #1

Ref: (a) Memo received 01/27/95

Encl: (1) Exhibits 1 thru 5

1. Per reference (a), the excavation permit is approved based on the existing utilities information contained on existing filed drawings.
2. Care must be observed during the excavation process and excavation by hand shall be performed whenever utilities are present as shown in project drawings and in enclosure (1).
3. Should any utilities be damaged or disconnected immediate notification shall be done to PWD.
4. Arrangements for repairs of any utilities damaged or disconnected shall be done by contractor after written notification to PWD is made.
5. If any additional information or assistance is needed to perform excavation safely, please contact Mr. Caleb Romero, Utilities Engineer, at telephone extensions 4068/4268.


Caleb Romero



FIRE PUMP HOUSE, 2 FLOORS,
 CAP. 2,000 GPM - T.D.H. 231 FT.
 DISCH. PRESSURE = 100 P.S.I.
 SUCT. PRESSURE = 12 P.S.I.
 MOTOR ELECT. 2 EA. 150 HP
 MOTOR GASOLINE, 1EA. 150 HP

LEYTE DRIVE
 10" ACP

TRANSF. STATION

FLAG POLE 1932

ELECTR. SUBSTAT.

2078

2245

10" C.I.

1930

1" PVC

10" C.I.

425

777

16"

40"

1625

369

1749

SUBSTA 193

167

2183

16" C.I.

16" C.I.

379

6"

2210

TRANSF. PAD

2011

2243

16" C.I.

426

MAIN VALVE ON INSIDE OF BLDG.

1979

16" TEE W/ COVER PLATE

94

2208(T)

2003(D)

589

119

593

623

10" A.C.P.

SUBSTA 822

493

43

43

12"

429

2057

STAND PIPE

1760 R.P.M. 25 H.P. ELEC. MTR.
SEWER LIFT STA: BLDG. 423
208V, 6.5 AMP, 3 HP.

2018 STAND BY GENERATOR

TRANSF. PAD

LEYTE DRIVE

778-TRANSF. STATION

6" C.I. FLAG POLE 1932

ELECTRIC SUBSTATION "A"

2245

2078

378

1930

1673

1750

2186

1625

3691

2011

379

2243

2211 (T)

SUBSTA 1938

791

2210 (T)

426

PUMP STATION
2-5 HP
1150 RPM
7.5 AMP, 208/440V
100 GPM

427

794

- 1589 □
- 1591 □
- 1593 □
- 1523 □

12"

12"

2203

1493

491

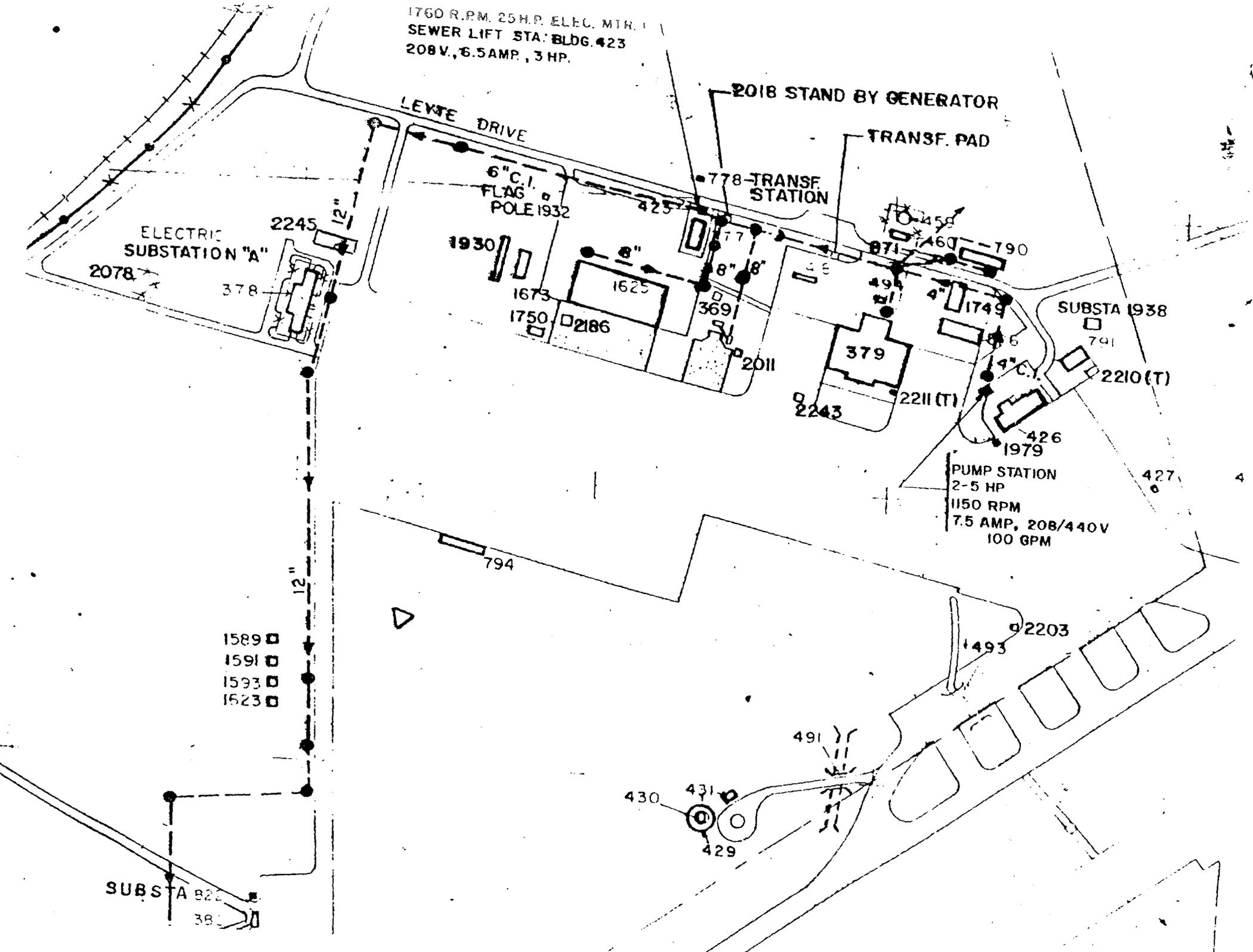
430

431

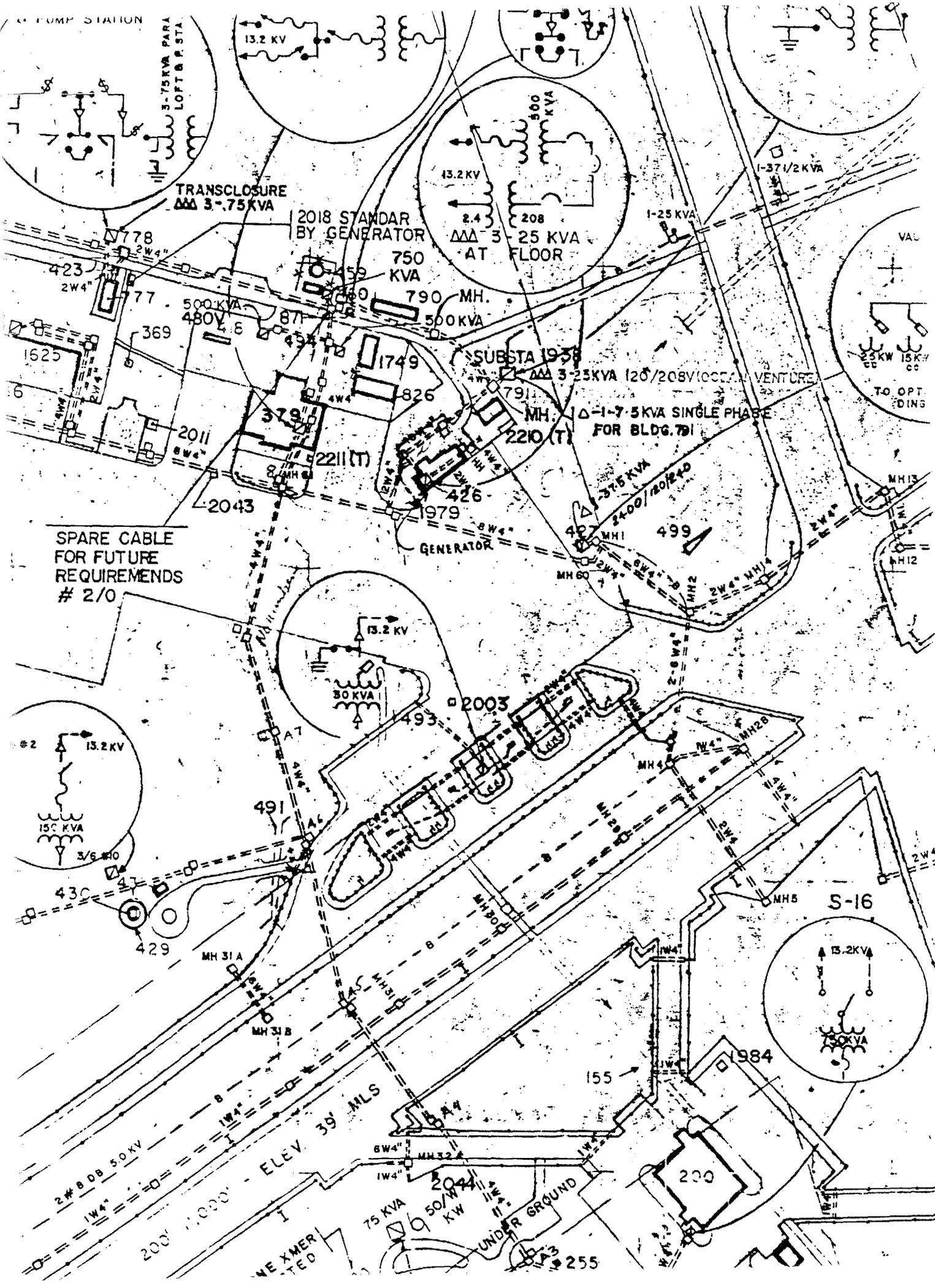
429

SUBSTA 822

38



PUMP STATION



TRANSCLASURE
3-75 KVA

2018 STANDAR
BY GENERATOR
750 KVA

13.2 KV
2.4
208
3-25 KVA
AT FLOOR

1-25 KVA

1-37 1/2 KVA

SUBSTA 1938
3-25 KVA (20/208V)

1-7.5 KVA SINGLE PHASE
FOR BLDG. 701

SPARE CABLE
FOR FUTURE
REQUIREMENTS
2/0

GENERATOR

S-16

ELEV 39' MLS
2# 800 50KV
1W4
200' 1000'

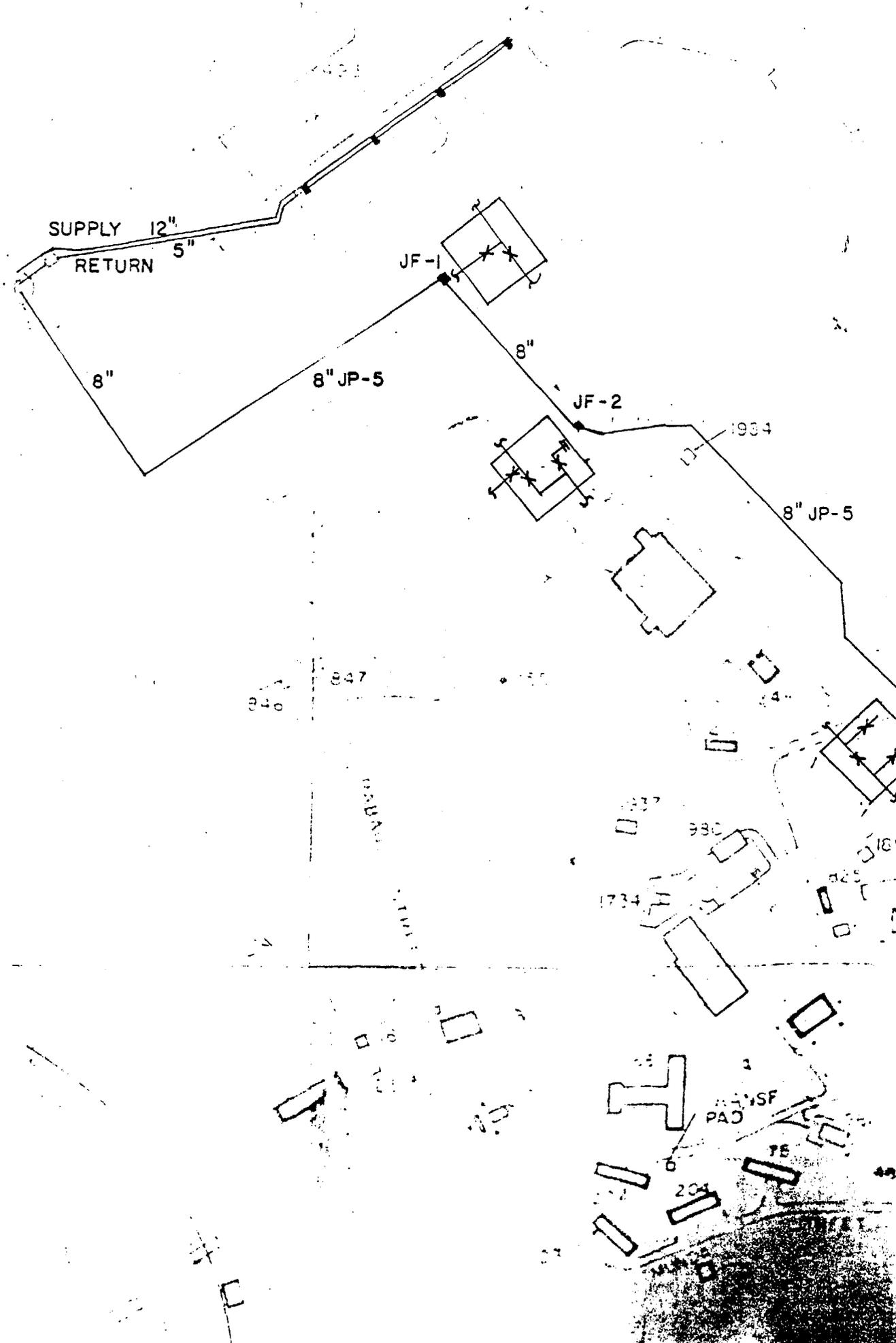
75 KVA
50/75 KW

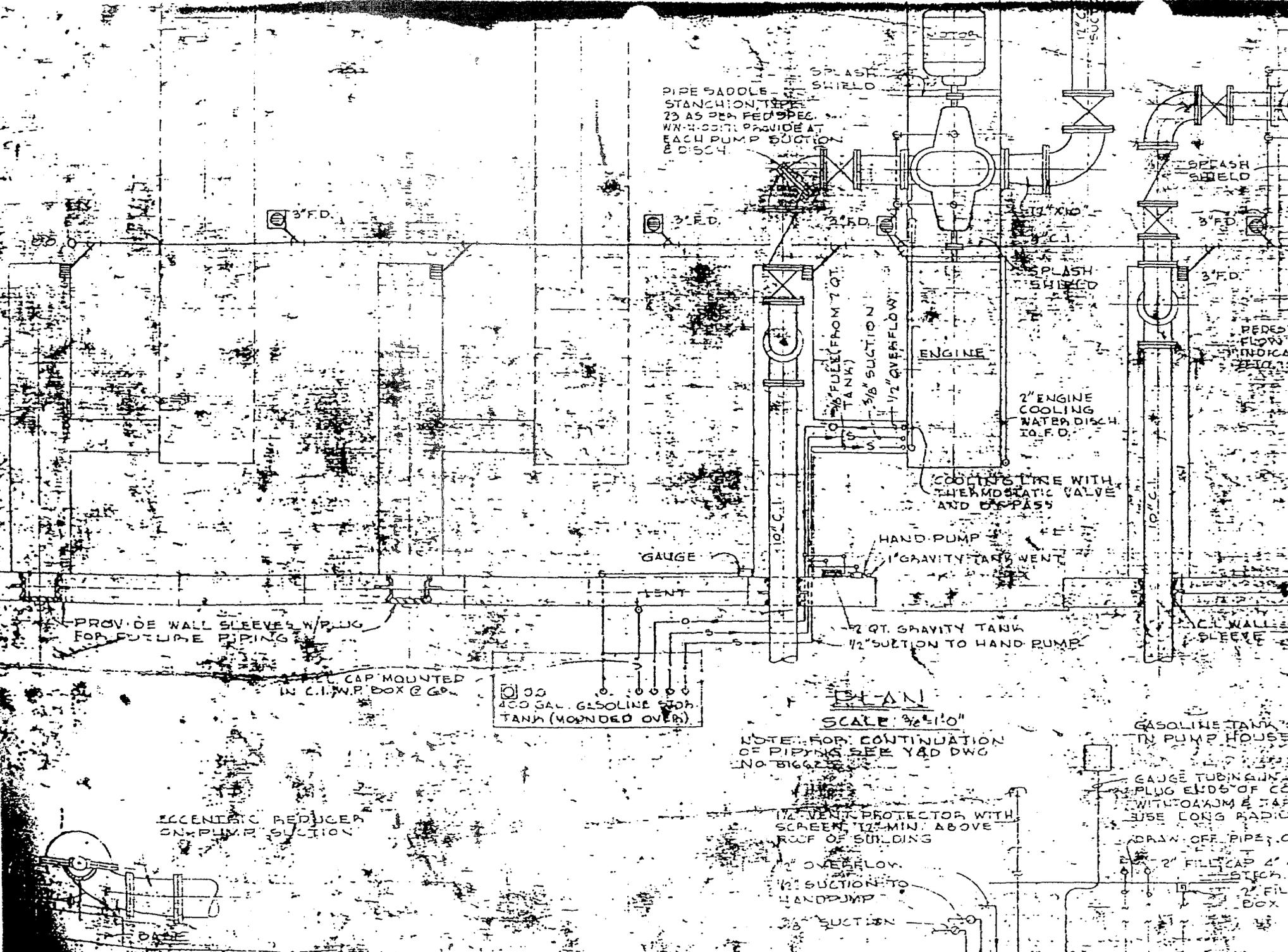
UNDER GROUND

13.2KV
150KVA

200

255





PIPE SADDLE STANCHION SHALL BE AS PER SPEC. W/ 4\"/>

3" F.D.

3/8" PUMP FROM T.O.T. TANK
1/2" OVERFLOW
3/8" SUCTION

ENGINE

2" ENGINE COOLING WATER DISCH. 10' F.D.

COOLING LINE WITH THERMOSTATIC VALVE AND GAUGE

HAND PUMP

GAUGE

1" GRAVITY TANK WENT

PROVIDE WALL SLEEVES W/ PLUG FOR FUTURE PIPING

2" FILL CAP MOUNTED IN C.I. W.P. BOX @ 60'

400 GAL. GASOLINE TANK (MOUNTED OVER)

SCALE 3/4" = 1'-0"

NOTE: FOR CONTINUATION OF PIPING SEE YARD DWG. NO BIGGER

GASOLINE TANK'S IN PUMP HOUSE

GAUGE TUBING IN PLUG ENDS OF CON. WITH O.A.D.M.E. TAP. USE LONG RADII

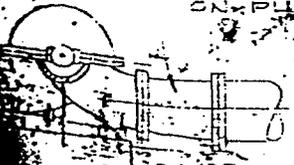
1/2" VENT PROTECTOR WITH SCREEN, 12" MIN. ABOVE ROOF OF BUILDING

DRAW-OFF PIPE, CA

OVERFLOW
1/2" SUCTION TO HAND PUMP

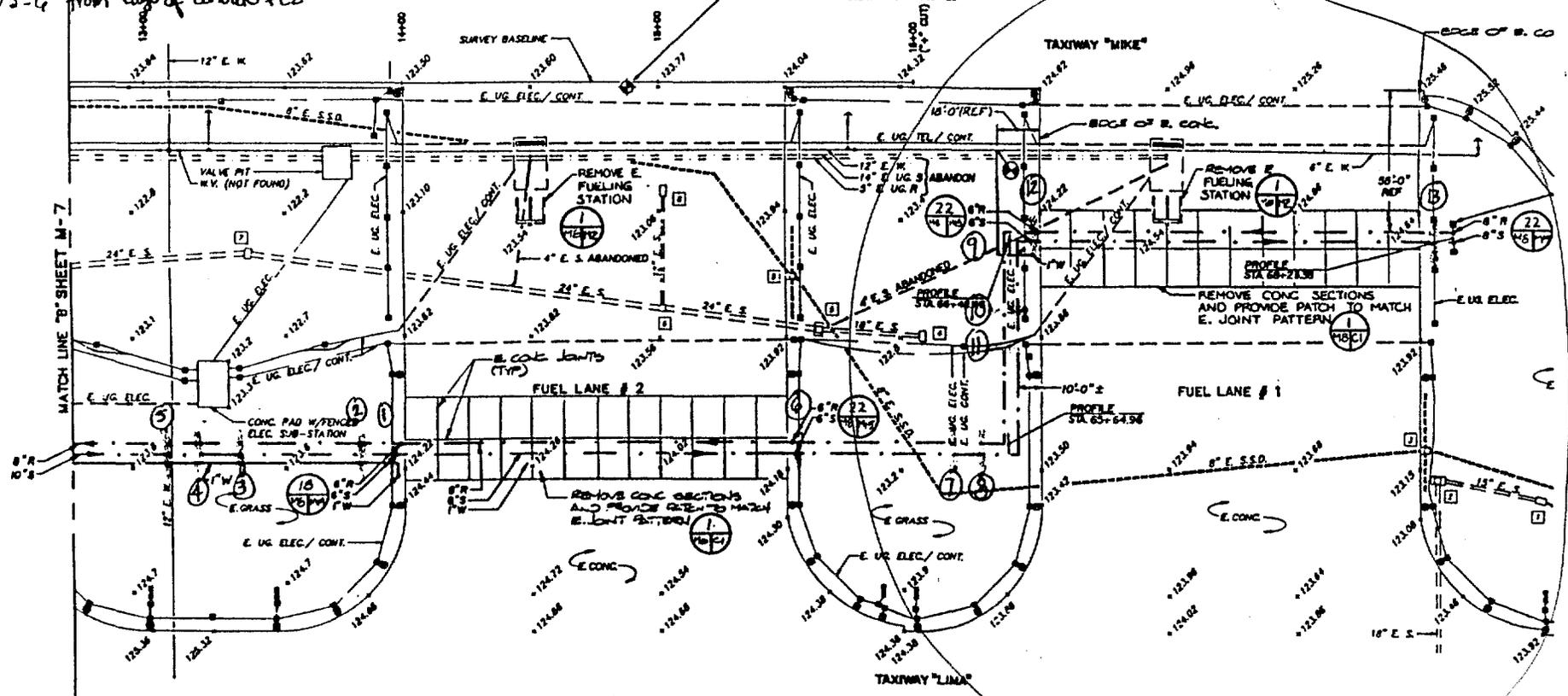
2" FILL CAP 4" ABOVE
2" FILL BOX

ECCENTRIC REDUCER ON PUMP SUCTION



- ① 5'-0" from Edge of Concrete FL-2
- ② 7'-3" " " " " " " " "
- ③ 6'-2" (concrete box) from Edge of Concrete FL-2
- ④ 7'-0" (concrete box) " " " " " " " "
- ⑤ 9'-0" from Edge of Concrete FL-2
- ⑥ 2'-4" from Edge of Concrete FL-2
- ⑦ 6'-0" from Edge of Concrete FL-2
- ⑧ 6'-0" " " " " " " " "
- ⑨ 7'-0" from STA 66+48.46 TO STA 65+64.96
- ⑩ 3'-0" " " " " " " " "
- ⑪ 4'-0" " " " " " " " "
- ⑫ 3'-0" from Edge of Concrete FL-1

BENCHMARK: BRASS DISK NO. 40 SET FLUSH IN CONCRETE
ELEVATION = 123.725



PLAN - NEW WORK

- NOTE
1. FOR TRENCHING DETAIL SEE (5) (H8C7)
 2. FOR SEE PROFILE SEE M-10

Fuel Pit #1

APPENDIX C-2
EQUIPMENT DECONTAMINATION

Prior to beginning work and before installing each soil boring and monitoring well, the drilling rig and associated equipment were decontaminated by removing loose soil from the equipment, followed by steam cleaning. Potable water from a spigot at the decontamination area andalconox (non-phosphate soap) were used for steam cleaning. Equipment decontamination areas are located in the old Bundy gas station area and within a concrete burned area near the pier.

Equipment decontamination at the Bundy gas station area was conducted in a 20-foot by 20-foot with 6-inch high wood walls and covered with plastic sheeting to contain the decon water. Decontamination water contained in the decontamination area volatilized to the atmosphere before it could be pumped into 55-gallon drums for disposal.

During installation of each soil boring, the split-spoon sampling equipment was cleaned between each sampling interval by scrubbing the remaining soil off with a brush in soapy water and rinsing in fresh water. The split-spoon equipment was steam cleaned in the decontamination area after each borehole was installed.

APPENDIX C-3
AIR MONITORING

During drilling activities, the breathing zone around the soil borings and monitoring wells was routinely monitored with an OVA. Results of the daily air monitoring are presented in this Appendix. The breathing zone levels did not exceed 0.0 ppm while drilling any boreholes or monitoring wells.

APPENDIX C-4

OVA FIELD SCREENING METHODOLOGY

The following method was employed for OVA screening: (1) two pint-sized mason jars were filled half filled with soil from the same depth; (2) the jar tops were covered with tin foil and sealed; (3) the jars were placed in a cool area for five minutes to allow the headspace to equilibrate; and (4) the headspace was measured with an OVA. Two samples were collected from each interval to measure the headspace with and without a charcoal filter; the filter allows differentiation between natural organic vapors (e.g., methane) and hydrocarbon vapors.

APPENDIX C-5
MONITORING WELL CONSTRUCTION

The six monitoring wells installed for this SC (RRP#1-MW1 through RRP#1-MW6) were constructed to intercept the water-table using the hollow-stem auger method. The top of the screened interval was placed several feet above the water table to ensure that the water table will remain below the top of the screen during yearly water-level fluctuations (maintaining the water table within the screen interval is necessary to accurately assess BTEX groundwater contamination and detection of free product if present).

Filter pack material consisting of 6/18 grade texblast sand was poured in each borehole annulus to 2 feet above the top of the screen after the well casing and screen were emplaced in the borehole. During sand pack emplacement, the depth to sand was continuously monitored using a weighted tape measure to ensure that sand bridging did not occur and to ensure that the filter pack was placed at the proper interval. A 1 to 2-foot bentonite pellet seal was emplaced on top of the sand pack. Water was poured on top of the bentonite to hydrate the pellets. The bentonite was allowed to hydrate before the well was completed by pouring cement grout to the surface. The monitoring wells were completed using a square shaped concrete pad (measuring 3-ft x 3-ft x 0.5-ft deep) and a flush steel protective manhole cover or a round (12-inch diameter) concrete pad and a flush steel protective manhole cover. A monitoring well construction diagram for each monitoring well constructed under the supervision of BB&L personnel is presented in **Appendix B**.

APPENDIX C-6

MONITORING WELL DEVELOPMENT

Development of the six monitoring wells was performed by pumping and surging with a centrifugal pump until the wells were free of silt and sand. Well development dates and volumes developed are summarized in **Table 3-2**.

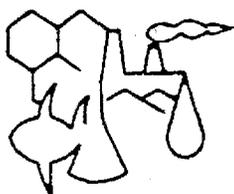
Based on groundwater field screening results, development water from each monitoring well was determined to be clean and was drained onto the concrete road surface to allow volatilization and evaporation.



APPENDIX D

APPENDIX D

FIELD TPH AND BTEX SCREENING REPORT



ECG Laboratories

Environmental Analytical Services ♦ Division of ECG Enterprises

March 17, 1995

Mr. José Garrido
Blasland Blouck and Lee
4730 Northwest
Boca Ratón Blvd.
Boca Ratón, FL 33431-4876

RE: Project No. 399.19 / US Navy Refuel Pit 1

Report No. 95-124

Dear Mr. Garrido:

With respect to the project of reference above, included you will find our report of analysis for the following ECG Sample ID numbers and their respective identities:

<u>ECG Sample ID</u>	<u>Sample Identity/Procedence</u>
95-124-01	Refuel Pit 1 SB-3 (4'-6')
95-124-02	Refuel Pit 1 SB-4 (4'-6')
95-124-03	Refuel Pit 1 SB-4 (2'-4')
95-124-04	Refuel Pit 1 SB-1 (4'-6')
95-124-05	Refuel Pit 1 SB-3 (2'-4')
95-124-06	Refuel Pit 1 SB-2 (4'-6')
95-124-07	Refuel Pit 1 SB-1 (Water)
95-124-08	Refuel Pit 1 SB-2 (Water)

All analyses were performed in accordance to EPA methods and/or laboratory SOP's. Quality Assurance/Quality Control requirements were accomplished according to methodology requirements.

Should you have any inquiries regarding the data contained herein, please do not hesitate to contact me at your convenience.

Cordially,

Arnaldo Mercado Bosch
Operations Manager

DATA CERTIFICATION STATEMENT

All data contained herein has been reviewed for compliance with methodology requirements and, where applicable, corrective action has been taken. Corrections and approval of data has also been performed.

All analyses and procedures have been performed by supervised and qualified personnel.

All the data gathered and obtained for the preparation of this report will be kept in our custody for a term of three years, unless otherwise required by the client or any other interested party. All the Quality Control and Quality Assurance generated for the validation of the data is available upon request.

I hereby certify that all raw data and associated documentation has been reviewed and approved.



Armando Mercado Bosch
Armando Mercado Bosch
Operations Manager
P.R. Chemist's License No. 2901

RESULTS TABLES for ECG Sample ID 95-124-01**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/16/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/16/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-124-02**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/16/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/16/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-124-03**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/16/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/16/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-124-04**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/16/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/16/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-124-05**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/16/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/16/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-124-06**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/16/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/16/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-124-07**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/16/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/16/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-124-08**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/16/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	0.020
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/16/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

**ENVIRONMENTAL CONSULTING GROUP
CHAIN OF CUSTODY RECORD**

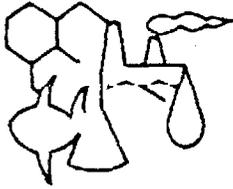
FROM : ECG ENTERPRISES

PHONE NO. : 8097548097

MAR. 17 1995 03:48PM P02

Col No.		Project Name				Full RCRA	RCI	TCLP	ig	Resect	Corr.	Other	Other	Matrix	Matrix	Remarks
1.19		US Navy: Refuel Pit 1														
Collected by: MB																
No.	Date	Time	Comp	Grab	Sample ID	No. of Containers										
	3/15	0815	X		Refuel Pit 1 SB-3(4-4)	1						1	1	S	95-124-01	
	3/15	1355	X		Refuel Pit 1 SB-4(4-6)	1						1	1	S	95-124-02	
	3/15	1320	X		Refuel Pit 1 SB-4(2-4)	1						1	1	S	95-124-03	
	3/14	1145	X		Refuel Pit 1 SB-1(4-6)	1						1	1	S	95-124-04	
	3/15	0750	X		Refuel Pit 1 SB-3(2-4)	1						1	1	S	95-124-05	
	3/14	1650	X		Refuel Pit 1 SB-2(4-6)	1						1	1	S	95-124-06	
	3/15	0720		X	Refuel Pit 1 SB-1	2						1	1	A	95-124-07	
	3/15	0730		X	Refuel Pit 1 SB-2	2						1	1	A	95-124-08	
Relinquished By: (Signature)		Date/Time		Received By: (Signature)		Relinquished By: (Signature)		Date/Time		Received By: (Signature)						
		3/15/1600														
Relinquished By: (Signature)		Date/Time		Received By: (Signature)		Relinquished By: (Signature)		Date/Time		Received By: (Signature)						
Relinquished By: (Signature)		Date/Time		Received for Laboratory By: (Signature)		Remarks										
		5:43														
Customer signature:																

PTX
BOIS



ECG Laboratories

Environmental Analytical Services ♦ Division of ECG Enterprises

March 20, 1995

Mr. José Garrido
Blasland Blouck and Lee
4730 Northwest
Boca Ratón Blvd.
Boca Ratón, FL 33431-4876

RE: Project No. 399.19 / US Navy Refuel Pit 1

Report No. 95-126

Dear Mr. Garrido:

With respect to the project of reference above, included you will find our report of analysis for the following ECG Sample ID numbers and their respective identities:

ECG Sample ID

95-126-01
95-126-02
95-126-03
95-126-04
95-126-05
95-126-06
95-126-07
95-126-08
95-126-09
95-126-10
95-126-11

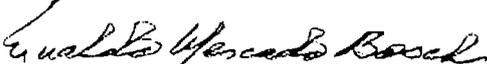
Sample Identity/Procedence

Refuel Pit 1 SB-6 (2'-4')
Refuel Pit 1 SB-6 (4'-6')
Refuel Pit 1 SB-5 (4'-6')
Refuel Pit 1 SB-5 (2'-4')
Refuel Pit 1 Dupe
Refuel Pit 1 SB-4 (Water)
Refuel Pit 1 SB-5 (Water)
Refuel Pit 1 SB-3 (Water)
Refuel Pit 1 SB-6 (Water)
Refuel Pit 1 SB-7 (4'-6')
Refuel Pit 1 SB-7 (8'-10')

All analyses were performed in accordance to EPA methods and/or laboratory SOP's. Quality Assurance/Quality Control requirements were accomplished according to methodology requirements.

Should you have any inquiries regarding the data contained herein, please do not hesitate to contact me at your convenience.

Cordially,


Arnaldo Mercado Bosch
Operations Manager

DATA CERTIFICATION STATEMENT

All data contained herein has been reviewed for compliance with methodology requirements and, where applicable, corrective action has been taken. Corrections and approval of data has also been performed.

All analyses and procedures have been performed by supervised and qualified personnel.

All the data gathered and obtained for the preparation of this report will be kept in our custody for a term of three years, unless otherwise required by the client or any other interested party. All the Quality Control and Quality Assurance generated for the validation of the data is available upon request.

I hereby certify that all raw data and associated documentation has been reviewed and approved.



Arnaldo Mateo Toledo Bosch
Arnaldo Mateo Toledo Bosch
Operations Manager
Lic. R. 2901 License No. 2901

RESULTS TABLES for ECG Sample ID 95-126-01**I Volatile Organic Compounds (VOC's)**

Analysis Date: 03/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-126-02**I Volatile Organic Compounds (VOC's)**

Analysis Date: 03/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-126-03**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-126-04**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-126-05**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-126-06**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-126-07**I Volatile Organic Compounds (VOC's)**

Analysis Date: 03/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-126-08**I Volatile Organic Compounds (VOC's)**

Analysis Date: 03/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-126-09**I Volatile Organic Compounds (VOC's)**

Analysis Date: 03/18/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-126-10**I Volatile Organic Compounds (VOC's)**

Analysis Date: 03/18/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-126-11**I Volatile Organic Compounds (VOC's)**

Analysis Date: 03/18/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

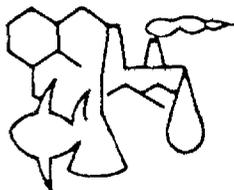
ENVIRONMENTAL CONSULTING GROUP
CHAIN OF CUSTODY RECORD

FROM : EOG ENTERPRISES

PHONE NO. : 8097648097

MAR. 21 1995 09:04AM P1

Lot No.		Project Name					No. of Containers	Fid	RCRA	RCI	TCLP	Ig	React	Com	Other	Other	Matrix	Matrix (A = aqueous; M = multiphase; SD = sludge; O = oil; S = soil; ORG = organic)
File Collected by:																		
No.	Date	Time	Comp	Grab	Sample ID	No. of Containers											Remarks	
9.19	US Navy: Rapid Refuel Pit 1																	
File Collected by:		Mike Bauer																
														TPH	BTX	5/05		
	3/15	1555	X		Refuel Pit 1 SB-6(2-4)	1									1	1	S	95-126-01
	3/15	1605	X		Refuel Pit 1 SB-6(4-6)	1									1	1	S	95-126-02
	3/15	1500	X		Refuel Pit 1 SB-5(4-6)	1									1	1	S	95-126-03
	3/15	1446	X		Refuel Pit 1 SB-5(2-4)	1									1	1	S	95-126-04
	3/15	—		X	Refuel Pit 1 Dupe	2								1	1	A	95-126-05	
	3/15	1520		X	Refuel Pit 1 SB-4	2								1	1	A	95-126-06	
	3/15	1540		X	Refuel Pit 1 SB-5	2								1	1	A	95-126-07	
	3/16	1140	X		Refuel Pit 1 SB-3	2								1	1	A	95-126-08	
	3/16	1130	X		Refuel Pit 1 SB-6	2								1	1	A	95-126-09	
	3/16	0945	X		Refuel Pit 1 SB-7(4-6)	1									1	1	S	95-126-10
	3/16	1015	X		Refuel Pit 1 SB-7(8-10)	1									1	1	S	95-126-11
Relinquished By: (Signature)		Date/Time		Received By: (Signature)		Relinquished By: (Signature)		Date/Time		Received By: (Signature)								
<i>Sam Press</i>		3/16/95/1525		<i>Alfredo Fontana</i>														
Relinquished By: (Signature)		Date/Time		Received By: (Signature)		Relinquished By: (Signature)		Date/Time		Received By: (Signature)								
Relinquished By: (Signature)		Date/Time		Received for Laboratory By: (Signature)		Remarks												
<i>Alfredo Fontana</i>		3/16/95/1720		<i>Alfredo Fontana</i>														
Customer signature:																		



ECG Laboratories

Environmental Analytical Services • Division of ECG Enterprises

March 20, 1995

Mr. José Garrido
Blasland Brouck and Lee
4730 Northwest
Boca Ratón Blvd.
Boca Ratón, FL 33431-4876

RE: Project No. 399.19 / US Navy Refuel Pit 1

Report No. 95-133

Dear Mr. Garrido:

With respect to the project of reference above, included you will find our report of analysis for the following ECG Sample ID numbers and their respective identities:

ECG Sample ID

95-133-01
95-133-02
95-133-03
95-133-04
95-133-05
95-133-06
95-133-07

Sample Identity/Procedence

Refuel Pit 1 SB-8 (2'-4')
Refuel Pit 1 SB-9 (2'-4')
Refuel Pit 1 SB-9 (6'-8')
Refuel Pit 1 SB-8 (10'-12')
Refuel Pit 1 SB-8 (Water)
Refuel Pit 1 SB-9 (Water)
Refuel Pit 1 SB-7 (Water)

All analyses were performed in accordance to EPA methods and/or laboratory SOP's. Quality Assurance/Quality Control requirements were accomplished according to methodology requirements.

Should you have any inquiries regarding the data contained herein, please do not hesitate to contact me at your convenience.

Cordially,

Arnaldo Mercado Bosch
Operations Manager

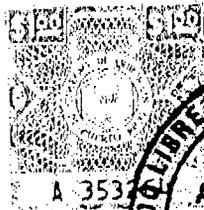
DATA CERTIFICATION STATEMENT

All data contained herein has been reviewed for compliance with methodology requirements and where applicable, corrective action has been taken. Corrections and approval of data has also been performed.

All analyses and procedures have been performed by supervised and qualified personnel.

All the data gathered and obtained for the preparation of this report will be kept in our custody for a term of three years, unless otherwise required by the client or any other interested party. All the Quality Control and Quality Assurance generated for the validation of the data is available upon request.

I hereby certify that all raw data and associated documentation has been reviewed and approved.



Arnaldo Mercado Bosch

Arnaldo Mercado Bosch

Corporations Manager

Lic. No. 2901 License No. 2901

RESULTS TABLES for ECG Sample ID 95-133-01**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/20/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-133-02**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/20/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-133-03**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/20/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-133-04**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/20/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-133-05**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/20/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-133-06**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/20/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-133-07**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/20/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/20/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

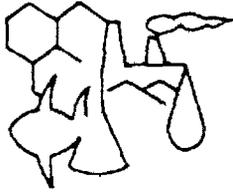
ENVIRONMENTAL CO. ULTING GROUP
CHAIN OF CUSTODY RECORD

FROM : ECG ENTERPRISES

PHONE NO. : 8097548097

Mar. 21 1995 09:16AM P30

Project No.		Project Name					Full RCRA	RCI	TCLP	Ig	React	Corr.	Other	Other	Matrix	Matrix (A= aqueous; M= multiphasic; SD= sludge; O= oil; S= soil ORG= organic)		Remarks
Sample Collected by:																		
Sta. No.	Date	Time	Comp	Grab	Sample ID	No. of Containers												
	US Navy: Refuel Pit 1																	
	Mike Bauer												BTEX	BOIS				
	3/16/95	1405	X		Refuel Pit 1 SB-8	1							1	1	S		95-133-01	
	3/17/95	1045	X		Refuel Pit 1 SB-9(2-4)	1							1	1	S		95-133-02	
	3/17/95	1120	X		Refuel Pit 1 SB-9(6-8)	1							1	1	S		95-133-03	
	3/16/95	1445	X		Refuel Pit 1 SB-8(10-12)	1							1	1	S		95-133-04	
	3/16/95	1610		X	Refuel Pit 1 SB-8	2							1	1	A		95-133-05	
	3/17/95	1335		X	Refuel Pit 1 SB-9	2							1	1	A		95-133-06	
	3/16/95	1330		X	Refuel Pit 1 SB-7	2							1	1	A		95-133-07	
Relinquished By: (Signature)			Date/Time			Received By: (Signature)			Relinquished By: (Signature)			Date/Time			Received By: (Signature)			
			3/17/1410															
Relinquished By: (Signature)			Date/Time			Received By: (Signature)			Relinquished By: (Signature)			Date/Time			Received By: (Signature)			
Relinquished By: (Signature)			Date/Time			Received for Laboratory By: (Signature)			Remarks									
			3/17/95/1630															
Customer Signature:																		



ECG Laboratories

Environmental Analytical Services ♦ Division of ECG Enterprises

March 27, 1995

Mr. José Garrido
Blasland Blouck and Lee
4730 Northwest
Boca Ratón Blvd.
Boca Ratón, FL 33431-4876

RE: Project No. 399.19 / US Navy Refuel Pit 1

Report No. 95-143

Dear Mr. Garrido:

With respect to the project of reference above, included you will find our report of analysis for the following ECG Sample ID numbers and their respective identities:

<u>ECG Sample ID</u>	<u>Sample Identity/Precedence</u>
95-143-01	Refuel Pit 1 SB-10 (4'-6')
95-143-02	Refuel Pit 1 SB-10 (6'-8')
95-143-03	Refuel Pit 1 SB-10 (Water)
95-143-04	Refuel Pit 1 SB-11 (2'-4')
95-143-05	Refuel Pit 1 SB-11 (8'-10')
95-143-06	Refuel Pit 1 SB-11 (Water)

All analyses were performed in accordance to EPA methods and/or laboratory SOP's. Quality Assurance/Quality Control requirements were accomplished according to methodology requirements.

Should you have any inquiries regarding the data contained herein, please do not hesitate to contact me at your convenience.

Cordially,

A handwritten signature in cursive script, appearing to read "Arnaldo Mercado Bosch". The signature is written in dark ink and is positioned above the printed name.

Arnaldo Mercado Bosch
Operations Manager

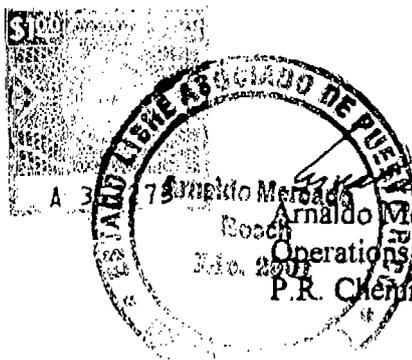
DATA CERTIFICATION STATEMENT

All data contained herein has been reviewed for compliance with methodology requirements and, where applicable, corrective action has been taken. Corrections and approval of data has also been performed.

All analyses and procedures have been performed by supervised and qualified personnel.

All the data gathered and obtained for the preparation of this report will be kept in our custody for a term of three years, unless otherwise required by the client or any other interested party. All the Quality Control and Quality Assurance generated for the validation of the data is available upon request.

I hereby certify that all raw data and associated documentation has been reviewed and approved.


A 3 75 Arnaldo Mercado Bosch
Operations Manager
P.R. Chemist's License No. 2901

RESULTS TABLES for ECG Sample ID 95-143-01**I. Volatile Organic Compounds (VOC's)**Analysis Date: 03/23/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	0.020
Ethylbenzene	0.030
m&p-xylene	0.020
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)Analysis Date: 03/27/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-143-02**I. Volatile Organic Compounds (VOC's)**Analysis Date: 03/23/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	0.010
Ethylbenzene	<0.010
m&p-xylene	0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)Analysis Date: 03/27/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-143-03**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/23/95

Parameter	Amount Detected
Benzene	0.020
Toluene	0.029
Ethylbenzene	0.028
m&p-xylene	0.070
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/27/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-143-04**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/23/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	0.100
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/27/95

Parameter	Amount Detected
TPH	2,510

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-143-05**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/23/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	0.014
Ethylbenzene	0.017
m&p-xylene	0.017
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/27/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-143-06**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/23/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/27/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

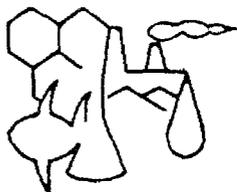
ENVIRONMENTAL CONSULTING GROUP
CHAIN OF CUSTODY RECORD

FROM : ECG ENTERPRISES

PHONE NO. : 8097648097

Mar. 27 1995 05:09PM P1

Project No.		Project Name				Full	RCI	TCLP	Ig	React	Corr.	Other	Other	Matrix	Matrix		
29.19		RAPID Rehab Pit #1				RCRA									(A = aqueous; M = multiphase; SD = sludge; O = oil; S = soil ORG = organic)		
Sample Collected by: <i>Mike Bauer</i>																	
No.	Date	Time	Comp	Grab	Sample ID	No. of Containers	BTEX	BO15	TPH						Remarks		
	3/21/95	1610	X		RAPID Rehab Pit #1 SB-10(4-6)	21	X	X						S	95-143-01		
	3/21/95	1655	X		SB-10(6-8')	21	X	X						S	95-143-02		
	3/21/95	1655		X	SB-10	22	X		X					A	95-143-03		
	3/22/95	0959	X		SB-10 (2-4)	21	X	X						S	95-143-04		
	3/22/95	1050	X		SB-10 (8-10)	21	X	X						S	95-144-95-143-05		
	3/22/95	1410		X	RRP #1 SB-11	22	X		X					A	95-143-06		
Relinquished By: (Signature)			Date/Time			Received By: (Signature)			Relinquished By: (Signature)			Date/Time			Received By: (Signature)		
<i>Mike Bauer</i>			3/22/95 1700			<i>Alfredo Jordana</i>											
Relinquished By: (Signature)			Date/Time			Received By: (Signature)			Relinquished By: (Signature)			Date/Time			Received By: (Signature)		
Relinquished By: (Signature)			Date/Time			Received for Laboratory By: (Signature)			Remarks								
<i>Alfredo Jordana</i>			3/22/95 6:30 PM			<i>Alfredo Jordana</i>											
Customer signature: <i>Mike Bauer</i>																	



ECG Laboratories

Environmental Analytical Services • Division of ECG Enterprises

March 31, 1995

Mr. José Garrido
Blasland Blouck and Lee
4730 Northwest
Boca Ratón Blvd.
Boca Ratón, FL 33431-4876

RE: Project No. 399.19 / US Navy Refuel Pit 1

Report No. 95-156

Dear Mr. Garrido:

With respect to the project of reference above, included you will find our report of analysis for the following ECG Sample ID numbers and their respective identities:

ECG Sample ID

Sample Identity/Procedence

95-156-01

Refuel Pit 1 SB-12 (2'-4')

95-156-02

Refuel Pit 1 SB-12 (4'-6')

95-156-03

Refuel Pit 1 SB-13 (0'-2')

95-156-04

Refuel Pit 1 SB-14 (0'-2')

95-156-05

Refuel Pit 1 SB-15 (0'-2')

All analyses were performed in accordance to EPA methods and/or laboratory SOP's. Quality Assurance/Quality Control requirements were accomplished according to methodology requirements.

Should you have any inquiries regarding the data contained herein, please do not hesitate to contact me at your convenience.

Cordially,

A handwritten signature in cursive script, appearing to read 'Arnaldo Mercado Bosch'. The signature is written in dark ink and is positioned above the printed name.

Arnaldo Mercado Bosch
Operations Manager

DATA CERTIFICATION STATEMENT

All data contained herein has been reviewed for compliance with methodology requirements and, where applicable, corrective action has been taken. Corrections and approval of data has also been performed.

All analyses and procedures have been performed by supervised and qualified personnel.

All the data gathered and obtained for the preparation of this report will be kept in our custody for a term of three years, unless otherwise required by the client or any other interested party. All the Quality Control and Quality Assurance generated for the validation of the data is available upon request.

I hereby certify that all raw data and associated documentation has been reviewed and approved.



RESULTS TABLES for ECG Sample ID 95-156-01**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/30/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/30/95

Parameter	Amount Detected
TPH	261

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-156-02**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 03/30/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/30/95

Parameter	Amount Detected
TPH	481

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-156-03**I Volatile Organic Compounds (VOC's)**

Analysis Date: 03/30/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/30/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-156-04**I Volatile Organic Compounds (VOC's)**

Analysis Date: 03/30/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/30/95

Parameter	Amount Detected
TPH	569

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-156-05**I Volatile Organic Compounds (VOC's)**

Analysis Date: 03/30/95

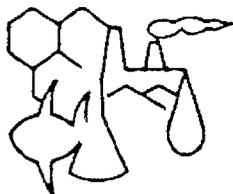
Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 03/30/95

Parameter	Amount Detected
TPH	21

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.



ECG Laboratories

Environmental Analytical Services • Division of ECG Enterprises

April 8, 1995

Mr. José Garrido
Blasland Blouck and Lee
4730 Northwest
Boca Ratón Blvd.
Boca Ratón, FL 33431-4876

RE: Project No. 399.19 / US Navy Refuel Pit 1

Report No. 95-168

Dear Mr. Garrido:

With respect to the project of reference above, included you will find our report of analysis for the following ECG Sample ID numbers and their respective identities:

ECG Sample ID

Sample Identity/Procedence

95-168-01
95-168-02
95-168-03
95-168-04

Refuel Pit 1 SB-13 (4'-6")
Refuel Pit 1 SB-13 (Water)
Refuel Pit 1 SB-14 (4'-6")
Refuel Pit 1 SB-14 (Water)

All analyses were performed in accordance to EPA methods and/or laboratory SOP's. Quality Assurance/Quality Control requirements were accomplished according to methodology requirements.

Should you have any inquiries regarding the data contained herein, please do not hesitate to contact me at your convenience.

Cordially,

A handwritten signature in dark ink, appearing to read "Arnaldo Mercado Bosch". The signature is fluid and cursive.

Arnaldo Mercado Bosch
Operations Manager

DATA CERTIFICATION STATEMENT

All data contained herein has been reviewed for compliance with methodology requirements and, where applicable, corrective action has been taken. Corrections and approval of data has also been performed.

All analyses and procedures have been performed by supervised and qualified personnel.

All the data gathered and obtained for the preparation of this report will be kept in our custody for a term of three years, unless otherwise required by the client or any other interested party. All the Quality Control and Quality Assurance generated for the validation of the data is available upon request.

I hereby certify that all raw data and associated documentation has been reviewed and approved.



Armando Mercado Bosch
Armando Mercado Bosch
Bosch Operations Manager
Lic. 2901 R. Chemist's License No. 2901

RESULTS TABLES for ECG Sample ID 95-168-01**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 04/06/95

Parameter	Amount Detected
Benzene	0.384
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 04/05/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-168-02**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 04/06/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 04/05/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-168-03**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 04/06/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 04/05/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-168-04**I. Volatile Organic Compounds (VOC's)**

Analysis Date: 04/06/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II. Total Petroleum Hydrocarbons (TPH)

Analysis Date: 04/05/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

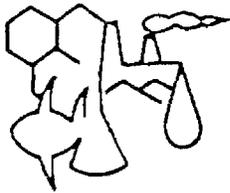
ENVIRONMENTAL CONSULTING GROUP
CHAIN OF CUSTODY RECORD

FROM : EOG ENTERPRISES

PHONE NO. : 8097648097

Apr. 10 1995 09:11AM P01

Lot No.		Project Name				No. of Containers	Fed	RCI	TCLP	Ig	React	Corr.	Other	Other	Matrix	Matrix	Remarks
9.19		RAPID Retrol Pit #1															
Sample Collected by: Mike Bauer (BB+L)																	
No.	Date	Time	Comp	Grab	Sample ID	No. of Containers	Fed	RCI	TCLP	Ig	React	Corr.	Other	Other	Matrix	Matrix	Remarks
	4/3/95	1420	X		RRP#1 SB-13 (4-6')	1	X	X							S	95-168-01	
	4/3/95	1620		X	RRP#1 SB-13	2	X		X						A	95-168-02	
	4/4/95	0920	X		RRP#1 SB-14 (4-6')	1	X	X							S	95-168-03	
	4/4/95	0955		X	RRP#1 SB-14		X		X						A	95-168-04	
Relinquished By: (Signature)			Date/Time			Received By: (Signature)			Relinquished By: (Signature)			Date/Time			Received By: (Signature)		
[Signature]			4/4/95 1655			Alfredo Fontana											
Relinquished By: (Signature)			Date/Time			Received By: (Signature)			Relinquished By: (Signature)			Date/Time			Received By: (Signature)		
Relinquished By: (Signature)			Date/Time			Received for Laboratory By: (Signature)			Remarks								
Alfredo Fontana			4/4/95/6:00 PM			Gualdo Hernandez											
Customer signature:																	



ECG Laboratories

Environmental Analytical Services ♦ Division of ECG Enterprises, Inc.

April 17, 1995

Mr. José Garrido
Blasland Blouck and Lee
4730 Northwest
Boca Ratón Blvd.
Boca Ratón, FL 33431-4876

RE: Project No. 399.19 / US Navy Refuel Pit 1

Report No. 95-186

Dear Mr. Garrido:

With respect to the project of reference above, included you will find our report of analysis for the following ECG Sample ID numbers and their respective identities:

ECG Sample ID

Sample Identity/Procedence

95-186-01
95-186-02
95-186-03
95-186-04
95-186-05

Refuel Pit 1 SB-18 (Water)
Refuel Pit 1 SB-18 (4'-6')
Refuel Pit 1 SB-18 (10'-12')
Refuel Pit 1 SB-19 (4'-6')
Refuel Pit 1 SB-19 (16'-18')

All analyses were performed in accordance to EPA methods and/or laboratory SOP's. Quality Assurance/Quality Control requirements were accomplished according to methodology requirements.

Should you have any inquiries regarding the data contained herein, please do not hesitate to contact me at your convenience.

Cordially,

Arnaldo Mercado Bosch
Operations Manager

DATA CERTIFICATION STATEMENT

All data contained herein has been reviewed for compliance with methodology requirements and, where applicable, corrective action has been taken. Corrections and approval of data has also been performed.

All analyses and procedures have been performed by supervised and qualified personnel.

All the data gathered and obtained for the preparation of this report will be kept in our custody for a term of three years, unless otherwise required by the client or any other interested party. All the Quality Control and Quality Assurance generated for the validation of the data is available upon request.

I hereby certify that all raw data and associated documentation has been reviewed and approved.



Arnaldo Mercado Bosch

Arnaldo Mercado Bosch
Operations Manager
P.R. Chemist License No. 2901

RESULTS TABLES for ECG Sample ID 95-186-01**I Volatile Organic Compounds (VOC's)**

Analysis Date: 04/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 04/12/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-186-02**I Volatile Organic Compounds (VOC's)**

Analysis Date: 04/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	0.025
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 04/12/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-186-03**I Volatile Organic Compounds (VOC's)**

Analysis Date: 04/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	0.054
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 04/12/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-186-04**I Volatile Organic Compounds (VOC's)**

Analysis Date: 04/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	<0.010
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 04/12/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

RESULTS TABLES for ECG Sample ID 95-186-05**I Volatile Organic Compounds (VOC's)**

Analysis Date: 04/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	0.016
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 04/12/95

Parameter	Amount Detected
TPH	<10

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

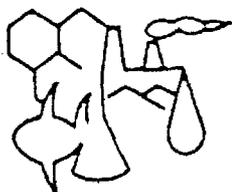
ENVIRONMENTAL CONSULTING GROUP
CHAIN OF CUSTODY RECORD

FROM : EOG ENTERPRISES

PHONE NO. : 8097648097

May. 24 1995 10:31AM P01

Project No. 599.19		Project Name Rapid Refuel Pits #1 (RRP#1)					Full RCRA	RCI 418.1	TCLP	Ig	React	Corr.	Other	Other	Matrix	Matrix (A = aqueous; M = multiphase; SD = sludge; O = oil; S = soil ORG = organic)	
Sample Collected by: Julie Skidmore																	
Sta. No.	Date	Time	Comp	Grab	Sample ID	No. of Containers									Remarks		
	09/10/95	13:55		✓	RRP#1-SB18 (water)	2	X	X							IF 418.1 > 100 mg/kg		
	09/10/95	13:15			RRP#1-SB18 (4-6')	1	X	X							on soil, please run		
	09/10/95	13:45			RRP#1-SB18 (10-12')	1	✓	X							modified EOG-DRG		
	09/11/95	09:20			RRP#1-SB19 (4-6')	1	X	X							Same for water if		
	09/11/95	10:40			RRP#1-SB19 (16-18')	1	X	X							> 50 mg/L		
Relinquished By: (Signature) <i>Julie Skidmore</i>		Date/Time 09/11/95 12:30		Received By: (Signature) <i>Shirley Lynn</i>		Relinquished By: (Signature)		Date/Time		Received By: (Signature)		Relinquished By: (Signature)		Date/Time		Received By: (Signature)	
Relinquished By: (Signature)		Date/Time		Received By: (Signature)		Relinquished By: (Signature)		Date/Time		Received By: (Signature)		Relinquished By: (Signature)		Date/Time		Received By: (Signature)	
Relinquished By: (Signature) <i>Shirley Lynn</i>		Date/Time 9/11/95 2:15 PM		Received for Laboratory By: (Signature) <i>[Signature]</i>		Remarks		Customer Signature: <i>Julie Skidmore</i>									



ECG Laboratories

Environmental Analytical Services ♦ Division of ECG Enterprises, Inc.

April 17, 1995

Mr. José Garrido
Blasland Blouck and Lee
4730 Northwest
Boca Ratón Blvd.
Boca Ratón, FL 33431-4876

RE: Project No. 399.19 / US Navy Refuel Pit 1

Report No. 95-188

Dear Mr. Garrido:

With respect to the project of reference above, included you will find our report of analysis for the following ECG Sample ID numbers and their respective identities:

ECG Sample ID

Sample Identity/Precedence

95-188-01

Refuel Pit 1 SB-19 (Water)

All analyses were performed in accordance to EPA methods and/or laboratory SOP's. Quality Assurance/Quality Control requirements were accomplished according to methodology requirements.

Should you have any inquiries regarding the data contained herein, please do not hesitate to contact me at your convenience.

Cordially,

A handwritten signature in cursive script, appearing to read "Arnaldo Mercado Bosch".

Arnaldo Mercado Bosch
Operations Manager

DATA CERTIFICATION STATEMENT

All data contained herein has been reviewed for compliance with methodology requirements and, where applicable, corrective action has been taken. Corrections and approval of data has also been performed.

All analyses and procedures have been performed by supervised and qualified personnel.

All the data gathered and obtained for the preparation of this report will be kept in our custody for a term of three years, unless otherwise required by the client or any other interested party. All the Quality Control and Quality Assurance generated for the validation of the data is available upon request.

I hereby certify that all raw data and associated documentation has been reviewed and approved.



A. Mercado Bosch
A. Mercado Bosch
Operations Manager
LAPRO Chemist's License No. 2901

RESULTS TABLES for ECG Sample ID 95-186-01**I Volatile Organic Compounds (VOC's)**

Analysis Date: 04/17/95

Parameter	Amount Detected
Benzene	<0.010
Toluene	0.026
Ethylbenzene	<0.010
m&p-xylene	<0.010
o-xylene	<0.010

II Total Petroleum Hydrocarbons (TPH)

Analysis Date: 04/12/95

Parameter	Amount Detected
TPH	<1

* All amounts are parts per million (ppm, mg/l, mg/kg) unless otherwise specified.

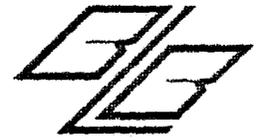
**ENVIRONMENTAL CONSULTING GROUP
CHAIN OF CUSTODY RECORD**

FROM : ECG ENTERPRISES

PHONE NO. : 8097648097

May. 24 1995 10:34AM P11

Project No. 399.19		Project Name Rapid Refuel Pt #1 (RRP#1)					Null <input checked="" type="checkbox"/> RCR CI <input checked="" type="checkbox"/> TCLP <input type="checkbox"/> Ig <input type="checkbox"/> React <input type="checkbox"/> Corr. <input type="checkbox"/> Other <input type="checkbox"/> Other <input type="checkbox"/> Matrix <input type="checkbox"/> Matrix (A = aqueous; M = multiphasic; SD = sludge; O = oil; S = soil ORG = organic)	8020 418.1	X X (ECG # 95-188-01)	Remarks If 418.1 > 50 mg/L run modified B015 - DRO
Sample Collected by: Julie Skidmore										
No.	Date	Time	Comp	Grab	Sample ID	No. of Containers				
	09/11/95	14:00			RRP#1-5819 (water)	2	X	X		
Relinquished By: (Signature) <i>Julie Skidmore</i>		Date/Time 09/12/95 15:50	Received By: (Signature) <i>Alfredo Fontana</i>		Relinquished By: (Signature)		Date/Time	Received By: (Signature)		
Relinquished By: (Signature)		Date/Time	Received By: (Signature)		Relinquished By: (Signature)		Date/Time	Received By: (Signature)		
Relinquished By: (Signature) <i>Alfredo Fontana</i>		Date/Time 4/12/95 5:25pm	Received for Laboratory By: (Signature) <i>Hernandez</i> 4/12/95 5:25pm		Remarks					
Customer Signature: <i>Julie Skidmore</i>										



APPENDIX E

APPENDIX E

SLUG TEST RESULTS AND CALCULATIONS

SLUG TEST RESULTS
U.S. NAVAL STATION
ROOSEVELT ROADS, PUERTO RICO

Well No.: MW-1
 Test Date: 4/19/95

Formation Tested: Surficial
 Rising Head Test

	<u>English Units</u>	<u>Metric Units</u>
Stickup	0.00 (ft)	0.00 (cm)
Static Water Level	6.57 (ft)	200.25 (cm)
Depth to Bottom of Screen (distance from ground level)	14.50 (ft)	441.96 (cm)
Boring Diameter	8.00 (in)	20.32 (cm)
Casing Diameter	2.00 (in)	5.08 (cm)
Screen Diameter	2.00 (in)	5.08 (cm)
Screen Length	10.00 (ft)	304.80 (cm)
Depth to Boundary (b)	20.00 (ft)	609.60 (cm)
Delta H at Time 0	2.50 (ft)	76.20 (cm)
Delta H at Time t	1.00 (ft)	30.48 (cm)
Time t	1560.00 (sec)	1560 (sec)
Ratio Kh/Kv	1	1
Porosity of Filter Pack	0.3	0.3

<u>HYDRAULIC CONDUCTIVITY</u>	<u>cm/sec</u>	<u>ft/day</u>	<u>gpd/ft ^ 2</u>
K (Bouwer-Rice)	7.8E-05	2.2E-01	1.7E+00
K (Hvorslev Time Lag)	2.5E-05	7.1E-02	5.3E-01
K (Hvorslev Variable Head)	2.5E-05	7.0E-02	5.3E-01

SLUG TEST WORKSHEET
U.S. NAVAL STATION
ROOSEVELT ROADS, PUERTO RICO

Well Number: MW-1

Test Date: 4/19/95

EQUATIONS USED

EQUATION 1: Bouwer-Rice Method

$$K = (((Rc^2) * \ln(Re/Rw)) / (2Le)) * (1/T) * \ln(H0/Ht)$$

where:

K = Hydraulic conductivity

Rc = Casing radius

Re = Effective well radius over which the drawdown is dissipated (this value is calculated from predetermined curves)

Rw = Borehole radius

Le = Saturated screen length

H0 = Drawdown in well at time zero: time zero is specified on the slug test curve

Ht = Drawdown in well at time "t": time "t" is specified on the slug test curve

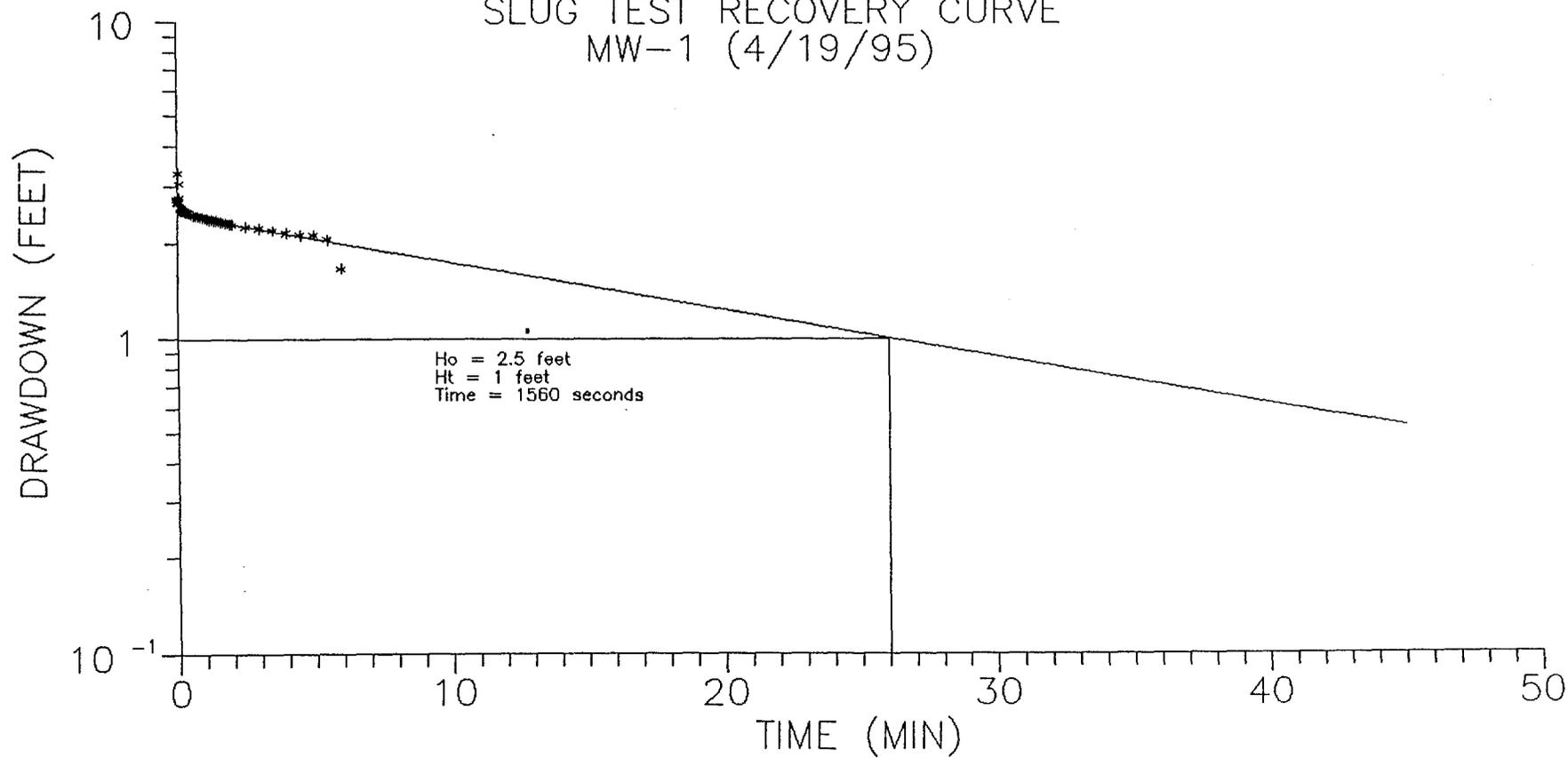
T = Elapsed time from time zero to time "t"

Note: All equations are valid for any consistent set of units

VARIABLES USED

<u>Variables</u>	<u>English Units</u>	<u>Metric Units</u>
Rc	2.00 (in)	5.08 (cm)
Rw	8.00 (in)	20.32 (cm)
Le	10.00 (ft)	304.80 (cm)
H0	2.50 (ft)	76.20 (cm)
Ht	1.000 (ft)	30.48 (cm)
T	1560 (sec)	1560 (sec)
b	20 (ft)	609.60 (cm)

U.S. NAVAL STATION
ROOSEVELT ROADS, PUERTO RICO
SLUG TEST RECOVERY CURVE
MW-1 (4/19/95)



SLUG TEST RESULTS – FIELD DATA

U.S. NAVAL STATION
ROOSEVELT ROADS, PUERTO RICO

Well No.: MW-1

Test Date: 4/19/95

<u>TIME (min)</u>	<u>DEPTH (feet)</u>	<u>TIME (min)</u>	<u>DEPTH (feet)</u>
0	2.745	1.3333	2.341
0.0083	2.688	1.4166	2.335
0.0166	2.663	1.5	2.328
0.025	2.657	1.5833	2.316
0.0333	2.675	1.6666	2.309
0.0416	3.288	1.75	2.303
0.05	3.054	1.8333	2.29
0.0583	2.77	1.9166	2.284
0.0666	2.694	2	2.278
0.075	2.751	2.5	2.24
0.0833	2.682	3	2.208
0.1	2.587	3.5	2.177
0.1166	2.568	4	2.139
0.1333	2.562	4.5	2.107
0.15	2.556	5	2.114
0.1666	2.543	5.5	2.038
0.1833	2.537	6	1.653
0.2	2.53		
0.2166	2.524		
0.2333	2.518		
0.25	2.511		
0.2666	2.505		
0.2833	2.505		
0.3	2.499		
0.3166	2.492		
0.3333	2.486		
0.4166	2.474		
0.5	2.455		
0.5833	2.442		
0.6666	2.429		
0.75	2.417		
0.8333	2.404		
0.9166	2.398		
1	2.385		
1.0833	2.373		
1.1666	2.36		
1.25	2.354		

SLUG TEST RESULTS
U.S. NAVAL STATION
ROOSEVELT ROADS, PUERTO RICO

Well No.: MW-2
 Test Date: 4/19/95

Formation Tested: Surficial
 Rising Head Test

	<u>English Units</u>	<u>Metric Units</u>
Stickup	0.00 (ft)	0.00 (cm)
Static Water Level	5.87 (ft)	178.92 (cm)
Depth to Bottom of Screen (distance from ground level)	14.50 (ft)	441.96 (cm)
Boring Diameter	8.00 (in)	20.32 (cm)
Casing Diameter	2.00 (in)	5.08 (cm)
Screen Diameter	2.00 (in)	5.08 (cm)
Screen Length	10.00 (ft)	304.80 (cm)
Depth to Boundary (b)	20.00 (ft)	609.60 (cm)
Delta H at Time 0	2.90 (ft)	88.39 (cm)
Delta H at Time t	2.00 (ft)	60.96 (cm)
Time t	1980.00 (sec)	1980 (sec)
Ratio Kh/Kv	1	1
Porosity of Filter Pack	0.3	0.3

<u>HYDRAULIC CONDUCTIVITY</u>	<u>cm/sec</u>	<u>ft/day</u>	<u>gpd/ft²</u>
K (Bouwer-Rice)	2.4E-05	6.7E-02	5.0E-01
K (Hvorslev Time Lag)	7.5E-06	2.1E-02	1.6E-01
K (Hvorslev Variable Head)	7.5E-06	2.1E-02	1.6E-01

SLUG TEST WORKSHEET
U.S. NAVAL STATION
ROOSEVELT ROADS, PUERTO RICO

Well Number: MW-2

Test Date: 4/19/95

EQUATIONS USED

EQUATION 1: Bouwer-Rice Method

$$K = (((Rc^2) * \ln(Re/Rw)) / (2Le)) * (1/T) * \ln(H0/Ht)$$

where:

K = Hydraulic conductivity

Rc = Casing radius

Re = Effective well radius over which the drawdown is dissipated (this value is calculated from predetermined curves)

Rw = Borehole radius

Le = Saturated screen length

H0 = Drawdown in well at time zero: time zero is specified on the slug test curve

Ht = Drawdown in well at time "t": time "t" is specified on the slug test curve

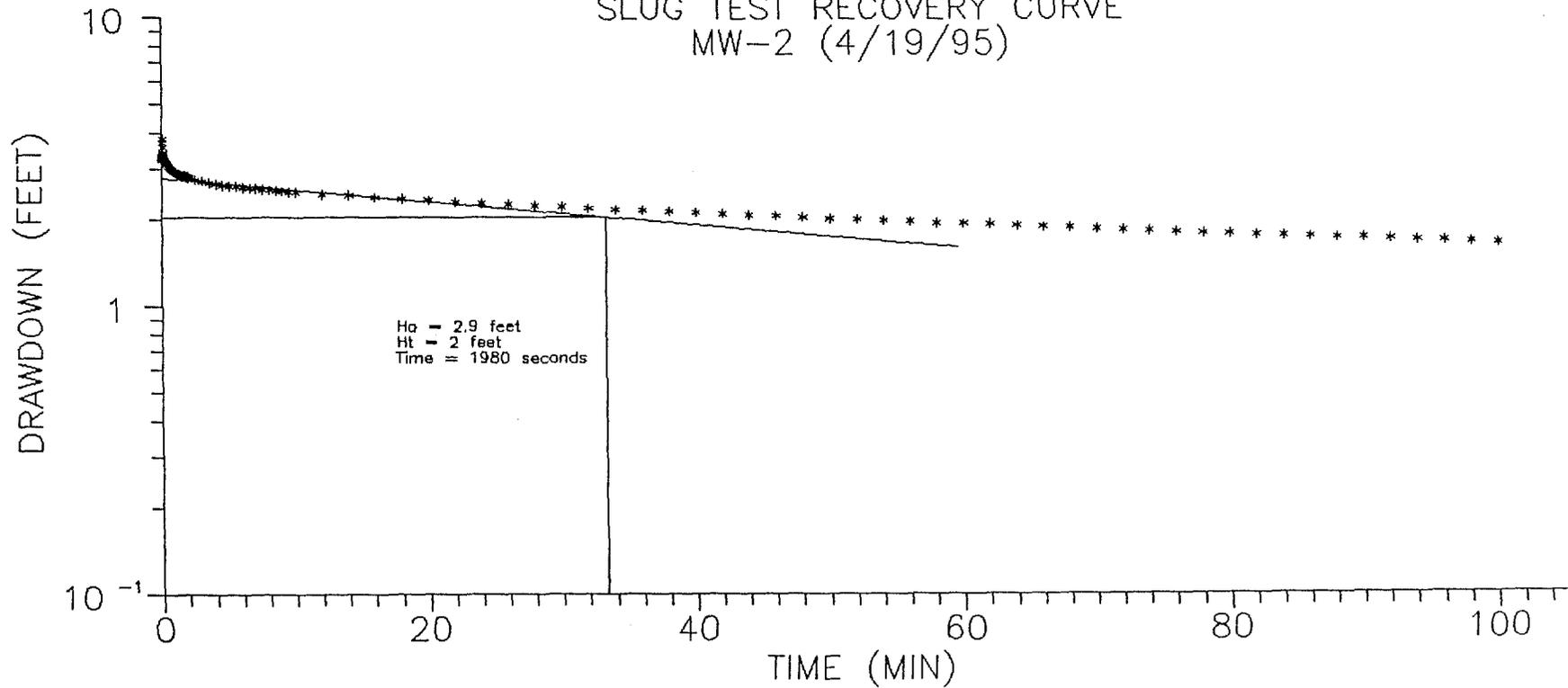
T = Elapsed time from time zero to time "t"

Note: All equations are valid for any consistent set of units

VARIABLES USED

<u>Variables</u>	<u>English Units</u>	<u>Metric Units</u>
Rc	2.00 (in)	5.08 (cm)
Rw	8.00 (in)	20.32 (cm)
Le	10.00 (ft)	304.80 (cm)
H0	2.90 (ft)	88.39 (cm)
Ht	2.000 (ft)	60.96 (cm)
T	1980 (sec)	1980 (sec)
b	20 (ft)	609.60 (cm)

U.S. NAVAL STATION
ROOSEVELT ROADS, PUERTO RICO
SLUG TEST RECOVERY CURVE
MW-2 (4/19/95)



SLUG TEST RESULTS – FIELD DATA

U.S. NAVAL STATION
ROOSEVELT ROADS, PUERTO RICO

Well No.: MW-2

Test Date: 4/19/95

<u>TIME (min)</u>	<u>DEPTH (feet)</u>	<u>TIME (min)</u>	<u>DEPTH (feet)</u>	<u>TIME (min)</u>	<u>DEPTH (feet)</u>
0	3.233	1.3333	2.875	36	2.152
0.0083	3.264	1.4166	2.859	38	2.132
0.0166	3.289	1.5	2.849	40	2.112
0.025	3.319	1.5833	2.839	42	2.091
0.0333	3.349	1.6666	2.834	44	2.071
0.0416	3.38	1.75	2.824	46	2.056
0.05	3.41	1.8333	2.814	48	2.036
0.0583	3.698	1.9166	2.809	50	2.016
0.0666	3.809	2	2.799	52	2
0.075	3.567	2.5	2.753	54	1.98
0.0833	3.42	3	2.723	56	1.965
0.1	3.314	3.5	2.693	58	1.94
0.1166	3.279	4	2.667	60	1.93
0.1333	3.269	4.5	2.647	62	1.915
0.15	3.248	5	2.627	64	1.894
0.1666	3.233	5.5	2.612	66	1.879
0.1833	3.218	6	2.597	68	1.864
0.2	3.208	6.5	2.581	70	1.849
0.2166	3.193	7	2.566	72	1.834
0.2333	3.183	7.5	2.551	74	1.819
0.25	3.173	8	2.536	76	1.798
0.2666	3.163	8.5	2.526	78	1.783
0.2833	3.152	9	2.516	80	1.773
0.3	3.142	9.5	2.506	82	1.753
0.3166	3.132	10	2.496	84	1.738
0.3333	3.122	12	2.46	86	1.728
0.4166	3.082	14	2.43	88	1.712
0.5	3.046	16	2.4	90	1.702
0.5833	3.021	18	2.369	92	1.687
0.6666	2.996	20	2.339	94	1.672
0.75	2.976	22	2.314	96	1.662
0.8333	2.955	24	2.288	98	1.642
0.9166	2.94	26	2.263	100	1.632
1	2.925	28	2.243		
1.0833	2.91	30	2.218		
1.1666	2.895	32	2.192		
1.25	2.885	34	2.172		



APPENDIX F

APPENDIX F

GROUNDWATER SAMPLING PROCEDURES AND SAMPLING LOGS

GROUNDWATER SAMPLING PROCEDURES

Sampling Procedures

Each monitoring well was allowed to stabilize for at least 24 hours after installation prior to being sampled. To avoid cross-contamination between wells, disposable bailers were used to collect groundwater samples. Prior to sampling groundwater from the monitoring wells, depth to water was measured and each well was purged of at least four well volumes. The purge procedure was performed by hand bailing using a disposable bailer or the use of a peristaltic pump. During purging, multiple water-quality measurements of pH, temperature, and specific conductance were collected in the field until reaching stabilization. The complete well sampling logs are presented in this **Appendix**.

Groundwater samples were shipped in sealed coolers packed with ice via an overnight delivery service to Savannah Laboratories in Deerfield Beach, Florida.

QA/QC Procedures

Field blanks were collected on every date that two or more wells were sampled. The field blanks were analyzed for BTEX by EPA Method 602 and for total petroleum hydrocarbons by EPA Method 418.1. Field blank samples were collected by filling the appropriate laboratory containers with distilled water in an area that groundwater samples were being collected on that date. No constituents were detected above the laboratory detection limits in any of the field blank samples.

Two equipment blanks were collected during the SC, one from a new disposable bailer and one from decontaminated split-spoon used to collect soil samples from the soil borings. The samples were collected by pouring distilled water into and over the bailer and split-spoon and collecting the runoff in the

appropriate laboratory containers. No constituents were detected above the laboratory detection limits in either of the equipment blank samples.

One set of duplicate samples from monitoring well RRP#1-MW5 was collected for analysis by EPA Method 602 and by EPA Method 418.1. To test the laboratory's precision, the origin of the duplicate sample was not known by the laboratory. The duplicate sample analysis (**Table 4-3**) were essentially identical.

Project/No. 399.19 Page 1 of 5
 Site Location RRP #1
 Site/Well No. MW1 Coded/ Replicate No. N/A Date 09/13/95
 Weather _____ Time Sampling Began 10:55 Time Sampling Completed 11:20

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing (North Side)
 Height of MP Below Land Surface _____ (feet) MP Elevation _____ (feet)
 Total Sounded Depth (TD) of Well Below MP 14.61 (feet) Water-Level Elevation _____ (feet)
 Depth to Water (DTW) Below MP 6.45 (feet) Diameter of Casing/ Construction Type 2" Schedule 40 PVC
 Gallons Pumped/Bailed Prior to Sampling _____
 Water Column (WC) in Well (TD - DTW) 8.16 (feet) (GAL x 5 VOL x PUMP RATE) ~ 7 gallons
 Gallons per Foot (GPF) 0.16
 Gallons in Well (WC x GPF) 1.31 Sampling Pump Intake (feet below land surface) _____

Evacuation Method Peristaltic pump with polyethylene tubing

SAMPLING DATA/FIELD PARAMETERS

Color None Odor None Appearance Clear Temperature 31.7 °F

Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance, umhos/cm 0.44 x1 0.742
0.44 0.723
0.3 pH 7.21

Sampling Method and Material Disposable teflon bailer with monofilament line

Constituents Sampled	Container Description		Preservative
	From Lab	X or BB&L	
1. <u>EPA Method 8020</u>	<u>3-40 ml vials</u>	<u>X</u>	<u>14°C HCl</u>
2. <u>418.1</u>	<u>1-200 ml</u>		<u>HCl</u>
3. _____	_____		_____
4. _____	_____		_____
5. _____	_____		_____
6. _____	_____		_____
7. _____	_____		_____

Remarks _____

Sampling Personnel J. Skidmore

GAL./FT.	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46

Project/No. 399.19
Site Location RRP #1

Page 2 of 5

Site/Well No. mw2 Coded/
Replicate No. N/A

Date 04/13/95

Weather _____

Time Sampling
Began 10:10

Time Sampling
Completed 10:30

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing (North Side)

Height of MP Below Land Surface _____ (feet) MP Elevation _____ (feet)

Total Sounded Depth (TD) of Well Below MP 14.61 (feet) Water-Level Elevation _____ (feet)

Depth to Water (DTW) Below MP 5.91 (feet) Diameter of Casing/ Construction Type 2" Schedule 40 PVC

Gallons Pumped/Bailed Prior to Sampling _____

Water Column (WC) in Well (TD - DTW) 8.70 (feet) (GAL x 5 VOL x PUMP RATE) ~ 7 gallons

Gallons per Foot (GPF) 0.16 Sampling Pump Intake (feet below land surface) _____

Gallons in Well (WC x GPF) 1.39

Evacuation Method _____

Color none Odor none Appearance clear Temperature 28.9
29.2
29.2 °F

Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance, 8.86 x 10 7.08
8.05 6.98
umhos/cm 8.00 pH 6.89

Sampling Method and Material _____

Constituents Sampled	Container Description		Preservative
	From Lab	X or BB&L	
1. <u>EPA Method 8020</u>			<u>4°C</u>
2. <u>418.1</u>			
3. _____			
4. _____			
5. _____			
6. _____			
7. _____			

Remarks _____

Sampling Personnel

J Skidmore

WELL CASING VOLUMES			
GAL./FT.	1-1/4" = 0.077	2" = 0.16	3" = 0.37
	1-1/2" = 0.10	2-1/2" = 0.24	4" = 0.65
		3-1/2" = 0.50	6" = 1.46

Project/No. 399.19
Site Location RRP #1

Page 3 of 5

Site/Well No. MW3

Coded/
Replicate No. N/A

Date 04/13/95
DPP

Weather SAME AS MW-4

Time Sampling Began 0730

Time Sampling Completed 0745

EVACUATION DATA

Description of Measuring Point (MP)	<u>Top of Casing (North Side)</u>	MP Elevation	_____ (feet)
Height of MP Below Land Surface	_____ (feet)	Water-Level Elevation	_____ (feet)
Total Sounded Depth (TD) of Well Below MP	<u>20.00</u> (feet)	Diameter of Casing/	_____
Depth to Water (DTW) Below MP	<u>6.60</u> (feet)	Construction Type	<u>2" Schedule 40 PVC</u>
Water Column (WC) in Well (TD - DTW)	<u>13.40</u> (feet)	Gallons Pumped/Bailed Prior to Sampling	_____
Gallons per Foot (GPF)	<u>0.16</u>	(GAL x 5 VOL x PUMP RATE)	<u>11 gallons</u> <u>1 gpm for 12 min</u>
Gallons in Well (WC x GPF)	<u>2.14</u>	Sampling Pump Intake (feet below land surface)	_____

Evacuation Method Peristaltic Pump / dedicated poly tubing

SAMPLING DATA/FIELD PARAMETERS

Color None Odor None Appearance Clear Temperature 29.6/30.1/30.1 [⊖]

Other (specific ion; OVA; HNU; etc.) Teflon bailer, mono. l. line

Specific Conductance, umhos/cm 758/735 / 727 pH 7.44/6.52 / 6.49

Sampling Method and Material Teflon bailer / mono. l. line

Constituents Sampled	Container Description		Preservative
	From Lab	X or BB&L	
1. <u>EPA Method 8020</u>	<u>3x 40 ml glass</u>	<u>tetlon cap</u>	<u>14°C, HCL</u>
2. <u>418.1</u>	<u>1x 500 ml</u>	<u>amber f</u>	<u>HCL Zc</u>
3. <u>610</u>	<u>1x 1 liter</u>	<u>amber</u>	<u>Zc</u>
4. <u>739.2</u>	<u>1x 250 ml</u>	<u>plastic</u>	<u>HNO3, Zc</u>
5. _____	_____	_____	_____
6. _____	_____	_____	_____
7. _____	_____	_____	_____

Remarks

~~Collected DPP sample at this location for 8020 and 418.1~~

Sampling Personnel

~~Julie Skidmore~~ ^{DPP} DPP

GAL./FT.	1-1/4" = 0.077	<u>2" = 0.16</u>	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46

Project/No. 399.19
Site Location 399.19 RRPT#1

Page 4 of 5

Site/Well No. MW4

Coded/
Replicate No. N/A

Date 04/13/95

Weather Sunny 85°F

Time Sampling
Began 0705

Time Sampling
Completed 0715

EVACUATION DATA

Description of Measuring Point (MP)	<u>Top of Casing (North Side)</u>	MP Elevation	<u> </u>	(feet)
Height of MP Below Land Surface	<u> </u>	Water-Level Elevation	<u> </u>	(feet)
Total Sounded Depth (TD) of Well Below MP	<u>20.00</u>	Diameter of Casing/	<u> </u>	(feet)
Depth to Water (DTW) Below MP	<u>8.44</u>	Construction Type	<u>2" Schedule 40 PVC</u>	
Water Column (WC) in Well		Gallons Pumped/Bailed	<u> </u>	
(TD - DTW)	<u>11.56</u>	Prior to Sampling	<u> </u>	
Gallons per Foot (GPF)	<u>0.14</u>	(GAL x 5 VOL x PUMP RATE)	<u> </u>	
Gallons in Well	<u>1.84</u>	Sampling Pump Intake	<u> </u>	
(WC x GPF)		(feet below land surface)	<u> </u>	

Evacuation Method Peristaltic Pump dedicated poly tubing.

SAMPLING DATA/FIELD PARAMETERS

Color None Odor None Appearance clear Temperature 30.4/31.7/32.9 °C

Other (specific ion; OVA; HNU; etc.)

Specific Conductance, umhos/cm 673 / 618 / 610 pH 8.22 / 7.23 / 7.18

Sampling Method and Material Teflon bailer dedicated monofilament line

Constituents Sampled	Container Description		Preservative
	From Lab	X or BB&L	
1. <u>EPA Method 8020</u>	<u>3x 40ml glass teflon cap</u>	<u> </u>	<u>14°C HCL</u>
2. <u>418.1</u>	<u>1x 500ml amber</u>	<u> </u>	<u>HCL/DCL</u>
3. <u>610</u>	<u>1x 1 liter amber</u>	<u> </u>	<u>ICE</u>
4. <u> </u>	<u> </u>	<u> </u>	<u> </u>
5. <u> </u>	<u> </u>	<u> </u>	<u> </u>
6. <u> </u>	<u> </u>	<u> </u>	<u> </u>
7. <u> </u>	<u> </u>	<u> </u>	<u> </u>

Remarks

Sampling Personnel Julia Skidmore DPP

GAL./FT.	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46

Project/No. 399.14
Site Location RR#1

Page 5 of 5

Site/Well No. mws

Coded/
Replicate No. N/A

Date 04/13/45

Weather _____

Time Sampling
Began 11:25

Time Sampling
Completed 12:25

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing (North Side)
Height of MP Below Land Surface _____ (feet) MP Elevation _____ (feet)
Total Sounded Depth (TD) of Well Below MP 20.10 (feet) Water-Level Elevation _____ (feet)
Depth to Water (DTW) Below MP 9.35 (feet) Diameter of Casing/
Construction Type 2" Schedule 40 PVC
Gallons Pumped/Bailed
Prior to Sampling _____
(GAL x 5 VOL x PUMP RATE) ≈ 9 gallons
Water Column (WC) in Well
(TD - DTW) 10.75 (feet) Sampling Pump Intake
Gallons per Foot (GPF) .16 (feet below land surface) _____
Gallons in Well
(WC x GPF) 1.72

Evacuation Method _____

SAMPLING DATA/FIELD PARAMETERS

Color None Odor ? Appearance Clear Temperature ① 29.9
② 29.9
③ 29.2 °F

Other (specific ion; OVA; HNU; etc.) _____

Specific Conductance, ① 0.48 ① 8.02
② 0.44 ② 8.00
umhos/cm ③ 0.48 pH ③ 7.98

Sampling Method and Material _____

	Constituents Sampled	Container Description		Preservative
		From Lab	X or BB&L	
1.	<u>EPA Method 8020</u>			<u>14°C</u>
2.	<u>418.1</u>			
3.	<u>610</u>			
4.	<u>239.2</u>			
5.				
6.				
7.				

Remarks

Collected Field & Equipment Blank at this location
collected DUP for 8020 and 418.1 at this location

Sampling Personnel

Julie Stidman

WELL CASING VOLUMES			
GAL./FT.	1-1/4" = 0.077	2" = 0.16	3" = 0.37
	1-1/2" = 0.10	2-1/2" = 0.24	4" = 0.65
		3-1/2" = 0.50	6" = 1.46

Project/No. Navy - Roosevelt Roads / 399.19 Page 1 of 1
 Site Location Rapid Refuel Pit #1
 Site/Well No. RRP1 MW-6 Coded/ Replicate No. N/A Date 5/12/95
 Weather Sunny, mid 80's, Windy Time Sampling Began 16:45 Time Sampling Completed 17:10

EVACUATION DATA

Description of Measuring Point (MP) Top of Casing (North Side)
 Height of MP Below Land Surface _____ (feet) MP Elevation _____ (feet)
 Total Sounded Depth (TD) of Well Below MP 18.84 (feet) Water-Level Elevation _____ (feet)
 Depth to Water (DTW) Below MP 6.93 (feet) Diameter of Casing/
 Construction Type 2" Schedule 40 PVC
 Gallons Pumped/Bailed Prior to Sampling 4.6 gallons
 (GAL x 5 VOL x PUMP RATE) ~~1.88 x 5 x 1.0 = 9.4 gal/min.~~ 0.5 gal/min. off
 Water Column (WC) in Well (TD - DTW) 11.41 (feet) Sampling Pump Intake (feet below land surface) 10' to 13'
 Gallons per Foot (GPF) 0.16
 Gallons in Well (WC x GPF) 1.83

Evacuation Method Peristaltic pump and polyethylene tubing

SAMPLING DATA/FIELD PARAMETERS

Color Initially Very light brown then clear Odor No he Appearance Slightly cloudy then clear Temperature 32.7/31.7/31.7/31.6 °C
 Other (specific Ion; OVA; HNU; etc.) _____

Specific Conductance, umhos/cm 898/797/846/839 pH 7.80/7.31/6.87/6.86

Sampling Method and Material Disposable teflon Bailer with monofilament line

Constituents Sampled	Container Description	Preservative
1. <u>8020</u>	From Lab <u>X</u> or BB&L <u>(3) 40 ml. glass vials clear</u>	<u>14°C HCl, Ice</u>
2. <u>418.1</u>	<u>(1) 500 ml. glass amber</u>	<u>H₂SO₄, Ice</u>
3. <u>610</u>	<u>(1) 1000 ml. glass amber</u>	<u>Ice</u>
4. <u>239.2</u>	<u>(1) 250 ml. plastic</u>	<u>HNO₃, Ice</u>
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____

Remarks Prepared field blank prior to sampling. Trip blank prepared by lab.

Sampling Personnel Alan Fass

GAL/FT.	1-1/4" = 0.077	2" = 0.16	3" = 0.37	4" = 0.65
	1-1/2" = 0.10	2-1/2" = 0.24	3-1/2" = 0.50	6" = 1.46



APPENDIX G

APPENDIX G

LABORATORY ANALYTICAL REPORT

Case Narrative: D580996

Date: 04/22/95

Client: Blasland Bouck & Lee, Inc.

Client Project Manager: Mr. Jose Garrido

Laboratory Project Manager: Paul Canevaro

Laboratory: Savannah Laboratories & Environmental Services, Inc.,
Deerfield Beach Division

During final review of project D580996 a clerical error was found. Sample 80996-5 (Refuel Pit 1 SB-3 (4-6)) was reported to have petroleum hydrocarbons at 10 mg/kg dry weight. The report should have read less than 10 mg/kg dry weight (<10 mg/kg).

No other analytical or quality problems occurred.



Paul Canevaro
Project Manager

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D5-80996

Received: 17 MAR 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (US Navy)
Sampled By: Mike Bauer

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES				
80996-1	Refuel Pit 1 SB-4 (2-4)				
80996-2	Refuel Pit 1 SB-2 (4-6)				
80996-3	Refuel Pit 1 SB-3 (2-4)				
80996-4	Refuel Pit 1 SB-4 (4-6)				
80996-5	Refuel Pit 1 SB-3 (4-6)				
PARAMETER	80996-1	80996-2	80996-3	80996-4	80996-5
Purgeable Aromatics (602/8020)					
Benzene, ug/kg dw	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene, ug/kg dw	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene, ug/kg dw	<5.0	<5.0	<5.0	<5.0	<5.0
Xylenes, ug/kg dw	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw	<50	<50	<50	<50	<50
Date Analyzed	03.20.95	03.20.95	03.20.95	03.20.95	03.20.95
Method Number	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Dilution factor	1	1	1	1	1
Petroleum Hydrocarbons					
Petroleum Hydrocarbons, mg/kg dw	<10	<10	<10	<10	<10
Date Extracted	03.20.95	03.20.95	03.20.95	03.20.95	03.20.95
Date Analyzed	03.22.95	03.22.95	03.22.95	03.22.95	03.22.95
Method Number	3550/418.1	3550/418.1	3550/418.1	3550/418.1	3550/418.1
Percent Solids, %	85	80	85	82	80

Validated & Certified by 

License No.: 620

Mr. Jose Garrido
 Blasland Bouck & Lee, Inc.
 5950 Hazeltine National Dr., Suite 140
 Orlando, FL 32822

Project: #399.19 (US Navy)
 Sampled By: Mike Bauer

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES				
80996-6	Refuel Pit 1 SB-1 (4-6)				
80996-7	Refuel Pit 1 Dup 1				
80996-8	Refuel Pit 1 SB-6 (4-6)				
80996-9	Refuel Pit 1 SB-6 (2-4)				
80996-10	Refuel Pit 1 SB-5 (2-4)				
PARAMETER	80996-6	80996-7	80996-8	80996-9	80996-10
Purgeable Aromatics (602/8020)					
Benzene, ug/kg dw	<5.0	<5.0	<5.0	<5.0	<5.0
Ethylbenzene, ug/kg dw	<5.0	<5.0	<5.0	<5.0	<5.0
Toluene, ug/kg dw	<5.0	<5.0	<5.0	<5.0	<5.0
Xylenes, ug/kg dw	<5.0	<5.0	<5.0	<5.0	<5.0
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw	<50	<50	<50	<50	<50
Date Analyzed	03.20.95	03.21.95	03.21.95	03.20.95	03.22.95
Method Number	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8020
Dilution factor	1	1	1	1	1
Petroleum Hydrocarbons					
Petroleum Hydrocarbons, mg/kg dw	<10	<10	<10	<10	<10
Date Extracted	03.20.95	03.20.95	03.20.95	03.20.95	03.20.95
Date Analyzed	03.22.95	03.22.95	03.22.95	03.22.95	03.22.95
Method Number	3550/418.1	3550/418.1	3550/418.1	3550/418.1	3550/418.1
Percent Solids, %	79	83	77	86	91

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License No.: 620

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D5-80996

Received: 17 MAR 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (US Navy)
Sampled By: Mike Bauer

REPORT OF RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES			
80996-11	Refuel Pit 1 SB-5 (4-6)			
80996-12	Refuel Pit 1 SB-7 (8-10)			
80996-13	Refuel Pit 1 SB-7 (4-6)			
PARAMETER		80996-11	80996-12	80996-13
Purgeable Aromatics (602/8020)				
Benzene, ug/kg dw		<5.0	<5.0	<5.0
Ethylbenzene, ug/kg dw		<5.0	<5.0	<5.0
Toluene, ug/kg dw		<5.0	<5.0	<5.0
Xylenes, ug/kg dw		<5.0	<5.0	<5.0
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw		<50	<50	<50
Date Analyzed		03.20.95	03.21.95	03.21.95
Method Number		EPA 8020	EPA 8020	EPA 8020
Dilution factor		1	1	1
Petroleum Hydrocarbons				
Petroleum Hydrocarbons, mg/kg dw		<10	<10	<10
Date Extracted		03.20.95	03.20.95	03.20.95
Date Analyzed		03.22.95	03.22.95	03.22.95
Method Number		3550/418.1	3550/418.1	3550/418.1
Percent Solids, %		76	82	82

Validated & Certified by: 

License No.: 620

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D5-80996

Received: 17 MAR 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (US Navy)
Sampled By: Mike Bauer

REPORT OF RESULTS

Page 4

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED	
80996-14	Refuel Pit 1 (Decon Water)	03-16-95	
80996-15	Refuel Pit 1 (Eq. Blank)	03-16-95	
PARAMETER		80996-14	80996-15
Purgeable Aromatics (602/8020)			
Benzene, ug/l		<1.0	<1.0
Ethylbenzene, ug/l		<1.0	<1.0
Toluene, ug/l		<1.0	<1.0
Xylenes, ug/l		<1.0	<1.0
Methyl-Tert-Butyl-Ether (MTBE), ug/l		<10	<10
Date Analyzed		03.21.95	03.21.95
Method Number		EPA 602	EPA 602
Dilution factor		1	1

Validated & Certified by: 

License No.: 

SL SAVANNAH LABORATORIES
 & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D5-80996

Received: 17 MAR 95

Mr. Jose Garrido
 Blasland Bouck & Lee, Inc.
 5950 Hazeltine National Dr., Suite 140
 Orlando, FL 32822

Project: #399.19 (US Navy)
 Sampled By: Mike Bauer

REPORT OF RESULTS

Page 5

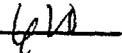
LOG NO SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID

80996-16 Lab Blank
 80996-17 Accuracy - % Recovery (Mean)
 80996-18 Precision - Relative % Difference
 80996-19 Detection Limit

PARAMETER	80996-16	80996-17	80996-18	80996-19
Purgeable Aromatics (602/8020)				
Benzene, ug/kg dw	<5.0	98 %	2.0 %	5.0
Ethylbenzene, ug/kg dw	<5.0	---	---	5.0
Toluene, ug/kg dw	<5.0	98 %	1.0 %	5.0
Xylenes, ug/kg dw	<5.0	---	---	5.0
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw	<50	---	---	50
Date Analyzed	03.20.95	---	---	---
Method Number	EPA 8020	---	---	---
Petroleum Hydrocarbons				
Petroleum Hydrocarbons, mg/kg dw	<10	68 %	1.5 %	10
Date Extracted	03.20.95	---	---	---
Date Analyzed	03.22.95	---	---	---
Method Number	3550/418.1	---	---	---

SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371.
 Method References: EPA SW-846 and EPA 600/4-79-020.


 Paul Canevaro

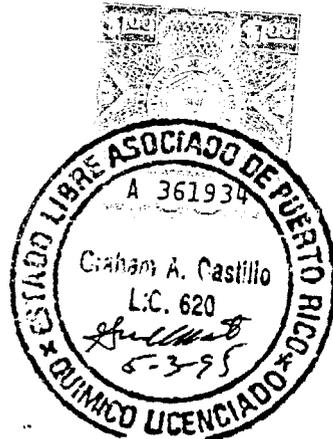
Validated & Certified by: 
 License No.: 

Final Page Of Report

CERTIFICATE

I certify that I have reviewed and evaluated all analytical raw data concerning all the samples contained in Laboratory Reports of analyses for Savannah Laboratories Log No. D5-80996.

I hereby certify that, to the best of my knowledge, the results for said log number, pages 1-5 (inclusive), signed by Paul Canevaro, are correct and reliable.



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

O NUMBER	PROJECT NUMBER 399.111	PROJECT NAME US Navy	MATRIX TYPE	REQUIRED ANALYSES	PAGE 1 OF 2
CLIENT NAME BBL		TELEPHONE/FAX NO. 407 856 5502		<input checked="" type="checkbox"/> STANDARD TAT <input type="checkbox"/> EXPEDITED TAT * REPORT DUE DATE _____ * SUBJECT TO RUSH FEES	
CLIENT ADDRESS Orlando, FL		CITY, STATE, ZIP CODE			
AMPLER(S) NAME(S)		CLIENT PROJECT MANAGER Jose Garrido			

DATE	TIME	SAMPLE IDENTIFICATION	MATRIX TYPE	NUMBER OF CONTAINERS SUBMITTED															
				1	2	3	4	5	6	7	8	9	10						
3/15	1320	Refuel Pit 1 SB-4(2-4)	X																
3/14	1650	Refuel Pit 1 SB-2(4-6)	X																
3/15	0750	Refuel Pit 1 SB-3(2-4)	X																
3/15	1355	Refuel Pit 1 SB-4(4-6)	X																
3/15	0815	Refuel Pit 1 SB-3(4-6)	X																
3/14	1145	Refuel Pit 1 SB-1(4-6)	X																
3/15	—	Refuel Pit 1 Dup. 1	X																
3/15	1605	Refuel Pit 1 SB-6(4-6)	X																
3/15	1555	Refuel Pit 1 SB-6(2-4)	X																
3/15	1446	Refuel Pit 1 SB-5(2-4)	X																
3/15	1500	Refuel Pit 1 SB-5(4-6)	X																
3/16	0800	Refuel Pit 1 (Decon Water)	X																

* If hit > 100 mg
 per kg run for
 modified
 8015 DRO

RELINQUISHED BY: (SIGNATURE) EMPTY BOTTLES	DATE 3/20	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i>	DATE 3/15	TIME 1520
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY						LABORATORY REMARKS
RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>[Signature]</i>	DATE 3/17/15	TIME 9:05	CUSTODY INTACT <input type="checkbox"/> YES <input type="checkbox"/> NO	CUSTODY SEAL NO.	S.L. LOG NO. D580996	

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT NUMBER 399.19		PROJECT NAME US Navy		REQUIRED ANALYSES										PAGE 2 OF 2			
CLIENT NAME 313L		TELEPHONE/FAX NO. (407) 856 5502		MATRIX TYPE AQUEOUS MATRIX NONAQUEOUS MATRIX OIL MATRIX AIR MATRIX BTEX 418.1*										<input checked="" type="checkbox"/> STANDARD TAT <input type="checkbox"/> EXPEDITED TAT			
CLIENT ADDRESS Orlando, FL		CITY, STATE, ZIP CODE												REPORT DUE DATE _____			
AMPLIFIER(S) NAME(S) Mike Bauer		CLIENT PROJECT MANAGER Jose Garrido		NUMBER OF CONTAINERS SUBMITTED													
SAMPLING DATE		TIME		SAMPLE IDENTIFICATION													
3/16		08:00		Refuel Pit 1 (Eq. Blank)		X		1		1							
3/16		10:15		Refuel Pit 1 SB-7 (8-10)		X		1		1							
3/16		09:45		Refuel Pit 1 SB-7 (4-6)		X		1		1						* If hit > 100mg per kg, run modified 8015 DRO	

RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i>		DATE 1/31/95		TIME		RECEIVED BY: (SIGNATURE)		DATE		TIME		RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i>		DATE 3/16		TIME 1600	
RECEIVED BY: (SIGNATURE)		DATE		TIME		RELINQUISHED BY: (SIGNATURE)		DATE		TIME		RECEIVED BY: (SIGNATURE)		DATE		TIME	

FOR SAVANNAH LABORATORY USE ONLY										LABORATORY REMARKS							
RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>[Signature]</i>		DATE 3-17-95		TIME 9:05		CUSTODY INTACT <input type="checkbox"/> YES <input type="checkbox"/> NO		CUSTODY SEAL NO.									

LOG NO: D5-81017

Received: 18 MAR 95

Mr. Jose Garrido
 Blasland Bouck & Lee, Inc.
 5950 Hazeltine National Dr., Suite 140
 Orlando, FL 32822

Project: #399.19 (US Navy)
 Sampled By: Mike Bauer

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED				
81017-1	Refuel Pit SB-8 (2-4)	03-16-95				
81017-2	Refuel Pit SB-8 (10-12)	03-16-95				
81017-3	Refuel Pit SB-9 (6-8)	03-17-95				
81017-4	Refuel Pit SB-9 (2-4)	03-17-95				
81017-5	Refuel Pit Dup 2	03-17-95				
PARAMETER	81017-1	81017-2	81017-3	81017-4	81017-5	
Purgeable Aromatics (602/8020)						
Benzene, ug/kg dw	<5.0	<5.0	<5.0	<5.0	<5.0	
Ethylbenzene, ug/kg dw	<5.0	<5.0	<5.0	<5.0	<5.0	
Toluene, ug/kg dw	<5.0	<5.0	<5.0	<5.0	<5.0	
Xylenes, ug/kg dw	<5.0	<5.0	<5.0	<5.0	<5.0	
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw	<50	<50	<50	<50	<50	
Date Analyzed	03.23.95	03.24.95	03.24.95	03.24.95	03.24.95	
Method Number	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8020	
Dilution factor	1	1	1	1	1	
Petroleum Hydrocarbons						
Petroleum Hydrocarbons, mg/kg dw	<10	<10	<10	<10	<10	
Date Extracted	03.21.95	03.21.95	03.21.95	03.21.95	03.21.95	
Date Analyzed	03.22.95	03.22.95	03.22.95	03.22.95	03.22.95	
Method Number	3550/418.1	3550/418.1	3550/418.1	3550/418.1	3550/418.1	
Percent Solids, %	81	82	79	80	78	

Validated & Certified by: 

License No.: 620

Mr. Jose Garrido
 Blasland Bouck & Lee, Inc.
 5950 Hazeltine National Dr., Suite 140
 Orlando, FL 32822

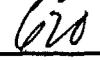
Project: #399.19 (US Navy)
 Sampled By: Mike Bauer

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID			
81017-6	Lab Blank			
81017-7	Accuracy - % Recovery (Mean)			
81017-8	Precision - Relative % Difference			
81017-9	Detection Limit			
PARAMETER	81017-6	81017-7	81017-8	81017-9
Purgeable Aromatics (602/8020)				
Benzene, ug/kg dw	<5.0	100 %	0 %	5.0
Ethylbenzene, ug/kg dw	<5.0	---	---	5.0
Toluene, ug/kg dw	<5.0	100 %	0 %	5.0
Xylenes, ug/kg dw	<5.0	---	---	5.0
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw	<50	---	---	50
Date Analyzed	03.24.95	---	---	---
Method Number	EPA 8020	---	---	---
Petroleum Hydrocarbons				
Petroleum Hydrocarbons, mg/kg dw	<10	70 %	0 %	10
Date Extracted	03.21.95	---	---	---
Date Analyzed	03.22.95	---	---	---
Method Number	3550/418.1	---	---	---

SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371.
 Method Reference: EPA SW-846.


 Paul Canevaro

Validated & Certified by: 
 License No.: 

CERTIFICATE

I certify that I have reviewed and evaluated all analytical raw data concerning all the samples contained in Laboratory Reports of analyses for Savannah Laboratories Log No. D5-81017.

I hereby certify that, to the best of my knowledge, the results for said log number, pages 1-2 (inclusive), signed by Paul Canevaro, are correct and reliable.



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

NO. NUMBER	PROJECT NUMBER 399.19	PROJECT NAME US Navy	MATRIX TYPE	REQUIRED ANALYSES	PAGE 1	OF 1
CLIENT NAME	TELEPHONE/FAX NO. 407 586 5502		AQUEOUS MATRIX NONAQUEOUS MATRIX OIL MATRIX AIR MATRIX BTEX 410.1*		<input checked="" type="checkbox"/> STANDARD TAT <input type="checkbox"/> EXPEDITED TAT	
CLIENT ADDRESS Orlando, FL	CITY, STATE, ZIP CODE					
AMPLER(S) NAME(S) Mike Bauer		CLIENT PROJECT MANAGER J. Garrido		REPORT DUE DATE _____		
SAMPLING DATE		SAMPLE IDENTIFICATION		NUMBER OF CONTAINERS SUBMITTED		

DATE	TIME	SAMPLE IDENTIFICATION	AQUEOUS MATRIX	NONAQUEOUS MATRIX	OIL MATRIX	AIR MATRIX	BTEX	410.1*
3/16	1405	Refuel Pit 1 SB-8(2-4)	X				1	1
3/16	1445	Refuel Pit 1 SB-8(10-12)	X				1	1
3/17	1120	Refuel Pit 1 SB-9(6-8)	X				1	1
3/17	1045	Refuel Pit 1 SB-9(2-4)	X				1	1
3/17	-	Refuel Pit 1 Dup 2	X				1	1

* If hit greater than 100 mg/kg run #8 (DPA) 0015 + DRO

RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i>	DATE 3/18/95	TIME 1202	RECEIVED BY: (SIGNATURE)	DATE	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

FOR SAVANNAH LABORATORY USE ONLY

RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>[Signature]</i>	DATE 3/18/95	TIME 1202	CUSTODY INTACT <input type="checkbox"/> YES <input type="checkbox"/> NO	CUSTODY SEAL NO.	S.L. LOG NO. D581017
---	-----------------	--------------	--	------------------	-------------------------

LABORATORY REMARKS

Case Narrative: D581072

Date: 05/09/95

Client: Blasland Bouck & Lee, Inc.

Client Project Manager: Mr. Jose Garrido

Laboratory Project Manager: Paul Canevaro

Laboratory: Savannah Laboratories & Environmental Services, Inc.,
Deerfield Beach Division

During the final review of project D581072, a clerical error was found for sample 81072-4 (RRP#1 SB-11 (4-6')). That sample was initially reported to have a concentration of 29ug/kg of xylenes present. The actual concentration of xylenes in the sample is 11ug/kg.

No other analytical or quality problems occurred.



Paul Canevaro
Project Manager

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D5-81072

Received: 23 MAR 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (USN)
Sampled By: Mike Bauer

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES					DATE SAMPLED
81072-1	Rapid Refuel Pit #1 SB-10 (4-6')					03-22-95
81072-2	RRP#1 SB-10 (6-8')					03-22-95
81072-3	RRP#1 SB-11 (2-4')					03-22-95
81072-4	RRP#1 SB-11 (4-6')					03-22-95
81072-5	RRP#1 SB-11 (8-10')					03-22-95
PARAMETER	81072-1	81072-2	81072-3	81072-4	81072-5	
Purgeable Aromatics (602/8020)						
Benzene, ug/kg dw	<5.0	<5.0	<50*F65	<5.0	<5.0	
Ethylbenzene, ug/kg dw	<5.0	<5.0	<50*F65	12	<5.0	
Toluene, ug/kg dw	<5.0	<5.0	<50*F65	29	13	
Xylenes, ug/kg dw	<5.0	<5.0	220	11	<5.0	
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw	<50	<50	<500*F65	<50	<50	
Date Analyzed	03.27.95	03.27.95	03.27.95	03.28.95	03.27.95	
Method Number	EPA 8020	PA 8020	EPA 8020	EPA 8020	EPA 8020	
Dilution factor	1	1	10	1	1	
Petroleum Hydrocarbons						
Petroleum Hydrocarbons, mg/kg dw	<10	<10	120	52	<10	
Date Extracted	03.27.95	03.27.95	03.27.95	03.27.95	03.27.95	
Date Analyzed	03.28.95	03.28.95	03.28.95	03.28.95	03.28.95	
Method Number	3550/418.1	3550/418.1	3550/418.1	3550/418.1	3550/418.1	
Percent Solids, %	82	74	89	82	79	

Validated & Certified by: 

License No.: 

SL SAVANNAH LABORATORIES
 & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D5-81072

Received: 23 MAR 95

Mr. Jose Garrido
 Blasland Bouck & Lee, Inc.
 5950 Hazeltine National Dr., Suite 140
 Orlando, FL 32822

Project: #399.19 (USN)
 Sampled By: Mike Bauer

REPORT OF RESULTS

Page 2

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID

81072-6 Lab Blank
 81072-7 Accuracy - % Recovery (Mean)
 81072-8 Precision - Relative % Difference
 81072-9 Detection Limit

PARAMETER	81072-6	81072-7	81072-8	81072-9
Purgeable Aromatics (602/8020)				
Benzene, ug/kg dw	<5.0	105 %	0 %	5.0
Ethylbenzene, ug/kg dw	<5.0	---	---	5.0
Toluene, ug/kg dw	<5.0	105 %	1.9 %	5.0
Xylenes, ug/kg dw	<5.0	---	---	5.0
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw	<50	---	---	50
Date Analyzed	03.27.95	---	---	---
Method Number	EPA 8020	---	---	---
Petroleum Hydrocarbons				
Petroleum Hydrocarbons, mg/kg dw	<10	78 %	1.3 %	10
Date Extracted	03.27.95	---	---	---
Date Analyzed	03.28.95	---	---	---
Method Number	3550/418.1	---	---	---

*F65 - Elevated detection limits were reported due to sample matrix interference.
 SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371.
 Method Reference: EPA SW-846.

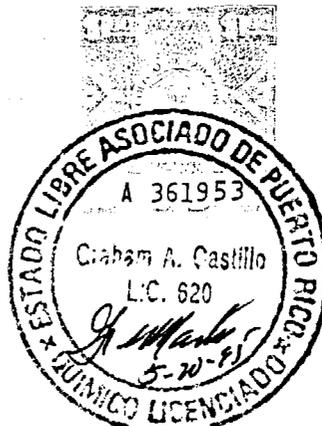

 Paul Canevaro

Validated & Certified by: 
 License No.: 620

CERTIFICATE

I certify that I have reviewed and evaluated all analytical raw data concerning all the samples contained in Laboratory Reports of analyses for Savannah Laboratories Log No. D5-81072.

I hereby certify that, to the best of my knowledge, the results for said log number, pages 1-2 (inclusive), signed by Paul Canevaro, are correct and reliable.



ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

O. NUMBER		PROJECT NUMBER	PROJECT NAME	MATRIX TYPE	REQUIRED ANALYSES										PAGE	OF		
		399.19	USN															
CLIENT NAME			TELEPHONE/FAX NO.		AQUEOUS MATRIX NONAQUEOUS MATRIX OIL MATRIX AIR MATRIX BTEx 4/8.1 *											<input type="checkbox"/> STANDARD TAT <input type="checkbox"/> EXPEDITED TAT * REPORT DUE DATE _____ * SUBJECT TO RUSH FEES		
CLIENT ADDRESS			CITY, STATE, ZIP CODE															
AMPLER(S) NAME(S)			CLIENT PROJECT MANAGER															
SAMPLING DATE			SAMPLE IDENTIFICATION															
DATE		TIME	SAMPLE IDENTIFICATION		NUMBER OF CONTAINERS SUBMITTED													
2/1/95	1610		Rapid Retest Pit 1	SB-10 (4-6')	X		X	X										* if Hit Greater than
2/1/95	1655		↓ ↓ ↓	SB-10 (6-8')	X		Y	X										100 mg/kg Ben
12/2/95	0959		↓ ↓ ↓	SB-11 (2-4)	X		X	Y										8015 + DRO
12/4/95	1012		↓ ↓ ↓	SB-11 (4-6)	X		X	X										
2/2/95	1050		↓ ↓ ↓	SB-11 (8-10)	X		X	X										

EMPTY BOTTLES
 RECEIVED BY: (SIGNATURE) *[Signature]*

DATE: 2-6-95
 TIME: _____
 RECEIVED BY: (SIGNATURE) *[Signature]*

DATE: 3/22/95
 TIME: 1100
 RECEIVED BY: (SIGNATURE) _____

DATE: _____
 TIME: _____
 RECEIVED BY: (SIGNATURE) _____

FOR SAVANNAH LABORATORY USE ONLY					LABORATORY REMARKS				
RECEIVED FOR LABORATORY BY: (SIGNATURE)	DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	S.L. LOG NO.				
<i>[Signature]</i>	3/23/95	9:35	<input type="checkbox"/> YES <input type="checkbox"/> NO		DS-81072				

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D5-81162

Received: 30 MAR 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (Rapid Refuel Pit #1)
Sampled By: M. Bauer

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED				
81162-1	RRP #1 SB-12 (2-4')	03-24-95				
81162-2	RRP #1 SB-12 (4-6')	03-24-95				
81162-3	RRP #1 SB-13 (0-2')	03-29-95				
81162-4	RRP #1 SB-14 (0-2')	03-29-95				
81162-5	RRP #1 SB-15 (0-2')	03-29-95				
PARAMETER	81162-1	81162-2	81162-3	81162-4	81162-5	
Purgeable Aromatics (602/8020)						
Benzene, ug/kg dw	<25	<25	<5.0	<25	<5.0	
Ethylbenzene, ug/kg dw	<25	<25	<5.0	130	<5.0	
Toluene, ug/kg dw	290	71	<5.0	64	<5.0	
Xylenes, ug/kg dw	100	90	<5.0	720	<5.0	
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw	<250	<250	<50	<250	<50	
Date Analyzed	04.09.95	04.09.95	04.03.95	04.03.95	04.04.95	
Method Number	EPA 8020	EPA 8020	EPA 8020	EPA 8020	EPA 8020	
Dilution factor	5	5	1	5	1	
Petroleum Hydrocarbons						
Petroleum Hydrocarbons, mg/kg dw	400	1200	<10	2300	12	
Date Extracted	03.31.95	03.31.95	03.31.95	03.31.95	03.31.95	
Date Analyzed	04.03.95	04.03.95	04.03.95	04.03.95	04.03.95	
Method Number	3550/418.1	3550/418.1	3550/418.1	3550/418.1	3550/418.1	
Percent Solids, %	86	84	86	69	84	

Validated & Certified by: 

License No.: 620

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D5-81162

Received: 30 MAR 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (Rapid Refuel Pit #1)
Sampled By: M. Bauer

REPORT OF RESULTS

Page 2

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID

81162-6 Lab Blank
81162-7 Accuracy - % Recovery (Mean)
81162-8 Precision - Relative % Difference
81162-9 Detection Limit

PARAMETER	81162-6	81162-7	81162-8	81162-9
Purgeable Aromatics (602/8020)				
Benzene, ug/kg dw	<5.0	92 %	1.1 %	5.0
Ethylbenzene, ug/kg dw	<5.0	---	---	5.0
Toluene, ug/kg dw	<5.0	89 %	2.2 %	5.0
Xylenes, ug/kg dw	<5.0	---	---	5.0
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw	<50	---	---	50
Date Analyzed	04.04.95	---	---	---
Method Number	EPA 8020	---	---	---
Petroleum Hydrocarbons				
Petroleum Hydrocarbons, mg/kg dw	<10	76 %	0 %	10
Date Extracted	03.31.95	---	---	---
Date Analyzed	04.03.95	---	---	---
Method Number	3550/418.1	---	---	---

SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371.
Method References: EPA SW-846 and EPA 600/4-79-020.


Paul Canevaro

Validated & Certified by: 

License No.: 620

Final Page Of Report

Laboratories in Savannah, GA • Tallahassee, FL • Tampa, FL • Deerfield Beach, FL • Mobile, AL • New Orleans, LA

CERTIFICATE

I certify that I have reviewed and evaluated all analytical raw data concerning all the samples contained in Laboratory Reports of analyses for Savannah Laboratories Log No. D5-81162.

I hereby certify that, to the best of my knowledge, the results for said log number, pages 1-2 (inclusive), signed by Paul Canevaro, are correct and reliable.



SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D5-81330

Received: 12 APR 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (Rapid Refuel Pits #1)
Sampled By: Julie Skidmore

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED			
81330-1	RRP#1-SB18 (4-6')	04-11-95			
81330-2	RRP#1-SB18 (10-12')	04-11-95			
81330-3	RRP#1-SB19 (4-6')	04-11-95			
81330-4	RRP#1-SB19 (16-18')	04-11-95			
PARAMETER		81330-1	81330-2	81330-3	81330-4
Purgeable Aromatics (602/8020)					
Benzene, ug/kg dw		<5.0	<5.0	<5.0	<5.0
Chlorobenzene, ug/kg dw		<5.0	<5.0	<5.0	<5.0
1,2-Dichlorobenzene, ug/kg dw		<5.0	<5.0	<5.0	<5.0
1,3-Dichlorobenzene, ug/kg dw		<5.0	<5.0	<5.0	<5.0
1,4-Dichlorobenzene, ug/kg dw		<5.0	<5.0	<5.0	<5.0
Ethylbenzene, ug/kg dw		<5.0	<5.0	<5.0	<5.0
Toluene, ug/kg dw		<5.0	<5.0	14	<5.0
Xylenes, ug/kg dw		<5.0	<5.0	<5.0	<5.0
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw		<50	<50	<50	<50
Date Analyzed		04.13.95	04.13.95	04.18.95	04.13.95
Method Number		EPA 8020	EPA 8020	EPA 8020	EPA 8020
Dilution factor		1	1	1	1
Petroleum Hydrocarbons					
Petroleum Hydrocarbons, mg/kg dw		<10	<10	<10	<10
Date Extracted		04.13.95	04.13.95	04.13.95	04.13.95
Date Analyzed		04.13.95	04.13.95	04.13.95	04.13.95
Method Number		3550/418.1	3550/418.1	3550/418.1	3550/418.1
Percent Solids, %		80	82	82	74

Validated & Certified by: 

License No.: 

Mr. Jose Garrido
 Blasland Bouck & Lee, Inc.
 5950 Hazeltine National Dr., Suite 140
 Orlando, FL 32822

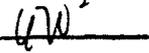
Project: #399.19 (Rapid Refuel Pits #1)
 Sampled By: Julie Skidmore

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID			
81330-5	Lab Blank			
81330-6	Accuracy - % Recovery (Mean)			
81330-7	Precision - Relative % Difference			
81330-8	Detection Limit			
PARAMETER	81330-5	81330-6	81330-7	81330-8
Purgeable Aromatics (602/8020)				
Benzene, ug/kg dw	<5.0	93 %	15 %	5.0
Chlorobenzene, ug/kg dw	<5.0	92 %	16 %	5.0
1,2-Dichlorobenzene, ug/kg dw	<5.0	---	---	5.0
1,3-Dichlorobenzene, ug/kg dw	<5.0	---	---	5.0
1,4-Dichlorobenzene, ug/kg dw	<5.0	---	---	5.0
Ethylbenzene, ug/kg dw	<5.0	---	---	5.0
Toluene, ug/kg dw	<5.0	88 %	17 %	5.0
Xylenes, ug/kg dw	<5.0	---	---	5.0
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw	<50	---	---	50
Date Analyzed	04.13.95	---	---	---
Method Number	EPA 8020	---	---	---
Petroleum Hydrocarbons				
Petroleum Hydrocarbons, mg/kg dw	<10	90 %	0 %	10
Date Extracted	04.13.95	---	---	---
Date Analyzed	04.13.95	---	---	---
Method Number	3550/418.1	---	---	---

SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371.
 Method References: EPA SW-846 and EPA 600/4-79-020.

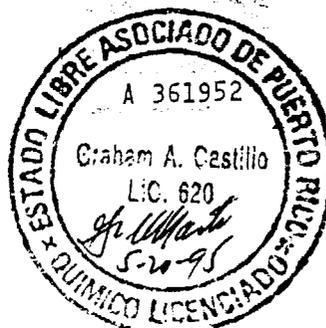

 Paul Canevaro

Validated & Certified by: 
 License No.: 

CERTIFICATE

I certify that I have reviewed and evaluated all analytical raw data concerning all the samples contained in Laboratory Reports of analyses for Savannah Laboratories Log No. D4-81330.

I hereby certify that, to the best of my knowledge, the results for said log number, pages 1-2 (inclusive), signed by Paul Canevaro, are correct and reliable.



SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

- 5102 LaRoche Avenue, Savannah, GA 31404
- 2846 Industrial Plaza Drive, Tallahassee, FL 32301
- 414 SW 12th Avenue, Deerfield Beach, FL 33442
- 900 Lakeside Drive, Mobile, AL 36693
- 6712 Benjamin Road, Suite 100, Tampa, FL 33634
- 110 Alpha Drive, Destrehan, LA 70047

- Phone: (912) 354-7858 Fax: (912) 352-0165
- Phone: (904) 878-3994 Fax: (904) 878-9504
- Phone: (305) 421-7400 Fax: (305) 421-2584
- Phone: (205) 666-6633 Fax: (205) 666-6696
- Phone: (813) 885-7427 Fax: (813) 885-7049
- Phone: (504) 764-1100 Fax: (504) 725-1163

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT REFERENCE Rapid Refuel Pits #1		PROJECT NO. 399.19	P.O. NUMBER		MATRIX TYPE	REQUIRED ANALYSES					PAGE	OF
PROJECT LOC. (State) Puerto Rico	SAMPLER(S) NAME Julie Skidmore		PHONE		AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (oil, solvent, etc)	8020 418.1					STANDARD REPORT DELIVERY <input type="checkbox"/> EXPEDITED REPORT DELIVERY (surcharge) <input type="checkbox"/> Date Due: _____	
CLIENT NAME BB&L		CLIENT PROJECT MANAGER Jose Garrido		FAX								
CLIENT ADDRESS (CITY, STATE, ZIP) Orlando FL												
SAMPLE		SL NO.	SAMPLE IDENTIFICATION			NUMBER OF CONTAINERS SUBMITTED					REMARKS	
DATE	TIME											
04/10	13:15		RRP#1 - SB18 (4-6')			X	1	1				If 418.1 > 100 mg/kg, please run modified 8015 - DRO
04/10	13:45		RRP#1 - SB18 (10-12')			X	1	1				
04/11	09:20		RRP#1 - SB19 (4-6')			X	1	1				
04/11	10:40		RRP#1 - SB19 (16-18')			X	1	1				
RELINQUISHED BY: (SIGNATURE)			DATE	TIME	RELINQUISHED BY: (SIGNATURE)			DATE	TIME	RELINQUISHED BY: (SIGNATURE)		
			3/30/95	4:46 ^{PM}	<i>[Signature]</i>			04/11	13:30			
RECEIVED BY: (SIGNATURE)			DATE	TIME	RECEIVED BY: (SIGNATURE)			DATE	TIME	RECEIVED BY: (SIGNATURE)		
LABORATORY USE ONLY												
RECEIVED FOR LABORATORY BY: (SIGNATURE)			DATE	TIME	CUSTODY INTACT	CUSTODY SEAL NO.	SL LOG NO.	LABORATORY REMARKS:				
<i>[Signature]</i>			4/12/95	1140	<input type="checkbox"/> YES <input type="checkbox"/> NO		D5-81330					

ORIGINAL

Mr. Jose Garrido
 Blasland Bouck & Lee, Inc.
 5950 Hazeltine National Dr., Suite 140
 Orlando, FL 32822

Project: #399.19 (RRP #1)
 Sampled By: Julie Skidmore

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED		
81358-1	RRP #1-MW1	04-13-95		
81358-2	RRP #2-MW2	04-13-95		
81358-3	RRP #1-DUP	04-13-95		
PARAMETER		81358-1	81358-2	81358-3
Aromatic Volatiles (8020)				
Benzene, ug/l		<1.0	<1.0	<1.0
Chlorobenzene, ug/l		<1.0	<1.0	<1.0
1,2-Dichlorobenzene, ug/l		<1.0	<1.0	<1.0
1,3-Dichlorobenzene, ug/l		<1.0	<1.0	<1.0
1,4-Dichlorobenzene, ug/l		<1.0	<1.0	<1.0
Ethylbenzene, ug/l		<1.0	<1.0	<1.0
Toluene, ug/l		<1.0	<1.0	<1.0
Xylenes, ug/l		<1.0	<1.0	<1.0
Methyl-tert-butyl ether (MTBE), ug/l		<10	<10	<10
Date Analyzed		04.20.95	04.19.95	04.20.95
Method Number		EPA 602	EPA 602	EPA 602
Dilution factor		1	1	1
Petroleum Hydrocarbons				
Petroleum Hydrocarbons, mg/l		<1.0	<1.0	<1.0
Date Extracted		04.19.95	04.19.95	0.19.95
Date Analyzed		04.20.95	04.20.95	04.20.95
Method Number		EPA 418.1	EPA 418.1	EPA 418.1

Validated & Certified by: 

License No.: 670

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

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LOG NO: D5-81358

Received: 14 APR 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

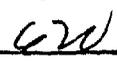
Project: #399.19 (RRP #1)
Sampled By: Julie Skidmore

REPORT OF RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
81358-4	RRP #1-MW5	04-13-95
PARAMETER	81358-4	
Aromatic Volatiles (8020)		
Benzene, ug/l		<1.0
Chlorobenzene, ug/l		<1.0
1,2-Dichlorobenzene, ug/l		<1.0
1,3-Dichlorobenzene, ug/l		<1.0
1,4-Dichlorobenzene, ug/l		<1.0
Ethylbenzene, ug/l		<1.0
Toluene, ug/l		<1.0
Xylenes, ug/l		<1.0
Methyl-tert-butyl ether (MTBE), ug/l		<10
Date Analyzed		04.20.95
Method Number		EPA 602
Dilution factor		1
Petroleum Hydrocarbons		
Petroleum Hydrocarbons, mg/l		<1.0
Date Extracted		04.19.95
Date Analyzed		04.20.95
Method Number		EPA 418.1
Lead		
Lead, mg/l		<0.0050
Date Analyzed		04.18.95
Method Number		EPA 239.2

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LOG NO: D5-81358

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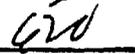
Project: #399.19 (RRP #1)
 Sampled By: Julie Skidmore

REPORT OF RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
81358-5	RRP #1-Equip. Blank	04-13-95
PARAMETER	81358-5	
Aromatic Volatiles (8020)		
Benzene, ug/l		<1.0
Chlorobenzene, ug/l		<1.0
1,2-Dichlorobenzene, ug/l		<1.0
1,3-Dichlorobenzene, ug/l		<1.0
1,4-Dichlorobenzene, ug/l		<1.0
Ethylbenzene, ug/l		<1.0
Toluene, ug/l		<1.0
Xylenes, ug/l		<1.0
Methyl-tert-butyl ether (MTBE), ug/l		<10
Date Analyzed		04.20.95
Method Number		EPA 602
Dilution factor		1

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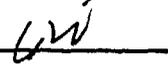
Project: #399.19 (RRP #1)
Sampled By: Julie Skidmore

REPORT OF RESULTS

Page 4

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
81358-5	RRP #1-Equip. Blank	04-13-95
PARAMETER	81358-5	
Polynuclear Aromatic Hydrocarbons (EPA 610)		
Acenaphthene, ug/l		<10
Acenaphthylene, ug/l		<10
Benzo(a)pyrene, ug/l		<10
Benzo(g,h,i)perylene, ug/l		<10
Benzo(b,k)fluoranthene, ug/l		<10
Chrysene + Benzo(a)anthracene, ug/l		<10
Fluoranthene, ug/l		<10
Fluorene, ug/l		<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l		<10
Naphthalene, ug/l		<10
Phenanthrene + Anthracene, ug/l		<10
Pyrene, ug/l		<10
2-Methylnaphthalene, ug/l		<10
1-Methylnaphthalene, ug/l		<10
Date Extracted		04.19.95
Date Analyzed		04.20.95
Method Number		EPA 610
Dilution factor		1
Petroleum Hydrocarbons		
Petroleum Hydrocarbons, mg/l		<1.0
Date Extracted		04.19.95
Date Analyzed		04.20.95
Method Number		EPA 418.1
Lead		
Lead, mg/l		<0.0050
Date Analyzed		04.18.95
Method Number		EPA 239.2

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Project: #399.19 (RRP #1)
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REPORT OF RESULTS

Page 5

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
81358-6	RRP #1-Field Blank	04-13-95
PARAMETER		81358-6
Aromatic Volatiles (8020)		
Benzene, ug/l		<1.0
Chlorobenzene, ug/l		<1.0
1,2-Dichlorobenzene, ug/l		<1.0
1,3-Dichlorobenzene, ug/l		<1.0
1,4-Dichlorobenzene, ug/l		<1.0
Ethylbenzene, ug/l		<1.0
Toluene, ug/l		<1.0
Xylenes, ug/l		<1.0
Methyl-tert-butyl ether (MTBE), ug/l		<10
Date Analyzed		04.20.95
Method Number		EPA 602
Dilution factor		1

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LOG NO: D5-81358

Received: 14 APR 95

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Project: #399.19 (RRP #1)
Sampled By: Julie Skidmore

REPORT OF RESULTS

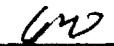
Page 6

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

81358-7 Lab Blank
81358-8 Accuracy - % Recovery (Mean
81358-9 Precision - Relative % Difference
81358-10 Detection Limit

PARAMETER	81358-7	81358-8	81358-9	81358-10
Aromatic Volatiles (8020)				
Benzene, ug/l	<1.0	97 %	4.1 %	1.0
Chlorobenzene, ug/l	<1.0	97 %	2.1 %	1.0
1,2-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,3-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,4-Dichlorobenzene, ug/l	<1.0	---	---	1.0
Ethylbenzene, ug/l	<1.0	---	---	1.0
Toluene, ug/l	<1.0	94 %	1.1 %	1.0
Xylenes, ug/l	<1.0	---	---	1.0
Methyl-tert-butyl ether (MTBE), ug/l	<10	---	---	10
Date Analyzed	04.19.95	---	---	---
Method Number	EPA 602	---	---	---

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Project: #399.19 (RRP #1)
Sampled By: Julie Skidmore

REPORT OF RESULTS

Page 7

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

81358-7 Lab Blank
81358-8 Accuracy - % Recovery (Mean
81358-9 Precision - Relative % Difference
81358-10 Detection Limit

PARAMETER	81358-7	81358-8	81358-9	81358-10
Polynuclear Aromatic Hydrocarbons (EPA 610)				
Acenaphthene, ug/l	<10	62 %	11 %	10
Acenaphthylene, ug/l	<10	---	---	10
Benzo(a)pyrene, ug/l	<10	56 %	1.8 %	10
Benzo(g,h,i)perylene, ug/l	<10	---	---	10
Benzo(b,k)fluoranthene, ug/l	<10	---	---	10
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---	10
Fluoranthene, ug/l	<10	---	---	10
Fluorene, ug/l	<10	63 %	9.5 %	10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---	10
Naphthalene, ug/l	<10	55 %	11 %	10
Phenanthrene + Anthracene, ug/l	<10	---	---	10
Pyrene, ug/l	<10	75 %	13 %	10
2-Methylnaphthalene, ug/l	<10	---	---	10
1-Methylnaphthalene, ug/l	<10	---	---	10
Date Extracted	04.19.95	---	---	---
Date Analyzed	04.20.95	---	---	---
Method Number	EPA 610	---	---	---
Petroleum Hydrocarbons				
Petroleum Hydrocarbons, mg/l	<1.0	80 %	3.8 %	1.0
Date Extracted	04.19.95	---	---	---
Date Analyzed	04.20.95	---	---	---
Method Number	EPA 418.1	---	---	---

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Project: #399.19 (RRP #1)
Sampled By: Julie Skidmore

REPORT OF RESULTS

Page 8

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

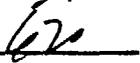
81358-7 Lab Blank
81358-8 Accuracy - % Recovery (Mean
81358-9 Precision - Relative % Difference
81358-10 Detection Limit

PARAMETER	81358-7	81358-8	81358-9	81358-10
Lead				
Lead, mg/l	<0.0050	102 %	3.9 %	0.0050
Date Analyzed	04.18.95	---	---	---
Method Number	EPA 239.2	---	---	---

SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371.
Method References: EPA SW-846 and EPA 600/4-79-020.


Paul Canevaro

Validated & Certified by: 

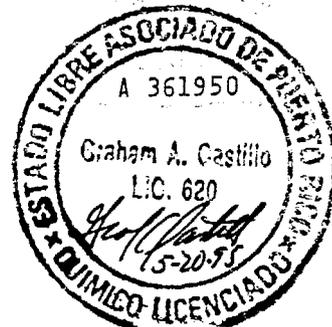
License No.: 

Final Page Of Report

CERTIFICATE

I certify that I have reviewed and evaluated all analytical raw data concerning all the samples contained in Laboratory Reports of analyses for Savannah Laboratories Log No. D5-81358.

I hereby certify that, to the best of my knowledge, the results for said log number, pages 1-6 (inclusive), signed by Paul Canevaro, are correct and reliable.



SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

- 5102 LaRoche Avenue, Savannah, GA 31404
- 2846 Industrial Plaza Drive, Tallahassee, FL 32301
- 414 SW 12th Avenue, Deerfield Beach, FL 33442
- 900 Lakeside Drive, Mobile, AL 36693
- 6712 Benjamin Road, Suite 100, Tampa, FL 33634
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Phone: (912) 354-7858 Fax: (912) 352-0165
 Phone: (904) 878-3994 Fax: (904) 878-9504
 Phone: (305) 421-7400 Fax: (305) 421-2584
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 Phone: (813) 885-7427 Fax: (813) 885-7049
 Phone: (504) 764-1100 Fax: (504) 725-1163

ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT REFERENCE RRP#1		PROJECT NO. 399.19	P.O. NUMBER	MATRIX TYPE	REQUIRED ANALYSES	PAGE	OF
PROJECT LOC. (State) PR	SAMPLER(s) NAME J Skidmore	PHONE	FAX	AQUEOUS (WATER) SOLID OR SEMI-SOLID AIR NON-AQUEOUS LIQUID (oil, solvent, etc.) 8020 418.1 610 239.2	STANDARD REPORT DELIVERY <input type="checkbox"/> EXPEDITED REPORT DELIVERY (surcharge) Date Due: _____		
CLIENT NAME BB+L		CLIENT PROJECT MANAGER Jose Garrido					
CLIENT ADDRESS (CITY, STATE, ZIP) Orlando FL							

SAMPLE		SL NO.	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS SUBMITTED							REMARKS		
DATE	TIME												
01/13	11:20		RRP#1 - mw1	X			W	1					IF 418.1 > 50 mg/L, run modified BOIS-DRO
	10:30		RRP#1 - mw2	X			W	1					
			RRP#1 - mw3	X			W	1	1	1			
			RRP#1 - mw4	X			W	1	1	1			
	12:25		RRP#1 - mws	X			W	1	1	1			
	-		RRP#1 - Dup	X			W	1	1	1			
	11:30		RRP#1 - Equip Blank	X			W	1	1	1			
	11:55		RRP#1 - Field Blank	X			W	3	1	1			

RELINQUISHED BY: (SIGNATURE) <i>Carolyn Henderson</i>	DATE 3/15/95	TIME	RELINQUISHED BY: (SIGNATURE) <i>Jose Garrido</i>	DATE 01/13/95	TIME 12:00	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY						
RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>Deat Powell</i>	DATE 4/14/95	TIME 9/45	CUSTODY INTACT <input type="checkbox"/> YES <input type="checkbox"/> NO	CUSTODY SEAL NO.	SL LOG NO. D5-81358	LABORATORY REMARKS:

ORIGINAL

SL SAVANNAH LABORATORIES
& ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D5-81396

Received: 18 APR 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (RRP #1)
Sampled By: Dan Press

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
81396-1	RRP #1-MW-3	04-14-95
PARAMETER	81396-1	
Aromatic Volatiles (8020)		
Benzene, ug/l		<1.0
Chlorobenzene, ug/l		<1.0
1,2-Dichlorobenzene, ug/l		<1.0
1,3-Dichlorobenzene, ug/l		<1.0
1,4-Dichlorobenzene, ug/l		<1.0
Ethylbenzene, ug/l		<1.0
Toluene, ug/l		<1.0
Xylenes, ug/l		<1.0
Methyl-tert-butyl ether (MTBE), ug/l		<10
Date Analyzed		04.21.95
Method Number		EPA 8020
Dilution factor		1

Validated & Certified by: 

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LOG NO: D5-81396

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Project: #399.19 (RRP #1)
Sampled By: Dan Press

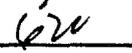
REPORT OF RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
81396-1	RRP #1-MW-3	04-14-95
PARAMETER		81396-1

Polynuclear Aromatic Hydrocarbons (EPA 610)		
Acenaphthene, ug/l		<10
Acenaphthylene, ug/l		<10
Benzo(a)pyrene, ug/l		<10
Benzo(g,h,i)perylene, ug/l		<10
Benzo(b,k)fluoranthene, ug/l		<10
Chrysene + Benzo(a)anthracene, ug/l		<10
Fluoranthene, ug/l		<10
Fluorene, ug/l		<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l		<10
Naphthalene, ug/l		<10
Phenanthrene + Anthracene, ug/l		<10
Pyrene, ug/l		<10
2-Methylnaphthalene, ug/l		<10
1-Methylnaphthalene, ug/l		<10
Date Extracted		04.17.95
Date Analyzed		04.20.95
Method Number		EPA 610
Dilution factor		1
Petroleum Hydrocarbons		
Petroleum Hydrocarbons, mg/l		<1.0
Date Extracted		04.21.95
Date Analyzed		04.21.95
Method Number		EPA 418.1
Lead		
Lead, mg/l		<0.0050
Date Analyzed		04.20.95
Method Number		EPA 239.2

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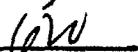
Project: #399.19 (RRP #1)
Sampled By: Dan Press

REPORT OF RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
81396-2	RRP #1-MW-4	04-14-95
PARAMETER	81396-2	
Aromatic Volatiles (8020)		
Benzene, ug/l		<1.0
Chlorobenzene, ug/l		<1.0
1,2-Dichlorobenzene, ug/l		<1.0
1,3-Dichlorobenzene, ug/l		<1.0
1,4-Dichlorobenzene, ug/l		<1.0
Ethylbenzene, ug/l		<1.0
Toluene, ug/l		<1.0
Xylenes, ug/l		<1.0
Methyl-tert-butyl ether (MTBE), ug/l		<10
Date Analyzed		04.21.95
Method Number		EPA 8020
Dilution factor		1

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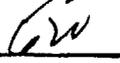
Project: #399.19 (RRP #1)
Sampled By: Dan Press

REPORT OF RESULTS

Page 4

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
81396-2	RRP #1-MW-4	04-14-95
PARAMETER	81396-2	
Polynuclear Aromatic Hydrocarbons (EPA 610)		
Acenaphthene, ug/l		<10
Acenaphthylene, ug/l		<10
Benzo(a)pyrene, ug/l		<10
Benzo(g,h,i)perylene, ug/l		<10
Benzo(b,k)fluoranthene, ug/l		<10
Chrysene + Benzo(a)anthracene, ug/l		<10
Fluoranthene, ug/l		<10
Fluorene, ug/l		<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l		<10
Naphthalene, ug/l		<10
Phenanthrene + Anthracene, ug/l		<10
Pyrene, ug/l		<10
2-Methylnaphthalene, ug/l		<10
1-Methylnaphthalene, ug/l		<10
Date Extracted	04.17.95	
Date Analyzed	04.20.95	
Method Number	EPA 610	
Dilution factor	1	
Petroleum Hydrocarbons		
Petroleum Hydrocarbons, mg/l		<1.0
Date Extracted	04.21.95	
Date Analyzed	04.21.95	
Method Number	EPA 418.1	

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Project: #399.19 (RRP #1)
Sampled By: Dan Press

REPORT OF RESULTS

Page 5

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

81396-3 Lab Blank
81396-4 Accuracy - % Recovery (Mean)
81396-5 Precision - Relative % Difference
81396-6 Detection Limit

PARAMETER	81396-3	81396-4	81396-5	81396-6
Aromatic Volatiles (8020)				
Benzene, ug/l	<1.0	109 %	1.8 %	1.0
Chlorobenzene, ug/l	<1.0	104 %	0.96 %	1.0
1,2-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,3-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,4-Dichlorobenzene, ug/l	<1.0	---	---	1.0
Ethylbenzene, ug/l	<1.0	---	---	1.0
Toluene, ug/l	<1.0	90 %	0 %	1.0
Xylenes, ug/l	<1.0	---	---	1.0
Methyl-tert-butyl ether (MTBE), ug/l	<10	---	---	10
Date Analyzed	04.21.95	---	---	---
Method Number	EPA 8020	---	---	---

Validated & Certified by: 

License No.: 620

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D5-81396

Received: 18 APR 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (RRP #1)
Sampled By: Dan Press

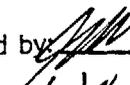
REPORT OF RESULTS

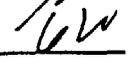
Page 6

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

81396-3 Lab Blank
81396-4 Accuracy - % Recovery (Mean)
81396-5 Precision - Relative % Difference
81396-6 Detection Limit

PARAMETER	81396-3	81396-4	81396-5	81396-6
Polynuclear Aromatic Hydrocarbons (EPA 610)				
Acenaphthene, ug/l	<10	62 %	11 %	10
Acenaphthylene, ug/l	<10	---	---	10
Benzo(a)pyrene, ug/l	<10	56 %	1.8 %	10
Benzo(g,h,i)perylene, ug/l	<10	---	---	10
Benzo(b,k)fluoranthene, ug/l	<10	---	---	10
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---	10
Fluoranthene, ug/l	<10	---	---	10
Fluorene, ug/l	<10	63 %	9.5 %	10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---	10
Naphthalene, ug/l	<10	55 %	11 %	10
Phenanthrene + Anthracene, ug/l	<10	---	---	10
Pyrene, ug/l	<10	75 %	13 %	10
2-Methylnaphthalene, ug/l	<10	---	---	10
1-Methylnaphthalene, ug/l	<10	---	---	10
Date Extracted	04.17.95	---	---	---
Date Analyzed	04.20.95	---	---	---
Method Number	EPA 610	---	---	---
Petroleum Hydrocarbons				
Petroleum Hydrocarbons, mg/l	<1.0	76 %	1.3 %	1.0
Date Extracted	04.21.95	---	---	---
Date Analyzed	04.21.95	---	---	---
Method Number	EPA 418.1	---	---	---

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LOG NO: D5-81396

Received: 18 APR 95

Mr. Jose Garrido
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5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (RRP #1)
Sampled By: Dan Press

REPORT OF RESULTS

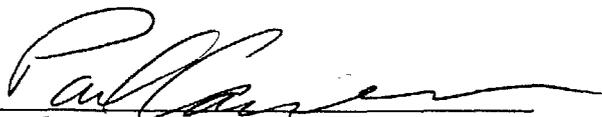
Page 7

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

81396-3 Lab Blank
81396-4 Accuracy - % Recovery (Mean)
81396-5 Precision - Relative % Difference
81396-6 Detection Limit

PARAMETER	81396-3	81396-4	81396-5	81396-6
Lead				
Lead, mg/l	<0.0050	90 %	4.4 %	0.0050
Date Analyzed	04.20.95	---	---	---
Method Number	EPA 239.2	---	---	---

SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371.
Method References: EPA SW-846, EPA 40 CFR Part 136 and EPA 600/4-79-020.


Paul Canevaro

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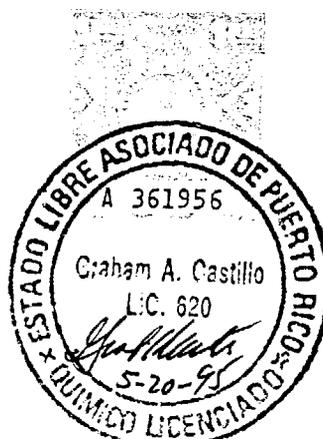
Final Page Of Report

Laboratories in Savannah, GA • Tallahassee, FL • Tampa, FL • Deerfield Beach, FL • Mobile, AL • New Orleans, LA

CERTIFICATE

I certify that I have reviewed and evaluated all analytical raw data concerning all the samples contained in Laboratory Reports of analyses for Savannah Laboratories Log No. D5-81396.

I hereby certify that, to the best of my knowledge, the results for said log number, pages 1-7 (inclusive), signed by Paul Canevaro, are correct and reliable.



SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

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ANALYSIS REQUEST AND CHAIN OF CUSTODY RECORD

PROJECT REFERENCE RRP#1		PROJECT NO. 399.19	P.O. NUMBER	MATRIX TYPE	REQUIRED ANALYSES	PAGE OF
PROJECT LOC. (State) F.R.	SAMPLER(S) NAME Dan Press		PHONE	AQUEOUS (WATER) SOLID OR SEMISOLID AIR NONAQUEOUS LIQUID (oil, solvent, etc.)	8020 418.1 # 6/0 239.2	STANDARD REPORT DELIVERY <input checked="" type="checkbox"/>
CLIENT NAME BBL - Orlando		CLIENT PROJECT MANAGER J. Garrido				
CLIENT ADDRESS (CITY, STATE, ZIP) Orlando, FL						
Date Due: _____						

SAMPLE DATE	SAMPLE TIME	SL NO.	SAMPLE IDENTIFICATION	NUMBER OF CONTAINERS SUBMITTED							REMARKS		
				A	B	C	D	E	F	G			
4/14/95	0715		RRP#1 - MW-3	X				3	1	1	1		* Note: If hit greater than 50mg/L run MOD 8015 - DRO
	0715		RRP#1 - MW-4	X				3	1	1			

RELINQUISHED BY: (SIGNATURE) <i>Carolyn Henderson</i>	DATE 3/15/95	TIME	RELINQUISHED BY: (SIGNATURE) <i>[Signature]</i>	DATE 4/10	TIME	RELINQUISHED BY: (SIGNATURE)	DATE	TIME
RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME	RECEIVED BY: (SIGNATURE)	DATE	TIME

LABORATORY USE ONLY						
RECEIVED FOR LABORATORY BY: (SIGNATURE) <i>Deak D. Wo</i>	DATE 4/14/95	TIME 4:45 PM	CUSTODY INTACT <input type="checkbox"/> YES <input type="checkbox"/> NO	CUSTODY SEAL NO.	SL LOG NO. DS-81390	LABORATORY REMARKS:

ORIGINAL

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

414 SW 12th Avenue • Deerfield Beach, Florida 33442 • (305) 421-7400 • Fax (305) 421-2584

LOG NO: D5-81457A

Received: 24 APR 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (RRP#1)
Sampled By: DP/JG

REPORT OF RESULTS

Page 1

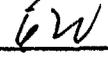
LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
81457A-1	RRP #1 MW5	04-18-95

PARAMETER	81457A-1
-----------	----------

Polynuclear Aromatic Hydrocarbons (EPA 610)

Acenaphthene, ug/l	<10
Acenaphthylene, ug/l	<10
Benzo(a)pyrene, ug/l	<10
Benzo(g,h,i)perylene, ug/l	<10
Benzo(b,k)fluoranthene, ug/l	<10
Chrysene + Benzo(a)anthracene, ug/l	<10
Fluoranthene, ug/l	<10
Fluorene, ug/l	<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10
Naphthalene, ug/l	<10
Phenanthrene + Anthracene, ug/l	<10
Pyrene, ug/l	<10
2-Methylnaphthalene, ug/l	<10
1-Methylnaphthalene, ug/l	<10
Date Extracted	04.25.95
Date Analyzed	04.26.95
Method Number	EPA 610
Dilution factor	1

Validated & Certified by: 

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LOG NO: D5-81457A

Received: 24 APR 95

Mr. Jose Garrido
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Orlando, FL 32822

Project: #399.19 (RRP#1)
Sampled By: DP/JG

REPORT OF RESULTS

Page 2

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

81457A-2 Lab Blank
81457A-3 Accuracy - % Recovery (Mean)
81457A-4 Precision - Relative % Difference
81457A-5 Detection Limit

PARAMETER	81457A-2	81457A-3	81457A-4	81457A-5
Polynuclear Aromatic Hydrocarbons (EPA 610)				
Acenaphthene, ug/l	<10	81 %	2.5 %	10
Acenaphthylene, ug/l	<10	---	---	10
Benzo(a)pyrene, ug/l	<10	78 %	6.4 %	10
Benzo(g,h,i)perylene, ug/l	<10	---	---	10
Benzo(b,k)fluoranthene, ug/l	<10	---	---	10
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---	10
Fluoranthene, ug/l	<10	---	---	10
Fluorene, ug/l	<10	83 %	2.4 %	10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---	10
Naphthalene, ug/l	<10	72 %	7.0 %	10
Phenanthrene + Anthracene, ug/l	<10	---	---	10
Pyrene, ug/l	<10	94 %	1.1 %	10
2-Methylnaphthalene, ug/l	<10	---	---	10
1-Methylnaphthalene, ug/l	<10	---	---	10
Date Extracted	04.25.95	---	---	---
Date Analyzed	04.26.95	---	---	---
Method Number	EPA 610	---	---	---

SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371.
Method Reference: EPA 40 CFR Part 136.


Paul Canevaro

Validated & Certified by 

License No.: 621

Final Page Of Report

CERTIFICATE

I certify that I have reviewed and evaluated all analytical raw data concerning all the samples contained in Laboratory Reports of analyses for Savannah Laboratories Log No. D5-81457A.

I hereby certify that, to the best of my knowledge, the results for said log number, pages 1-2 (inclusive), signed by Paul Canevaro, are correct and reliable.



Mr. Jose Garrido
 Blasland Bouck & Lee, Inc.
 5950 Hazeltine National Dr., Suite 140
 Orlando, FL 32822

Project: #399.19 (US Navy)
 Sampled By: JG/DP

REPORT OF RESULTS

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
81457-1	RRP #1 Waste Char.	04-21-95
PARAMETER		81457-1
Petroleum Hydrocarbons		
Petroleum Hydrocarbons, mg/kg dw		93
Date Extracted		04.27.95
Date Analyzed		04.28.95
Method Number		EPA 9073
Arsenic (TCLP)		
Arsenic (TCLP), mg/l		<0.20
Date Analyzed		04.27.95
Method Number		EPA 6010
Barium (TCLP)		
Barium (TCLP), mg/l		<1.0
Date Analyzed		04.27.95
Method Number		EPA 6010
Cadmium (TCLP)		
Cadmium (TCLP), mg/l		<0.010
Date Analyzed		04.27.95
Method Number		EPA 6010
Chromium (TCLP)		
Chromium (TCLP), mg/l		<0.050
Date Analyzed		04.27.95
Method Number		EPA 6010
Lead (TCLP)		
Lead (TCLP), mg/l		<0.20
Date Analyzed		04.27.95
Method Number		EPA 6010

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 & ENVIRONMENTAL SERVICES, INC.

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LOG NO: D5-81457

Received: 24 APR 95

Mr. Jose Garrido
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 Orlando, FL 32822

Project: #399.19 (US Navy)
 Sampled By: JG/DP

REPORT OF RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
81457-1	RRP #1 Waste Char.	04-21-95
PARAMETER	81457-1	
Mercury (TCLP)		
Mercury (TCLP), mg/l	<0.020	
Date Analyzed	04.28.95	
Method Number	EPA 7470	
Selenium (TCLP)		
Selenium (TCLP), mg/l	<0.50	
Date Analyzed	04.27.95	
Method Number	EPA 6010	
Silver (TCLP)		
Silver (TCLP), mg/l	<0.010	
Date Analyzed	04.27.95	
Method Number	EPA 6010	
Corrosivity-pH (EPA 9045), units	7.70	
Ignitability-flash point		
Ignitability-flash point, Degrees F	*F6	
Date Analyzed	04.27.95	
Method Number	EPA 1010	
Total Releasable Cyanide		
Total Releasable Cyanide, mgHCN/kg waste	<1.0	
Date Analyzed	04.27.95	
Method Number	7.3.3.2	
Total Releasable Sulfide		
Total Releasable Sulfide, mgH ₂ S/kg waste	<10	
Date Analyzed	04.27.95	
Method Number	7.3.4.2	
Percent Solids, %	82	

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LOG NO: D5-81457

Received: 24 APR 95

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 Orlando, FL 32822

Project: #399.19 (US Navy)
 Sampled By: JG/DP

REPORT OF RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID				
81457-2	Lab Blank				
81457-3	Accuracy - % Recovery (Mean)				
81457-4	Precision - Relative % Difference				
81457-5	Detection Limit				
PARAMETER		81457-2	81457-3	81457-4	81457-5
Petroleum Hydrocarbons					
Petroleum Hydrocarbons, mg/kg dw		<10	100 %	0 %	10
Date Extracted		04.27.95	---	---	---
Date Analyzed		04.28.95	---	---	---
Method Number		EPA 9073	---	---	---
Arsenic (TCLP)					
Arsenic (TCLP), mg/l		<0.20	89 %	4.5 %	0.20
Date Analyzed		04.27.95	---	---	---
Method Number		EPA 6010	---	---	---
Barium (TCLP)					
Barium (TCLP), mg/l		<1.0	103 %	1.9 %	1.0
Date Analyzed		04.27.95	---	---	---
Method Number		EPA 6010	---	---	---
Cadmium (TCLP)					
Cadmium (TCLP), mg/l		<0.010	94 %	3.2 %	0.010
Date Analyzed		04.27.95	---	---	---
Method Number		EPA 6010	---	---	---
Chromium (TCLP)					
Chromium (TCLP), mg/l		<0.050	94 %	3.2 %	0.050
Date Analyzed		04.27.95	---	---	---
Method Number		EPA 6010	---	---	---
Lead (TCLP)					
Lead (TCLP), mg/l		<0.20	87 %	2.3 %	0.20
Date Analyzed		04.27.95	---	---	---
Method Number		EPA 6010	---	---	---

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LOG NO: D5-81457

Received: 24 APR 95

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5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (US Navy)
Sampled By: JG/DP

REPORT OF RESULTS

Page 4

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID

81457-2 Lab Blank
81457-3 Accuracy - % Recovery (Mean)
81457-4 Precision - Relative % Difference
81457-5 Detection Limit

PARAMETER	81457-2	81457-3	81457-4	81457-5
Mercury (TCLP)				
Mercury (TCLP), mg/l	<0.020	96 %	5.2 %	0.020
Date Analyzed	04.28.95	---	---	---
Method Number	EPA 7470	---	---	---
Selenium (TCLP)				
Selenium (TCLP), mg/l	<0.50	99 %	2.0 %	0.50
Date Analyzed	04.27.95	---	---	---
Method Number	EPA 6010	---	---	---
Silver (TCLP)				
Silver (TCLP), mg/l	<0.010	18 %	5.7 %	0.010
Date Analyzed	04.27.95	---	---	---
Method Number	EPA 6010	---	---	---
Total Releasable Cyanide				
Total Releasable Cyanide, mgHCN/kg waste	<1.0	---	0 %	1.0
Date Analyzed	04.27.95	---	---	---
Method Number	7.3.3.2	---	---	---
Total Releasable Sulfide				
Total Releasable Sulfide, mgH ₂ S/kg waste	<10	---	0 %	10
Date Analyzed	04.27.95	---	---	---
Method Number	7.3.4.2	---	---	---

*F6 - The physical characteristics (hard, semisolid) of the sample prohibited continual stirring required by the Pensky-Martens Method. Therefore, the sample was heated without continual stirring and a test flame applied to the sample surface. No apparent ignition of vapors over the sample was observed. SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371. Method Reference: EPA SW-846.



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LOG NO: D5-81720

Received: 16 MAY 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (RRP #1)
Sampled By: Alan Fass

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
81720-1	RRP1 MW-6	05-12-95
PARAMETER	81720-1	
Aromatic Volatiles (8020)		
Benzene, ug/l		<1.0
Chlorobenzene, ug/l		<1.0
1,2-Dichlorobenzene, ug/l		<1.0
1,3-Dichlorobenzene, ug/l		<1.0
1,4-Dichlorobenzene, ug/l		<1.0
Ethylbenzene, ug/l		<1.0
Toluene, ug/l		<1.0
Xylenes, ug/l		<1.0
Methyl-tert-butyl ether (MTBE), ug/l		<10
Date Analyzed		05.21.95
Method Number		EPA 8020
Dilution factor		1

SL SAVANNAH LABORATORIES & ENVIRONMENTAL SERVICES, INC.

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LOG NO: D5-81720

Received: 16 MAY 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (RRP #1)
Sampled By: Alan Fass

REPORT OF RESULTS

Page 2

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED
81720-1	RRP1 MW-6	05-12-95
PARAMETER	81720-1	
Polynuclear Aromatic Hydrocarbons (EPA 610)		
Acenaphthene, ug/l		<10
Acenaphthylene, ug/l		<10
Benzo(a)pyrene, ug/l		<10
Benzo(g,h,i)perylene, ug/l		<10
Benzo(b,k)fluoranthene, ug/l		<10
Chrysene + Benzo(a)anthracene, ug/l		<10
Fluoranthene, ug/l		<10
Fluorene, ug/l		<10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l		<10
Naphthalene, ug/l		<10
Phenanthrene + Anthracene, ug/l		<10
Pyrene, ug/l		<10
2-Methylnaphthalene, ug/l		<10
1-Methylnaphthalene, ug/l		<10
Date Extracted		05.16.95
Date Analyzed		05.19.95
Method Number		EPA 610
Dilution factor		1
Petroleum Hydrocarbons		
Petroleum Hydrocarbons, mg/l		<1.0
Date Extracted		05.17.95
Date Analyzed		05.17.95
Method Number		EPA 418.1
Lead		
Lead, mg/l		<0.0050
Date Analyzed		05.18.95
Method Number		EPA 239.2

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LOG NO: D5-81720

Received: 16 MAY 95

Mr. Jose Garrido
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 5950 Hazeltine National Dr., Suite 140
 Orlando, FL 32822

Project: #399.19 (RRP #1)
 Sampled By: Alan Fass

REPORT OF RESULTS

Page 3

LOG NO	SAMPLE DESCRIPTION , LIQUID SAMPLES	DATE SAMPLED	
81720-2	Field Blank	05-12-95	
81720-3	Trip Blank		
PARAMETER		81720-2	81720-3
Aromatic Volatiles (8020)			
Benzene, ug/l		<1.0	<1.0
Chlorobenzene, ug/l		<1.0	<1.0
1,2-Dichlorobenzene, ug/l		<1.0	<1.0
1,3-Dichlorobenzene, ug/l		<1.0	<1.0
1,4-Dichlorobenzene, ug/l		<1.0	<1.0
Ethylbenzene, ug/l		<1.0	<1.0
Toluena, ug/l		<1.0	<1.0
Xylenes, ug/l		<1.0	<1.0
Methyl-tert-butyl ether (MTBE), ug/l		<10	<10
Date Analyzed		05.21.95	05.21.95
Method Number		EPA 8020	EPA 8020
Dilution factor		1	1

SL SAVANNAH LABORATORIES
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LOG NO: D5-81720

Received: 16 MAY 95

Mr. Jose Garrido
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 5950 Hazeltine National Dr., Suite 140
 Orlando, FL 32822

Project: #399.19 (RRP #1)
 Sampled By: Alan Fass

REPORT OF RESULTS

Page 4

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

81720-4 Lab Blank
 81720-5 Accuracy - % Recovery (Mean)
 81720-6 Precision - Relative % Difference
 81720-7 Detection Limit

PARAMETER	81720-4	81720-5	81720-6	81720-7
Aromatic Volatiles (8020)				
Benzene, ug/l	<1.0	94 %	1.1 %	1.0
Chlorobenzene, ug/l	<1.0	97 %	2.1 %	1.0
1,2-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,3-Dichlorobenzene, ug/l	<1.0	---	---	1.0
1,4-Dichlorobenzene, ug/l	<1.0	---	---	1.0
Ethylbenzene, ug/l	<1.0	---	---	1.0
Toluene, ug/l	<1.0	92 %	5.4 %	1.0
Xylenes, ug/l	<1.0	---	---	1.0
Methyl-tert-butyl ether (MTBE), ug/l	<10	---	---	10
Date Analyzed	05.21.95	---	---	---
Method Number	EPA 8020	---	---	---

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LOG NO: D5-81720

Received: 16 MAY 95

Mr. Jose Garrido
Blasland Bouck & Lee, Inc.
5950 Hazeltine National Dr., Suite 140
Orlando, FL 32822

Project: #399.19 (RRP #1)
Sampled By: Alan Fass

REPORT OF RESULTS

Page 5

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

81720-4 Lab Blank
81720-5 Accuracy - % Recovery (Mean)
81720-6 Precision - Relative % Difference
81720-7 Detection Limit

PARAMETER	81720-4	81720-5	81720-6	81720-7
Polynuclear Aromatic Hydrocarbons (EPA 610)				
Acenaphthene, ug/l	<10	68 %	0 %	10
Acenaphthylene, ug/l	<10	---	---	10
Benzo(a)pyrene, ug/l	<10	38 %	18 %	10
Benzo(g,h,i)perylene, ug/l	<10	---	---	10
Benzo(b,k)fluoranthene, ug/l	<10	---	---	10
Chrysene + Benzo(a)anthracene, ug/l	<10	---	---	10
Fluoranthene, ug/l	<10	---	---	10
Fluorene, ug/l	<10	70 %	3.0 %	10
Indeno(1,2,3-cd)pyrene+Dibenzo(a,h)anthracene, ug/l	<10	---	---	10
Naphthalene, ug/l	<10	63 %	3.2 %	10
Phenanthrene + Anthracene, ug/l	<10	---	---	10
Pyrene, ug/l	<10	84 %	3.6 %	10
2-Methylnaphthalene, ug/l	<10	---	---	10
1-Methylnaphthalene, ug/l	<10	---	---	10
Date Extracted	05.16.95	---	---	---
Date Analyzed	05.18.95	---	---	---
Method Number	EPA 610	---	---	---
Petroleum Hydrocarbons				
Petroleum Hydrocarbons, mg/l	<1.0	76 %	1.3 %	1.0
Date Extracted	05.17.95	---	---	---
Date Analyzed	05.17.95	---	---	---
Method Number	EPA 418.1	---	---	---

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REPORT OF RESULTS

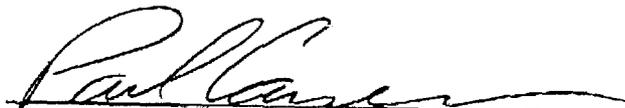
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LOG NO SAMPLE DESCRIPTION , QC REPORT FOR LIQUID SAMPLES

81720-4 Lab Blank
81720-5 Accuracy - % Recovery (Mean)
81720-6 Precision - Relative % Difference
81720-7 Detection Limit

PARAMETER	81720-4	81720-5	81720-6	81720-7
Lead				
Lead, mg/l	<0.0050	92 %	7.6 %	0.0050
Date Analyzed	05.18.95	---	---	---
Method Number	EPA 239.2	---	---	---

SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371.
Method References: EPA SW-846, EPA 40 CFR Part 136 and EPA 600/4-79-020.


Paul Canevaro

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LOG NO: D5-81224

Received: 05 APR 95

Mr. Jose Garrido
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Orlando, FL 32822

Project: #399.19 (Rapid Refuel Pit)
Sampled By: Mike Bauer

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED	
81224-1	RRP#1 SB-13 (4-6')	04-03-95	
81224-2	RRP#1 SB-14 (4-6')	04-04-95	
PARAMETER		81224-1	81224-2
Purgesble Aromatics (602/8020)			
Benzene, ug/kg dw		<25	<5.0
Ethylbenzene, ug/kg dw		490	<5.0
Toluene, ug/kg dw		<25	<5.0
Xylenes, ug/kg dw		1500	<5.0
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw		<250	<50
Date Analyzed		04.09.95	04.07.95
Method Number		EPA 8020	EPA 8020
Dilution factor		5	1
Petroleum Hydrocarbons			
Petroleum Hydrocarbons, mg/kg dw		86	<10
Date Extracted		04.06.95	04.06.95
Date Analyzed		04.07.95	04.07.95
Method Number		3550/418.1	3550/418.1
Percent Solids, %		84	79

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LOG NO: D5-81224

Received: 05 APR 95

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Project: #399.19 (Rapid Refuel Pit)
Sampled By: Mike Bauer

REPORT OF RESULTS

Page 2

LOG NO SAMPLE DESCRIPTION, QC REPORT FOR SOLID/SEMISOLID

81224-3 Lab Blank
81224-4 Accuracy - % Recovery (Mean)
81224-5 Precision - Relative % Difference
81224-6 Detection Limit

PARAMETER	81224-3	81224-4	81224-5	81224-6
Purgeable Aromatics (602/8020)				
Benzene, ug/kg dw	<5.0	102 %	2.9 %	5.0
Ethylbenzene, ug/kg dw	<5.0	---	---	5.0
Toluene, ug/kg dw	<5.0	106 %	6.6 %	5.0
Xylenes, ug/kg dw	<5.0	---	---	5.0
Methyl-Tert-Butyl-Ether (MTBE), ug/kg dw	<50	---	---	50
Date Analyzed	04.07.95	---	---	---
Method Number	EPA 8020	---	---	---
Petroleum Hydrocarbons				
Petroleum Hydrocarbons, mg/kg dw	<10	76 %	4.0 %	10
Date Extracted	04.06.95	---	---	---
Date Analyzed	04.07.95	---	---	---
Method Number	3550/418.1	---	---	---

SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371.
Method Reference: EPA SW-846.


Paul Canevaro

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LOG NO: D5-81162A

Received: 30 MAR 95

Mr. Jose Garrido
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Project: #399.19 (Rapid Refuel Pit #1)
Sampled By: M. Bauer

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED		
81162A-1	SB-12 (2-4')	03-24-95		
81162A-2	SB-12 (4-6')	03-24-95		
81162A-3	SB-14 (0-2')	03-24-95		
PARAMETER		81162A-1	81162A-2	81162A-3
Petroleum Hydrocarbons by GC (8015 - Extractable)				
Petroleum Hydrocarbons by GC, ug/kg dw		930000	340000	2100000
Date Extracted		04.14.95	04.14.95	04.14.95
Date Analyzed		04.18.95	04.18.95	04.18.95
Method Number		MOD 8015	MOD 8015	MOD 8015

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LOG NO: D5-81162A

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Project: #399.19 (Rapid Refuel Pit #1)
Sampled By: M. Bauer

REPORT OF RESULTS

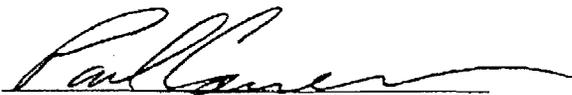
Page 2

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID

81162A-4 Lab Blank
81162A-5 Accuracy - % Recovery (Mean)
81162A-6 Precision - Relative % Difference
81162A-7 Detection Limit

PARAMETER	81162A-4	81162A-5	81162A-6	81162A-7
Petroleum Hydrocarbons by GC (8015 - Extractable)				
Petroleum Hydrocarbons by GC, ug/kg dw	<3300	50 %	5.9 %	3300
Date Extracted	04.14.95	---	---	---
Date Analyzed	04.18.95	---	---	---
Method Number	MOD 8015	---	---	---

SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371.
Method Reference: EPA SW-846.


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LOG NO: D5-81072B

Received: 13 APR 95

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Orlando, FL 32822

Project: #399.19 (USN)
Sampled By: Mike Bauer

REPORT OF RESULTS

Page 1

LOG NO	SAMPLE DESCRIPTION , SOLID OR SEMISOLID SAMPLES	DATE SAMPLED
81072B-1	RRP#1 SB-11 (2-4')	03-22-95
PARAMETER	81072B-1	
Petroleum Hydrocarbons by GC (8015 - Extractable)		
Petroleum Hydrocarbons by GC, ug/kg dw	950000	
Date Extracted	04.14.95	
Date Analyzed	04.18.95	
Method Number	MOD 8015	

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Project: #399.19 (USN)
Sampled By: Mike Bauer

REPORT OF RESULTS

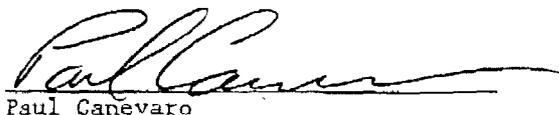
Page 2

LOG NO SAMPLE DESCRIPTION , QC REPORT FOR SOLID/SEMISOLID

81072B-2 Lab Blank
81072B-3 Accuracy - % Recovery (Mean)
81072B-4 Precision - Relative % Difference
81072B-5 Detection Limit

PARAMETER	81072B-2	81072B-3	81072B-4	81072B-5
Petroleum Hydrocarbons by GC (8015 - Extractable)				
Petroleum Hydrocarbons by GC, ug/kg dw	<3300	50 %	5.9 %	3300
Date Extracted	04.14.95	---	---	---
Date Analyzed	04.18.95	---	---	---
Method Number	MOD 8015	---	---	---

SL Environmental HRS Cert. #E86221 and SL Drinking Water HRS Cert. #86371.
Method Reference: EPA SW-846.



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