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FINAL SITE CHARACTERIZATION REPORT FOR SITE 1970 NAVAL ACTIVITY PUERTO RICO

7/1/2002

CH2M HILL

002

Final
Site Characterization Report
for
Site 1970

Prepared for

United States Navy
Roosevelt Roads Naval Station
Ceiba, Puerto Rico

Contract No. N62470-95-D-6007
CTO-229

Prepared by

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List of Acronyms

bls	below land surface
BTEX	benzene-toluene-ethylbenzene-xylene
DRO	Diesel Range Organics
EPA	U.S. Environmental Protection Agency
GRO	Gasoline Range Organics
IDW	Investigation-derived waste
MSL	mean sea level
NFA	No Further Action
NTU	nephelometric turbidity unit
ORP	Redox Potential
OVM	Organic Vapor Meter
ppm	parts per million
PREQB	Puerto Rico Environmental Quality Board
QA/QC	Quality Assurance/Quality Control
RCI	Reactivity/Corrosivity/Ignitability
SC	Site Characterization
TCLP	Toxicity Characteristic Leaching Procedure
TPH	total petroleum hydrocarbons
UST	underground storage tank
USTMD	Underground Storage Tank Management Division
WTP	Water Treatment Plant

Executive Summary

The U.S. Navy has conducted a Site Characterization (SC) investigation of a former underground storage tank (UST) located near Building 1970 (Site 1970) at U.S. Naval Station (NAVSTA) Roosevelt Roads, Puerto Rico. The former UST at Site 1970 was a 550-gallon fiberglass tank that stored diesel fuel. Following a failed integrity test in 1992, limited soil analyses were conducted for total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and xylene (BTEX). TPH levels exceeding the 100 milligrams per kilogram (mg/Kg) target level established by the Puerto Rico Environmental Quality Board (PREQB) for soil were encountered in one soil sample (280 mg/kg). As a result, PREQB requested a SC investigation of the site. The tank was removed in March 1997 and the excavated soil was disposed at a certified landfill.

The SC investigation at Site 1970 was conducted during February 15 to June 7, 2002. The primary objective of the SC investigation was to assess the horizontal and vertical extent of potential soil and groundwater contamination from the former 550-gallon diesel fuel UST and associated piping that were removed from the site. The SC investigation involved installing nine exploratory soil borings and three permanent groundwater monitoring wells; collecting and analyzing soil and groundwater samples; and providing recommendations for the site based on the investigation findings.

Samples from each exploratory soil boring were collected every 3 feet starting at 3 feet below land surface (bls) and terminating at 3 feet above groundwater depth. Collected soil samples were screened using an Organic Vapor Meter (OVM) and inspected for hydrocarbon staining and petroleum odor. Two soil samples (usually that had the highest OVM readings) were analyzed for TPH levels. One groundwater sample was collected from each soil boring and analyzed for TPH and BTEX. Groundwater samples collected from the newly installed monitoring wells were analyzed for TPH and BTEX.

Groundwater flow at Site 1970 is controlled by elevation differences between the project site and the surrounding hilly terrain. Based on water table elevation measurements taken during the SC investigation, groundwater flows predominantly in a southeasterly direction away from the former UST. Groundwater downgradient of the former UST was encountered at depths ranging from 9.8 to 13.8 ft bls.

The soil and groundwater screening results indicate the absence of significant soil or groundwater contamination at Site 1970. The analytical results for collected soil and groundwater samples indicate non-detectable levels of TPH or BTEX in the soil and groundwater, and confirm the absence of significant petroleum contamination at the site.

Based on the findings of the SC investigation, No Further Action (NFA) is recommended for Site 1970. Because of the absence of hydrocarbons in soil and groundwater at the site, no remediation measures are necessary.

SECTION 1

Introduction

Pursuant to Navy CLEAN II Contract N62470-95-D-6007, CH2M HILL was authorized by the U.S. Navy to conduct a Site Characterization (SC) investigation of a former underground storage tank (UST) located near Building 1970 (Site 1970) at U.S. Naval Station (NAVSTA) Roosevelt Roads, Puerto Rico. The objective of the SC investigation was to assess the extent of potential petroleum contamination in the soil and groundwater where the UST was once located. This report presents the findings of the SC investigation conducted at Site 1970. This report will be submitted to the Underground Storage Tank Management Division (USTMD) of the Puerto Rico Environmental Quality Board (PREQB) for review.

1.1 Project Location

NAVSTA Roosevelt Roads is located near the town of Ceiba on the eastern end of Puerto Rico. The approximate location of the station is 18° 15' 00" North latitude and 65° 39' 30" West longitude (Figure 1-1). The approximate location of Site 1970 is shown on Figure 1-2. The former UST at Site 1970 was located adjacent to the existing Building 1970 at NAVSTA Roosevelt Roads. The site topography is shown on Figure 1-3.

1.2 Site Background

The former UST at Site 1970 was a 550-gallon fiberglass tank that stored diesel fuel. Following a failed integrity test in 1992, limited soil analyses were conducted for total petroleum hydrocarbons (TPH) and benzene, toluene, ethylbenzene, and xylene (BTEX). TPH levels exceeding the 100 milligrams per kilogram (mg/Kg) target level established by PREQB for soil were encountered in one soil sample (280 mg/kg). As a result, PREQB requested a SC investigation of the site. No significant BTEX contamination was reported. The tank was removed in March 1997 and the excavated soil was disposed at a certified landfill.

1.3 Previous Investigations

No previous SC investigations have been conducted at Site 1970. The U.S. Navy requested that a SC investigation be conducted at Site 1970 to evaluate whether petroleum products once stored in the former UST have impacted the soil and groundwater at the site.

1.4 Project Objectives

The primary objective of the SC investigation at Site 1970 was to assess the horizontal and vertical extent of potential soil and groundwater contamination from the former 550-gallon diesel fuel UST and associated piping that were removed from the site. The SC investigation involved installing exploratory soil borings and permanent groundwater monitoring wells;

collecting and analyzing soil and groundwater samples; and performing a qualitative risk assessment (if necessary) based on the investigation findings.

A total of nine (9) soil borings and three (3) permanent monitoring wells were installed at Site 1970 to meet the project objectives. Soil and groundwater samples collected from the soil borings and monitoring wells were analyzed by On Site Labs, Inc., of Caguas, Puerto Rico. The findings of the investigation were used to assess potential exposure to human health and the environment.

FIGURE 1-1
Site Location Map
U.S. Naval Station Roosevelt Roads

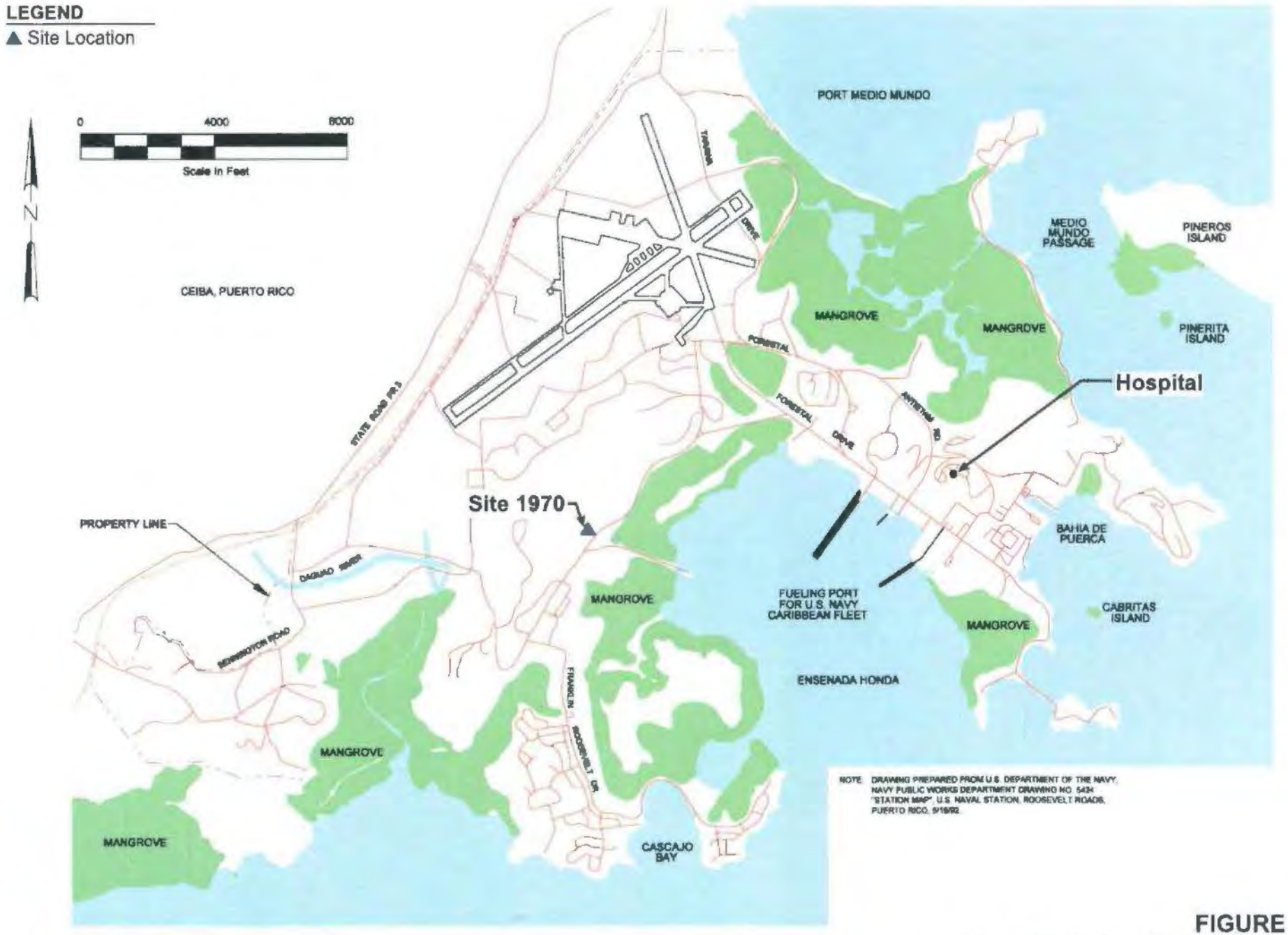
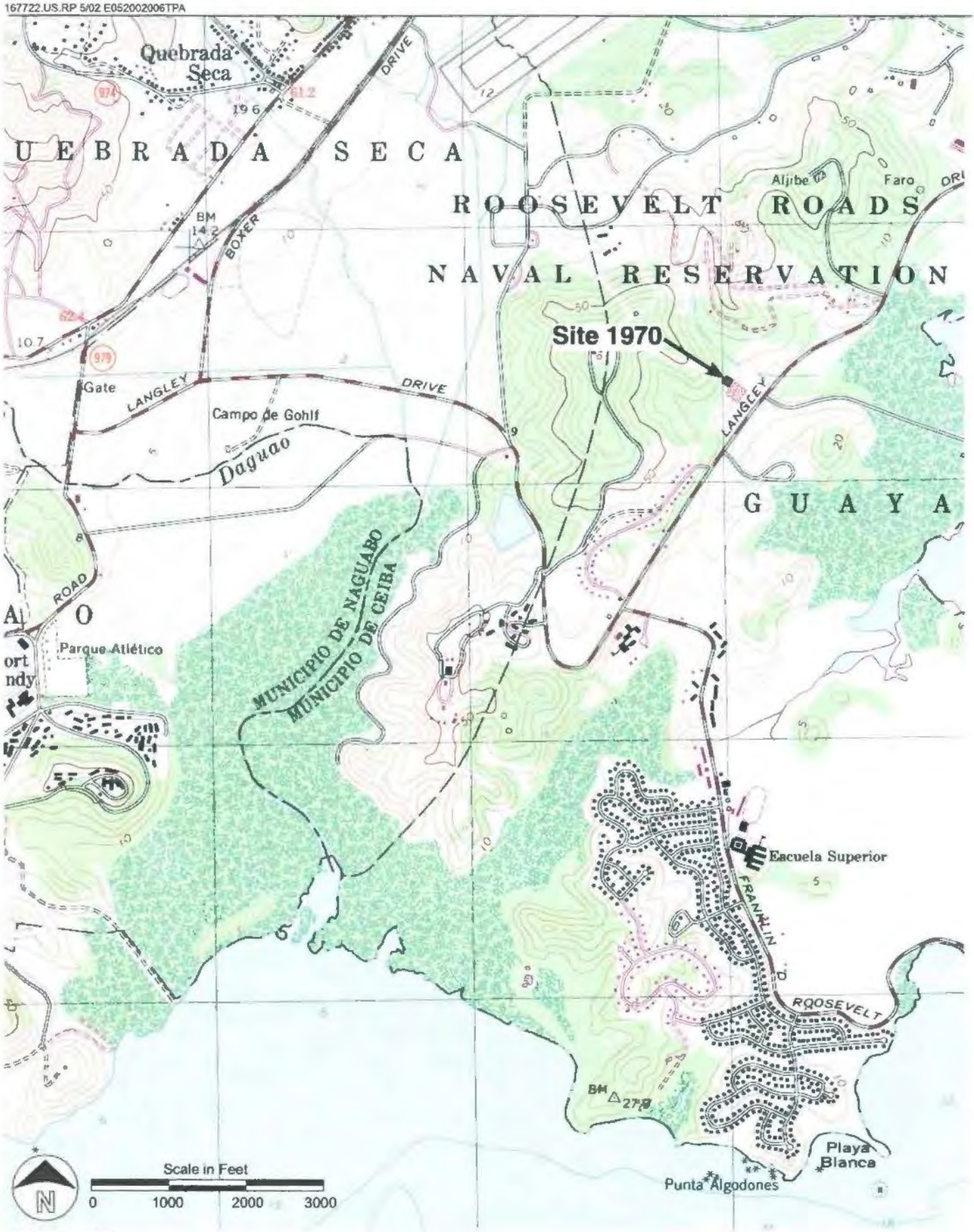


FIGURE 1-2
Approximate Location of Site 1970
U.S. Naval Station Roosevelt Roads



USGS Quad Map:
Naguabo, Puerto Rico - 1982

FIGURE 1-3
Site 1970 Topographic Map
U.S. Naval Station Roosevelt Roads

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SECTION 2

Investigation Methodology

The SC investigation at Site 1970 was conducted during February 15 to June 7, 2002 by two experienced CH2M HILL environmental engineers and a drilling subcontractor. The primary field activities involved installing soil borings and monitoring wells, and collecting and analyzing soil and groundwater samples. The standard operating procedures utilized during the SC investigation were presented in the Final Work Plan and Health & Safety Plan (CH2M HILL, 2002) prepared for the project.

2.1 Soil Borings

A total of nine exploratory soil borings were installed at Site 1970 (Figure 2-1). Completed soil boring logs for the project are provided as Appendix A. The locations of the first two or three soil borings were determined in the field based on site conditions and the expected groundwater flow direction. The remaining soil borings were located based on the results of the soil screening, and the soil and groundwater analytical results from the initial borings. The soil screening results and the analytical results for the soil and groundwater samples collected from the soil borings were also used to determine the locations of the permanent monitoring wells that were installed and sampled.

2.1.1 Soil Boring Installation

Soil boring installations at the site were initiated after utility clearance was obtained from NAVSTA Roosevelt Roads. As a safety precaution, the first five feet of each soil boring were installed with a hand auger to avoid accidentally puncturing underground pipes/conduits. The remaining length of each soil boring was advanced using a conventional split-spoon auger drill rig down to the depth of groundwater. An Organic Vapor Meter (OVM) was used to periodically measure organic vapor levels in the general breathing zone around each boring.

2.1.2 Soil Screening

Pre-cleaned, 3-inch diameter (2-foot-long) split spoon samples were collected every 3 feet in each soil boring, starting at 3 feet below land surface (bls) and terminating at 3 feet above groundwater depth. Collected soil samples were screened using an OVM and inspected for hydrocarbon staining and petroleum odor. For OVM screening, a 4-inch subsample was cut from the collected split-spoon sample and placed into a 1-gallon ziplock bag. After 10 minutes, the OVM probe was punched into the closed bag and the reading was taken.

The two samples with the highest OVM readings were analyzed for TPH levels by U.S. Environmental Protection Agency (EPA) Method 8015B for both Gasoline Range Organics (GRO) and Diesel Range Organics (DRO). The analytical laboratory provided a 24-hour turnaround time from sample delivery for the TPH analyses. The quick turnaround time allowed for rapid location of the next set of soil borings that were installed at the site to delineate the extent of potential contamination.

FIGURE 2-1
Site 1970 Locations of Soil Borings and Monitoring Wells
U.S. Naval Station Roosevelt Roads

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2.1.3 Groundwater Screening

For groundwater screening, one groundwater sample was collected from each soil boring using a peristaltic pump and analyzed for TPH by EPA Method 8015B for GRO and DRO compounds and for BTEX by EPA Method 8020A. The analytical results were used to help locate additional exploratory soil borings to delineate the extent of potential groundwater contamination prior to installing the permanent groundwater monitoring wells.

2.2 Monitoring Wells

A total of three permanent groundwater monitoring wells were installed at Site 1970 (see Figure 2-1). The locations of the monitoring wells were determined from screening and analyses of soil and groundwater samples collected from the exploratory soil borings.

As shown on Figure 2-1, the three monitoring wells installed at Site 1970 were in the parking lot downgradient of the former UST. Several attempts were made to install monitoring wells in the immediate vicinity of the former UST; however, the drill rig experienced refusal or very dense soil before reaching groundwater during all attempts (see Appendix A). Refusal conditions were encountered at the locations of SB-01 (3.5 ft bls), SB-05 (2.8 ft bls), and SB-06 (2.5 ft bls), and are attributed to unidentified buried structures. In addition to refusal conditions, drilling in the immediate vicinity of the former UST was complicated by the presence of extensive overhead electrical lines. Extremely dense soil was encountered between 12 ft bls and 15 ft bls at all other soil boring locations in the vicinity of the former UST.

2.2.1 Monitoring Well Construction

Completed well construction diagrams for the newly installed monitoring wells are provided as Appendix B. The permanent groundwater monitoring wells were installed using conventional hollow-stem auger drilling techniques. As a safety precaution, the first five feet of each monitoring well were installed with a hand auger to avoid accidentally puncturing underground pipes/conduits. An OVM was used to periodically measure organic vapor levels in the general breathing zone around each well borehole.

Table 2-1 provides a summary of the monitoring well completion data. All monitoring well casings were 2 inches in diameter, new, unused Schedule 40 PVC pipe. PVC casing sections had internal flush joined threaded joints. Monitor well screens were 2-inch diameter, Schedule 40, horizontal slotted PVC well screens. Screens were factory-slotted to 0.010 inch and 10 feet in length for each screen section. A threaded PVC cap was placed at the bottom of the screen section.

The filter pack material was clean, bagged silica sand (supplier certified to be free of contaminants) that was inert, hard, well rounded, and free from roots, trash and other material. The filter pack was placed at the bottom of the borehole and extended up a minimum of two feet above the screened section. The tremie pipe method was used for placement of the filter pack where appropriate.

Because hollow stem augers were used during this project, the filter pack was placed as the augers were withdrawn from the borehole. Augers were pulled in 2- to 3-foot intervals

during this process. Care was exercised while placing the filter pack through the augers to prevent bridging of the sand between the well casing and inside the augers. Frequent measurements were made to confirm that bridging had not occurred. Following filter pack tagging, a minimum 2-foot-thick layer of bentonite chips was placed above the filter pack material using the tremie pipe method to tightly seal the annular space.

Cement grout was placed from the bentonite seal to the ground surface. The grout was pumped through a tremie pipe and the length was no more than 5 feet from the top of the level of grout at all times. The grout seal was Portland cement conforming to ASTM C 150, Type II, with no more than 4 percent bentonite. The grout was mixed in the following proportions: 94 pounds (lbs) of type II Portland cement, up to 4 lbs of 100 percent sodium bentonite, and up to 8 gallons of potable water.

Steel, flush mount, bolt down, water tight, traffic bearing meter boxes were used to house the top of each monitoring well. The meter box was furnished with an 8.5-inch-diameter, traffic bearing cover centered in a 2-foot x 2-foot x 4-inch concrete pad. The installed pad was sloped gently away from the cover to allow for drainage. Water tight, locking caps (all keyed alike) were installed.

TABLE 2-1
Monitoring Well Completion Summary
Site 1970, U.S. Naval Station Roosevelt Roads

Well Designation	1970-MW1	1970-MW2	1970-MW-3
Date Installed	03/11/2002	03/11/2002	03/11/2002
Total Well Depth (ft, bls)	28	27	27
Type of Completion	Flush	Flush	Flush
Top of Casing Elevation (ft)	119.69	123.86	123.26
Casing Type	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC
Casing Length(s)	8	12	12
Screen Type	Schedule 40 PVC	Schedule 40 PVC	Schedule 40 PVC
Screen Slot Size (in)	0.01	0.01	0.01
Screen Length (ft)	20	15	15
Screen Interval (ft, bls)	8-28	12-27	12-27

Notes:
All monitoring wells are 2 inches in diameter
Top-of-casing elevations were referenced to the Roosevelt Roads datum
in = inch
ft = feet
msl = mean sea level
bls = below land surface

2.2.2 Monitoring Well Development

Completed well development logs for the newly installed monitoring wells are provided as Appendix C. The newly installed monitoring wells were developed with a surge block in conjunction with a bailer or pump. No air, detergents, soaps, acids, bleaches, or additives were used during development efforts. Well development efforts were initiated no sooner than 24 hours following well installation.

Well development continued until clear, sand free formation water was produced from the well and until pH, conductivity, and temperature measurements stabilized. For turbidity, stabilization was defined as having two consecutive readings within 10 nephelometric turbidity units (NTUs) of each other.

Monitoring wells were purged prior to sampling using a peristaltic pump at a low flow rate. Conductivity, pH, temperature, and turbidity readings were collected during purging efforts. A minimum of three sets of readings were collected until two consecutive sets of readings for all parameters were within 10 percent of each other.

2.2.3 Groundwater Sampling

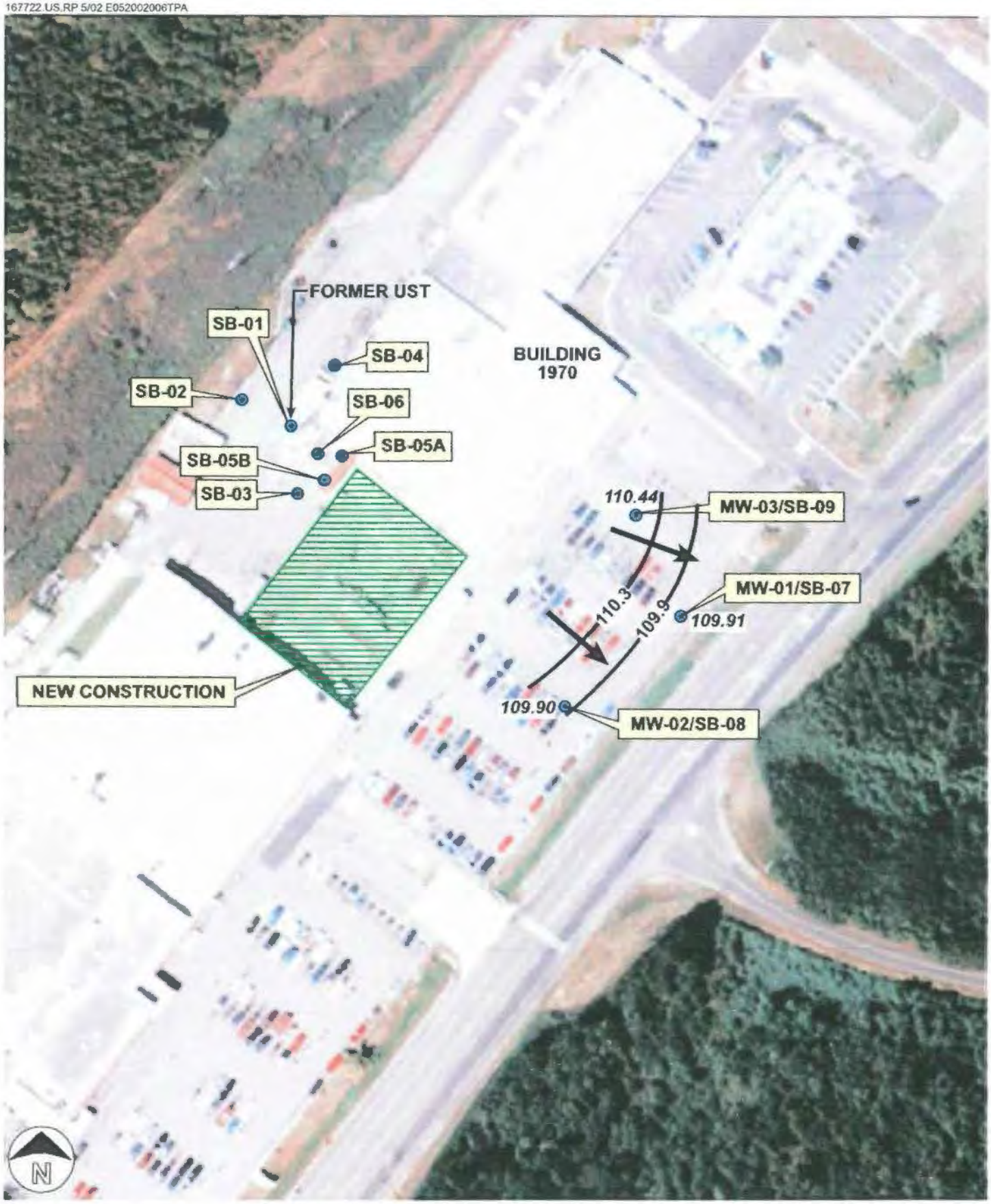
Completed well sampling logs for the newly installed monitoring wells are provided as Appendix D. After the monitoring wells were properly purged, groundwater samples were withdrawn using a peristaltic pump. The down-hole tubing used for sample collection was Teflon®. Approximately 6-inches of C-Flex® tubing was used at the rotary pump head to achieve efficient pumping. New tubing was used for each well.

Groundwater withdrawn for analyses was collected through a vacuum bottle. A special Teflon® lined transfer cap and pre-cleaned 1-liter amber sample bottle was installed in the suction tubing between the well and the peristaltic pump. The pump was then turned on to create a vacuum inside the 1-liter amber bottle, pulling the sample from the well into the 1-liter bottle. The required sample bottles were then filled directly from the 1-liter amber bottle.

Collected groundwater samples were analyzed for TPH using EPA Method 8015B for GRO and DRO and for BTEX by EPA Method 8020A.

2.3 Groundwater Elevation Measurements

The top-of-casing elevations of the three monitoring wells installed at Site 1970 were surveyed by a licensed surveyor and referenced to the NAVSTA Roosevelt Roads datum. Depth-to-water measurements were collected from the top-of-casing (north side) with an electronic water level probe. Table 2-2 presents the measured depth-to-water and monitoring well elevations. The water level measurements were used to generate the water table elevation contour map provided as Figure 2-2. As shown on the water table elevation maps, groundwater at Site 1970 flows predominantly in a southeasterly direction away from the former UST location.



Scale in Feet

100 0 100

LEGEND

MW	Monitoring Well
SB	Soil Boring
110.03	Groundwater Elevation
	Groundwater Contour
	Groundwater Flow Direction

FIGURE 2-2

Site 1970 Groundwater Flow Direction

U.S. Naval Station Roosevelt Roads

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TABLE 2-2
Water Table Elevation Data
Site 1970, U.S. Naval Station Roosevelt Roads

Well Designation	Date	Elevation of Top of Casing (ft, RRD)	Depth to Water (ft)	Water Level Elevation (ft, RRD)
1970-MW1	06/07/2002	119.69	9.78	109.91
1970-MW2	06/07/2002	123.86	13.96	109.90
1970-MW3	06/07/2002	123.26	12.82	110.44

Notes:
ft = feet
RRD = Roosevelt Roads datum (MSL + 100 ft)

2.4 Quality Assurance/Quality Control

Quality Assurance/Quality Control (QA/QC) samples for this project were collected according to the following standard guidelines:

- Field duplicates – 10 percent of total number of samples
- Equipment blank – 10 percent of total number of samples/day
- 1 trip blank/trip

2.5 Investigation Derived Waste

Investigation-derived waste (IDW) generated during the soil boring and monitoring well installations was containerized in drums and stored in a designated storage area. Composite samples of the IDW were collected a rate of one sample per a maximum of five drums and analyzed as follows:

- IDW drums containing water – Reactivity/Corrosivity/Ignitability (RCI) and TPH (DRO and GRO)
- IDW drums containing soil – RCI, Toxicity Characteristic Leaching Procedure (TCLP) metals, and TCLP volatiles

The results of these analyses were submitted to the disposal contractor prior to drum pick-up.

SECTION 3

Site Geology/Hydrogeology

3.1 Regional Geology

The geology of NAVSTA Roosevelt Roads consists of a sequence of intrusive and extrusive volcanic and volcaniclastic lithologies of Cretaceous age. Much of NAVSTA Roosevelt Roads is underlain by the Daguao formation. The Daguao formation is characterized by interbedded volcanic breccia, laval, subordinate volcanic sandstone, and crystal tuff. The largest hills and ridges on the base are composed of the Daguao formation, and the highest elevations approach 300 feet above mean sea level (MSL). The Daguao formation is encountered at different depths across NAVSTA Roosevelt Roads. The irregular surface elevation of the Daguao formation may be related to its tectonic origin of emplacement. The hills are flanked by Quaternary and Holocene fanglomerate and swamp deposits. The broad low-lying areas of the NAVSTA Roosevelt Roads are composed of Quaternary alluvium, slopewash, and fanglomerate deposits.

3.1.1 Site Geology

The soil samples collected during the installations of soil borings and monitoring wells were used to describe the local shallow site geology. Lithologic descriptions are included within the soil boring logs and monitoring well construction diagrams which are presented in Appendices A and B, respectively.

As seen in Figure 2-1, Site 1970 lies within a facility and parking lot (approximately 28 feet above msl) with local rolling topography. Beneath Site 1970, the encountered subsurface lithology consisted of shell, shelly sand, silty sand and silt from deposition and clay from highly weathered volcanic rock. The colors of encountered lithologies were primarily gray, greenish gray, dark grayish brown, and yellowish brown. The colors of the soils were determined using the Munsell soil color system. The silts and clays were darker in color, greenish and grays, which are characteristic of the weathering and oxidation or reduction of iron-rich volcanic rock. These sediments generally possess high plasticity when moist. The unconsolidated shell and sands were light brown to gray.

The geologic cross sections used for lithologic descriptions are shown on Figure 3-1 and the lithology illustrations are provided as Figures 3-2 and 3-3. The geologic cross section illustrations are based on the lithologic data collected during the installation of soil borings and monitoring wells for the SC investigation.

3.2 Site Hydrogeology

Groundwater flow at Site 1970 is controlled by elevation differences between the project site and the surrounding hilly terrain. Groundwater flows predominantly in a southeasterly direction away from the former UST (see Figure 2-2). Groundwater downgradient of the former UST was encountered at depths ranging from 9.8 to 13.8 ft bls.

Although the exact groundwater depth could not be ascertained in the vicinity of the former UST, ground elevation data collected during the professional survey indicates that groundwater depths in the vicinity of the former UST are greater than those in the downgradient areas where the monitoring wells were installed.

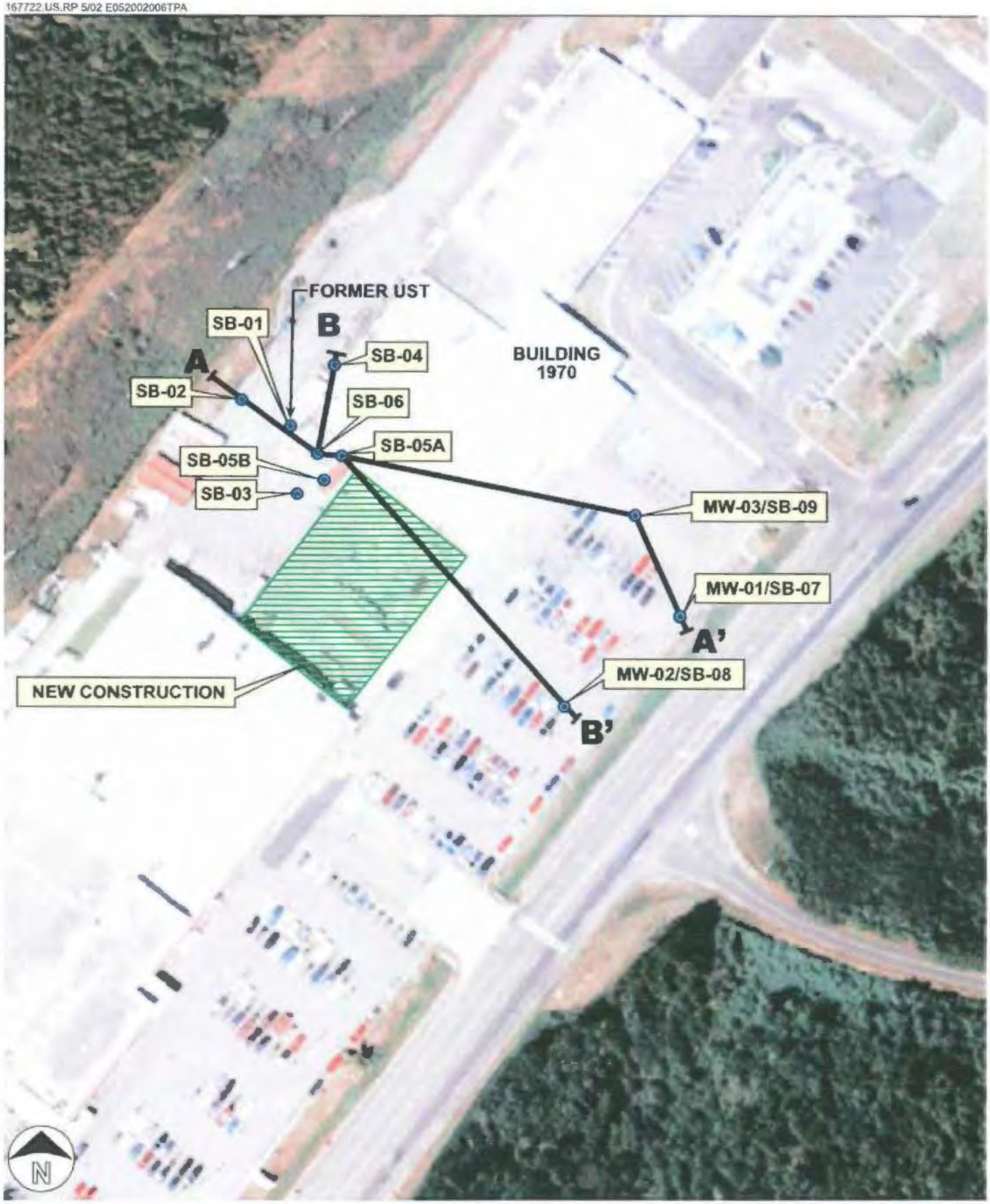

FIGURE 3-1
Site 1970 Locations of
Geologic Cross Sections A-A' and B-B'
U.S. Naval Station Roosevelt Roads

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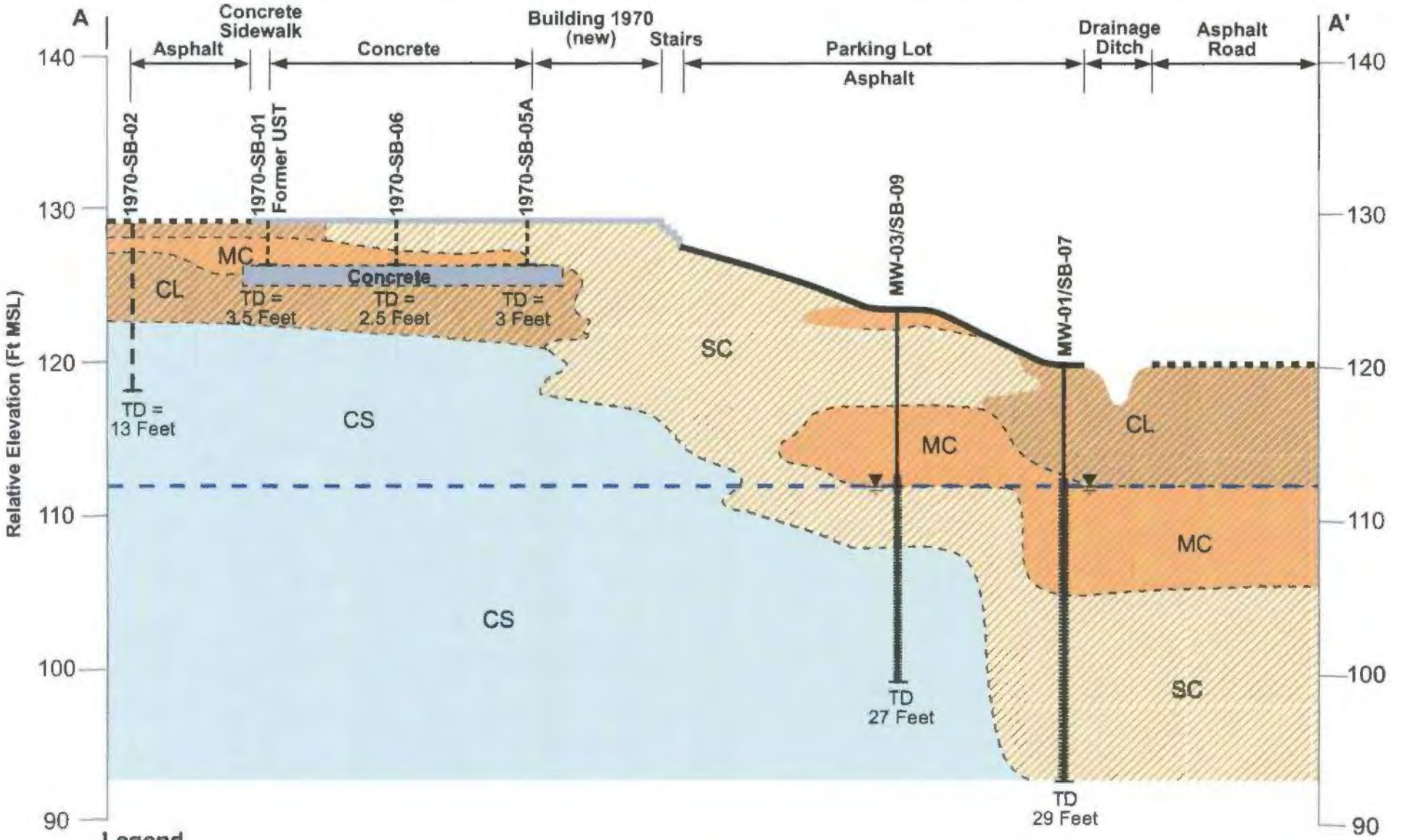

FIGURE 3-2
Geologic Cross-Section A-A', Site 1970
U.S. Navel Station Roosevelt Roads

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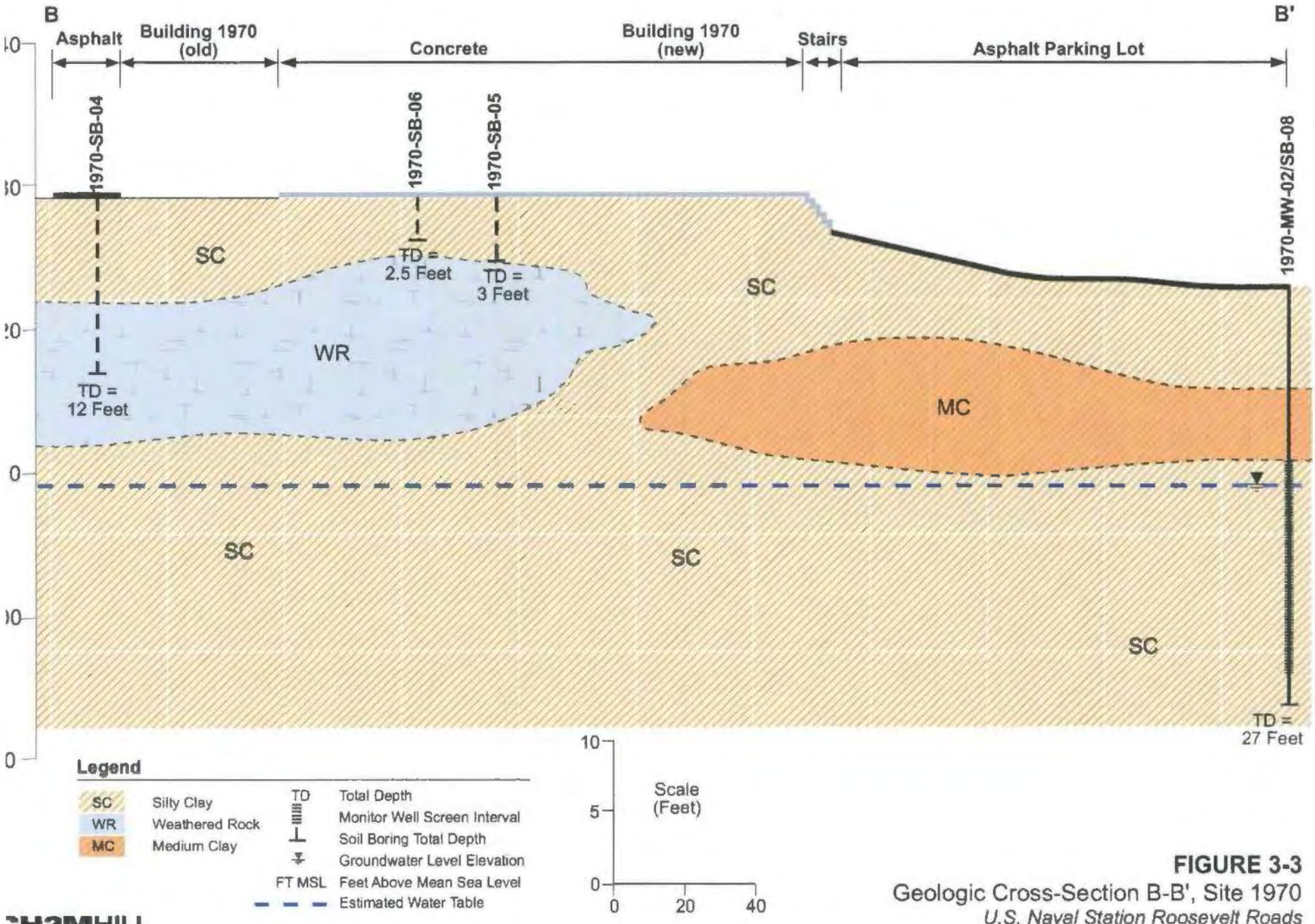

FIGURE 3-3
Geologic Cross-Section B-B', Site 1970
U.S. Naval Station Roosevelt Roads

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SECTION 4

Investigation Findings

The findings of the SC investigation of Site 1970 are presented in the following subsections. All QC sample results indicated that the laboratory analytical data were valid. The comprehensive analytical data for collected samples, including QC data, and chain-of-custody records are provided as Appendix E.

4.1 Soil Screening Results

The soil screening results for Site 1970 are presented in Table 4-1. As shown in Table 4-1, total organic vapors emitted from collected soil samples were very low for all soil borings. Total organic vapor levels ranged from 0 to 4.5 parts per million (ppm). OVM readings that are this low indicate negligible organic vapor levels from either hydrocarbons or methane. Two soil samples from each boring (usually that had the highest OVM readings) were analyzed for TPH GRO and DRO (see Table 4-1).

TABLE 4-1
Soil Screening Results (Samples analyzed for TPH are in bold)
Site 1970, U.S. Naval Station Roosevelt Roads

Sample Designation	Date Sampled	Sample Depth (ft bls)	Total Organic Vapors (ppm)
1970-SB01	03/06/2002	**0-1**	3.1
	03/06/2002	**3-3.5**	4.5
1970-SB02	03/06/2002	**0-1**	3.5
	03/06/2002	3-4	4.4
	03/06/2002	**7-9**	0.2
1970-SB03	03/06/2002	**0-1**	2.7
	03/06/2002	3-4	0.6
	03/06/2002	**7-9**	NA
1970-SB04	03/07/2002	**0-1**	0.3
	03/07/2002	**3-4**	0.3
1970-SB05	03/07/2002	**0-1**	0.6
	03/07/2002	**3-4**	1.5
1970-SB06	03/07/2002	0-1	0.3
1970-SB07	03/08/2002	**0-1**	4.1
	03/08/2002	3-4	0.8
	03/08/2002	12-14	0.8
	03/08/2002	**17-19**	0
1970-SB08	03/09/2002	0-1	0.3
	03/09/2002	3-3.5	0
	03/09/2002	**7-9**	0
	03/09/2002	12-14	0
	03/09/2002	**17-19**	0
	03/09/2002	22-24	0

TABLE 4-1
Soil Screening Results (Samples analyzed for TPH are in bold)
Site 1970, U.S. Naval Station Roosevelt Roads

Sample Designation	Date Sampled	Sample Depth (ft bls)	Total Organic Vapors (ppm)
1970-SB09	03/10/2002	0-1	0
	03/10/2002	3-4	0
	03/10/2002	**7-9**	0
	03/10/2002	12-14	NA
	03/10/2002	**17-19**	0
	03/10/2002	22-24	0

Notes:
NA = Not Analyzed
BLS = below land surface
ppm = parts per million

4.2 Groundwater Screening Results

The groundwater screening results for Site 1970 are presented in Table 4-2. As shown in Table 4-2, none of the groundwater samples collected from the soil borings installed at Site 1970 had detectable levels of TPH or BTEX.

TABLE 4-2
Groundwater Analytical Results
Site 1970, U.S. Naval Station Roosevelt Roads

Soil Boring	Date Sampled	Sample Matrix	EPA Method 8015B (GRO) TPH (mg/kg)	EPA Method 8015B (DRO) TPH (mg/kg)	EPA Method 8020A Total BTEX (mg/kg)
1970-SB07	03/08/02	Water	ND	ND	ND
1970-SB08	03/10/02	Water	ND	ND	ND
1970-SB09	03/10/02	Water	ND	ND	ND

Notes: TPH = Total Petroleum Hydrocarbons
Total BTEX = Sum of Benzene, Toluene, Ethylbenzene, and Xylene Concentrations
mg/kg = Milligrams per Kilogram
UST = Underground Storage Tank
ND = Non detect
EPA = Environmental Protection Agency
8015B (GRO) = EPA Method 8015B Gasoline Range Organics
8015B (DRO) = EPA Method 8015B Diesel Range Organics

4.3 Soil Analytical Results

The soil analytical results for Site 1970 are presented in Table 4-3. As shown in Table 4-3, none of the soil samples collected from the soil borings installed at Site 1970 had detectable levels of TPH.

TABLE 4-3
Soil Analytical Results
Site 1970, U.S. Naval Station Roosevelt Roads

Soil Boring	Date Sampled	Sample Matrix	EPA Method 8015B (GRO) TPH (mg/kg)	EPA Method 8015B (DRO) TPH (mg/kg)	EPA Method 8020A Total BTEX (mg/kg)
1970-SB01 (0-1)	03/06/02	Soil	ND	ND	NA
1970-SB01 (3-3.5)	03/06/02	Soil	ND	ND	NA
1970-SB02 (0-1)	03/06/02	Soil	ND	ND	NA
1970-SB02 (7-9)	03/06/02	Soil	ND	ND	NA
1970-SB03 (0-1)	03/06/02	Soil	ND	ND	NA
1970-SB03 (7-9)	03/06/02	Soil	ND	ND	NA
1970-SB04 (0-1)	03/07/02	Soil	ND	ND	NA
1970-SB04 (3-4)	03/07/02	Soil	ND	ND	NA
1970-SB05 (0-1)	03/07/02	Soil	ND	ND	NA
1970-SB05 (3-4)	03/07/02	Soil	ND	ND	NA
1970-SB07 (0-1)	03/08/02	Soil	ND	ND	NA
1970-SB07 (17-19)	03/08/02	Soil	ND	ND	NA
1970-SB08 (7-9)	03/10/02	Soil	ND	ND	NA
1970-SB08 (17-19)	03/10/02	Soil	ND	ND	NA
1970-SB09 (7-9)	03/10/02	Soil	ND	ND	NA
1970-SB09 (17-19)	03/10/02	Soil	ND	ND	NA

Notes: TPH = Total Petroleum Hydrocarbons
Total BTEX = Sum of Benzene, Toluene, Ethylbenzene, and Xylene Concentrations
mg/kg = Milligrams per Kilogram
UST = Underground Storage Tanks
ND = Non detect
NA = Not Analyzed
EPA = Environmental Protection Agency
8015B (GRO) = EPA Method 8015B Gasoline Range Organics
8015B (DRO) = EPA Method 8015B Diesel Range Organics

4.4 Groundwater Analytical Results

The groundwater analytical results for Site 1970 are presented in Table 4-4. As shown in Table 4-4, none of the groundwater samples collected from the newly installed permanent monitoring wells had detectable levels of TPH or BTEX.

TABLE 4-4
Groundwater Analytical Results
Site 1970, U.S. Naval Station Roosevelt Roads

Parameters	PREQB Target Levels	1970-MW-1	1970-MW-2	1970-MW-3
Date Sampled		**03/11/02**	**03/11/02**	**03/16/02**
Benzene (µg/L)	5.0	ND	ND	ND
Toluene (µg/L)	1,000	ND	ND	ND
Ethylbenzene (µg/L)	700	ND	ND	ND
Total Xylenes (µg/L)	10,000	ND	ND	ND
Total BTEX (µg/L)	50	ND	ND	ND
TPH GRO (ug/L)	-	ND	ND	ND
TPH DRO (µg/L)	-	ND	ND	ND
Total TPH (µg/L)	50,000	ND	ND	ND

Notes:

µg/L	=	Micrograms per Liter
PREQB	=	Puerto Rico Environmental Quality Board
Total BTEX	=	Sum of Benzene, Toluene, Ethylbenzene, and Xylenes
TPH DRO	=	EPA Method 8015M Diesel Range Organics
ND	=	Non detect

SECTION 5

Conclusions and Recommendations

5.1 Conclusions

The potential presence of petroleum hydrocarbons in soil and groundwater at Site 1970 was evaluated during this SC investigation. The findings of the SC investigation are as follows:

- The OVM soil screening results indicate negligible concentrations of hydrocarbons or methane in collected soil samples, and the absence of significant soil contamination at the site
- The laboratory analytical results for the soil samples collected during the SC investigation indicate non-detectable levels of TPH, and the absence of significant soil contamination at the site.
- The laboratory analytical results for the groundwater samples collected during the SC investigation indicate non-detectable levels of TPH and BTEX, and the absence of significant groundwater contamination at the site.

5.2 Recommendations

Based on the findings of the SC investigation, CH2M HILL recommends No Further Action (NFA) for Site 1970. Because of the absence of hydrocarbons in soil and groundwater at the site, no remediation measures are necessary.

APPENDIX A

Soil Boring Logs

CH2MHILL

Site Number	BORING NUMBER	
1970	1970-SB-01	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : RRNAS Site 1970 LOCATION : Roosevelt Roads Naval Air Station, Ceiba PR

ELEVATION : DRILLING CONTRACTOR Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : SS Hand Auger, Mobile Drill Rig with 4.25" ID, 6.25" OD

WATER LEVELS : START : 03/06/2002 END : LOGGER : HMH, EI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
1					Surface: 6" of concrete 6" Angular rocks up to 6" in diameter with some silty clay (30%), 5 Y, 5/2 olive gray. 1' 5 Y, 4/3 olive medium clay with some angular rocks (30%) up to 4" in diameter.	0-1 foot OVM = 3.1 ppm
2						
3					5 Y, 3/2 dark olive gray, medium soft	3-3.5 foot OVM = 4.5 ppm
4					Refusal at 3.5 feet	
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

CH2MHILL

Site Number	BORING NUMBER	
1970	1970-SB-02	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : RRNAS Site 1970 LOCATION : Roosevelt Roads Naval Air Station, Ceiba PR

ELEVATION : DRILLING CONTRACTOR Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : SS Hand Auger, Mobile Drill Rig with 4.25" ID, 6.25" OD

WATER LEVELS : START : 03/06/2002 END : 03/06/2002 LOGGER : HMH, EI

DEPTH BELOW SURFACE (FT) INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
1				Surface: 6" of asphalt 6" 10 YR, 4/4, dark yellowish brown silty clay with angular rocks (25%) up to 3" in diameter.	0-1 foot OVM = 3.5 ppm
2					
3				10 YR, 4/3, brown clayey silt with angular and rounded rock fragment up to 3" in diameter.	3-4 foot OVM = 4.4 ppm
4					
5					
6					
7	70%		6-12-19-50	Top 6" clayey silt, subangular rocks < 0.5" in diameter, 2.5 Y, 5/3, light olive brown Last 11" very dense silt	7-9 foot OVM = 0.2 ppm
8					
9					
10					
11					
12	4%		50 for 4"	Very fine and densely compacted silt. Some small (<3%) angular rock fragments <1" in diameter.	
13					
14				End of boring at 13 ft soil matrix was too dense. Drill rig advanced 0.5" in 3 minutes.	
15					
16					
17					
18					
19					
20					

CH2MHILL

Site Number	BORING NUMBER	
1970	1970-SB-03	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : RRNAS Site 1970 LOCATION : Roosevelt Roads Naval Air Station, Ceiba PR

ELEVATION : DRILLING CONTRACTOR Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : SS Hand Auger, Mobile Drill Rig with 4.25" ID, 6.25" OD

WATER LEVELS : NA START : 03/06/2002 END : 03/06/2002 LOGGER : HMH, EI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
1					Surface: 6" of asphalt 6" 2.5 Y, 3/2, very dark grayish brown clayey silt with subangular rock fragments < 3" in diameter.	0-1 foot OVM = 2.7 ppm
2						
3					10 YR, 4/3, brown clayey silt with angular and rounded rock fragment up to 3" in diameter.	3-4 foot OVM = 0.6 ppm
4						
5						
6						
7	88%			12-36-40-47	very dense, highly compacted silt. GLEY1, 5/1, greenish gray, 5G some very small fragments of weathered rock.	
8						
9						
10						
11						
12	0%			50 for 4"	Very fine and densely compacted silt. Some small (<3%) angular rock fragments <1" in diameter.	
13						
14						
15						
16					End of boring at 15 ft soil matrix was too dense.	
17						
18						
19						
20						

CH2MHILL

Site Number	BORING NUMBER	
1970	1970-SB-04	SHEET 1 OF 1

SOIL BORING LOG

PROJECT : RRNAS Site 1970 LOCATION : Roosevelt Roads Naval Air Station, Ceiba PR

ELEVATION : DRILLING CONTRACTOR Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : SS Hand Auger, Mobile Drill Rig with 4.25" ID, 6.25" OD

WATER LEVELS : NA START : 03/07/2002 END : 03/07/2002 LOGGER : HMH, EI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
1					Surface: 3" of asphalt 6" 2.5 Y, 3/2, very dark grayish brown clayey silt with subangular rock fragments < 3" in diameter.	0-1 foot OVM = 0.3 ppm
2						
3					10 YR, 4/3, brown clayey silt with lots of angular and rounded rock fragment, subangular to angular, up to 3" in diameter (75%).	3-4 foot OVM = 0.3 ppm
4						
5						
6						
7		4%		50 for 5"	Recovered 1" of fragmented weathered rock and very little silt.	
8						
9						
10						
11						
12						
13					End of boring at 12 ft soil matrix was too dense.	
14						
15						
16						
17						
18						
19						
20						

CH2MHILL

Site Number	BORING NUMBER	
1970	1970-SB-05	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: RRNAS Site 1970 LOCATION: Roosevelt Roads Naval Air Station, Ceiba PR

ELEVATION: DRILLING CONTRACTOR Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED: SS Hand Auger, Mobile Drill Rig with 4.25" ID, 6.25" OD

WATER LEVELS: NA START: 03/07/2002 END: 03/07/2002 LOGGER: HMH, EI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
0					Surface: 7" of concrete	
1	1				6" 2.5 Y, 3/2, very dark grayish brown clayey silt with subangular rock fragments < 3" in diameter. Geotextile at 1.5 feet bls	0-1 foot OVM = 0.6 ppm
2	2				Turning 5 Y, 4/2, olive gray moist medium clay	
3	3				Refusal at 2'10" encountered solid concrete	
4	4					
5	5					
6	6					
7	7					
8	8					
9	9					
10	10					
11	11					
12	12					
13	13					
14	14					
15	15					
16	16					
17	17					
18	18					
19	19					
20	20					

CH2MHILL

Site Number	BORING NUMBER	
1970	1970-SB-06	SHEET 1 OF 1

SOIL BORING LOG

PROJECT: RRNAS Site 1970 LOCATION: Roosevelt Roads Naval Air Station, Ceiba PR

ELEVATION: DRILLING CONTRACTOR Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED: SS Hand Auger, Mobile Drill Rig with 4.25" ID, 6.25" OD

WATER LEVELS: NA START: 03/07/2002 END: 03/07/2002 LOGGER: HMH, EI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" IN	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
1					Surface: 8" of concrete 6" 2.5 Y, 3/2, very dark grayish brown clayey silt with subangular rock fragments < 3" in diameter. Geotextile at 1.5 feet bls (looks like asphalt felt)	0-1 ft OVM = 0.3 ppm
2					2.5' Encountered gravel-probably buried unidentified lines.	
3					End of soil boring	
4						
5						
6						
7						
8						
9						
10						
11						
12						
13						
14						
15						
16						
17						
18						
19						
20						

CH2MHILL

Site Number	BORING NUMBER	
1970	1970-SB-07	SHEET 1 OF 2

SOIL BORING LOG

PROJECT: RRNAS Site 1970 LOCATION: Roosevelt Roads Naval Air Station, Ceiba PR

ELEVATION: DRILLING CONTRACTOR Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED: SS Hand Auger, Mobile Drill Rig with 4.25" ID, 6.25" OD

WATER LEVELS: 22 feet bls START: 03/08/2002 END: 03/08/2002 LOGGER: HMH, EI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
1					Surface: 3" of asphalt 6" 2.5 Y, 3/2, very dark grayish brown clayey silt with subangular rock fragments < 3" in diameter (80%).	0-1 foot OVM = 4.1 ppm
2						
3					6" 2.5 Y, 3/2, very dark grayish brown clayey silt with subangular rock fragments < 3" in diameter (30%).	3-4 foot OVM = 0.8 ppm
4						
5						
6						
7	8%			9-33-23-18		
8						
9						
10						
11						
12	54%			3-3-6-9	Medium clayey silt, mottled, 2.5 Y, 7/6, yellow mixed with 10 YR, 5/8, yellowish brown clayey silt	12-14 foot OVM = 0.8 ppm
13						
14						
15						
16						
17	70%			7-16-24-29	Clayey silt, mostly silt, 10 YR, 5/8, yellowish brown	17-19 foot OVM = 0 ppm
18						
19						
20						

CH2MHILL

Site Number	BORING NUMBER	
1970	1970-SB-07	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : RRNAS Site 1970 LOCATION : Roosevelt Roads Naval Air Station, Ceiba PR

ELEVATION : DRILLING CONTRACTOR Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : SS Hand Auger, Mobile Drill Rig with 4.25" ID, 6.25" OD

WATER LEVELS : 22 feet START : 03/08/2002 END : 03/07/2002 LOGGER : HMH, EI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
21						
22						
23						
24						
25						
26						
27						
28						
29						
					End of boring at 29 feet bls	
30						
31						
32						

CH2MHILL

Site Number	BORING NUMBER	
1970	1970-SB-08	SHEET 1 OF 2

SOIL BORING LOG

PROJECT : RRNAS Site 1970 LOCATION : Roosevelt Roads Naval Air Station, Ceiba PR

ELEVATION : DRILLING CONTRACTOR Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : SS Hand Auger, Mobile Drill Rig with 4.25" ID, 6.25" OD

WATER LEVELS : START : 03/09/2002 END : 03/09/2002 LOGGER : HMH, EI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
1					Surface: 3" of asphalt 10 YR, 4/4, dark yellowish brown clay with angular rock fragments (20%) <4" in diameter with fine to coarse gravel (15%)	0-1 foot OVM = 0.3 ppm
2						
3					Same as above	3-3.5 foot OVM = 0 ppm
4						
5						
6						
7		71%		4-11-15-18	Top 11" Medium to stiff clay: 2.5 Y, 4/4, olive brown, slightly moist	7-9 foot OVM = 0 ppm
8						
9						
10						
11						
12		63%		8-6-10-13	Soft to medium clayey silt. 10 YR, 5/8, yellowish brown	12-14 foot OVM = 0 ppm
13						
14						
15						
16						
17		58%		14-27-28-29	Soft to medium clayey silt (mostly silt), 10 YR, 5/8, yellowish brown	17-19 foot OVM = 0 ppm
18						
19						
20						

CH2MHILL

Site Number	BORING NUMBER	
1970	1970-SB-08	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : RRNAS Site 1970 LOCATION : Roosevelt Roads Naval Air Station, Ceiba PR

ELEVATION : DRILLING CONTRACTOR Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : SS Hand Auger, Mobile Drill Rig with 4.25" ID, 6.25" OD

WATER LEVELS : 22 feet START : 03/09/2002 END : 03/09/2002 LOGGER : HMH, EI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
21						
22	100%			8-14-14-19	10 YR, 5/8, yellowish brown clayey silt (mostly silt)	22-24 foot OVM = 0 ppm
23						
24						
25						
26						
27						
28						
29						
					End of boring at 29 feet bls	

CH2MHILL

Site Number	BORING NUMBER	
1970	1970-SB-09	SHEET 1 OF 2

SOIL BORING LOG

PROJECT: RRNAS Site 1970 LOCATION: Roosevelt Roads Naval Air Station, Ceiba PR

ELEVATION: DRILLING CONTRACTOR Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED: SS Hand Auger, Mobile Drill Rig with 4.25" ID, 6.25" OD

WATER LEVELS: START: 03/10/2002 END: 03/10/2002 LOGGER: HMH, EI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
1					Surface: 3" of asphalt angular to subangular rock fragments up to 3" in diameter (50%) GLEY 1, 10Y, 4/1, dark greenish gray silty clay 18" Turning to medium clay, 10 YR, 4/4, dark yellowish brown, some fine to coarse gravel (5%)	0-1 foot OVM = 0 ppm
2						
3					Same as above with few rock fragments (<5%) and fine to coarse gravel	3-4 foot OVM = 0 ppm
4						
5						
6						
7	46%			5-7-17-21	2.5Y, 3/2, very dark grayish brown. Some rock fragments and medium to stiff moist clay.	7-9 foot OVM = 0 ppm
8						
9						
10						
11						
12	100%			2-3-5-5	10 YR, 4/4, Dark yellowish brown clayey silt. Very moist, but not saturated	12-14 foot OVM = NM
13						
14						
15						
16						
17	92%			11-22-28-23	GLEY 1, 4/1, dark greenish gray (mottled) clayey silt (mostly silt) slightly moist.	17-19 foot OVM = 0 ppm
18						
19						
20						

CH2MHILL

Site Number	BORING NUMBER	
1970	1970-SB-09	SHEET 2 OF 2

SOIL BORING LOG

PROJECT : RRNAS Site 1970 LOCATION : Roosevelt Roads Naval Air Station, Ceiba PR

ELEVATION : DRILLING CONTRACTOR Geoworks, Inc.

DRILLING METHOD AND EQUIPMENT USED : SS Hand Auger, Mobile Drill Rig with 4.25" ID, 6.25" OD

WATER LEVELS : 22 feet START : 03/09/2002 END : 03/09/2002 LOGGER : HMH, EI

DEPTH BELOW SURFACE (FT)	INTERVAL (FT)	RECOVERY (%)	#/TYPE	STANDARD PENETRATION TEST RESULTS 6"-6"-6"-6" (N)	SOIL DESCRIPTION: SOIL NAME, USCS GROUP SYMBOL, COLOR, MOISTURE CONTENT, RELATIVE DENSITY, OR CONSISTENCY, SOIL STRUCTURE, MINERALOGY.	COMMENTS: DEPTH OF CASING, DRILLING RATE, DRILLING FLUID LOSS, TESTS, AND INSTRUMENTATION.
21						
22	100%			13-25-37-36	GLEY 1, 4/1, dark greenish gray (mottled) clayey silt (mostly silt) slightly moist.	22-24 foot OVM = 0 ppm
23						
24						
25						
26						
27						
					End of Boring at 27 ft bls	
28						
29						

APPENDIX B

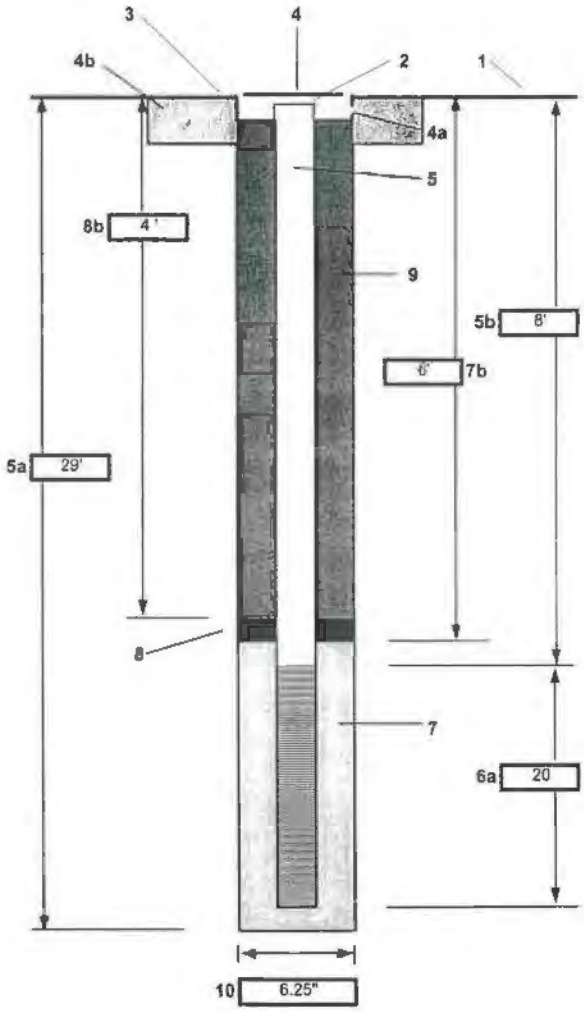
Monitoring Well Completion Diagrams

CH2MHILL

SITE	WELL ID
1970	1970-MW-01

WELL COMPLETION DIAGRAM-FLUSH MOUNT

LOCATION : Site 1970, Roosevelt Roads NAS
PROJECT NUMBER : 167722.FI.FQ
DRILLING CONTRACTOR : Geoworks Inc.
DRILLING METHOD AND EQUIPMENT USED : Mobile Drill Rig, 4.25" ID H.S.A.
DRILLING START DATE: 03/08/2002 DRILLING END DATE: 03/11/2002 LOGGER: Hector M. Hernandez, Erik Iser



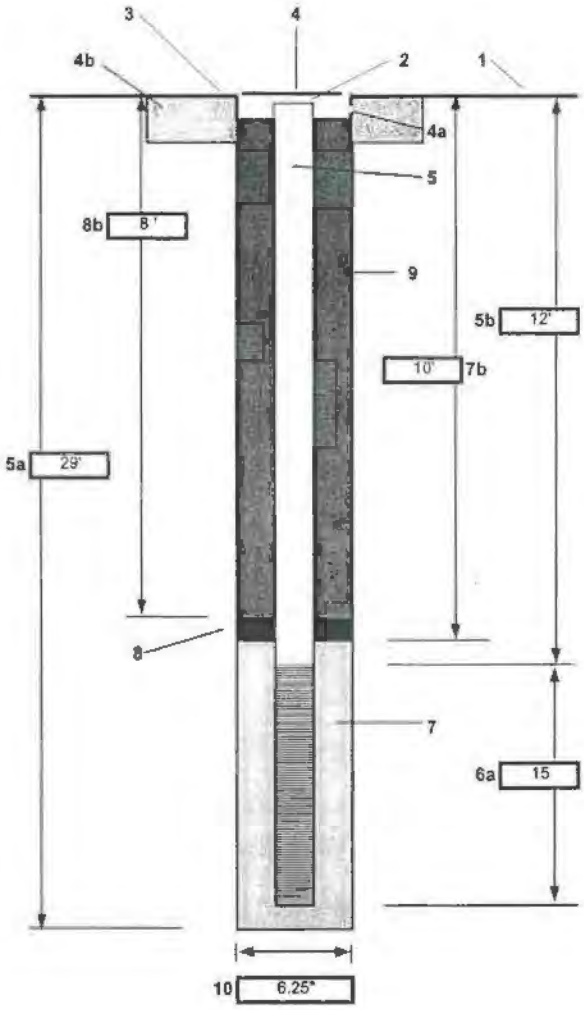
1-	Ground elevation at well	
2-	Top of inner casing elevation	
3-	Top of outer casing elevation	
4-	Wellhead protection cover type	6" well vault
	a) drain tube? (yes/no)	no
	b) concrete pad dimensions	2'x2'x4"
5-	Dia./type of well casing	2" SCH 40 PVC
	a) Total depth	28 feet
	b) Length of casing (less screen)	6 feet
6-	Type/slot size of screen	SCH 40 PVC, 0.010" Slot
	a) Length of screen	10 feet
7-	Type screen filter	TEC Minerals Filter Media 100lb/bag
	a) Quantity used	7.5 bags
	b) Depth to top of filter pack (bls)	3 feet bls
8-	Type of seal	Hole plug chips
	a) Quantity used	1 foot (unhydrated)
	b) Depth to top of seal (bls)	2 feet
9-	Grout	
	a) Grout mix used	Portland Cement
	b) Method of placement	Pour
	c) Vol. of well casing grout	0.85 ft^3
10-	OD of auger	6.25 inches
	Development method	Disposable Teflon baller Geopump
	Development time	1 hour 45 minutes
	Estimated purge volume	43 gallons
	Comments	

CH2MHILL

SITE	WELL ID
1970	1970-MW-02

WELL COMPLETION DIAGRAM-FLUSH MOUNT

LOCATION : Site 1970, Roosevelt Roads NAS
PROJECT NUMBER : 167722.FI.FQ
DRILLING CONTRACTOR : Geoworks Inc.
DRILLING METHOD AND EQUIPMENT USED : Mobile Drill Rig, 4.25" ID H.S.A.
DRILLING START DATE: 03/09/2002 DRILLING END DATE: 03/11/2002 LOGGER: Hector M. Hernandez, Erik Iser



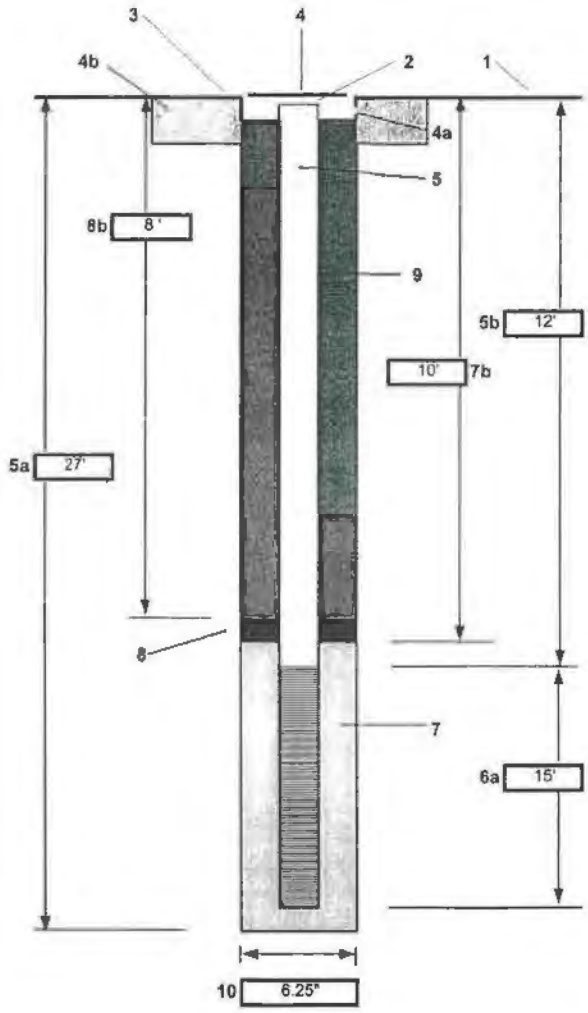
1-	Ground elevation at well	
2-	Top of inner casing elevation	
3-	Top of outer casing elevation	
4-	Wellhead protection cover type	8" well vault
	a) drain tube? (yes/no)	no
	b) concrete pad dimensions	2'x2'x4"
5-	Dia./type of well casing	2" SCH 40 PVC
	a) Total depth	27 feet
	b) Length of casing (less screen)	12 feet
6-	Type/slot size of screen	SCH 40 PVC, 0.010" Slot
	a) Length of screen	15 feet
7-	Type screen filter	TEC Minerals Filter Media 100lb/bag
	a) Quantity used	6.5 bags
	b) Depth to top of filter pack (bls)	10 feet bls
8-	Type of seal	Hole plug chips
	a) Quantity used	2 feet (unhydrated)
	b) Depth to top of seal (bls)	8 feet
9-	Grout	
	a) Grout mix used	Portland Cement
	b) Method of placement	Pour
	c) Vol. of well casing grout	1.7 ft^3
10-	OD of auger	6.25 inches
	Development method	Disposable Teflon bailer Geopump
	Development time	2 hours 1 minute
	Estimated purge volume	27 gallons
	Comments	

CH2MHILL

SITE	WELL ID
1970	1970-MW-03

WELL COMPLETION DIAGRAM-FLUSH MOUNT

LOCATION : Site 1970, Roosevelt Roads NAS
PROJECT NUMBER : 167722.FI.FQ
DRILLING CONTRACTOR : Geoworks Inc.
DRILLING METHOD AND EQUIPMENT USED : Mobile Drill Rig, 4.25" ID H.S.A.
DRILLING START DATE: 03/09/2002 DRILLING END DATE: 03/11/2002 LOGGER: Hector M. Hernandez, Erik Iser



1-	Ground elevation at well	
2-	Top of inner casing elevation	
3-	Top of outer casing elevation	
4-	Wellhead protection cover type	8" well vault
	a) drain tube? (yes/no)	no
	b) concrete pad dimensions	2'x2'x4"
5-	Dia./type of well casing	2" SCH 40 PVC
	a) Total depth	27 feet
	b) Length of casing (less screen)	12 feet
6-	Type/slot size of screen	SCH 40 PVC, 0.010" Slot
	a) Length of screen	15 feet
7-	Type screen filter	TEC Minerals Filter Media 100lb/bag
	a) Quantity used	6.5 bags
	b) Depth to top of filter pack (bls)	8 feet bls
8-	Type of seal	Hole plug chips
	a) Quantity used	1 foot (unhydrated)
	b) Depth to top of seal (bls)	2 feet
9-	Grout	
	a) Grout mix used	Portland Cement
	b) Method of placement	Pour
	c) Vol. of well casing grout	1.7 ft^3
10-	OD of auger	6.25 inches
	Development method	Disposable Teflon bailer Geopump
	Development time	2 hours 48 minutes
	Estimated purge volume	55 gallons

Comments

APPENDIX C

Monitoring Well Development Logs

PROJECT NUMBER	WELL NUMBER	DATE
167722.FI.FQ	1970-MW-01	03/14/2002

WELL DEVELOPMENT LOG

PROJECT : RRNAS Site 1970 LOCATION : Roosevelt Roads NAS, Puerto Rico

DEVELOPMENT CONTRACTOR : CH2M Hill

DEVELOPMENT METHOD AND EQUIPMENT USED : Disposable Teflon Bailer to remove sediment and Geopump for development

TOTAL DEPTH: 27.83 START WATER LEVELS : 9.98 START : 03/14/2002 END : 03/14/2002 LOGGER: Erik Isem

MAXIMUM DRAWDOWN DURING PUMPING: 3.07 feet

RANGE AND AVERAGE DISCHARGE RATE: Approximately 0.25 gallons per minute with Geopump

TOTAL QUANTITY OF WATER DISCHARGED: Approximately 18 gallons with disposable bailer to remove heavy sediments from well and 25 gallons with Geopump

DISPOSITION OF DISCHARGE WATER: Turbid, tan color-no odor

Military Time	Water Volume Discharged (gallons)	Depth to Water (ft btoc)	Turbidity (NTU)	Temperature (C)	pH	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Salinity (%)	ORP (mV)	Remarks: color, sheen, odor
15:05	Surge well screen									
15:15	18.0	11.18	NM	NM	NM	NM	NM	NM	NM	
15:17	20.5	11.50	999+	32.30	7.11	3.09	12.65	0.2	111	
15:27	23.1	12.10	999+	32.20	6.81	3.17	5.89	0.2	6	
15:37	25.6	12.81	999+	31.90	6.72	3.53	5.40	0.2	42	
15:47	28.2	13.05	999+	31.80	6.73	2.14	6.73	0.2	14	
15:57	30.7	13.05	999+	31.80	6.70	3.45	6.35	0.2	-1	
16:07	33.2	13.05	999+	31.80	6.69	3.49	6.26	0.2	-10	
	Surge well screen									Begin surging well screen
	Surge well screen									End surging well screen
16:20	33.2	11.54	999+	31.90	6.74	3.10	8.01	0.2	114	
16:30	35.8	12.45	999+	31.80	6.67	3.47	4.17	0.2	-16	
16:40	38.3	12.75	695+	31.70	6.69	3.71	4.13	0.2	27	
16:50	40.9	13.01	999+	31.60	6.67	3.77	3.73	0.2	0	
17:00	43.4	13.01	999+	31.60	6.66	3.64	4.80	0.2	-12	
										End of Development water is turbid

1:45

PROJECT NUMBER	WELL NUMBER	DATE
167722.FI.FQ	1970-MW-02	03/14/2002

WELL DEVELOPMENT LOG

PROJECT : RRNAS Site 1970 LOCATION : Roosevelt Roads NAS, Puerto Rico

DEVELOPMENT CONTRACTOR : CH2M Hill

DEVELOPMENT METHOD AND EQUIPMENT USED : Disposable Teflon Bailer to remove sediment and Geopump for development

TOTAL DEPTH: 26.82 START WATER LEVELS : 15.56 START : 03/14/2002 END : 3./14/02 LOGGER: Erik Isern

MAXIMUM DRAWDOWN DURING PUMPING: 3.9 feet

RANGE AND AVERAGE DISCHARGE RATE: Approximately 0.25 gallons per minute with Geopump

TOTAL QUANTITY OF WATER DISCHARGED: Purged approximately 5 gallons with the disposable bailer and 22 gallons with the Geopump

DISPOSITION OF DISCHARGE WATER: Water color is tan use bailer to remove sediments prior to pumping

Military Time	Water Volume Discharged (gallons)	Depth to Water (ft btoc)	Turbidity (NTU)	Temperature (C)	pH	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Salinity (%)	ORP (mV)	Remarks: color, sheen, odor
10:25	5	15.77	999+	33.5	6.87	11.9	7.27	0.7	-99	
10:32	6.84	16.22	999+	33.5	6.88	12.2	6.29	0.7	-86	
10:37	8.68	16.56	999+	33.5	6.90	13.2	6.22	0.8	-77	
10:42	10.52	17.08	999+	33.4	6.90	14.4	5.82	0.8	-58	
10:49	12.36	17.80	999+	33.4	6.86	14.2	6.01	0.8	-86	
10:56	14.2	18.27	793.0	33.4	6.83	14.4	5.64	0.8	-115	
	Surge and bail well screen									Begin surging well screen
	Surge and bail well screen									End surging well screen
11:11	14.2	17.51	999+	33.80	6.90	13.1	6.83	0.8	-94	
11:18	16.04	17.84	999+	33.7	6.86	14.3	6.22	0.8	-74	
11:24	17.88	18.20	695	33.6	6.85	15.0	6.00	0.9	-88	
11:30	19.72	18.58	999+	33.7	6.82	15.0	5.77	0.9	-105	
11:36	21.56	18.90	695	33.5	6.80	15.3	5.55	0.9	-1258	
11:42	23.4	19.17	999+		6.78	15.6	5.26	0.9	-143	
	Surge and bail well screen									Begin surging well screen
	Surge and bail well screen									End surging well screen
12:13	23.4	19.5	999+	32.7	6.94	14.2	6.10	0.8	-103	
12:22	25.24	NM	999+	32.10	6.90	14.4	5.30	0.8	-123	
12:26	27.08	NM	999+	32.80	6.87	14.4	6.67	0.8	-121	
										End of development final water quality highly turbid

2:01

PROJECT NUMBER	WELL NUMBER	DATE
167722.FI.FQ	1970-MW-03	03/13/2002

WELL DEVELOPMENT LOG

PROJECT : RRNAS Site 1970 LOCATION : Roosevelt Roads NAS, Puerto Rico

DEVELOPMENT CONTRACTOR : CH2M Hill

DEVELOPMENT METHOD AND EQUIPMENT USED : Disposable Teflon Bailer to remove sediment and Geopump for development

TOTAL DEPTH: START WATER LEVELS : START : 03/13/2002 END : 03/14/2002 LOGGER: Erik Isern

MAXIMUM DRAWDOWN DURING PUMPING: feet

RANGE AND AVERAGE DISCHARGE RATE: 0.25 gallons per minute with Geopump

TOTAL QUANTITY OF WATER DISCHARGED: 22 gallons while removing sediments with bailer, and approximately 23 gallons with Geopump

DISPOSITION OF DISCHARGE WATER: Water was very thick with sediments at beginning of development.

Surged well and began removing water with very fine sediments on 3/12/02 (approximately 17 gal) continued on 3/13/2002. Surged and purged well with bailer 2X due to heavy sediments. Removed 5 gallons prior to pumping.

Military Time	Water Volume Discharged (gallons)	Depth to Water (ft btoc)	Turbidity (NTU)	Temperature (C)	pH	Specific Conductivity (mS/cm)	Dissolved Oxygen (mg/L)	Salinity (%)	ORP (mV)	Remarks: color, sheen, odor
11:20	22	14.9	999+	33.5	7.14	3.39	8.12	0.2	3	
11:30	24.3	15.5	999+	33.4	7.16	3.59	7.27	0.2	-6	
11:40	26.6	16	999+	33.4	7.16	3.94	7.36	0.2	-13	
11:50	28.9	16.25	999+	33.4	7.1	3.93	6.71	0.2	-36	
12:00	31.2	16.57	999+	33.2	7.06	4	6.05	0.2	-30	
12:10	33.5	16.85	999+	33.2	7.04	4.08	6.01	0.2	-37	
13:00	Surge well screen									Begin surging well screen
13:05	Surge well screen									End surging well screen and removed water/sediment
13:18	33.5	15.01	999+	33.6	7.16	4.02	9.35	0.2	26	
13:28	35.8	16.67	999+	33.2	7.12	4.24	7.17	0.2	14	
13:38	38.1	16	999+	33.1	7.08	4.19	6.43	0.2	5	
13:48	40.4	16.43	999+	33.1	7.06	4.07	5.87	0.2	3	
13:58	42.7	16.73	999+	33.1	7.04	4.12	5.68	0.2	-9	
14:08	45.0	16.98	999+	33.1	7.02	3.97	5.10	0.2	-17	
										End of Development

2:48

APPENDIX D

Monitoring Well Sampling Logs

Roosevelt Roads Naval Air Station Field Data Information Log for Groundwater Sampling

Date (mm/dd/yy)	03/14/2002	Casing Diameter	2"
Field Personnel	Hector M. Hernandez, Erik Isern	Casing Material	PVC
Site Name	RRNAS Site 2036	Measuring Point Elevation	
Job Number	167722.FI.FQ	Height of Riser (above land surface)	0"
Well ID #	1970-MW-01	Land Surface Elevation	
Weather Conditions		Screened Interval	
Air Temperature		Dedicated Pump of Bailer	Dedicated Teflon tubing
Total Well Depth (TWD)	27.83	Steel Guard Pipe Around Casing	no
Depth to Groundwater (DGW)	9.81	Locking Cap	yes
Length of Water Column (LWC) = TWD - DGW =	18.02	Protective Post/Abutment	8" steel well cover
1 Casing Volume = LWC x	0.163	Well Integrity Satisfactory	yes
Standard Evacuation Volume =	2.94	Well Yield	moderate
Method of Well Evacuation	Geopump through Teflon tubing	Comments/Observations:	
Method of Sample Collection	Geopump through Teflon tubing		
Total Volume of Water Removed (gallons)	14.7 gallons		

Field Parameters

Volume Purged (gallons)	Start	1	2	3	4	5				
Pumping Rate (gpm)		0.25	0.25	0.25	0.13	0.25				
Time (military)	14:37	14:49	15:01	15:13	15:35	15:47				
pH	6.88	6.9	6.94	6.92	6.89	6.89				
Specific Conductivity (mS/cm)	3.48	3.45	3.56	3.59	3.62	3.62				
Temperature (°C)	31.9	31.9	31.9	32.0	31.8	31.8				
Turbidity (NTU)	601	390	328	642	591	495				
Dissolved Oxygen (mg/L)	5.05	4.15	4.41	4.45	4.06	3.87				
ORP	142	133	129	95	53	45				
Salinity	0.2	0.2	0.2	0.2	0.2	0.2				
DTW (ft btoc)	10.01	11.67	11.86	12.28	12.51	12.52				

Additional Comments/Observations

Sample ID JLA029

Sample Time: 15:50

Roosevelt Roads Naval Air Station Field Data Information Log for Groundwater Sampling

Date (mm/dd/yy)	03/14/2002	Casing Diameter	2"
Field Personnel	Hector M. Hemandez, Erik Isern	Casing Material	PVC
Site Name	RRNAS Site 1970	Measuring Point Elevation	
Job Number	167722.FI.FQ	Height of Riser (above land surface)	0"
Well ID #	1970-MW-02	Land Surface Elevation	
Weather Conditions		Screened Interval	
Air Temperature		Dedicated Pump of Bailer	Dedicated Teflon tubing
Total Well Depth (TWD)	28.80	Steel Guard Pipe Around Casing	no
Depth to Groundwater (DGW)	13.83	Locking Cap	yes
Length of Water Column (LWC) = TWD - DGW =	14.97	Protective Post/Abutment	8" steel well cover
1 Casing Volume = LWC x	0.163	Well Integrity Satisfactory	yes
Standard Evacuation Volume =	2.44	Well Yield	moderate
Method of Well Evacuation	Geopump through Teflon tubing	Comments/Observations:	
Method of Sample Collection	Geopump through Teflon tubing	Water was orangish red, highly turbid	
Total Volume of Water Removed (gallons)	12.2 gallons		

Field Parameters

Volume Purged (gallons)	Start	1	2	3	4	5				
Pumping Rate (gpm)	0.24	0.24	0.24	0.24	0.24	0.24				
Time (military)	15:35	15:45	15:55	16:05	16:15	16:25				
pH	6.79	6.83	6.81	6.81	6.81	6.81				
Specific Conductivity (mS/cm)	10.8	11.1	11.2	11.1	11.1	11.2				
Temperature (°C)	33.4	33.38	33.3	33.29	33.31	33.3				
Turbidity (NTU)	999+	999+	717	999+	372	420				
Dissolved Oxygen (mg/L)	2.91	3.5	3.02	2.82	2.57	2.43				
ORP	30	23	1	-9	-22	-29				
Salinity	0.6	0.6	0.6	0.6	0.6	0.6				
DTW (ft btoc)	15.05	15.83	16.79	17.26	17.73	17.93				

Additional Comments/Observations

Sample ID JLA030

Sample Time: 16:27

Roosevelt Roads Naval Air Station Field Data Information Log for Groundwater Sampling

Date (mm/dd/yy)	03/16/2002	Casing Diameter	2"
Field Personnel	Hector M. Hernandez, Erik Isern	Casing Material	PVC
Site Name	RRNAS Site 1970	Measuring Point Elevation	
Job Number	167722.FI.FQ	Height of Riser (above land surface)	0"
Well ID #	1970-MW-03	Land Surface Elevation	
Weather Conditions	Sunny, Humidity @85%	Screened Interval	
Air Temperature		Dedicated Pump of Bailer	Dedicated Teflon tubing
Total Well Depth (TWD)	27.20	Steel Guard Pipe Around Casing	no
Depth to Groundwater (DGW)	12.99	Locking Cap	yes
Length of Water Column (LWC) = TWD - DGW =	14.21	Protective Post/Abutment	8" steel well cover
1 Casing Volume = LWC x	0.163	Well Integrity Satisfactory	yes
Standard Evacuation Volume =	2.32	Well Yield	low
Method of Well Evacuation	Geopump through Teflon tubing	Comments/Observations:	
Method of Sample Collection	Geopump through Teflon tubing	Water highly turbid tan color at start. Remained Turbid throughout.	
Total Volume of Water Removed (gallons)	12 gallons		

Field Parameters

Volume Purged (gallons)	Start	1	2	3	4	5				
Pumping Rate (gpm)	0.17	0.17	0.21	0.19	0.21	0.17				
Time (military)	9:26	9:40	9:51	10:03	10:14	10:28				
pH	6.88	6.94	6.97	6.99	7.01	7.02				
Specific Conductivity (mS/cm)	4.22	4.81	3.44	3.68	5.75	5.36				
Temperature (°C)	30.63	32.78	33.07	33.12	33.12	33.04				
Turbidity (NTU)	999+	292	520	480	927	999+				
Dissolved Oxygen (mg/L)	2.59	2.64	2.77	2.67	2.57	2.96				
ORP	205	159	160	149	142	138				
Salinity	0.2	0.2	0.2	0.2	0.2	0.2				
DTW (ft btoc)	12.99	14.50	15.38	16.01	16.62	17.04				

Additional Comments/Observations

Sample ID JLA032

Sample Time: 10:29

APPENDIX E

Laboratory Chain of Custody Forms and Analytical Data

On Site Labs, Inc.

Chain of Custody Record

PO # _____

Client: CH2M HILL TAMPA
Address: 4350 W. CYPRESS SUITE 600
Phone: 813-874-6522 FAX: 813-8743056
Client Project #: 167722.FI.FQ Project Manager: TUNCHANSOY

Date: MARCH 9, 2002 Page 1 of 1
LAB Project #: 02I0308CH2M Control#:
Location: RINAS SITES 2036 & 88
Collector: HUNT EI Date of Collection: MARCH 6 & 7

Sample Name	Depth	Time	Sample Matrix	Container Type	Grab / Composite	8021	8020 A (BTEX)	VOL 8260	SEMI VOL 8270	TRPH 418.1	TPH 8015 B (gasoline)	TPH 8015 B (diesel)	TPH 8015 B (gas & diesel)	TPH 8015 B (motor oil)	TPH 8015 B (full range)	TOTAL LEAD	TCLP LEAD	METALS	RCI	8082-PCBS	8082-Pesticide	PNA 610/8100	TCLP METALS			FIELD NOTES / PRESERVATION	Total # of Containers
HLA036	MA	0828	GW	40mL			X						X													2036 MW01	2
JLA001	0-1	1120	SOIL	2oz									X													1970 SB01 (01)	1
JLA002	3-3.5	1128	SOIL	2oz									X													1970 SB01 (3-3.5)	1
JLA003	0-1	1330	SOIL	2oz									X													1970SB02 (01)	1
JLA004	7-9	1508	SOIL	2oz									X													1970SB02 (7-9)	1
JLA005	0-1	1525	SOIL	2oz									X													1970SB03 (01)	1
JLA006	7-9	1642	SOIL	2oz									X													1970SB03(7-9)	1
JLA007	0-1	0826	SOIL	2oz									X													1970 SB04(01)	1
JLA008	3-4	0906	SOIL	2oz									X													1970 SB04(3-4)	1
JLA009	0-1	1440	SOIL	2oz									X													1970SB05 (0-1)	1
JLA010	3-4	1625	SOIL	2oz									X													1970SB05(3-4)	1
JLA011TB1	—	1726	QC SOIL	40mL			X						X													TRIP BLANK	2
JLA012EB1	—	1732	QC	40mL			X						X													EQUIP BLANK	2

RELINQUISHED BY (signature) — Date/Time: MARCH 02 0730 — RECEIVED BY (signature) — Date/Time: 3/8/02 0730

RELINQUISHED BY (signature) — Date/Time — RECEIVED BY (signature) — Date/Time

Total # of containers: 1 6
Chain of Custody seals Y / N / (NA): —
Seals Intact? Y / N (NA): —
Received good conditions / (Cold): YES

TEMPERATURE: 16° bath

G=Grab C=Composite S=Soil W=Aqueous

On Site Labs, Inc.

Chain of Custody Record

PO # _____

Client: CH2M HILL TAMPA

Address: 4350 W CYPRESS SUITE 600

Phone: 813-874-6522 FAX: 813-874-3056

Client Project #: 167722.FI.FS Project Manager: TUNCH ORSOY

Date: MARCH 8 2002 Page: 1 of 1

LAB Project #: 02I0308CH2M-2 Control#: 2055

Location: 12TH AVE SITE 1970

Collector: HMH, EC Date of Collection: MARCH 8 2002

Sample Name	Depth	Time	Sample Matrix	Container Type	Grab (G) or Composite (C)	8021	8020 A (BTEX)	VOL 8260	SEMI VOL 8270	TRPH 418.1	TPH 8015 B (gasoline)	TPH 8015 B (diesel)	TPH 8015 B (gas & diesel)	TPH 8015 B (motor oil)	TPH 8015 B (full range)	TOTAL LEAD	TCLP LEAD	METALS	RCI	8082-PCBS	8082-Pesticide	PNA 610/8100	TCLP METALS		Arsenic Furn.	FIELD NOTES / PRESERVATION	Total # of Containers
JLA013	0-1	1058	SOIL	2oz	C								X												X	1970 SB07 (0-1)	1
JLA014	17-19	1404	SOIL	2oz	C								X												X	1970SB07 (17-19)	1
JLA015	-	1516	GW	40ML	G		X						X												X	1970 SB07	2
JLA016 FD1	-	-	SOIL	2oz	C								X												X	FIELD DUPE 1	1
JLA017 FD2	-	-	GW	40ML	G		X						X												X	FIELD DUPE 2	2
JLA018 TB2		1549	QC	40ML			X																		X	TRIP BLANK 2	2
JLA019 EB2		1558	QC	40ML			X						X												X	EQUIPMENT BLANK 2	2

RELINQUISHED BY (signature)	Date/Time	RECEIVED BY (signature)	Date/Time
	MARCH 8 02 16:30		3/8/02 16:30
RELINQUISHED BY (signature)	Date/Time	RECEIVED BY (signature)	Date/Time

Total # of containers: 1 1

Chain of Custody seals Y / N (NA)

Seals Intact? Y / N (NA)

Received good conditions / cold: Y S

TEMPERATURE: ICE BATH 3°C

G = Grab C = Composite S = Soil W = Aqueous

On Site Labs, Inc.

Chain of Custody Record

PO # _____

Client: CH2M HILL TAMPA

Address: 4350 WEST CYPRESS SUITE 600

Phone: 813-874-6522 FAX: 813-874-3056

Client Project #: 167722.FI.FS Project Manager: TUNCAY ARSOY

Date: 3/14/02 Page: 1 of 1

LAB Project #: 02I0314CH2M Control#: _____

Location: SITES 88 & 1970

Collector: HMH, EI Date of Collection: 3/12/13/14/02

Sample Name	Depth	Time	Sample Matrix	Container Type	Grab or Composite*	8021	8020 A (BTEX)	VOL 8260	SEMI VOL 8270	TRPH 418.1	TPH 8015 B (gasoline)	TPH 8015 B (diesel)	TPH 8015 B (gas & diesel)	TPH 8015 B (motor oil)	TPH 8015 B (full range)	TOTAL LEAD	TCLP LEAD	METALS	RCI	8082-PCBS	8082-Pesticide	PNA 610/8100	TCLP METALS		QUICK TURN	FIELD NOTES / PRESERVATION	Total # of Containers
JCA029	NA	1550	GW	40mL	G		X						X												SITE 1970 MW-1	3
JCA030	NA	1627	GW	40mL	G		X						X												SITE 1970 MW-2	3
ICA020	7-9	1659	SOIL	2oz	C								X											X	88-SB07-	1
ICA021	27-29	0848	SOIL	2oz	C								X											X	88-SB07-	1
ICA022	7-9	1457	SOIL	2oz	C								X											X	88-SB09-	1
ICA023	12-14	1315	SOIL	2oz	C								X											X	88-SB09-	1
ICA024	NA	0835	GW	40mL	G		X						X											X	88-SB07	3
ICA025	NA	0840	GW	40mL	G		X						X											X	88-SB09	3
ICA026	NA	NA	SOIL	2oz	C								X											X	FIELD DUPE	1
JCA031	NA	0925	QC	40mL	G		X						X												EQUIP BLANK	3
ICA027	NA	0928	QC	40mL	G		X						X												EQUIP BLANK	3
ICA028	NA	NA	QC	4mL	G		X																		TRIP BLANK (LAS VEGAS ONLY)	2

RELINQUISHED BY (signature) _____ Date/Time 3/14/02 1700

RECEIVED BY (signature) _____ Date/Time 3/14/02 17:02

RELINQUISHED BY (signature) _____ Date/Time _____

RECEIVED BY (signature) _____ Date/Time _____

Total # of containers: 25

Chain of Custody seals Y / N / (NA): —

Seals Intact? Y / N / (NA): —

Received good conditions (cold): YES

TEMPERATURE

C=Composite S=Soil W=Aqueous

On Site Labs, Inc.

Chain of Custody Record

PO # _____

Client: CHEM HILL TAMPA

Address: 4350 WEST CYPRESS SUITE 600

Phone: 813-874-6522 FAX: 813 874 3056

Client Project #: 16T22.FI.FS Project Manager: TUNKIT OLSON

Date: MARCH 11, 02 Page: 1 of 1

LAB Project #: 02I0311C112M Control#: 2057

Location: SITES 1970, 88, 2036

Collector: HMH ESI Date of Collection: 3/8/10/11 2002

Sample Name	Depth	Time	Sample Matrix	Container Type	"Grab Composite"	8021	8020 A (BTEX)	VOL 8260	SEMI VOL 8270	TRPH 418.1	TPH 8015 B (gasoline)	TPH 8015 B (diesel)	TPH 8015 B (gas & diesel)	TPH 8015 B (motor oil)	TPH 8015 B (full range)	TOTAL LEAD	TCLP LEAD	METALS	RCI	8082-PCBS	8082-Pesticide	PNA 610/8100	TCLP METALS			FIELD NOTES / PRESERVATION	Total # of Containers
HLA031	—	1430	GW	40mL			X						X													2036 MW 02	3
JLA020	7-9	0943	SOIL	2oz									X													1970 SB08 7-9	1
JLA021	17-19	1046	SOIL	2oz									X													1970 SB08 17-19	1
JLA022	7-9	0932	SOIL	2oz									X													1970 SB09	1
JLA023	17-19	1010	SOIL	2oz									X													1970 SB09 17-19	1
JLA024	—	1317	GW	40mL			X						X													1970 SB08	2
JLA025	—	1335	GW	40mL			X						X													1970 SB09	2
JLA026FD3	NA	NA	SOIL	2oz									X													FIELD DUPE	1
JLA027 EB3	—	1315	QC	40mL			X						X													EQUIP BLANK/ FIELD DUPE	2
JLA028 TB3	—	1333	QC	40mL			X																			TRIP BLANK	2
JLA017	3-4	0854	SOIL	2oz									X													88 SB06 3-4	1
JLA018	7-9	0939	SOIL	2oz									X													88 SB06 7-9	1
JLA019	—	1208	GW	40mL			X						X													88 MW 01	3

RELINQUISHED BY (signature)	Date/Time	RECEIVED BY (signature)	Date/Time
	MARCH 11 02 1558	K Melburne	3/11/02 16:00

Total # of containers: 2 1 — —

Chain of Custody seals Y / N / NA

Seals Intact? Y / N / NA

Received good conditions / cold: YES

TEMPERATURE: ice bath 4.5°C

G=Grab C=Composite S=Soil W=Aqueous

On Site Labs, Inc.

Chain of Custody Record

PO # _____

Client: CH2M HILL TAMPA

Address 4350 WEST CYPRESS ST SUITE 600

Phone 813-874-6522 FAX 813-874-3056

Client Project # 167722.FI.FQ Project Manager TERESA ORSOW

Date MARCH 18, 2002 Page 1 of 1

LAB Project # 02I0318CH2M-3 Control# 2065

Location RRNAS SITES 1970 & 88

Collector HMH EI. Date of Collection 3/16/02

Sample Name	Depth	Time	Sample Matrix	Container Type	*Grab G Composite*	8021	8020 A (BTEX)	VOL 8260	SEMI VOL 8270	TRPH 418.1	TPH 8015 B (gasoline)	TPH 8015 B (diesel)	TPH 8015 B (gas & diesel)	TPH 8015 B (motor oil)	TPH 8015 B (full range)	TOTAL LEAD	TCLP LEAD	METALS	RCI	8082-PCBS	8082-Pesticide	PNA 610/8100	TCLP METALS			FIELD NOTES / PRESERVATION	Total # of Containers
ILA029		1505	GW	40ml			X						X													88 MW 02	3
ILA030		1457	GW	40ml			X						X													88 MW 03	3
ILA032		1029	GW	40ml			X						X													1970 MW 03	3

RELINQUISHED BY (signature) _____ Date/Time MARCH 18 2002 1150

RECEIVED BY (signature) _____ Date/Time 3/18/02 1730

RELINQUISHED BY (signature) _____ Date/Time

RECEIVED BY (signature) _____ Date/Time

Total # of containers: 09

Chain of Custody seals Y / N / NA: —

Seals Intact? Y / N / NA: —

Received good conditions / Cold: YES

TEMPERATURE: iced

G=Grab C=Composite S=Soil W=Aqueous

On Site Labs, Inc.

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CH2M HILL PROJECT NO. 167722.FI.FS
RRNAS SITES 88 AND 2036
CEIBA, P.R.

OSL Project #02I0308CH2M

TPH (Mod. EPA Method 8015B) ANALYSES OF SOIL

SAMPLE NUMBER	DATE ANALYZED	TPH-GAS C_5 - C_{12} (mg/Kg)	TPH-DIESEL C_{13} - C_{24} (mg/Kg)
METHOD BLANK	03/08/02	ND	ND
JLA001	03/08/02	ND	ND
JLA002	03/08/02	ND	ND
JLA003	03/08/02	ND	ND
JLA004	03/08/02	ND	ND
JLA005	03/08/02	ND	ND
JLA006	03/08/02	ND	ND
JLA007	03/08/02	ND	ND
JLA008	03/08/02	ND	ND
JLA009	03/08/02	ND	ND
JLA010	03/08/02	ND	ND
DETECTION LIMIT (mg/Kg)		10	25

TPH (Mod. EPA Method 8015B) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	TPH-GAS C_5 - C_{12} (mg/L)	TPH-DIESEL C_{13} - C_{24} (mg/L)
METHOD BLANK	03/08/02	ND	ND
JLA012EB1	03/08/02	ND	ND
HLA030	03/08/02	ND	ND
DETECTION LIMIT (mg/L)		10	25

mg/L = MILLIGRAMS PER LITER
mg/Kg = MILLIGRAMS PER KILOGRAM
CONCENTRATIONS BASED ON DRY WEIGHT
"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE THE LISTED DETECTION LIMIT
SAMPLING PERFORMED BY CH2M HILL PERSONNEL

ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

CH2M HILL PROJECT NO. 167722.FI.FS
RRNAS SITES 88 AND 2036
CEIBA, P.R.

OSL Project #02I0308CH2M

BTEX (Mod. EPA Method 8020A) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL-BENZENE (µg/L)	TOTAL XYLENES (µg/L)
METHOD BLANK	03/08/02	ND	ND	ND	ND
JLA011TB1	03/08/02	ND	1.3	ND	ND
JLA012EB1	03/08/02	ND	1.2	ND	ND
HLA030	03/08/02	ND	ND	ND	ND
DETECTION LIMIT (µg/L)		1.0	1.0	1.0	3.0

µg/L = MICROGRAMS PER LITER
"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE THE LISTED DETECTION LIMIT

SAMPLING PERFORMED BY: CH2M HILL PERSONNEL
ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

Marco A. Pedraza
Laboratory Manager

MARCO A. PEDRAZA RUIZ
Químico Licenciado
Estado Libre Asociado de Puerto Rico
LICENCIA

Kevin Shelburne
Principal

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CH2M HILL PROJECT NO. 167722.FI.FS
RRNAS SITE 1970
CEIBA, P.R.

OSL Project #02I0308CH2M-2

TPH (Mod. EPA Method 8015B) ANALYSES OF SOIL

SAMPLE NUMBER	DATE ANALYZED	TPH-GAS C_5 - C_{12} (mg/Kg)	TPH-DIESEL C_{13} - C_{24} (mg/Kg)
METHOD BLANK	03/11/02	ND	ND
JLA013	03/11/02	ND	ND
JLA014	03/11/02	ND	ND
JLA016FD1	03/11/02	ND	ND
DETECTION LIMIT (mg/Kg)		10	25

TPH (Mod. EPA Method 8015B) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	TPH-GAS C_5 - C_{12} (mg/L)	TPH-DIESEL C_{13} - C_{24} (mg/L)
METHOD BLANK	03/11/02	ND	ND
JLA015	03/11/02	ND	ND
JLA017 FD2	03/11/02	ND	ND
JLA019 EB2	03/11/02	ND	ND
DETECTION LIMIT (mg/L)		10	25

mg/L = MILLIGRAMS PER LITER
mg/Kg = MILLIGRAMS PER KILOGRAM
CONCENTRATIONS BASED ON DRY WEIGHT
"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE THE LISTED DETECTION LIMIT
SAMPLING PERFORMED BY: CH2M HILL PERSONNEL

ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

CH2M HILL PROJECT NO. 167722.FI.FS
RRNAS SITE 1970
CEIBA, P.R.

OSL Project #02I0308CH2M-2

BTEX (Mod. EPA Method 8020A) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL-BENZENE (µg/L)	TOTAL XYLENES (µg/L)
METHOD BLANK	03/11/02	ND	ND	ND	ND
JLA015	03/11/02	ND	ND	ND	ND
JLA017 FD2	03/11/02	ND	ND	ND	ND
JLA018 TB2	03/11/02	ND	2.2	ND	ND
JLA019 EB2	03/11/02	ND	1.7	ND	ND
DETECTION LIMIT (µg/L)		1.0	1.0	1.0	3.0

µg/L = MICROGRAMS PER LITER
"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE THE LISTED DETECTION LIMIT

SAMPLING PERFORMED BY: CH2M HILL PERSONNEL
ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

Marco A. Pedraza
Laboratory Manager

MARCO A. PEDRAZA RUIZ
Químico Licenciado
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CH2M HILL PROJECT NO. 167722.FI.FS
RRNAS SITES 88, 1970 AND 2036
CEIBA, P.R.

OSL Project #02I0311CH2M

TPH (Mod. EPA Method 8015B) ANALYSES OF SOIL

SAMPLE NUMBER	DATE ANALYZED	TPH-GAS C_5 - C_{12} (mg/Kg)	TPH-DIESEL C_{13} - C_{24} (mg/Kg)
METHOD BLANK	03/12/02	ND	ND
JLA020	03/12/02	ND	ND
JLA021	03/12/02	ND	ND
JLA022	03/12/02	ND	ND
JLA023	03/12/02	ND	ND
JLA026 FD3	03/12/02	ND	ND
ILA017	03/12/02	ND	ND
ILA018	03/12/02	ND	ND
DETECTION LIMIT (mg/Kg)		10	25

TPH (Mod. EPA Method 8015B) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	TPH-GAS C_5 - C_{12} (mg/L)	TPH-DIESEL C_{13} - C_{24} (mg/L)
METHOD BLANK	03/12/02	ND	ND
METHOD BLANK	03/18/02	ND	ND
HLA031	03/18/02	ND	ND
JLA024	03/18/02	ND	ND
JLA025	03/18/02	ND	ND
JLA027 EB3	03/18/02	ND	ND
ILA019	03/12/02	ND	ND
DETECTION LIMIT (mg/L)		10	25

mg/L = MILLIGRAMS PER LITER
mg/Kg = MILLIGRAMS PER KILOGRAM
CONCENTRATIONS BASED ON DRY WEIGHT
"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE THE LISTED DETECTION LIMIT
SAMPLING PERFORMED BY: CH2M HILL PERSONNEL

ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

CH2M HILL PROJECT NO. 167722.FI.FS
RRNAS SITES 88, 1970 AND 2036
CEIBA, P.R.

OSL Project #02I0311CH2M

BTEX (Mod. EPA Method 8020A) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL-BENZENE (µg/L)	TOTAL XYLENES (µg/L)
METHOD BLANK	03/18/02	ND	ND	ND	ND
HLA031	03/18/02	ND	ND	ND	ND
JLA024	03/18/02	ND	ND	ND	ND
JLA025	03/18/02	ND	ND	ND	ND
JLA027 EB3	03/18/02	ND	ND	ND	ND
ILA019	03/18/02	ND	ND	ND	ND
JLA028 TB3	03/18/02	ND	ND	ND	ND
DETECTION LIMIT (µg/L)		1.0	1.0	1.0	3.0

µg/L = MICROGRAMS PER LITER
"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE THE LISTED DETECTION LIMIT

SAMPLING PERFORMED BY: CH2M HILL PERSONNEL
ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

MARCO A. PEDRAZA RIOS
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LICENCIA # 733748

Marco A. Pedraza
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CH2M HILL PROJECT NO. 167722.FI.FS
RRNAS SITES 88 AND 1970
CEIBA, P.R.

OSL Project #02I0314CH2M

TPH (Mod. EPA Method 8015B) ANALYSES OF SOIL

SAMPLE NUMBER	DATE ANALYZED	TPH-GAS C_5 - C_{12} (mg/Kg)	TPH-DIESEL C_{13} - C_{24} (mg/Kg)
METHOD BLANK	03/19/02	ND	ND
ILA020	03/19/02	ND	ND
ILA021	03/19/02	ND	ND
ILA022	03/19/02	ND	ND
ILA023	03/19/02	ND	ND
ILA026	03/19/02	ND	ND
DETECTION LIMIT (mg/Kg)		10	25

TPH (Mod. EPA Method 8015B) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	TPH-GAS C_5 - C_{12} (mg/L)	TPH-DIESEL C_{13} - C_{24} (mg/L)
METHOD BLANK	03/19/02	ND	ND
ILA024	03/19/02	ND	ND
ILA025	03/19/02	ND	ND
ILA027	03/19/02	ND	ND
JLA029	03/19/02	ND	ND
JLA030	03/19/02	ND	ND
JLA031	03/19/02	ND	ND
DETECTION LIMIT (mg/L)		10	25

mg/L = MILLIGRAMS PER LITER
mg/Kg = MILLIGRAMS PER KILOGRAM
CONCENTRATIONS BASED ON DRY WEIGHT
"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE THE LISTED DETECTION LIMIT
SAMPLING PERFORMED BY: CH2M HILL PERSONNEL

ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

CH2M HILL PROJECT NO. 167722.FI.FS
RRNAS SITES 88 AND 1970
CEIBA, P.R.

OSL Project #02I0314CH2M

BTEX (Mod. EPA Method 8020A) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL-BENZENE (µg/L)	TOTAL XYLENES (µg/L)
METHOD BLANK	03/19/02	ND	ND	ND	ND
ILA024	03/19/02	ND	ND	ND	ND
ILA025	03/19/02	ND	ND	ND	ND
ILA027	03/19/02	ND	ND	ND	ND
ILA028	03/19/02	ND	ND	ND	ND
JLA029	03/19/02	ND	ND	ND	ND
JLA030	03/19/02	ND	ND	ND	ND
JLA031	03/19/02	ND	ND	ND	ND
DETECTION LIMIT (µg/L)		1.0	1.0	1.0	3.0

µg/L = MICROGRAMS PER LITER
"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE THE LISTED DETECTION LIMIT

SAMPLING PERFORMED BY: CH2M HILL PERSONNEL
ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

Marco A. Pedraza
Laboratory Manager

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CH2M HILL PROJECT NO. 167722.FI.FQ
RRNAS SITES 1970 AND 88
CEIBA, P.R.

OSL Project #02I0318CH2M-3

TPH (Mod. EPA Method 8015B) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	TPH-GAS C_5 - C_{12} (mg/L)	TPH-DIESEL C_{13} - C_{24} (mg/L)
METHOD BLANK	03/21/02	ND	ND
ILA029	03/21/02	ND	ND
ILA030	03/21/02	ND	ND
JLA032	03/21/02	ND	ND
DETECTION LIMIT (mg/L)		10	25

mg/L = MILLIGRAMS PER LITER
"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE THE LISTED DETECTION LIMIT
SAMPLING PERFORMED BY: CH2M HILL PERSONNEL

ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

CH2M HILL PROJECT NO. 167722.FI.FQ
RRNAS SITES 1970 AND 88
CEIBA, P.R.

OSL Project #02I0318CH2M-3

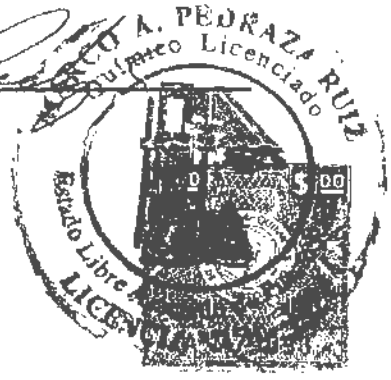
BTEX (Mod. EPA Method 8020A) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL-BENZENE (µg/L)	TOTAL XYLENES (µg/L)
METHOD BLANK	03/21/02	ND	ND	ND	ND
ILA029	03/21/02	ND	ND	ND	ND
ILA030	03/21/02	ND	ND	ND	ND
JLA032	03/21/02	ND	ND	ND	ND
DETECTION LIMIT (µg/L)		1.0	1.0	1.0	3.0

µg/L = MICROGRAMS PER LITER
"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE THE LISTED DETECTION LIMIT

SAMPLING PERFORMED BY: CH2M HILL PERSONNEL
ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

Marco A. Pedraza
Laboratory Manager



Kevin Shelburne
Principal

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March 12, 2002
OSL Projects #02I0308CH2M-2

Mr. Tunch Orsoy
CH2M HILL
4350 W. Cypress Street, Suite 600
Tampa, Florida 33607

SUBJECT: DATA REPORT - CH2M HILL PROJECT NO. 167722.FI.FS
SITE 1970 ROOSEVELT ROADS NAS, CEIBA, PUERTO RICO

Dear Mr. Orsoy:

Please find enclosed the analytical report for the samples collected by CH2M HILL personnel from the above-referenced site and delivered to On Site Labs (OSL) under the proper chain-of-custody protocol. An OSL Puerto Rico certified-chemist performed the following analyses:

- 3 soil samples analyzed for TPH-gas/diesel by modified EPA test method 8015B.
- 2 water samples analyzed for TPH-gas/diesel by modified EPA test method 8015B.
- 1 equipment blank water sample analyzed for TPH-gas/diesel.
- 2 water samples analyzed for BTEX by modified EPA test method 8020A.
- 1 trip and 1 equipment blank water sample analyzed for BTEX.
- Laboratory QA/QC analyses for TPH-gas/diesel and BTEX.

The analytical results are summarized in the attached table. Applicable detection limits, QA/QC data, chromatograms, a chain-of-custody and an invoice are attached.

OSL appreciates the opportunity to provide analytical services for this project. If you have any questions relating to the data or report, please do not hesitate to contact us.

Sincerely,
On Site Labs, Inc.

Kevin Shelburne
Principal

Attachments

QA/QC REPORT - CALIBRATION DATA

OSL Project #02I0308CH2M-2
DAILY CALIBRATION DATE: 03/11/02

CH2M HILL PROJECT NO. 167722.FI.FS
PROJECT NAME: RRNAS SITE 1970

			INITIAL		OPENING			CLOSING		
COMPOUND	DETECTOR	CALIB RANGE	RF	%RSD	AREA	RF	%DIFF	AREA	RF	%DIFF
TPH GASOLINE	FID #2 (gc5)	10 - 30,000	0.26	17.6%	54.25	0.27	6.0%	53.42	0.27	4.3%
TPH GASOLINE	FID #3 (gc5)	10 - 30,000	0.36	15.0%	66.19	0.33	8.6%	67.63	0.34	6.6%
TPH GASOLINE	FID #4 (gc5)	10 - 30,000	0.31	15.4%	53.64	0.27	12.4%	55.36	0.28	9.5%
TPH DIESEL	FID #2 (gc5)	25 - 20,000	0.69	14.1%	264.28	0.66	4.8%	271.52	0.68	2.2%
TPH DIESEL	FID #3 (gc5)	25 - 20,000	0.74	13.6%	314.84	0.79	6.5%	317.84	0.79	7.5%
TPH DIESEL	FID #4 (gc5)	25 - 20,000	0.61	11.1%	251.59	0.63	3.8%	215.53	0.54	11.1%

CALIB RANGE - RANGE OF CALIBRATION CURVE IN ppm
INITIAL RF - AVERAGE RESPONSE FACTOR FROM MULTIPOINT CALIBRATION CURVE
% RSD - LINEARITY OF MULTIPOINT CALIBRATION CURVE (+/- 20% ACCEPTABLE LIMITS)
AREA - AREA COUNTS FROM DAILY CALIBRATION STANDARD
RF - DETECTOR RESPONSE FACTOR FROM MID-POINT CALIBRATION STANDARD
% DIFF - DIFFERENCE, IN PERCENT, BETWEEN THE AVERAGE RF AND THE OPENING OR CLOSING RF (+/- 15% ACCEPTABLE LIMITS)
OPENING - MID-POINT CALIBRATION STANDARD ANALYZED BEFORE SAMPLE ANALYSES BEGIN
CLOSING - MID-POINT CALIBRATION STANDARD ANALYZED AFTER SAMPLES ANALYSES ARE COMPLETE

ANALYSES PERFORMED BY MARCO A PEDRAZA
DATA REVIEWED BY KEVIN SHELBURNE

ON SITE LABS, INC
PMB 627, HC-01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE (787) 720-0329 FAX 789-3858

QA/QC REPORT - MS/MSD DATA

MATRIX SPIKE (MS)/MATRIX SPIKE DUPLICATE (MSD)

OSL Project #0210308CH2M-2
DATE: 03/11/02

CH2M HILL PROJECT NO. 167722.FI.FS
PROJECT NAME: RRNAS SITE 1970

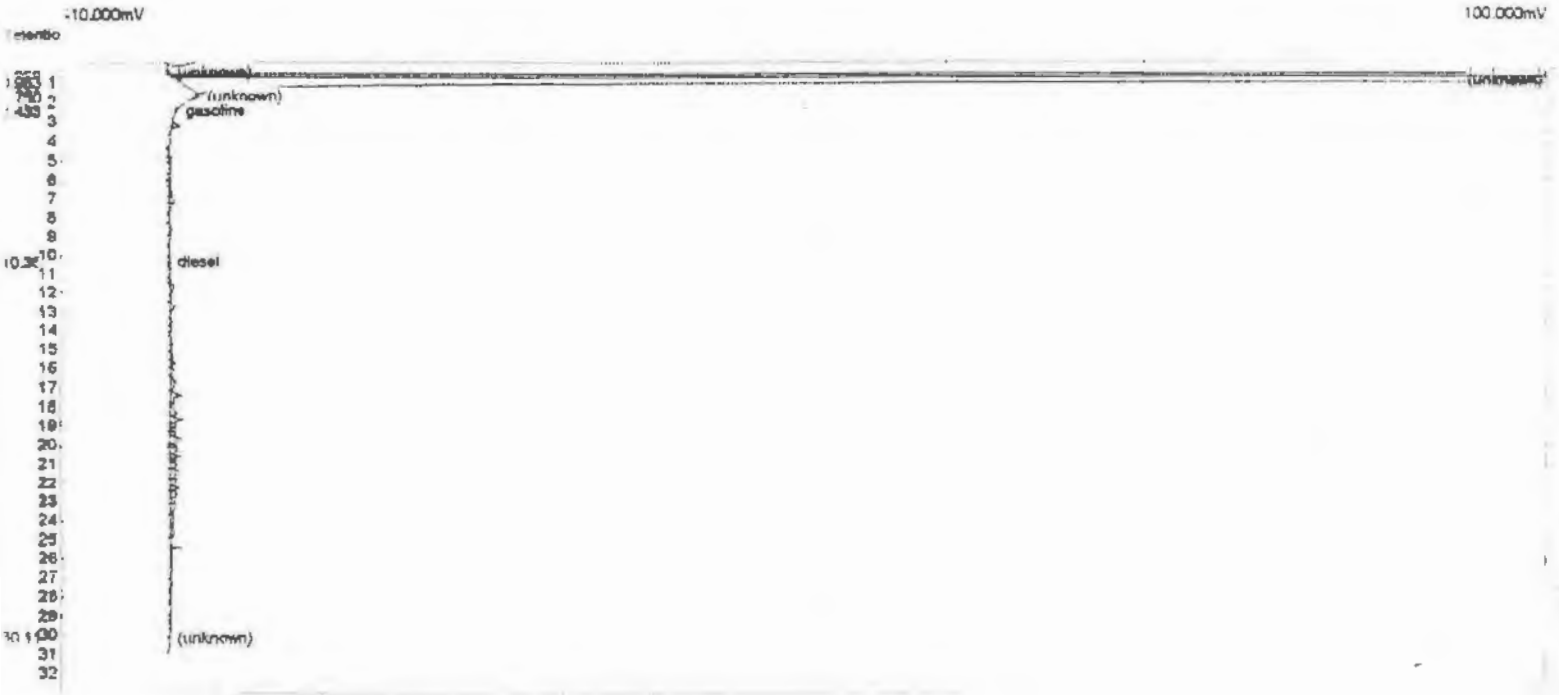
COMPOUND	SPK CON (ppm)	MS CONC (ppm)	%REC MS	MSD CONC (ppm)	%REC MSD	RPD	ACCEPTABLE RPD	ACCEPTABLE RECOVERY
TPH-GASOLINE	50	43	86%	48	96%	11%	15%	81% - 126%
TPH-DIESEL	100	118	118%	120	120%	2%	15%	74% - 131%

ppm = PARTS PER MILLION
MS CONC - ANALYZED CONCENTRATION OF SPIKED SAMPLE
% REC - PERCENT RECOVERY OF SPIKE FROM MATRIX
RPD - RELATIVE PERCENT DIFFERENCE BETWEEN MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES

ANALYSES PERFORMED BY MARCO A. PEDRAZA
DATA REVIEWED BY KEVIN SHELBURNE

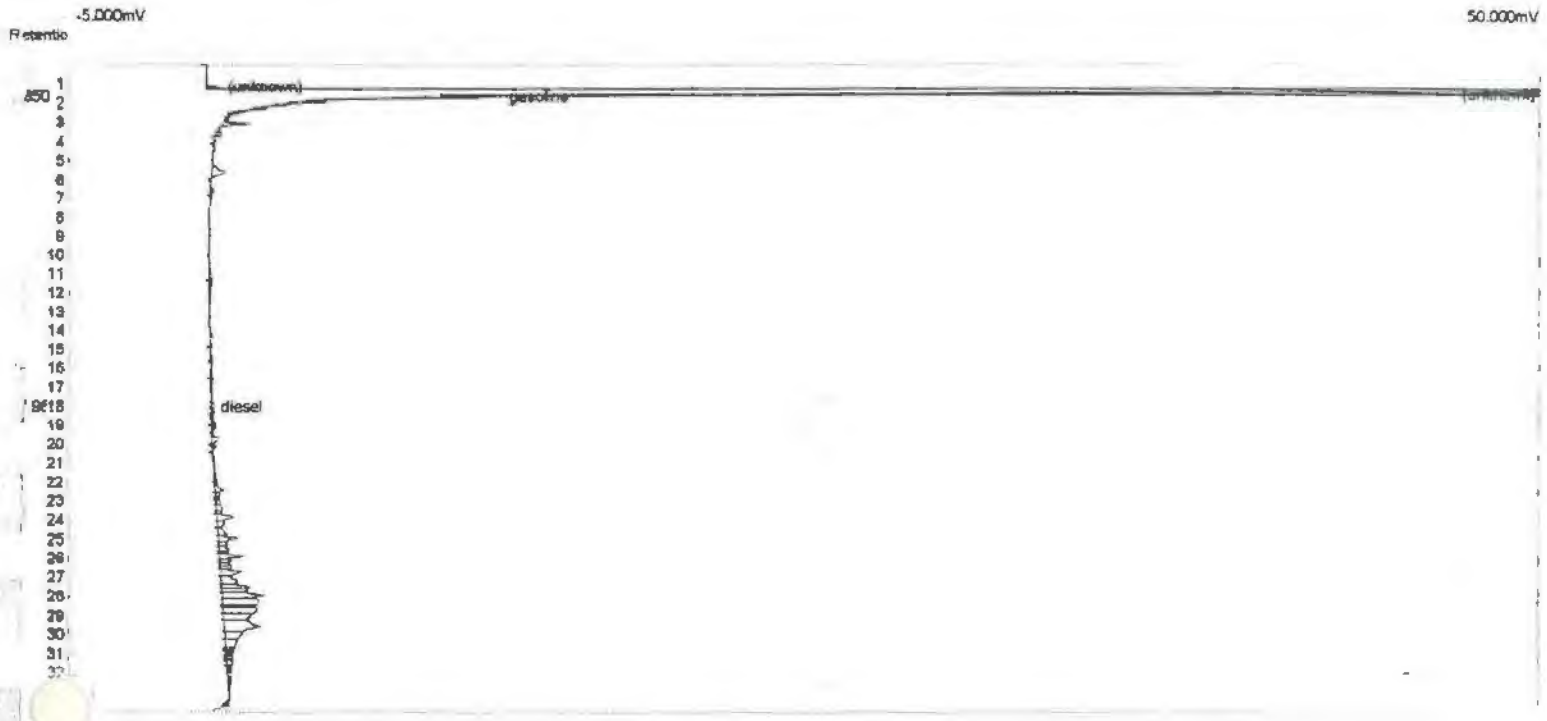
ON SITE LABS, INC
PMB 627, HC-01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE (787) 720-0329 FAX 789-3858

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 11:33:43
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0311fb5.CHR ()
Sample: 50/100 ppm G/D open std
Operator: MAP



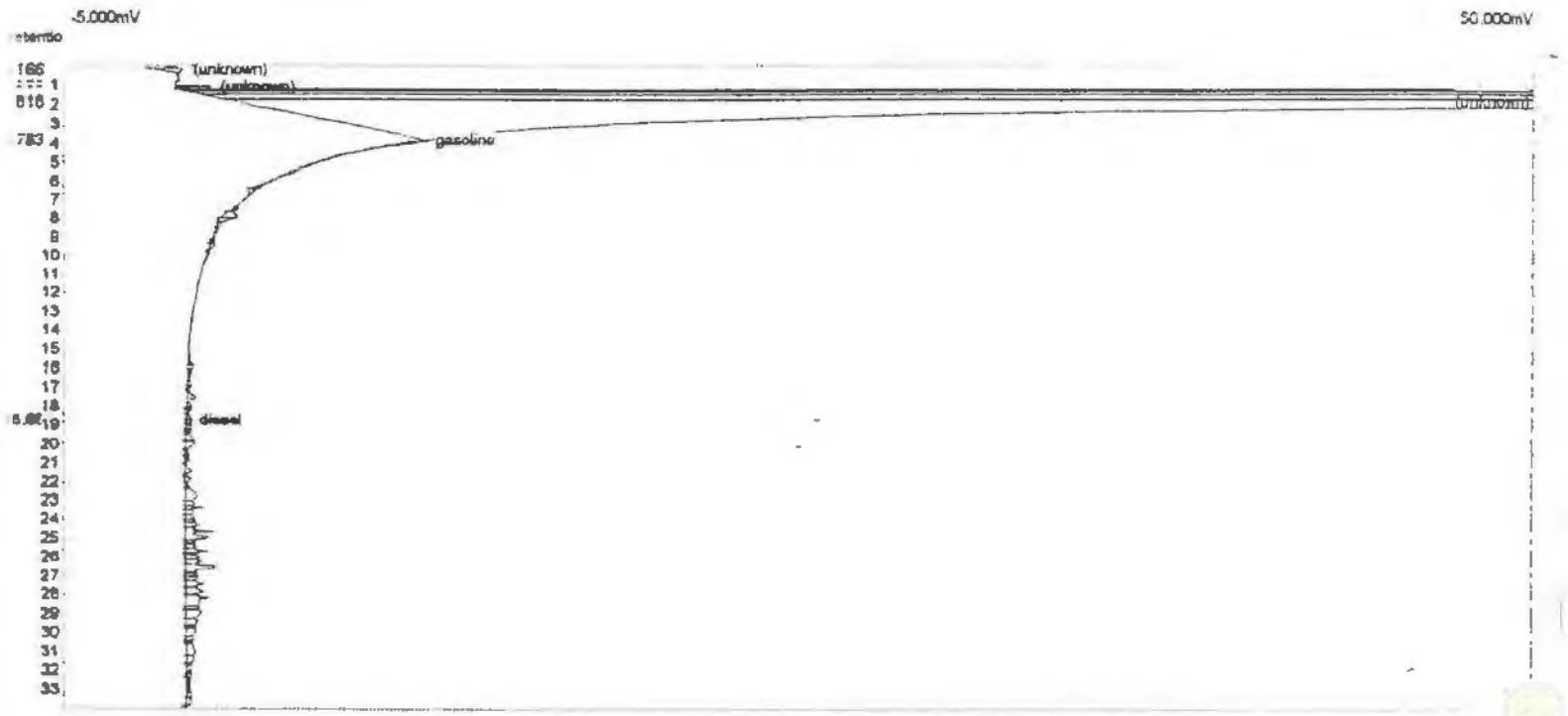
Component	Retention	Area	External	Units
gasoline	2.433	54.254	52.98	
diesel	10.350	264.280	95.20	ppm
		318.533	148.18	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 09:45:40
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0311fc2.CHR ()
Sample: 50/100 ppm G/D open std
Operator: MAP



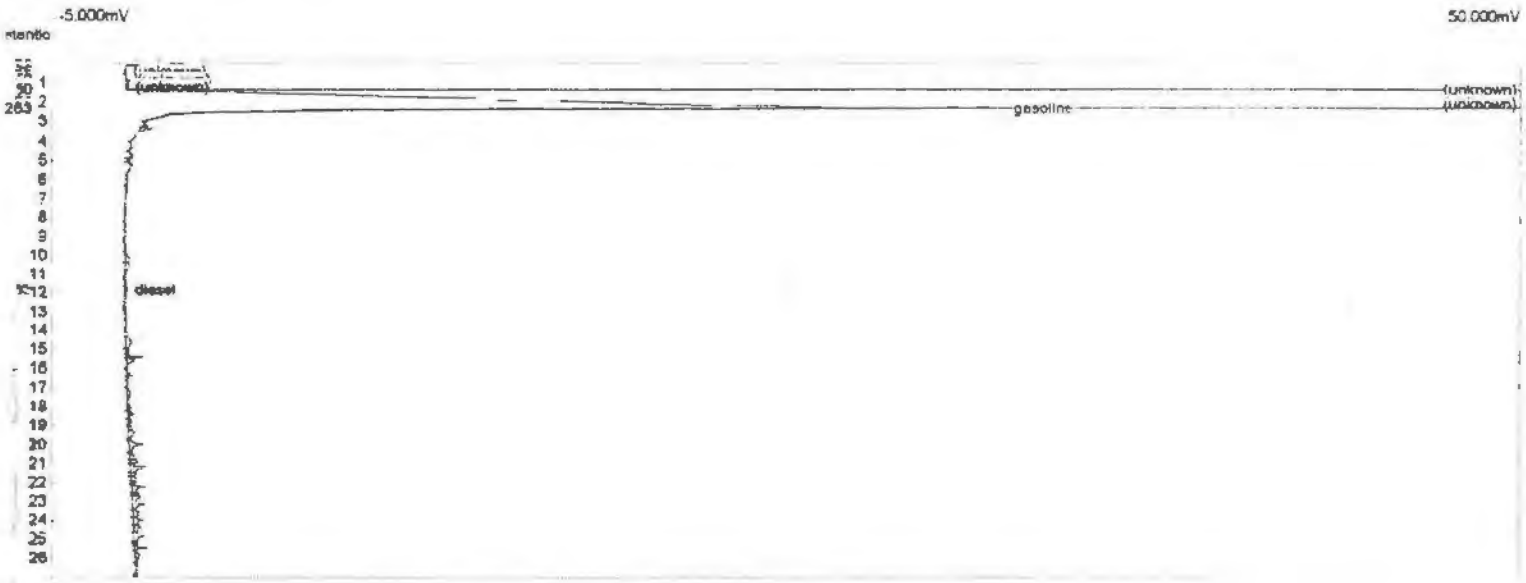
Component	Retention	Area	External	Units
Gasoline	1.650	66.169	45.71	
Diesel	17.966	314.843	106.51	ppm
		381.031	152.22	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 09:45:40
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0311fd2.CHR ()
Sample: 50/100 ppm G/D open std
Operator: MAP



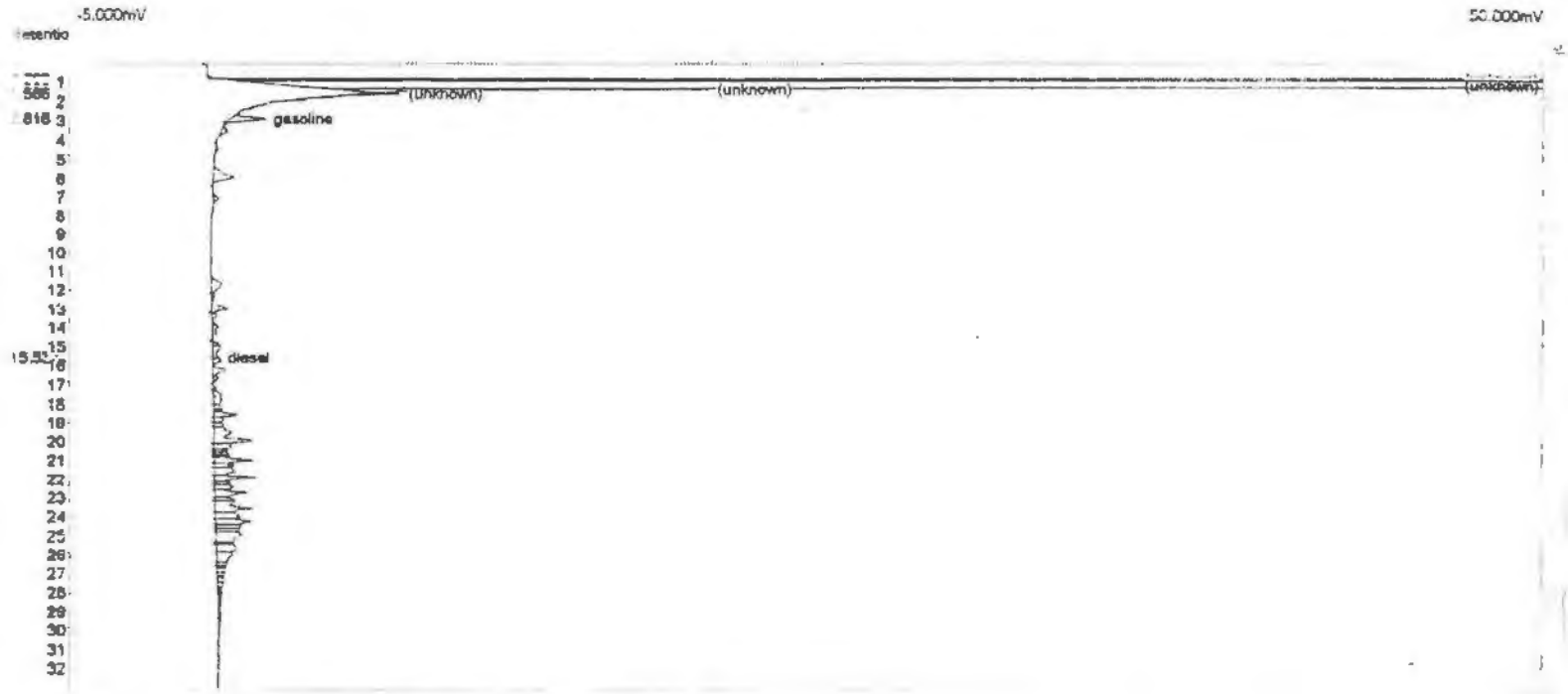
Component	Retention	Area	External	Units
gasoline	3.783	53.639	43.82	
diesel	18.683	251.589	103.79	ppm
		305.229	147.61	

Lab name: On Site Labs Inc
nalysis date: 03/11/2002 17:45:39
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
rier: N2
ile: 0311fb18.CHR ()
nple: 50/100 ppm G/D CLOSE
Operator: MAP



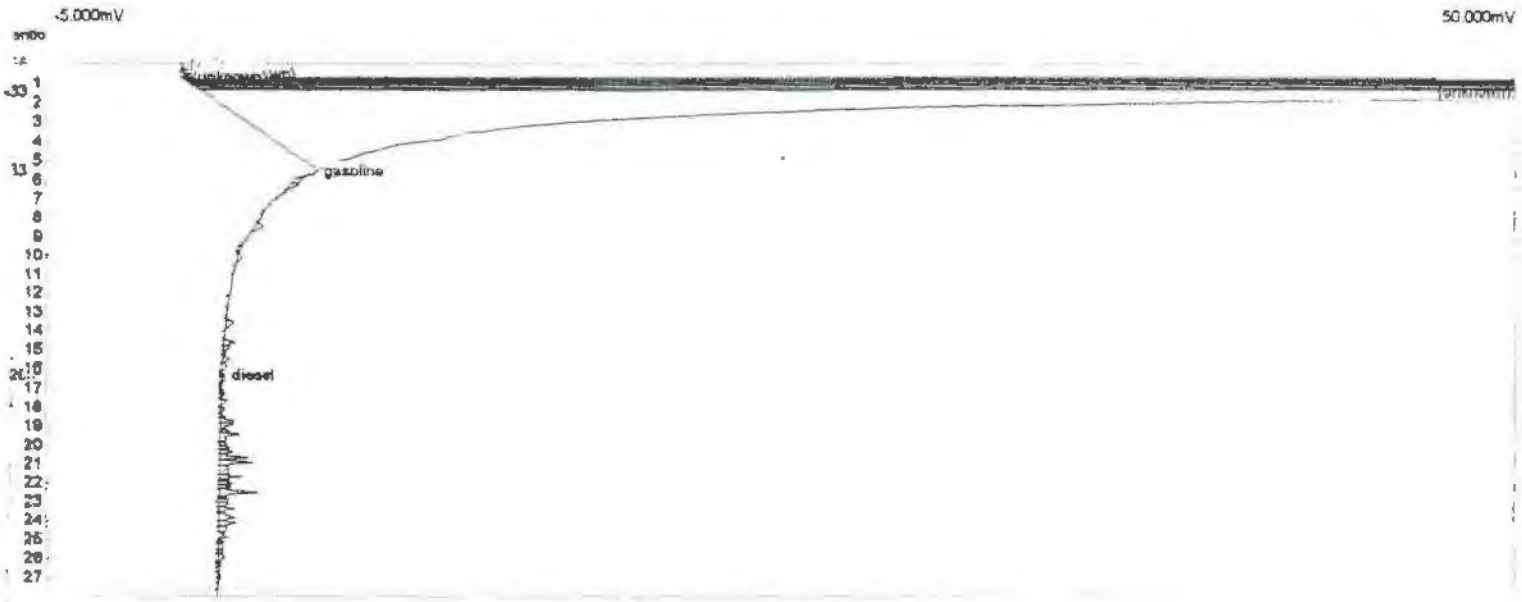
Component	Retention	Area	External	Units
gasoline	2.283	53.424	52.17	
as	11.833	271.523	97.81	ppm
		324.948	149.98	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 17:45:39
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTi-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0311fc16.CHR ()
Sample: 50/100 ppm G/D CLOSE
Operator: MAP



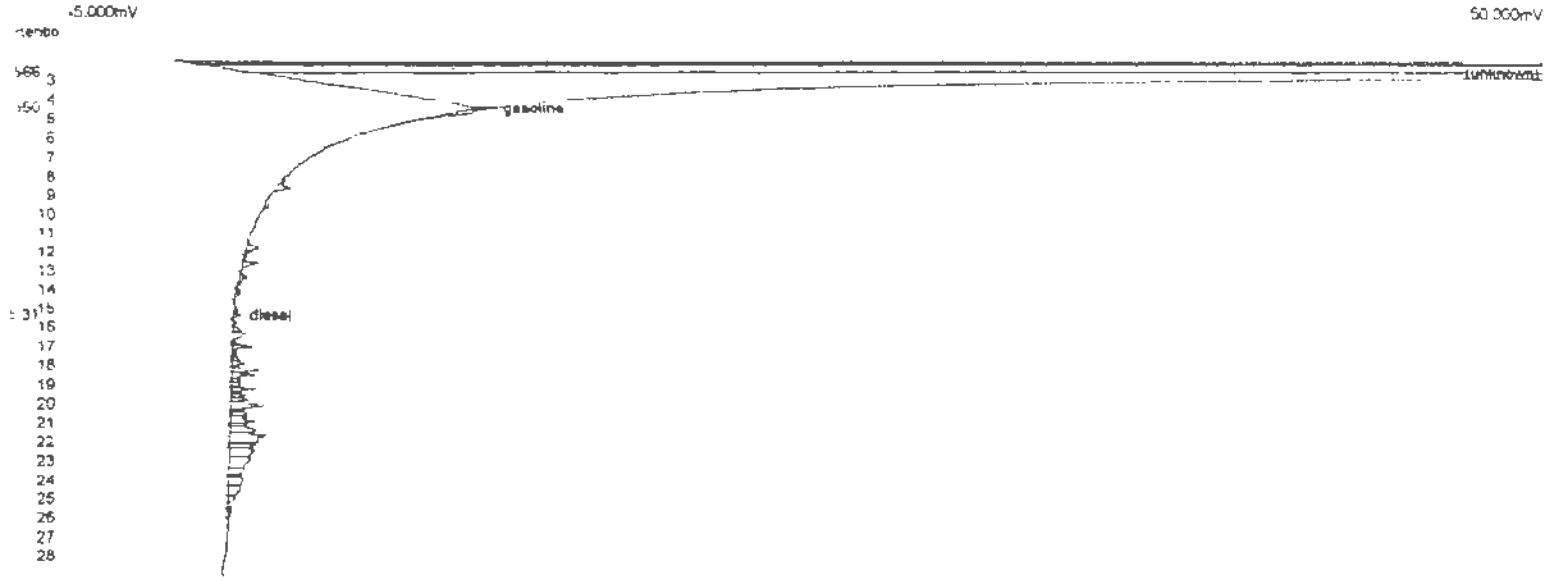
Component	Retention	Area	External	Units
gasoline	2.816	67.626	46.70	
diesel	15.533	317.844	107.53	ppm
		385.469	154.23	

Lab name: On Site Labs Inc
alysis date: 03/11/2002 17:45:39
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
er: N2
le: 0311fd18.CHR ()
ple: 50/100 ppm G/D CLOSE
Operator: MAP



Component	Retention	Area	External	Units
	5.483	55.360	45.23	
	16.283	215.528	88.91	ppm
		270.888	134.14	

Lab name: On Site Labs Inc
alysis date: 03/11/2002 18:24:39
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0311fd16.CHR ()
Sample: S-84 matrix spike
Operator: MAP

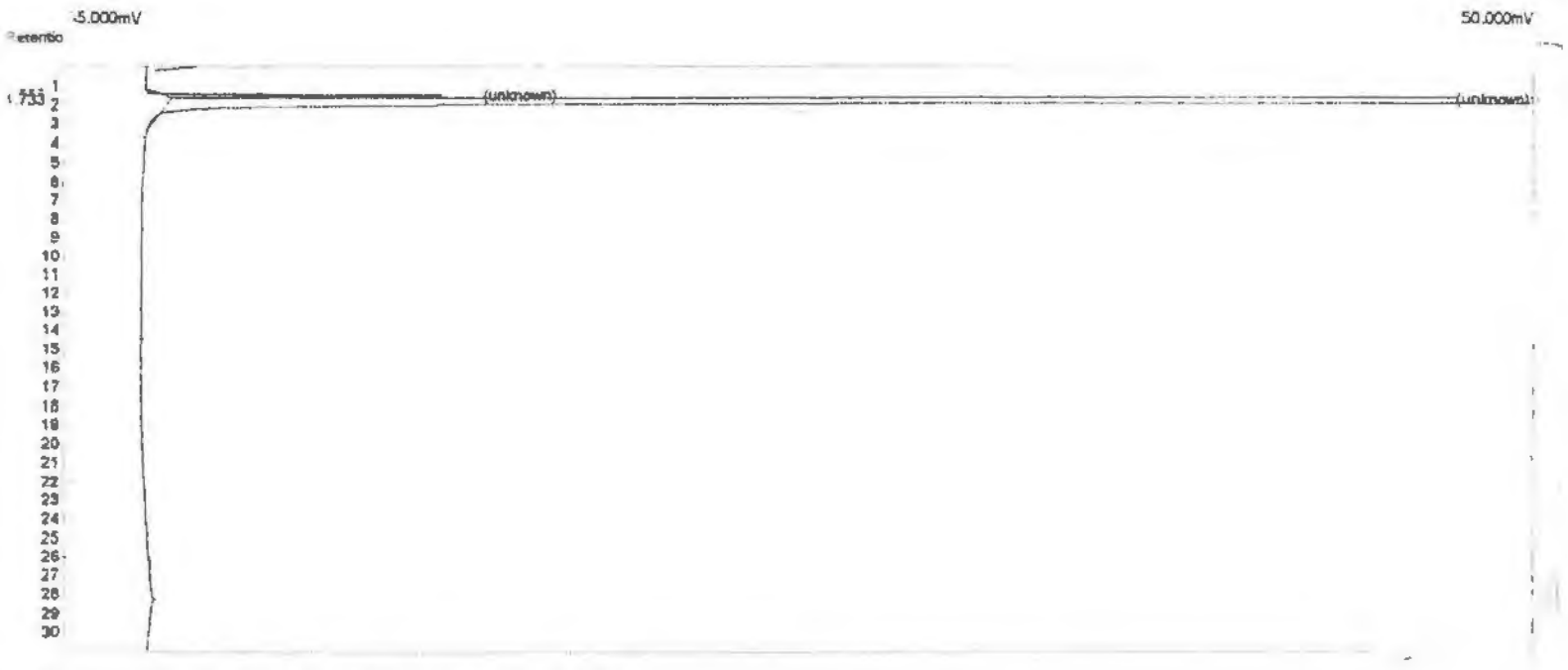


Component	Retention	Area	External	Units
asoline	4.350	52.064	42.54	
esel	15.316	285.405	117.74	ppm
		337.469	160.28	

Lab name: On Site Labs Inc
nalysis date: 03/11/2002 17:02:11
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
er: N2
ile: 0311fc17.CHR ()
mple: s-64 matrix spike duplicate
Operator: MAP

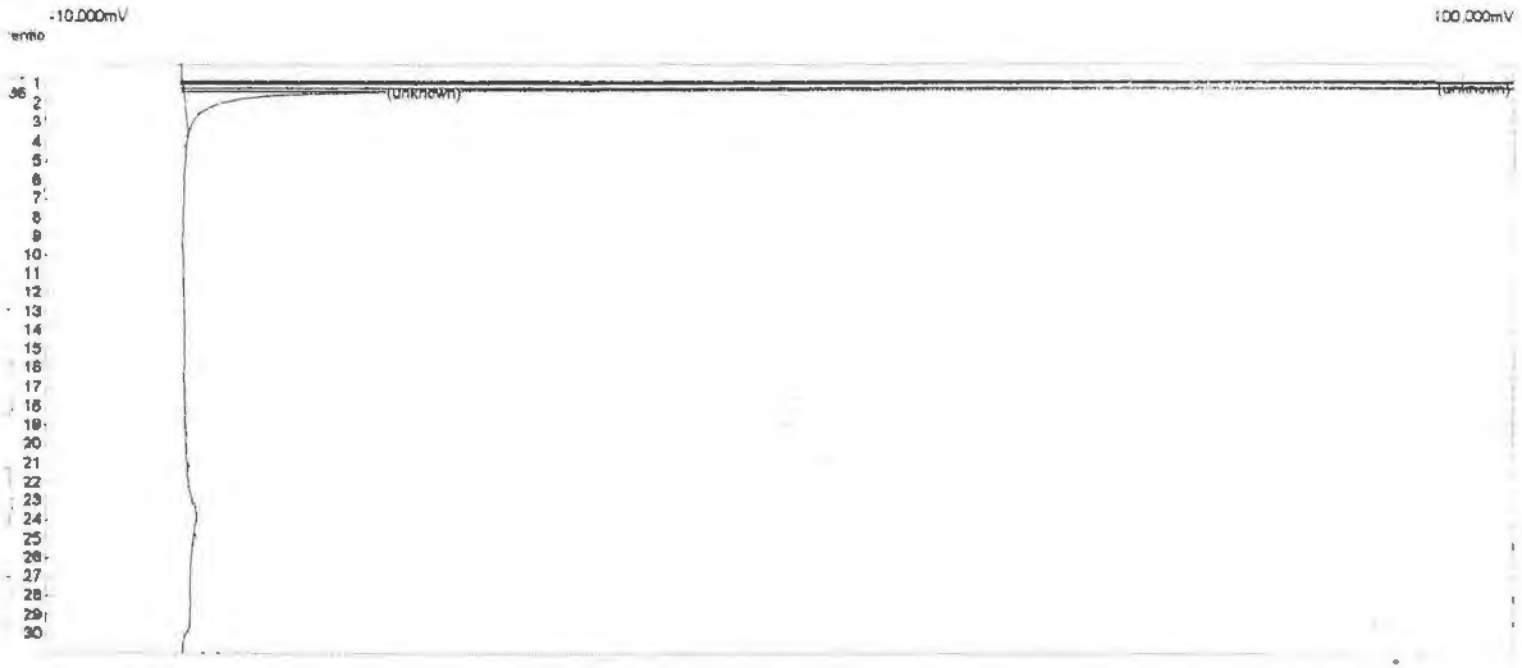
Component	Retention	Area	External	Units
asoline	1.066	69.581	48.05	
esel	16.900	355.233	120.17	ppm
		424.814	168.23	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 12:43:46
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0311fb7.CHR ()
Sample: METHOD BLANK
Operator: MAP



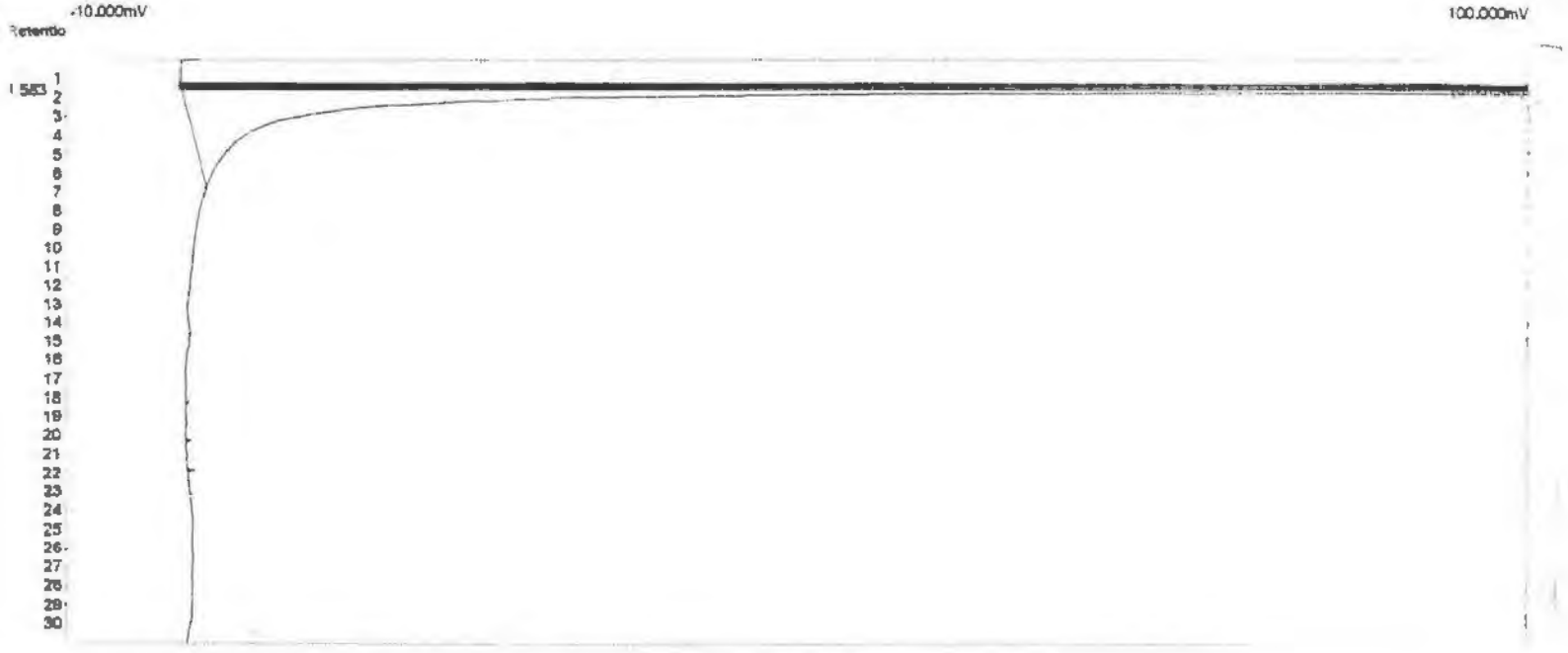
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 10:25:27
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0311fc3.CHR ()
Sample: METHOD BLANK
Operator: MAP



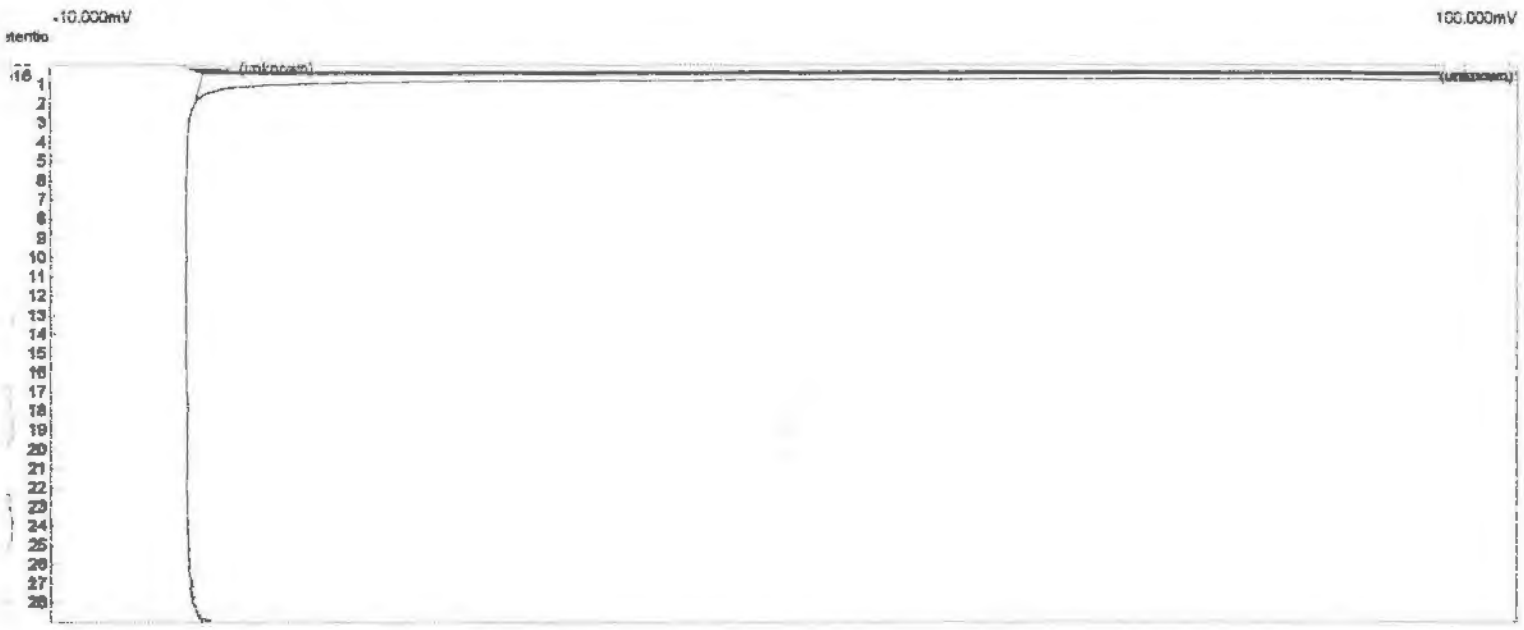
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 10:25:27
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0311fd3.CHR ()
Sample: METHOD BLANK
Operator: MAP



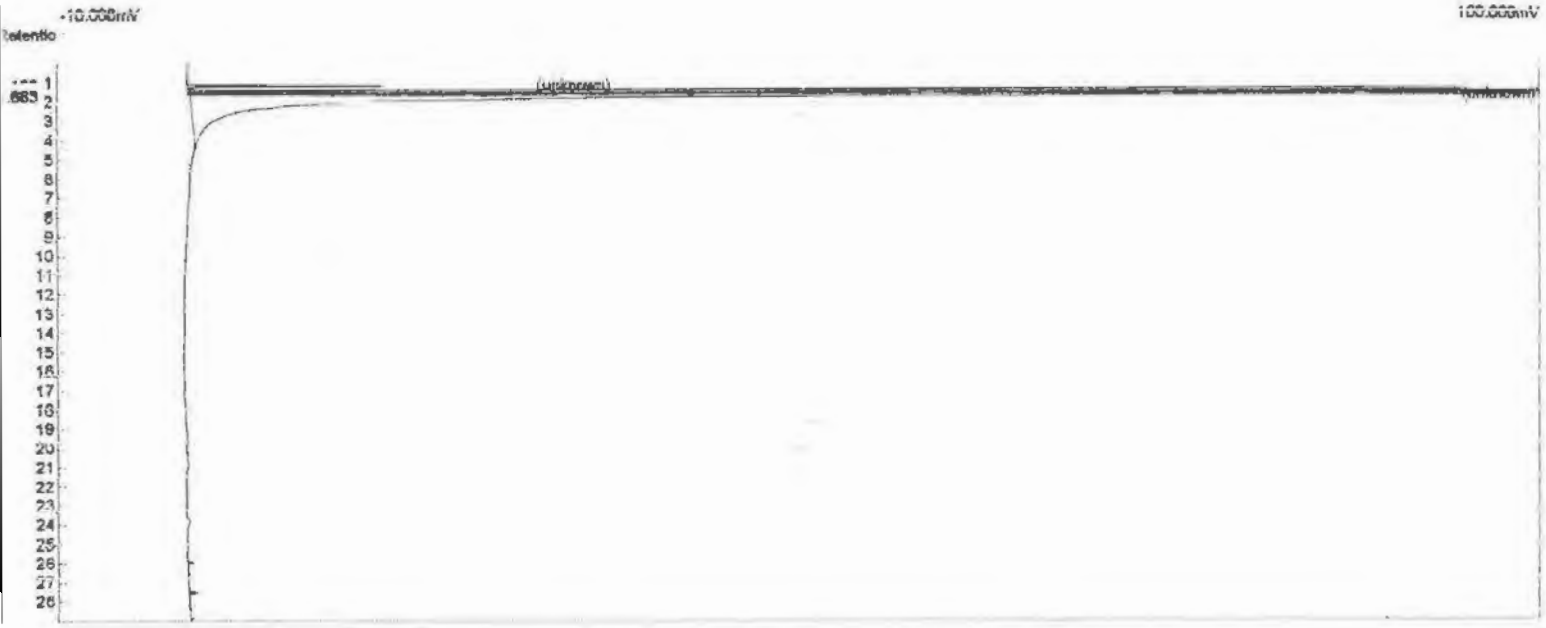
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
nalysis date: 03/11/2002 11:00:42
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
[illegible]ile: 0311fc4.CHR ()
[illegible]ple: JLA013/0308CH2M
Operator: MAP



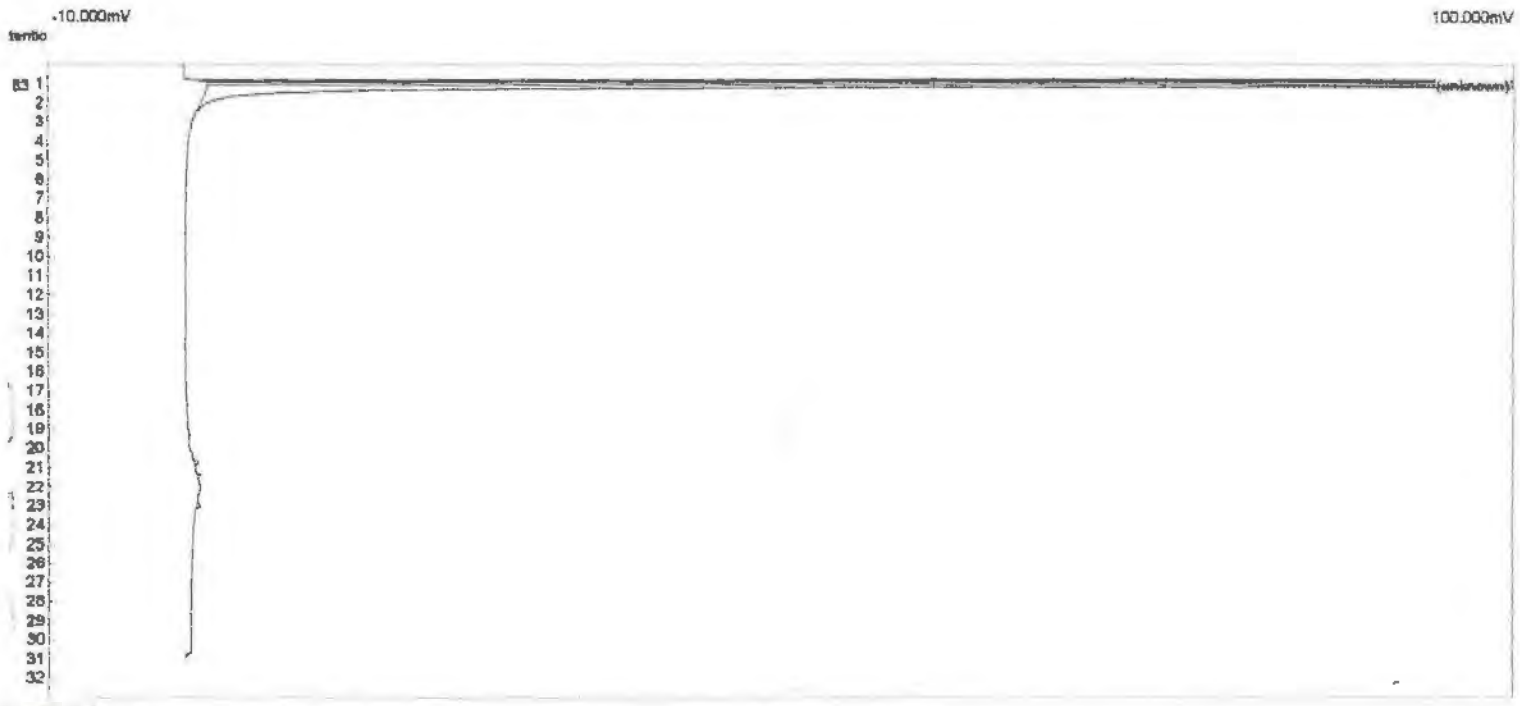
Component	Retention	Area	Extemal	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 11:00:42
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0311fd4.CHR ()
Sample: JLA014/0308CH2M
Operator: MAP



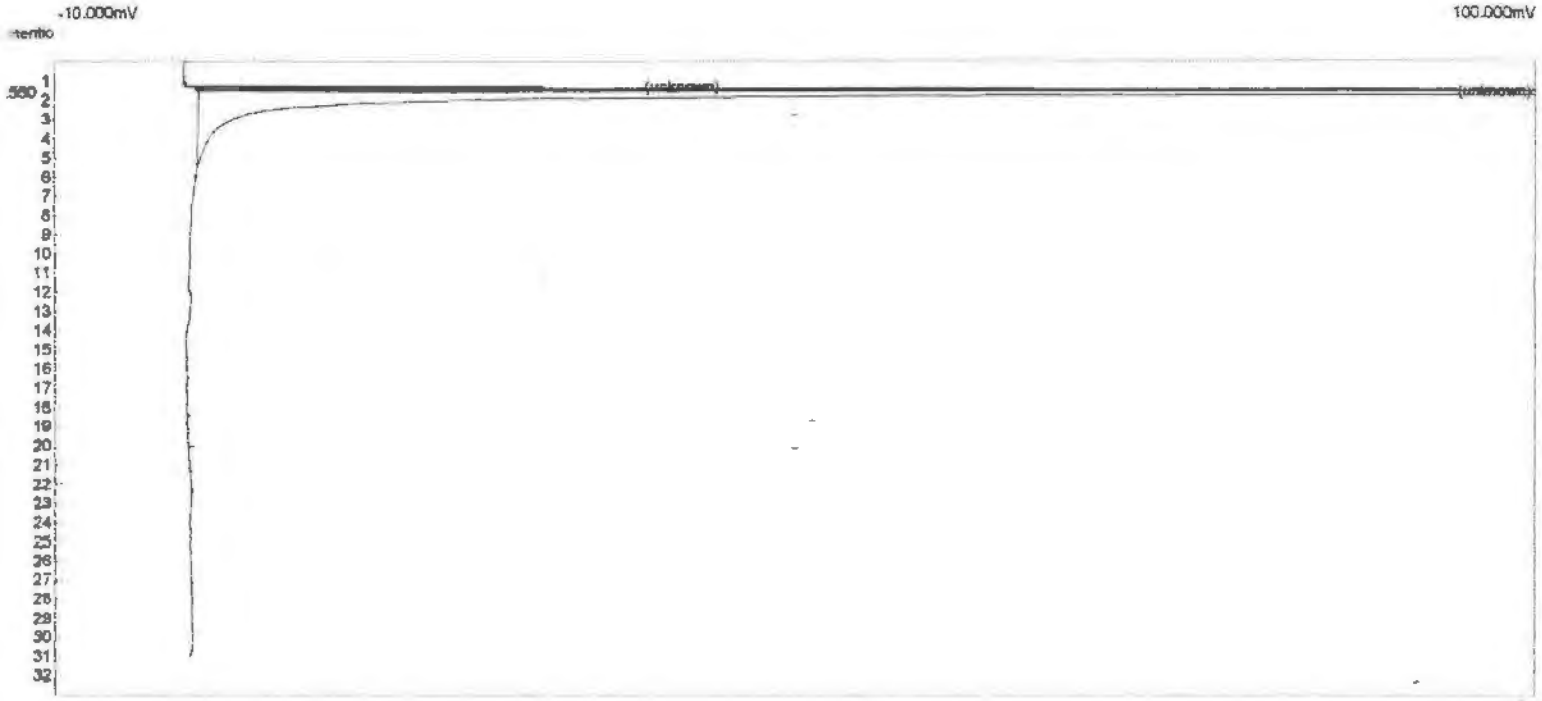
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
nalysis date: 03/11/2002 11:33:43
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
D[illegible]le: 0311fc5.CHR ()
[illegible]ple: JLA015/0308CH2M
Operator: MAP



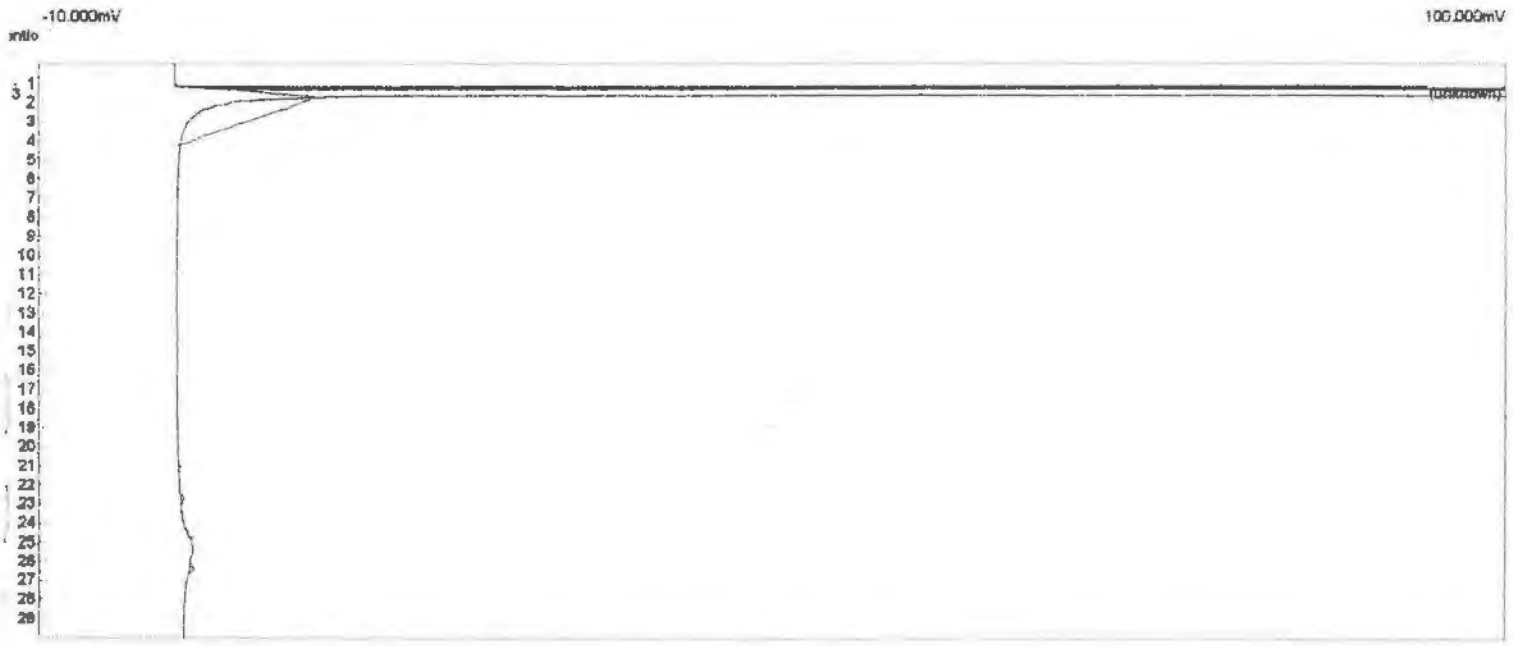
[illegible]onent	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 11:33:43
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0311fd5.CHR ()
Sample: JLA016FD1/0308CH2M
Operator: MAP



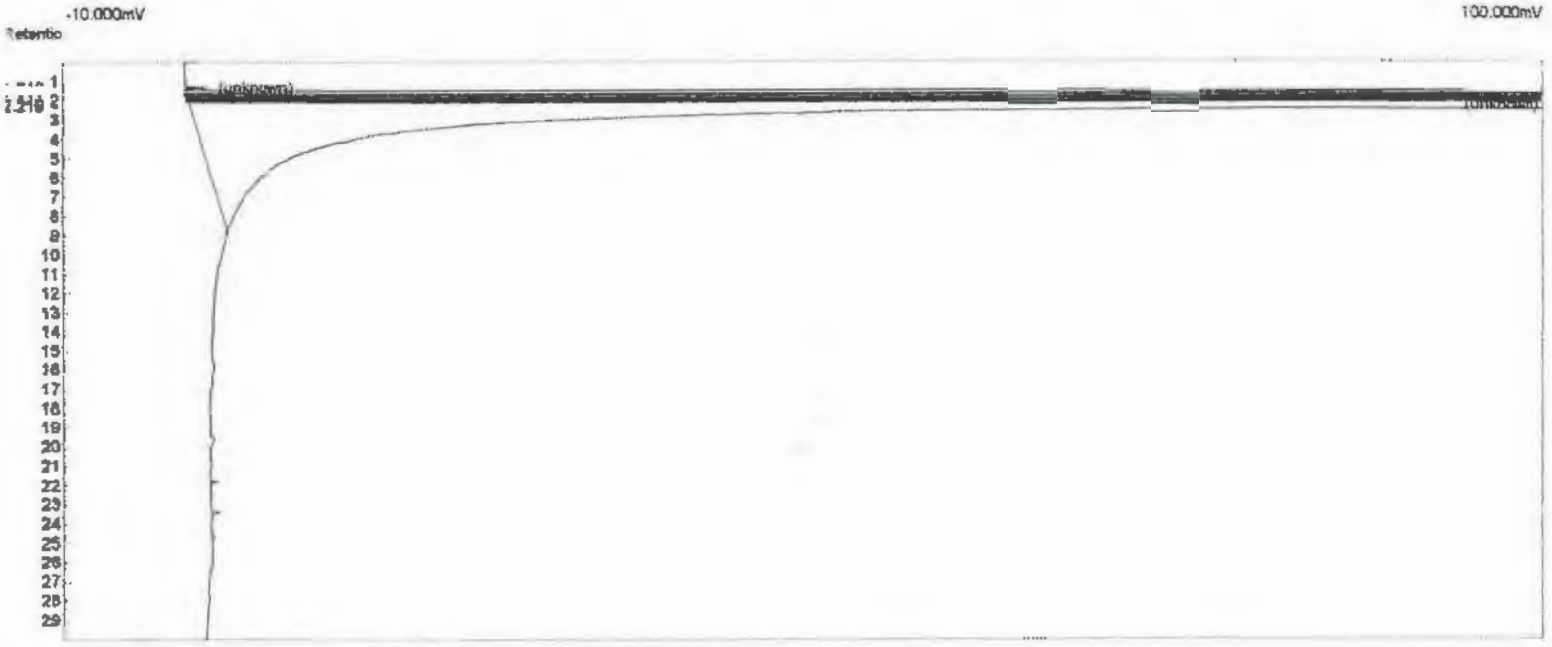
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
alysis date: 03/11/2002 12:11:03
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
D e: 0311fc8.CHR ()
e: JLA017FD2/0308CH2M
Operator: MAP



Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 12:11:03
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0311fd6.CHR ()
Sample: JLA019EB2/0308CH2M
Operator: MAP



Component	Retention	Area	External	Units
		0.000	0.00	

QA/QC REPORT - CALIBRATION DATA

OSL Project #02I0308CH2M-2
DAILY CALIBRATION DATE: 03/11/02

CH2M HILL PROJECT NO. 167722.FI.FS
PROJECT NAME: RRNAS SITE 1970, CEIBA

			INITIAL		OPENING			CLOSING		
COMPOUND	DETECTOR	CALIB RANGE	RF	%RSD	AREA	RF	%DIFF	AREA	RF	%DIFF
BENZENE	PID1 - GC2	0.5 - 75.0	1.66	9.0%	15.43	1.54	7.0%	25.64	1.71	3.0%
TOLUENE	PID1 - GC2	0.5 - 75.0	1.62	6.6%	15.60	1.56	3.7%	25.05	1.67	3.1%
ETHYLBENZENE	PID1 - GC2	0.5 - 75.0	1.17	11.4%	12.26	1.23	4.8%	17.79	1.19	1.4%
m&p-XYLENES	PID1 - GC2	1.0 - 150	1.80	10.4%	37.15	1.86	3.2%	52.67	1.76	2.5%
o-XYLENES	PID1 - GC2	0.5 - 75.0	1.36	8.6%	14.15	1.42	4.1%	20.21	1.35	0.9%

CALIB RANGE - RANGE OF CALIBRATION CURVE IN ppb
INITIAL RF - AVERAGE RESPONSE FACTOR FROM MULTIPOINT CALIBRATION CURVE
% RSD - LINEARITY OF MULTIPOINT CALIBRATION CURVE (+/- 20% ACCEPTABLE LIMITS)
AREA - AREA COUNTS FROM DAILY CALIBRATION STANDARD
RF - DETECTOR RESPONSE FACTOR FROM MID-POINT CALIBRATION STANDARD
% DIFF - DIFFERENCE, IN PERCENT, BETWEEN THE AVERAGE RF AND THE OPENING OR CLOSING RF (+/- 20% ACCEPTABLE LIMITS)
OPENING - MID-POINT CALIBRATION STANDARD ANALYZED BEFORE SAMPLE ANALYSES BEGIN
CLOSING - MID-POINT CALIBRATION STANDARD ANALYZED AFTER SAMPLES ANALYSES ARE COMPLETE

ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

ON SITE LABS, INC
PMB 627, HC-01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE: (787) 720-0329 FAX 789-3858

QA/QC REPORT - MS/MSD DATA

MATRIX SPIKE (MS)/MATRIX SPIKE DUPLICATE (MSD)

OSL PROJECT #02I0308CH2M-2 — CH2M HILL PROJECT NO. 167722.FI.FS
DATE: 03/11/02 — PROJECT NAME: RRNAS SITE 1970

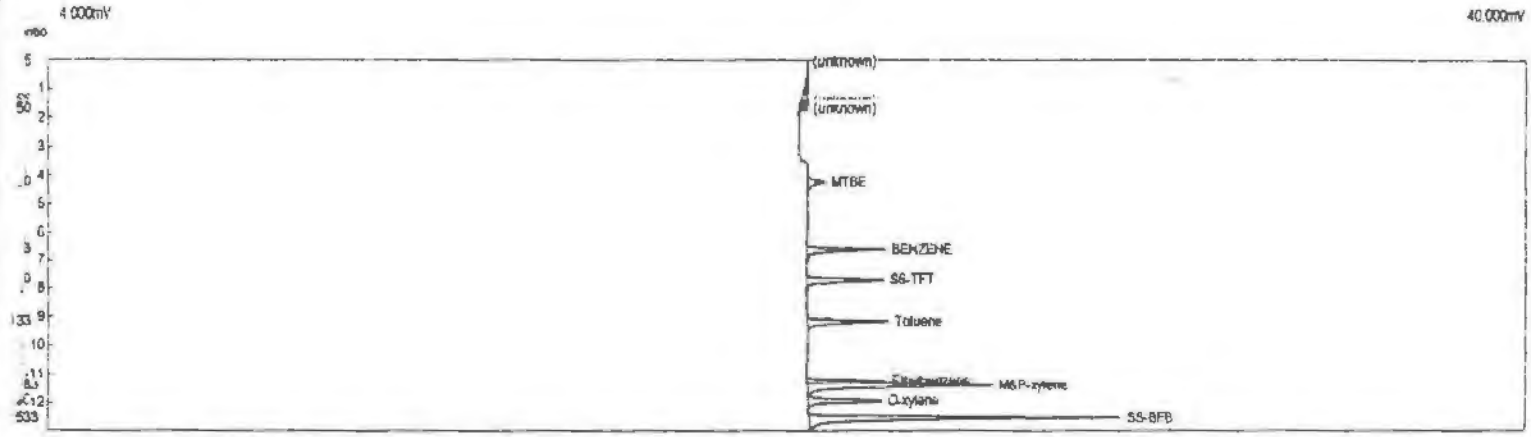
COMPOUND	SPK CONC (ppb)	MS CONC (ppb)	%REC MS	MSD CONC (ppb)	%REC MSD	RPD	ACCEPTABLE RPD	ACCEPTABLE RECOVERY
BENZENE	15	13.5	90%	12.0	80%	12%	20%	82% - 117%
TOLUENE	15	14.1	94%	12.2	81%	15%	20%	87% - 120%
ETHYLBENZENE	15	12.5	84%	11.2	75%	11%	20%	83% - 131%
TOTAL XYLENES	45	42.2	94%	35.6	79%	17%	20%	87% - 123%

ppb = PARTS PER BILLION
MS CONC - ANALYZED CONCENTRATION OF SPIKED SAMPLE
% REC - PERCENT RECOVERY OF SPIKE FROM MATRIX
RPD - RELATIVE PERCENT DIFFERENCE BETWEEN MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES

ANALYSES PERFORMED BY MARCO A PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

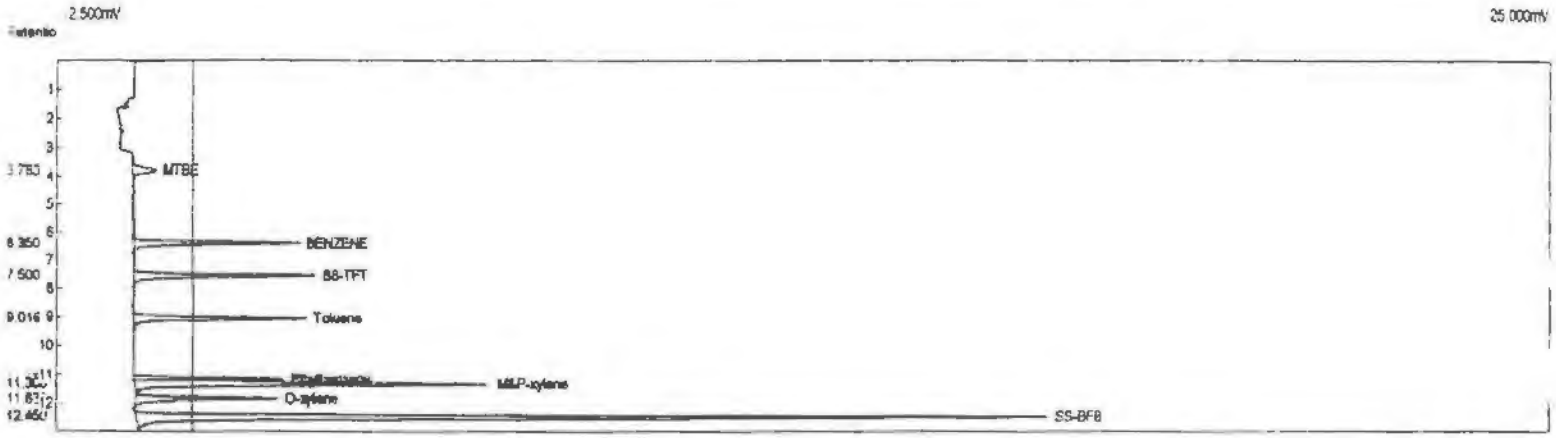
ON SITE LABS, INC
PMB 627, HC-01 BOX 29030, CAGUAS, P R. 00725
TELEPHONE (787) 720-0329 FAX 789-3858

Lab name: On Site Labs Inc
nalysis date: 03/11/2002 09:15:38
Method: EPA 8021 mod.
Lab ID: GC-2
Description: PID - Ch. 1
Column: Rtx-5,30m,5.0um,0.53mm
rier: N2
file: 0311pt1.CHR ()
Sample: 10 ppb OPEN BTEX STD
Operator: MAP



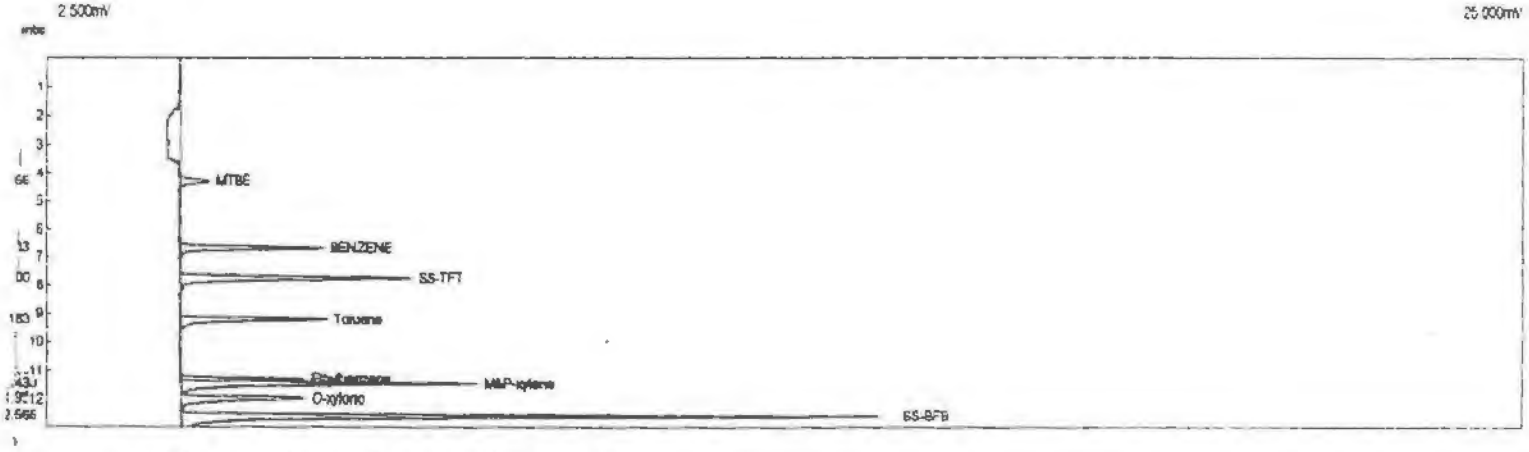
Component	Retention	Area	External	Internal	Units
MTBE	4.200	4.798	9.79	9.7918	ppb
BENZENE	6.583	15.431	9.30	9.2958	ppb
SS-TFT	7.650	15.628	11.31	11.3082	ppb
Toluene	9.133	15.601	9.63	9.6302	ppb
Ethylbenzene	11.233	12.259	10.48	10.4778	
M&P	11.383	37.150	20.64	20.6389	ppb
O-xy	11.900	14.154	10.41	10.4070	ppb
SS-BFB	12.533	60.684	19.64	19.6388	ppb
		175.704	101.19	101.1886	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 18:58:41
Method: EPA 8021 mod.
Lab ID: GC-2
Description: PID - Ch. 1
Column: Rtx-5,30m,5.0um,0.53mm
Carrier: N2
Data file: 0311pt35.CHR ()
Sample: 15 ppb CLOSE STD
Operator: MAP



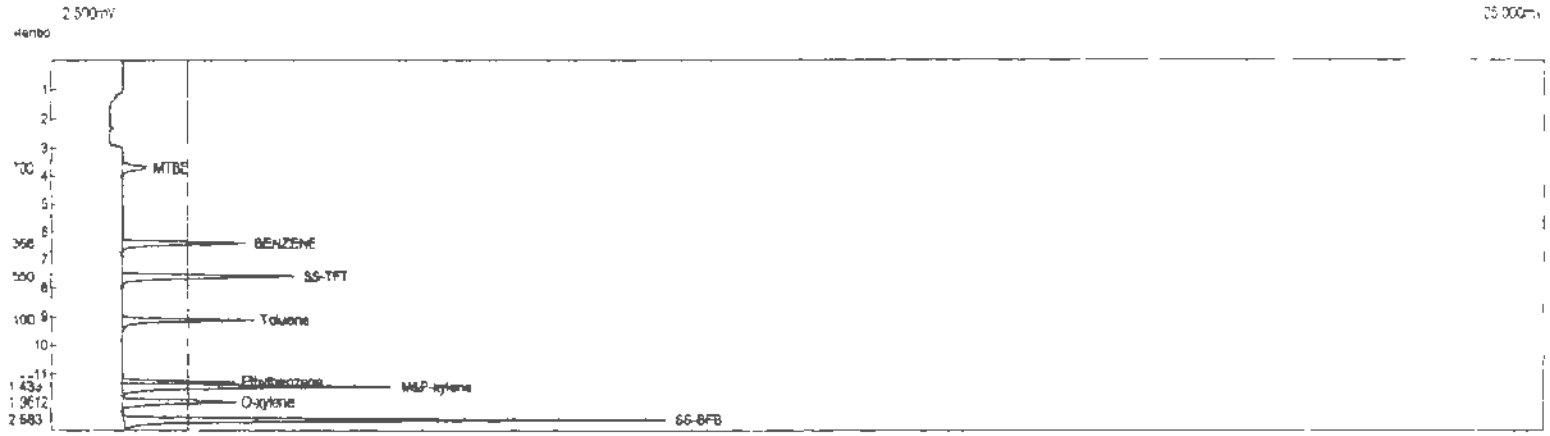
Component	Retention	Area	External	Internal	Units
MTBE	3.783	6.516	13.30	13.2969	ppb
BENZENE	6.350	25.643	15.45	15.4476	ppb
SS-TFT	7.500	29.562	21.39	21.3907	ppb
Toluene	9.016	25.046	15.46	15.4605	ppb
Ethylbenzene	11.150	17.793	15.21	15.2077	
M&P-xylene	11.300	52.668	29.26	29.2600	ppb
O-xylene	11.833	20.212	14.86	14.8618	ppb
SS-BFB	12.450	131.285	42.49	42.4871	ppb
		308.725	167.41	167.4123	

Lab name: On Site Labs Inc
alysis date: 03/11/2002 09:52:50
Method: EPA 8021 mod.
Lab ID: GC-2
Description: PID - Ch. 1
C mn: Rtx-5,30m,5.0um,0.53mm
er: N2
file: 0311pt3.chr ()
Sample: S-42 matrix spike
Operator: MAP



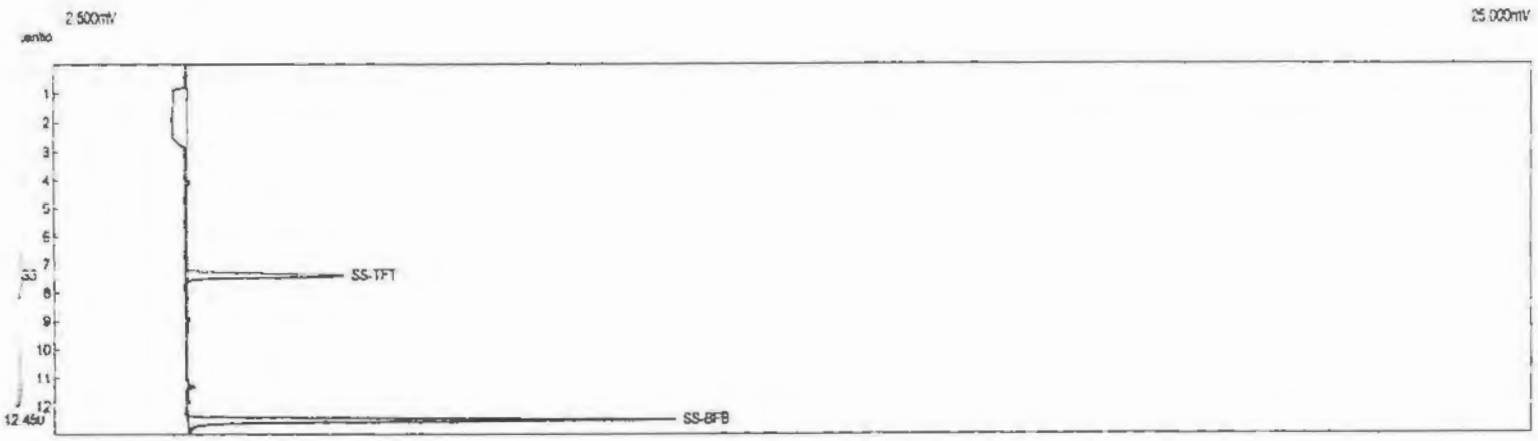
Component	Retention	Area	External	Internal	Units
MTBE	4.266	6.136	12.52	12.5224	ppb
ENZENE	6.633	22.429	13.51	13.5114	ppb
S-TFT	7.700	38.868	28.12	26.1245	ppb
Toluene	9.183	22.872	14.12	14.1188	ppb
Ethylbe ene	11.266	14.673	12.54	12.5410	
&P	11.433	49.740	27.63	27.6333	ppb
-X)	11.950	19.800	14.56	14.5588	ppb
SS-BFB	12.566	112.650	36.46	36.4561	ppb
		287.168	159.47	159.4665	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 14:01:21
Method: EPA 8021 mod.
Lab ID: GC-2
Description: PID - Ch. 1
Column: Rtx-5,30m,5.0um,0.53mm
Carrier: N2
Data file: 0311pt18.chr ()
Sample: S-42 matrix spike duplicate
Operator: MAP



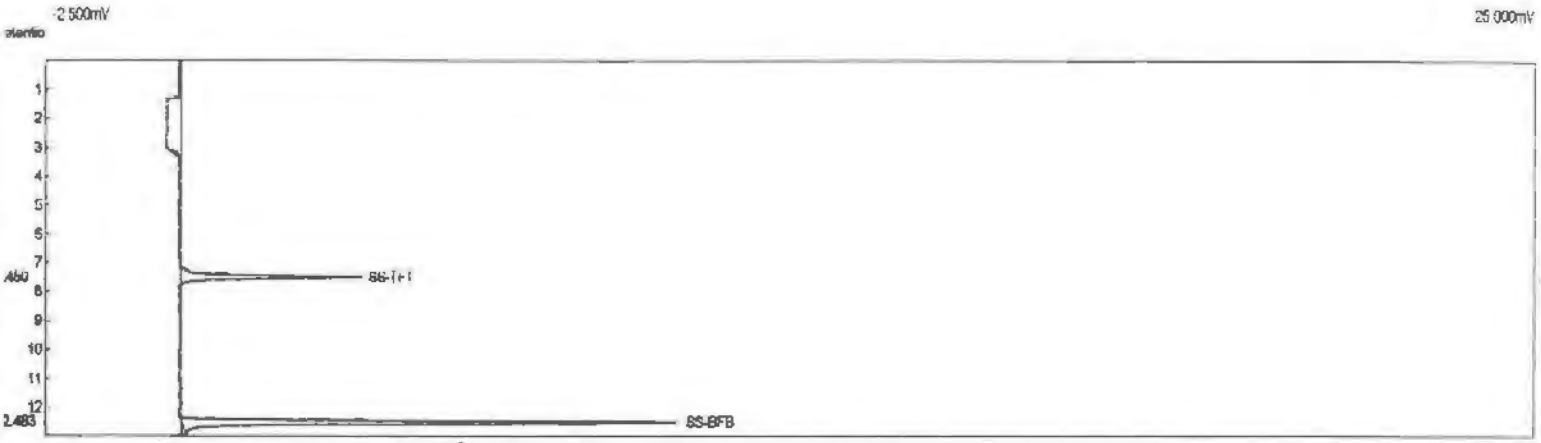
Component	Retention	Area	External	Internal	Units
MTBE	3.700	5.938	12.12	12.1184	ppb
BENZENE	6.366	19.890	11.98	11.9819	ppb
SS-TFT	7.550	28.525	20.64	20.6404	ppb
Toluene	9.100	19.774	12.21	12.2059	ppb
Ethylbenzene	11.266	13.110	11.21	11.2051	
M&P-xylene	11.433	42.210	23.45	23.4500	ppb
O-xylene	11.966	16.559	12.18	12.1757	ppb
SS-BFB	12.583	78.360	25.36	25.3592	ppb
		224.365	129.14	129.1366	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 10:17:14
Method: EPA 8021 mod.
Lab ID: GC-2
Description: PID - Ch. 1
Column: Rtx-5,30m,5.0um,0.53mm
Carrier: N2
Data file: 0311pt4.CHR ()
Sample: METHOD BLANK
Operator: MAP



Component	Retention	Area	External	Internal	Units
SS-TFT	7.333	26.750	19.36	19.3560	ppb
SS-BFB	12.450	68.576	22.19	22.1929	ppb
		95.326	41.55	41.5489	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 10:32:07
Method: EPA 8021 mod.
Lab ID: GC-2
Description: PID - Ch. 1
Column: Rtx-5,30m,5.0um,0.53mm
Carrier: N2
Data file: 0311pt5.CHR ()
Sample: JLA015/0308CH2M
Operator: MAP



Component	Retention	Area	External	Internal	Units
SS-TFT	7.450	31.416	22.73	22.7323	ppb
SS-BFB	12.483	72.418	23.44	23.4362	ppb
		103.834	46.17	46.1685	

Lab name: On Site Labs Inc
alysis date: 03/11/2002 10:52:06
Method: EPA 8021 mod.
Lab ID: GC-2
Description: PID - Ch. 1
Column: Rtx-5,30m,5.0um,0.53mm
rier: N2
ile: 0311pt6.CHR ()
ple: JLA017FD2/0308CH2M
Operator: MAP

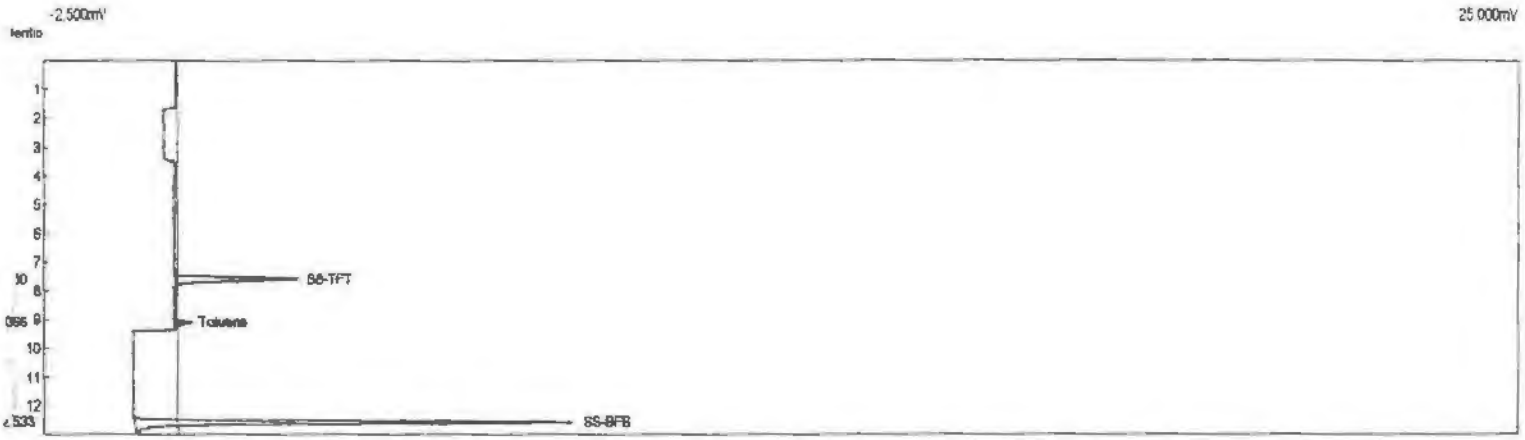
Component	Retention	Area	External	Internal	Units
S-TFT	7.583	22.946	16.60	16.6035	ppb
S-BFB	12.533	53.610	17.35	17.3495	ppb
		76.556	33.95	33.9530	

Lab name: On Site Labs Inc
Analysis date: 03/11/2002 11:20:33
Method: EPA 8021 mod.
Lab ID: GC-2
Description: PID - Ch. 1
Column: Rtx-5,30m,5.0um,0.53mm
Carrier: N2
Data file: 0311pt8.CHR ()
Sample: JLA019EB2/0308Cl I2M
Operator: MAP ~~JLA018EB2~~ 3/11/02

JLA018TB2

Component	Retention	Area	External	Internal	Units
S-TFT	7.393	23.404	16.93	16.9349	ppb
oluene	8.966	3.600	2.22	2.2222	ppb
S-BFB	12.500	60.256	19.50	19.5003	ppb
		87.260	38.66	38.6574	

Lab name: On Site Labs inc
nalysis date: 03/11/2002 11:06:07
Method: EPA 8021 mod.
Lab ID: GC-2
Description: PID - Ch. 1
Column: Rtx-5,30m,5.0um,0.53mm
rier: N2
file: 0311pt7.CHR ()
nple: JLA019EB2/0308CH2M
Operator: MAP



Component	Retention	Area	External	Internal	Units
SS-TFT	7.550	20.460	14.80	14.8046	ppb
Toluene	9.066	2.683	1.66	1.6562	ppb
SS-BFB	12.533	63.604	20.58	20.5838	ppb
		86.747	37.04	37.0446	

On Site Labs, Inc.

PMB 627 HC-01 Box 29030 Caguas, PR 00725
Telephone 787-720-0329 Fax 787-789-3858

March 20, 2002
OSL Projects #02I0314CH2M

Mr. Tunch Orsoy
CH2M HILL
4350 W. Cypress Street, Suite 600
Tampa, Florida 33607

SUBJECT: DATA REPORT - CH2M HILL PROJECT NO. 167722.FI.FS
SITES 88 AND 1970 ROOSEVELT ROADS NAS
CEIBA, PUERTO RICO

Dear Mr. Orsoy:

Please find enclosed the analytical report for the samples collected by CH2M HILL personnel from the above-referenced site and delivered to On Site Labs' (OSL) facility under the proper chain-of-custody protocol. An OSL Puerto Rico certified-chemist performed the following analyses:

- 5 soil samples analyzed for TPH-gas/diesel by modified EPA test method 8015B.
- 4 water samples analyzed for TPH-gas/diesel by modified EPA test method 8015B.
- 2 equipment blank water samples analyzed for TPH-gas/diesel.
- 4 water samples analyzed for BTEX by modified EPA test method 8020A.
- 1 trip and 2 equipment blank water samples analyzed for BTEX.
- Laboratory QA/QC analyses for TPH-gas/diesel and BTEX.

The analytical results are summarized in the attached table. Applicable detection limits, QA/QC data, chromatograms, a chain-of-custody and an invoice are attached.

OSL appreciates the opportunity to provide analytical services for this project. If you have any questions relating to the data or report, please do not hesitate to contact us.

Sincerely,
On Site Labs, Inc.

Kevin Shelburne
Principal

Attachments

QA/QC REPORT - CALIBRATION DATA

OSL Project #02I0314CH2M
DAILY CALIBRATION DATE: 03/19/02

CH2M HILL PROJECT NO. 167722.FI.FS
PROJECT NAME: RRNAS SITES 88 AND 1970

			INITIAL		OPENING			CLOSING		
COMPOUND	DETECTOR	CALIB RANGE	RF	%RSD	AREA	RF	%DIFF	AREA	RF	%DIFF
TPH GASOLINE	FID #2 (gc5)	10 - 30,000	0.26	17.6%	220.67	0.28	7.8%	231.71	0.29	13.1%
TPH GASOLINE	FID #3 (gc5)	10 - 30,000	0.36	15.0%	249.90	0.31	13.7%	261.74	0.33	9.6%
TPH GASOLINE	FID #4 (gc5)	10 - 30,000	0.31	15.4%	243.04	0.30	0.7%	229.66	0.29	6.2%
TPH DIESEL	FID #2 (gc5)	25 - 20,000	0.69	14.1%	1099.53	0.69	1.0%	1114.15	0.70	0.3%
TPH DIESEL	FID #3 (gc5)	25 - 20,000	0.74	13.6%	1088.22	0.68	8.0%	1085.39	0.68	8.2%
TPH DIESEL	FID #4 (gc5)	25 - 20,000	0.61	11.1%	907.99	0.57	6.4%	1036.36	0.65	6.9%

CALIB RANGE - RANGE OF CALIBRATION CURVE IN ppm
INITIAL RF - AVERAGE RESPONSE FACTOR FROM MULTIPOINT CALIBRATION CURVE
% RSD - LINEARITY OF MULTIPOINT CALIBRATION CURVE (+/- 20% ACCEPTABLE LIMITS)
AREA - AREA COUNTS FROM DAILY CALIBRATION STANDARD
RF - DETECTOR RESPONSE FACTOR FROM MID-POINT CALIBRATION STANDARD
% DIFF - DIFFERENCE, IN PERCENT, BETWEEN THE AVERAGE RF AND THE OPENING OR CLOSING RF (+/- 15% ACCEPTABLE LIMITS)
OPENING - MID-POINT CALIBRATION STANDARD ANALYZED BEFORE SAMPLE ANALYSES BEGIN
CLOSING - MID-POINT CALIBRATION STANDARD ANALYZED AFTER SAMPLES ANALYSES ARE COMPLETE

ANALYSES PERFORMED BY MARCO A. PEDRAZA
DATA REVIEWED BY KEVIN SHELBURNE

ON SITE LABS, INC
PMB 627 HC-01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE (787) 720-0329 FAX 799-3858

QA/QC REPORT - MS/MSD DATA

MATRIX SPIKE (MS)/MATRIX SPIKE DUPLICATE (MSD)

OSL Project #02I0314CH2M
DATE: 03/19/02

CH2M HILL PROJECT NO. 167722.FI.FS
PROJECT NAME: RRNAS SITES 88 AND 1970

COMPOUND	SPK CON (ppm)	MS CONC (ppm)	%REC MS	MSD CONC (ppm)	%REC MSD	RPD	ACCEPTABLE RPD	ACCEPTABLE RECOVERY
TPH-GASOLINE	200	178	89%	177	89%	1%	15%	81% - 126%
TPH-DIESEL	400	410	103%	400	100%	2%	15%	74% - 131%

ppm = PARTS PER MILLION
MS CONC - ANALYZED CONCENTRATION OF SPIKED SAMPLE
% REC - PERCENT RECOVERY OF SPIKE FROM MATRIX
RPD - RELATIVE PERCENT DIFFERENCE BETWEEN MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES

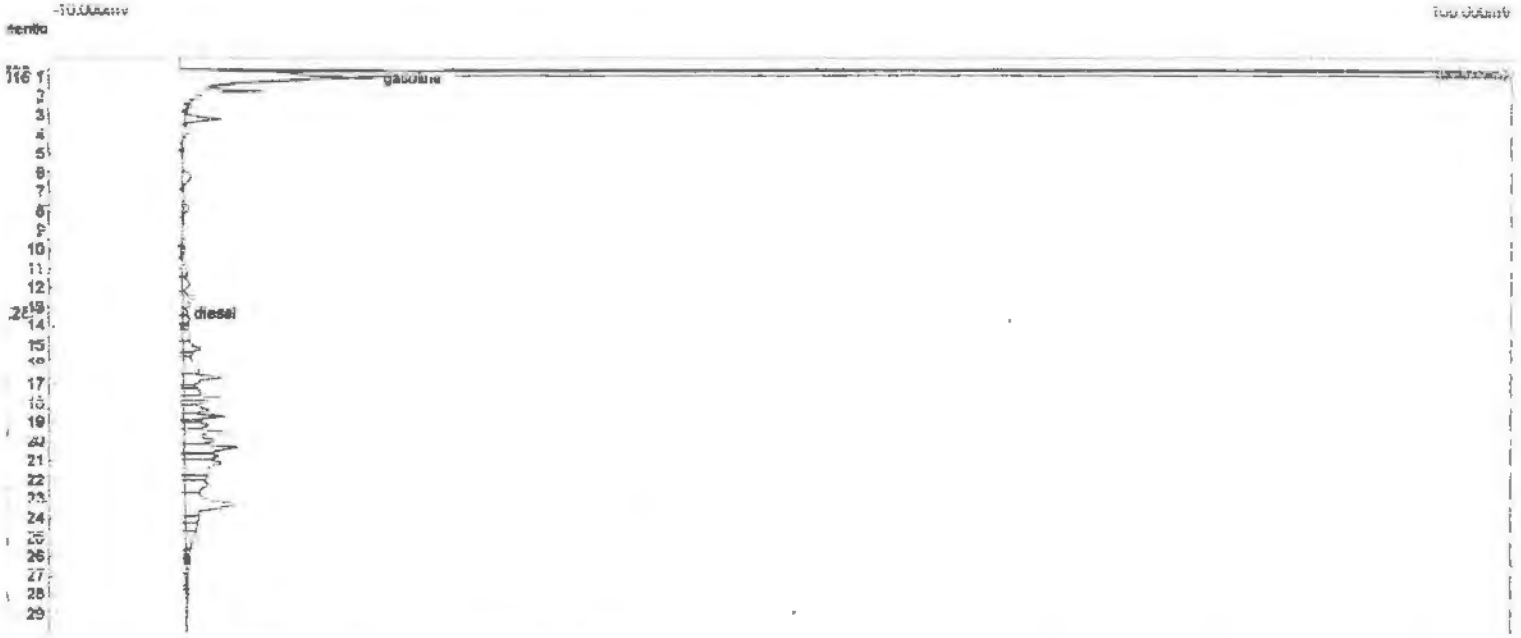
ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

ON SITE LABS, INC
PMB 627 HC-01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE (787) 720-0329 FAX 780-3858

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 11:25:49
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319fb1.CHR ()
Sample: 200/400 ppm G/D open
Operator: MAP

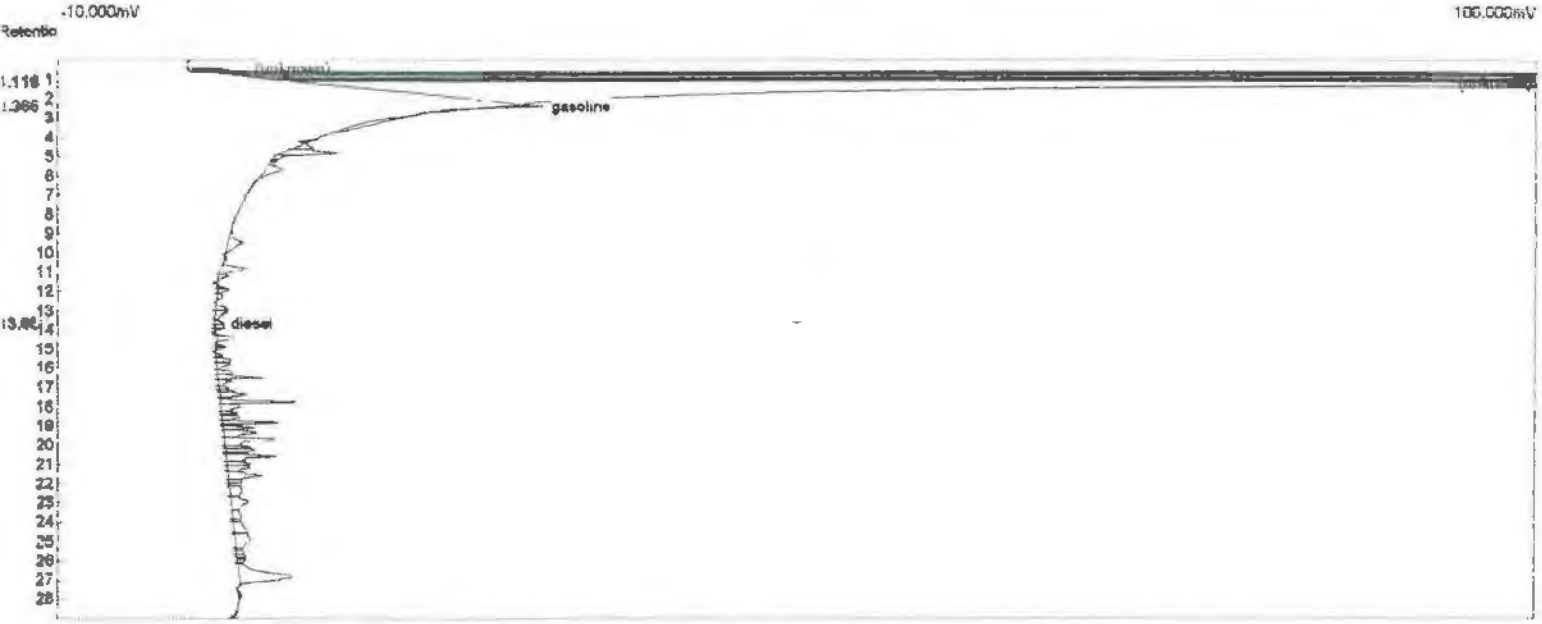
Component	Retention	Area	External	Units
gasoline	1.683	220.673	215.50	
diesel	11.816	1099.529	396.08	ppm
		1320.202	611.58	

Lab name: On Site Labs Inc
Analysis date: 03/18/2002 11:25:49
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0318fc1.CHR ()
Table: 200/400 ppm G/D open
Operator: MAP



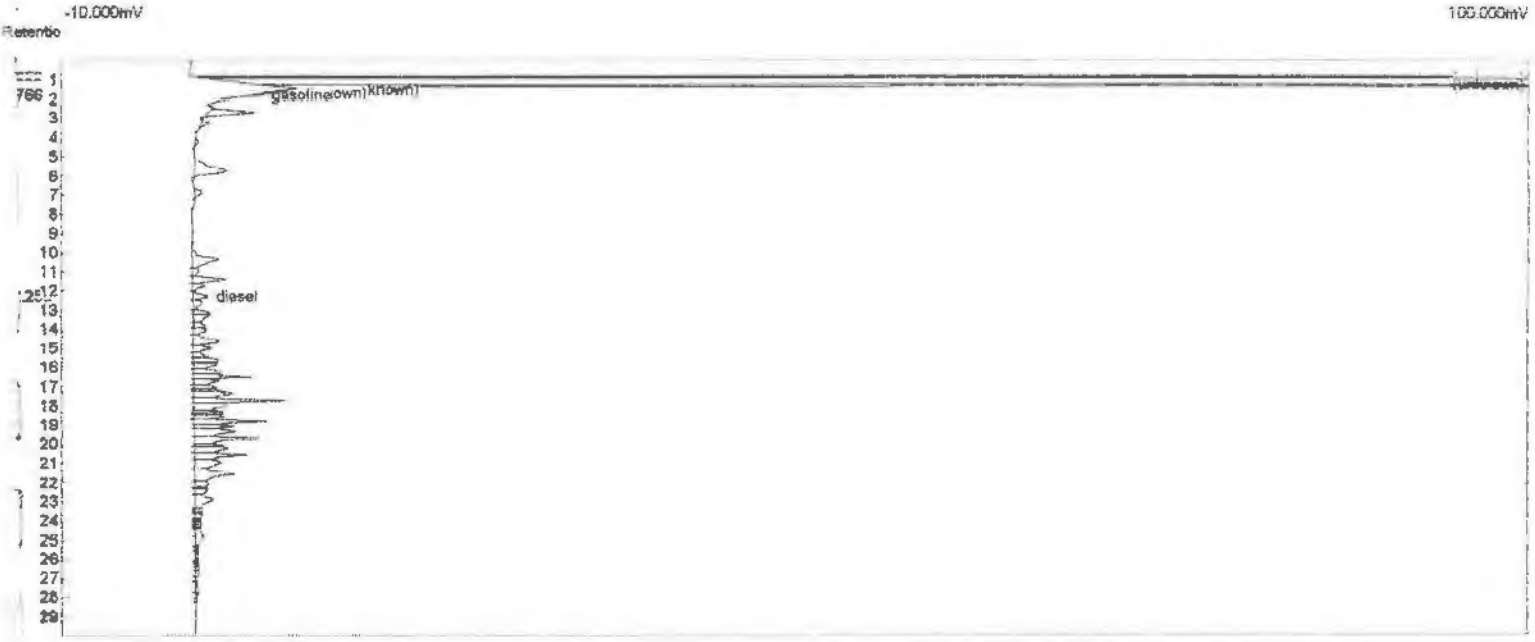
Component	Retention	Area	External	Units
gas	1.016	249.895	172.58	
diesel	13.283	1088.223	368.14	ppm
		1338.117	540.72	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 11:25:49
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319fd1.CHR ()
Sample: 200/400 ppm G/D open
Operator: MAP



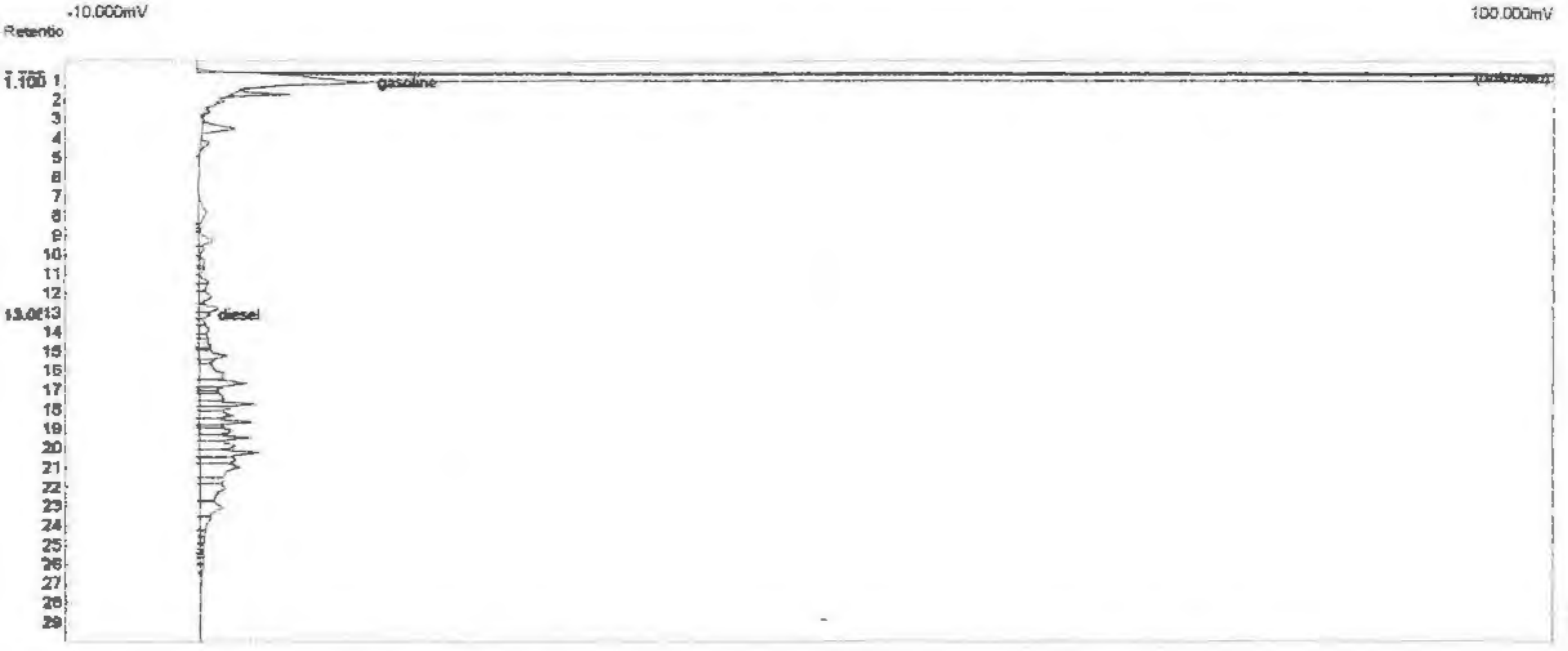
Component	Retention	Area	External	Units
gasoline	2.366	243.035	198.56	
diesel	13.650	907.990	374.58	ppm
		1151.024	573.14	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 16:58:03
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
file: 0319fb10.CHR ()
mple: 200/400 ppm G/D CLOSE
rator: MAP



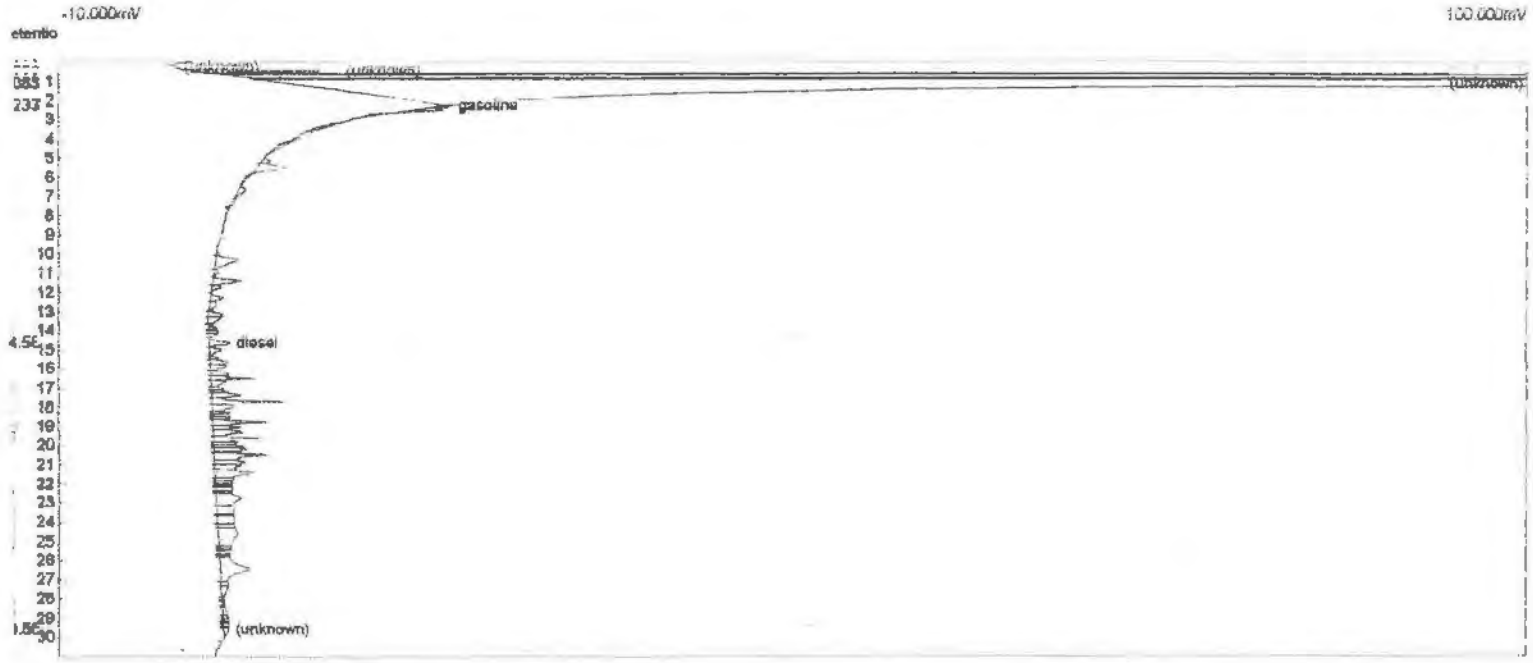
Component	Retention	Area	External	Units
	1.766	231.708	226.28	
	12.250	1114.150	401.35	ppm
		1345.857	627.63	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 16:58:03
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319fc10.CHR ()
Sample: 200/400 ppm G/D CLOSE
Operator: MAP



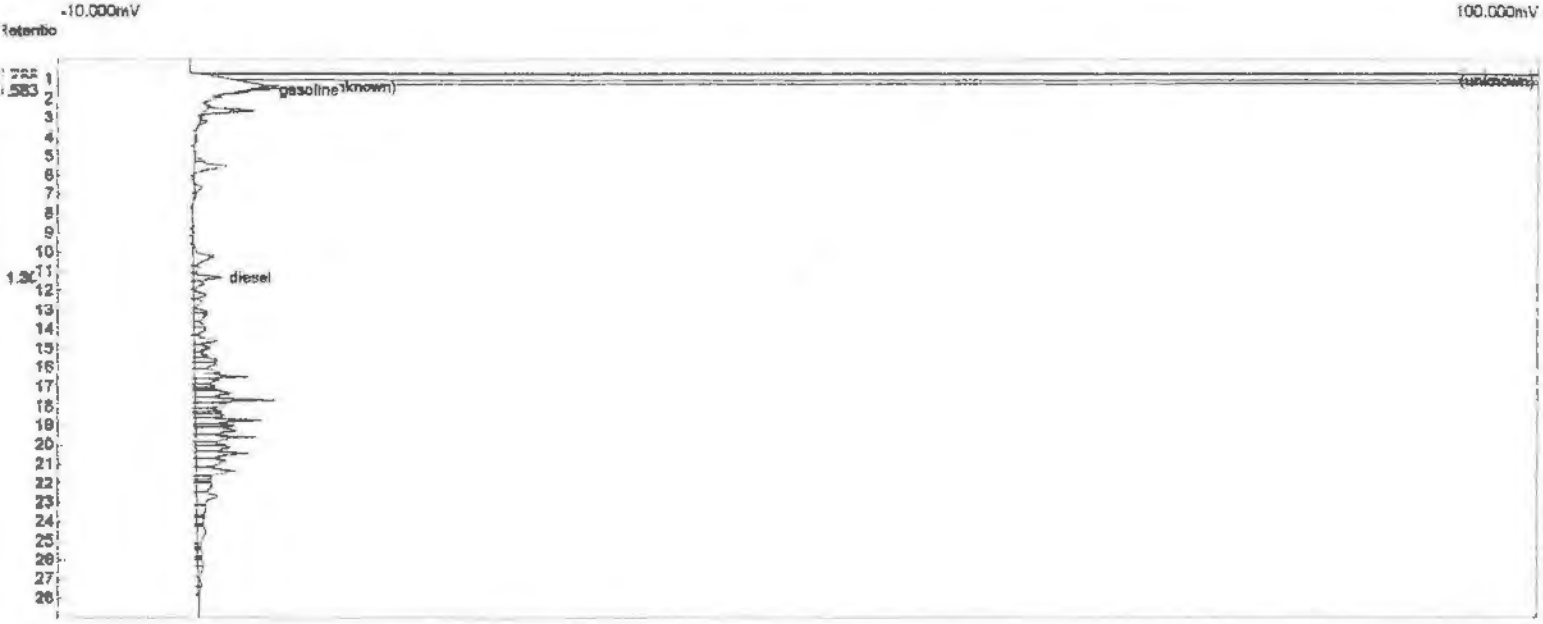
Component	Retention	Area	External	Units
gasoline	1.100	261.738	180.76	
diesel	13.066	1085.391	367.18	ppm
		1347.130	547.94	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 16:58:03
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
D[illegible]file: 0319fd10.CHR ()
[illegible]ple: 200/400 ppm G/D CLOSE
[illegible]ator: MAP



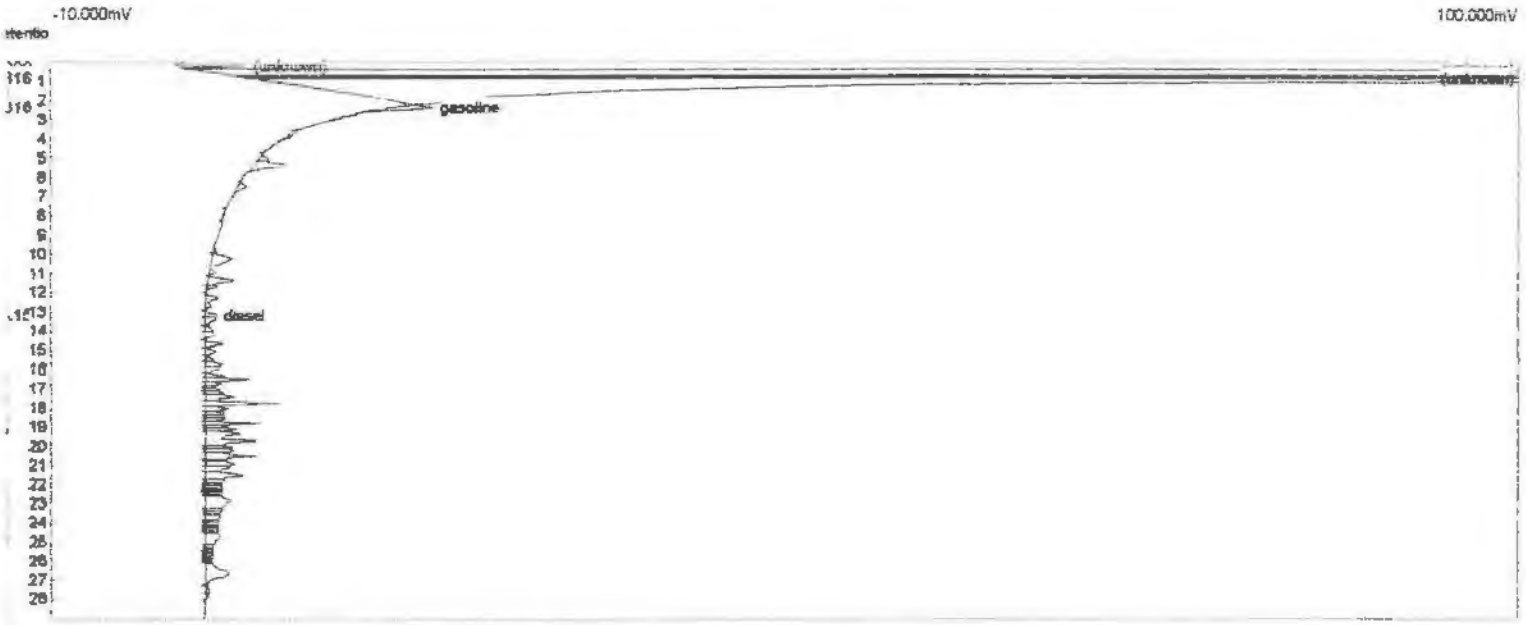
Component	Retention	Area	External	Units
BS	2.233	229.656	187.63	
Diesel	14.583	1036.356	427.54	ppm
		1266.012	615.17	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 12:08:22
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319fb2.CHR ()
Sample: blank matrix spike
Operator: MAP



Component	Retention	Area	External	Units
asoline	1.583	181.818	177.56	
iesel	11.300	1138.494	410.12	ppm
		1320.312	587.68	

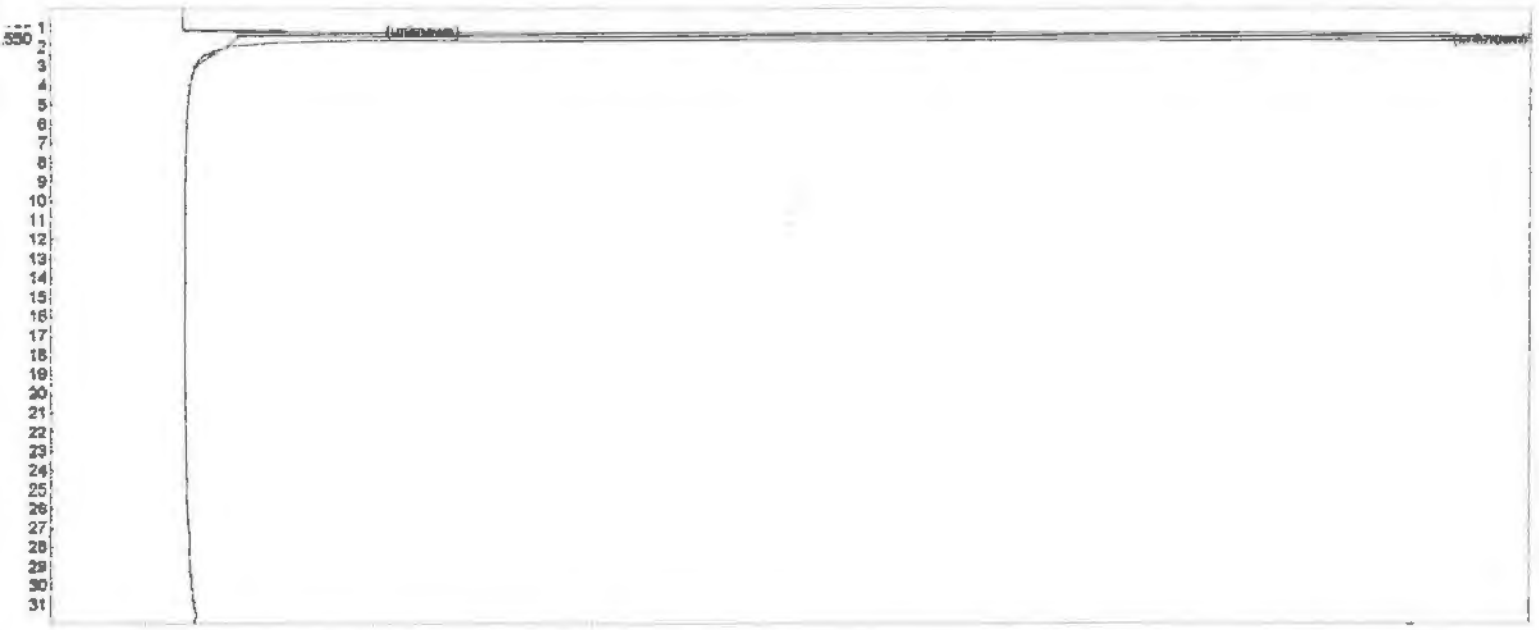
Lab name: On Site Labs Inc
Analysis date: 03/19/2002 12:08:22
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0319fd2.CHR ()
Sample: blank matrix spike duplicat
Operator: MAP



Component	Retention	Area	External	Units
as	2.316	216.164	176.60	
es	13.150	970.295	400.29	ppm
		1186.459	576.89	

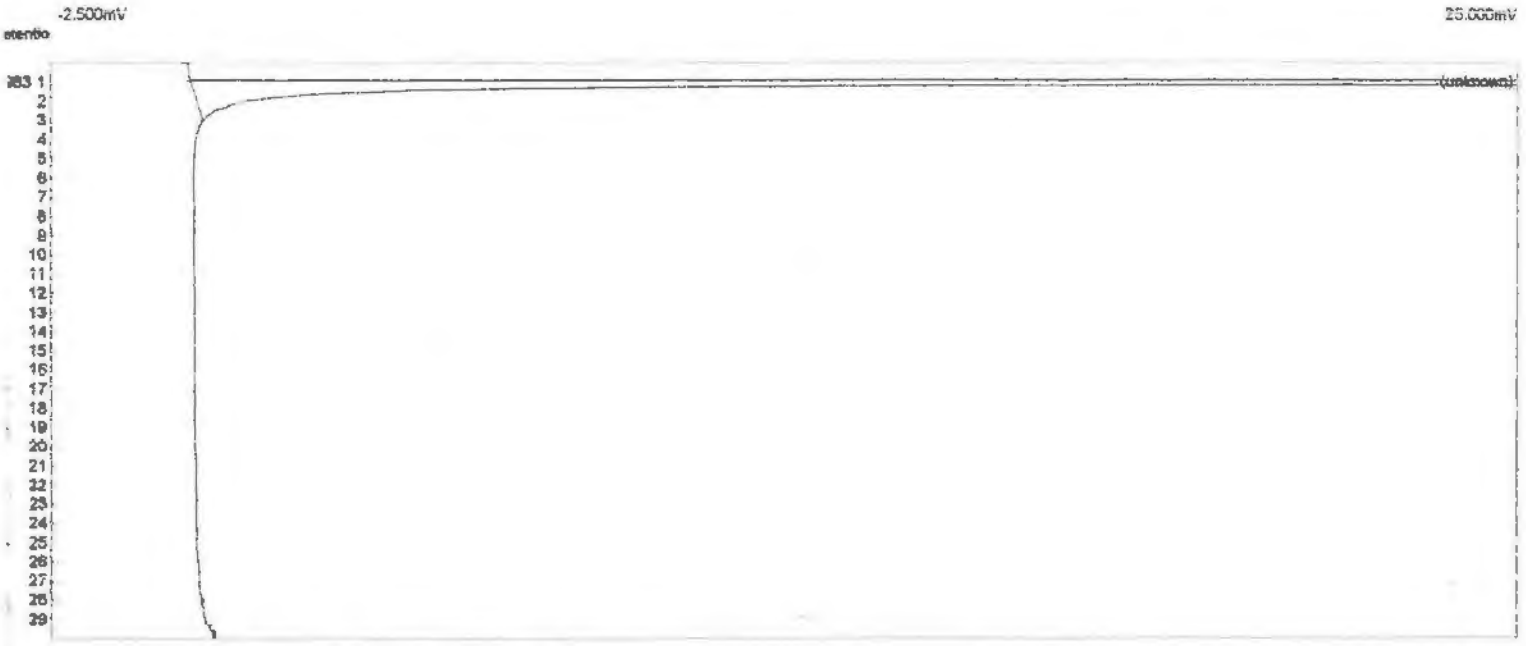
Lab name: On Site Labs inc
Analysis date: 03/19/2002 12:47:09
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319fb3.CHR ()
Sample: METHOD BLANK
Operator: MAP

-10.000mV 100.000mV



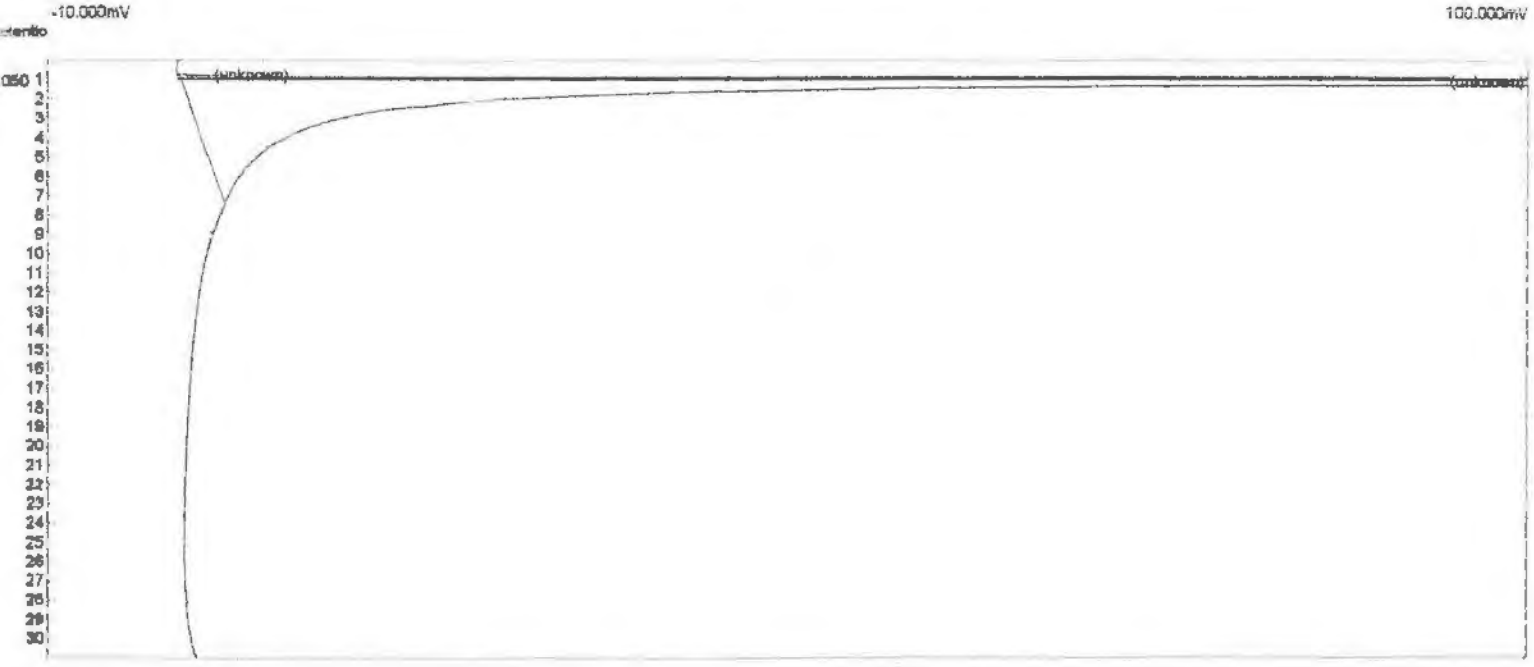
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 12:47:09
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0319fc3.CHR ()
Sample: METHOD BLANK
Operator: MAP



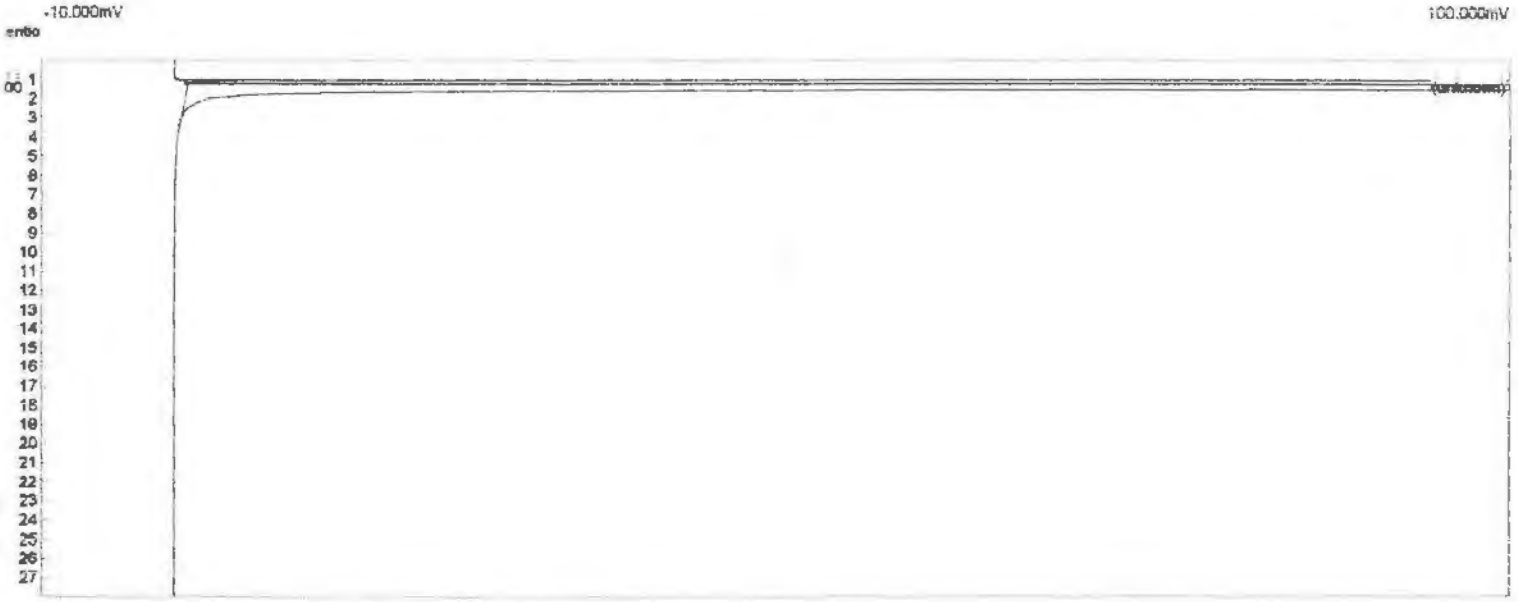
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 12:47:09
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319fd3.CHR ()
Sample: METHOD BLANK
Operator: MAP



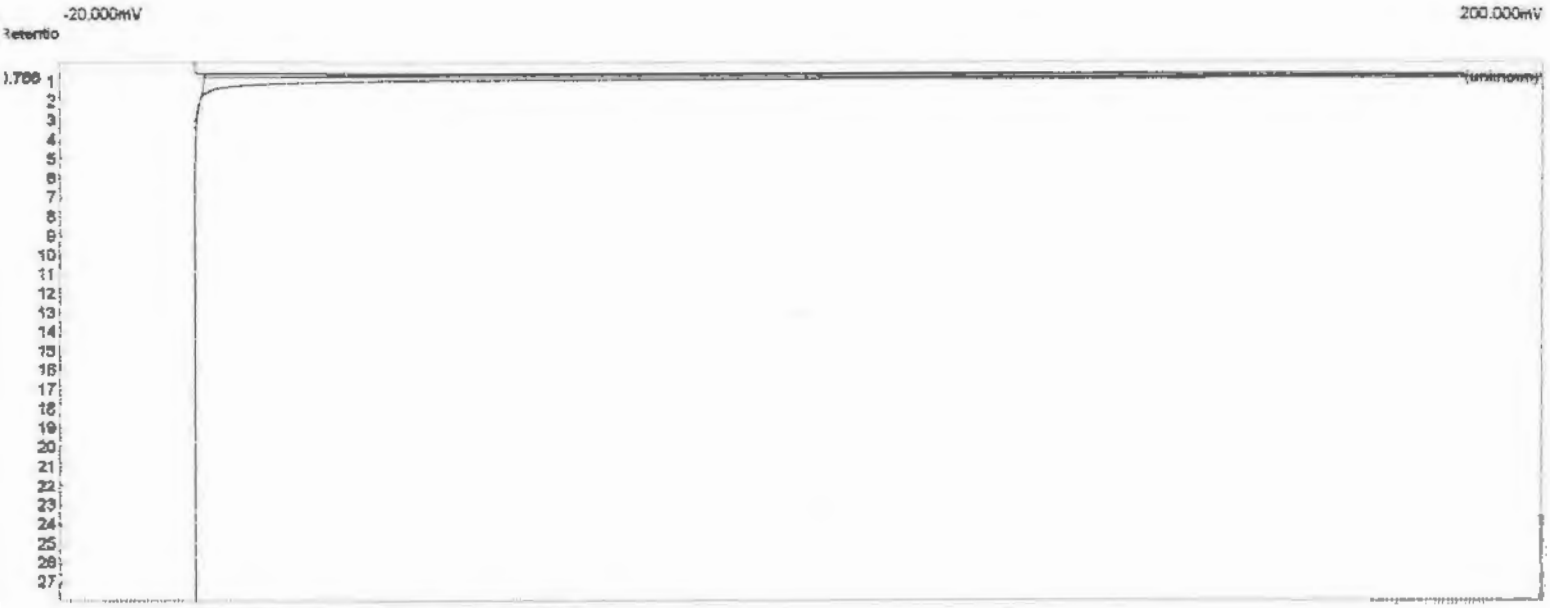
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 13:24:43
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319fb4.CHR ()
Sample file: ILA020/0314CH2M
Operator: MAP



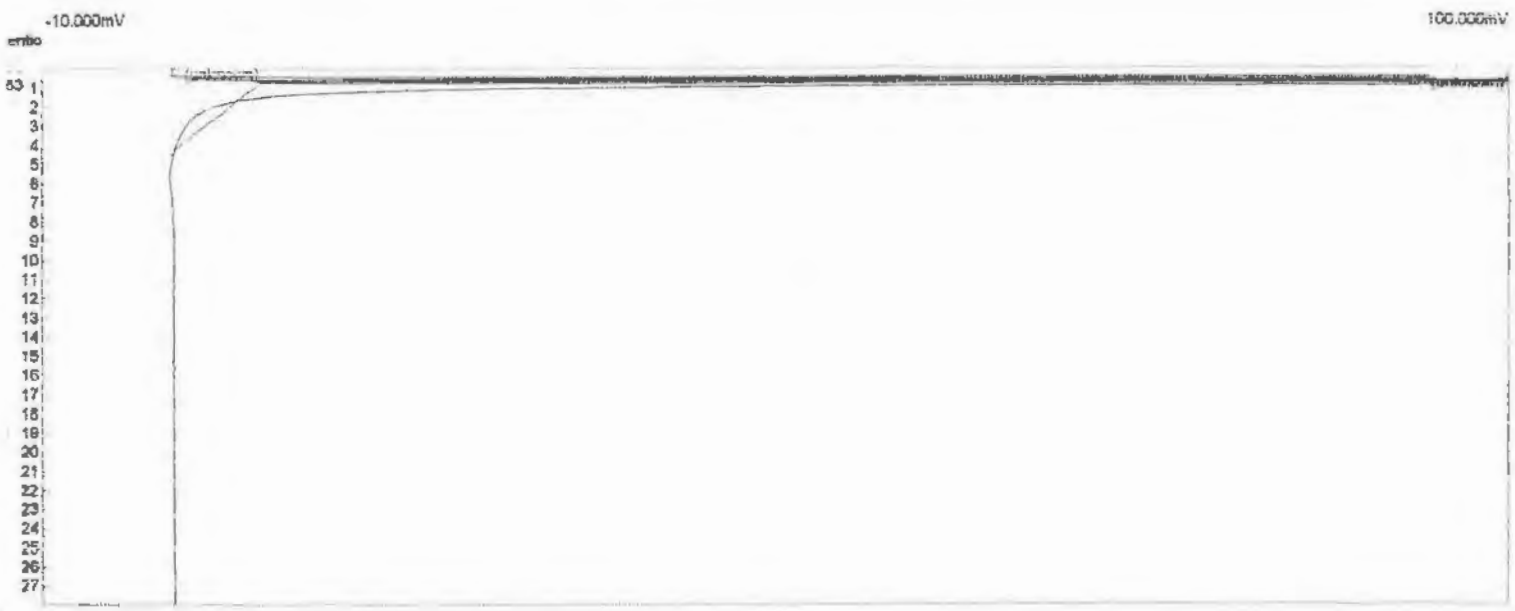
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 13:24:43
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319fc4.CHR ()
Sample: ILA021/0314CH2M
Operator: MAP



Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 13:24:43
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319fd4.CHR ()
Sample file: ILA022/0314CH2M
Operator: MAP

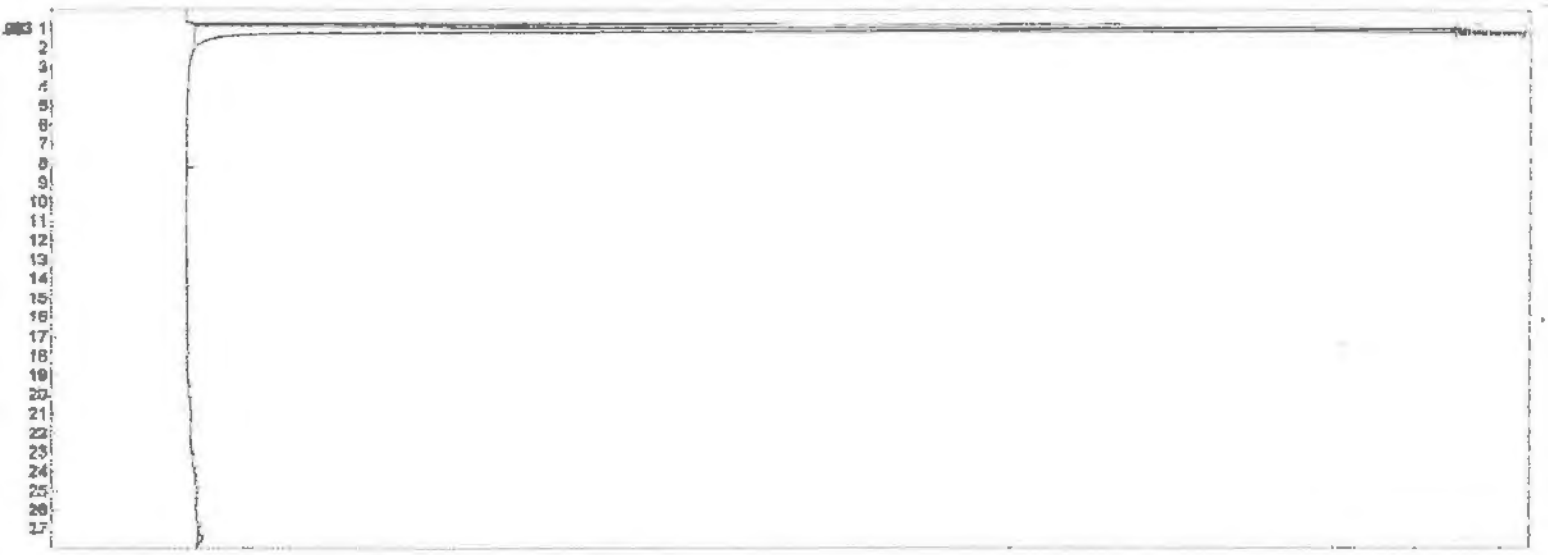


Component	Retention	Area	External	Units
		0.000	0.00	

Lab Name: On Site Labs Inc
Analysis Date: 03/19/2002 19:57:52
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319fb5.CHR ()
Sample: ILA023/0314CH2M
Operator: MAP

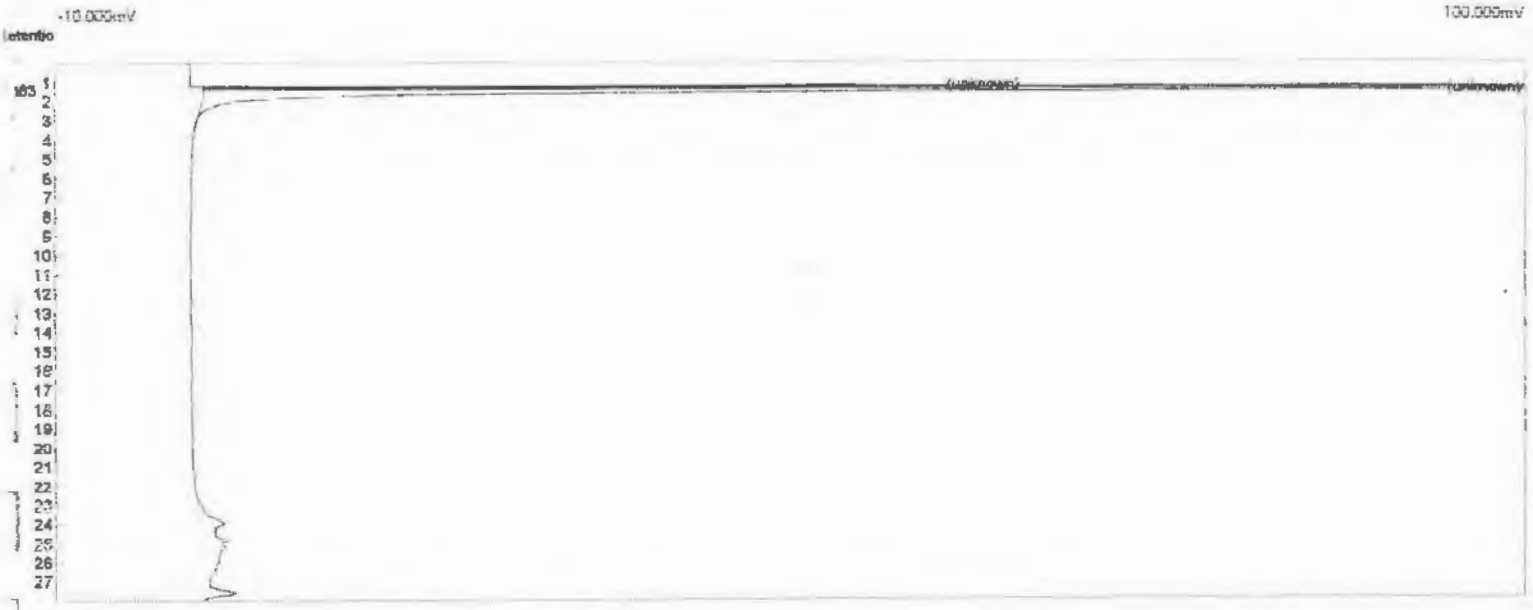
-10.000mV 100.000mV

detector



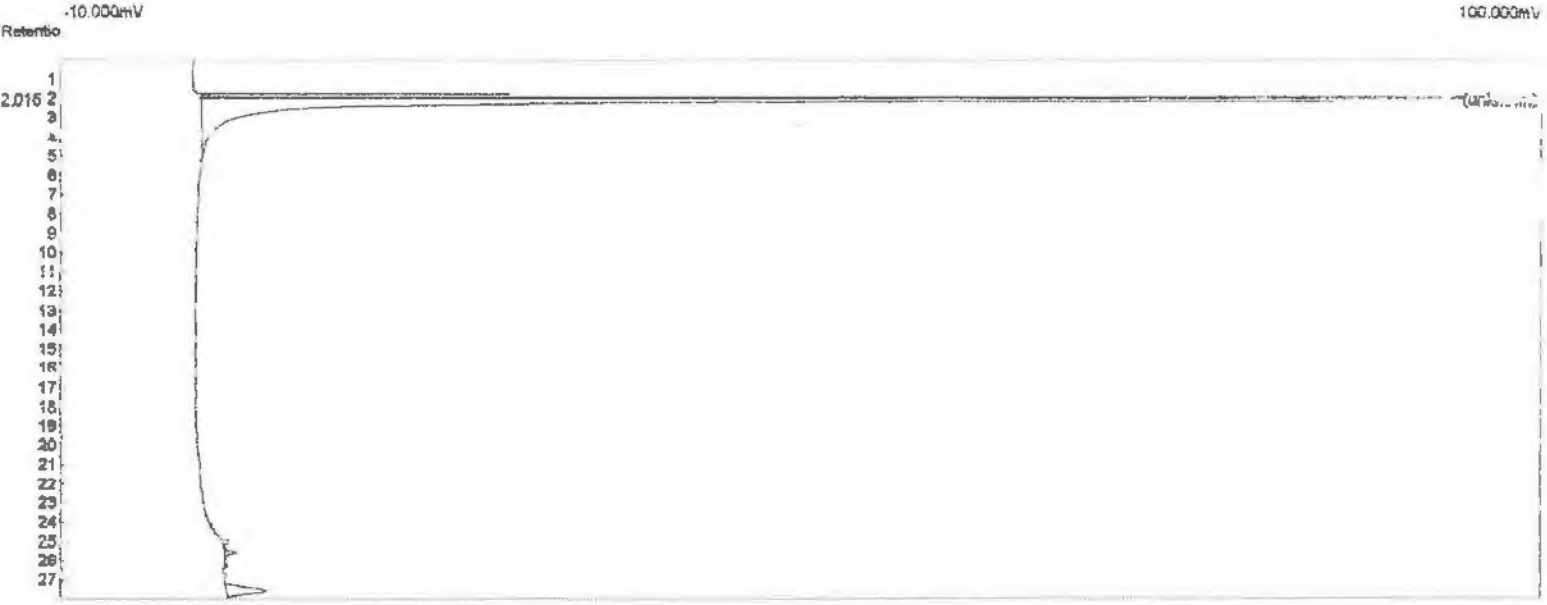
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs inc
Analysis date: 03/19/2002 13:57:52
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0319fc5.CHR ()
Sample: ILA024/0314CH2M
Operator: MAP



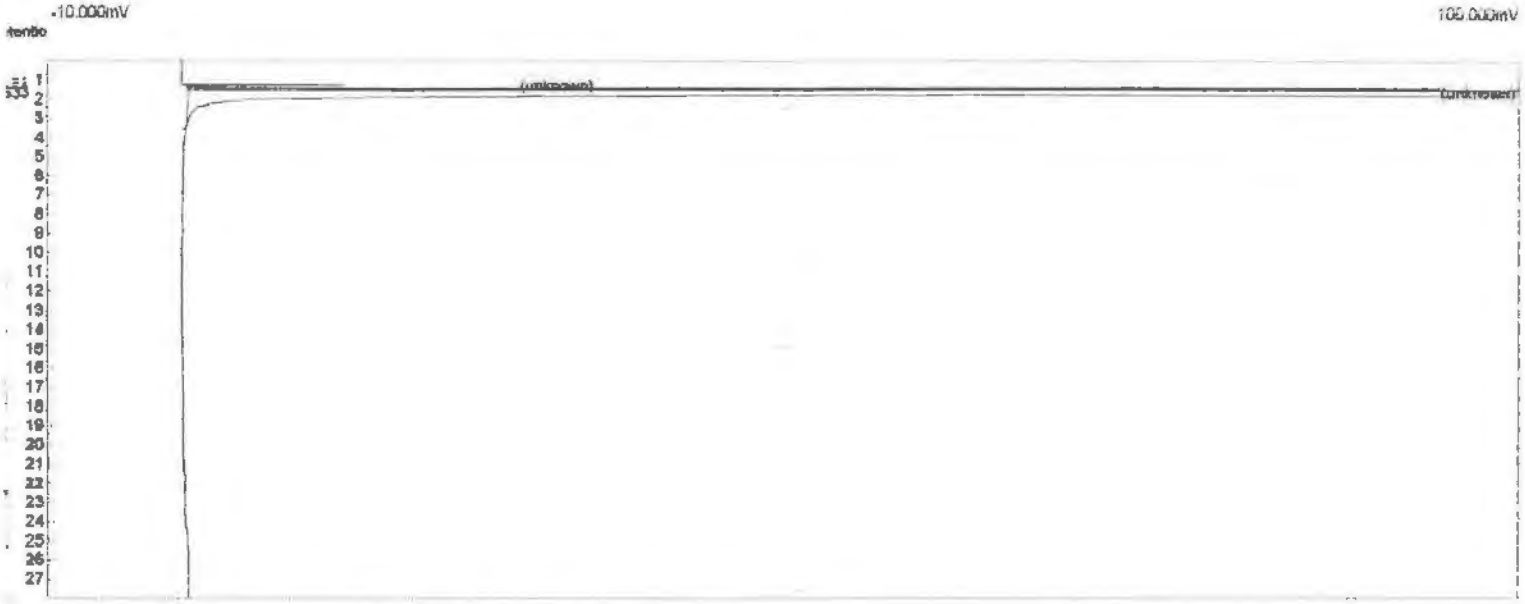
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 13:57:52
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319fd5.CHR 0
Sample: ILA025/0314CH2M
Operator: MAP



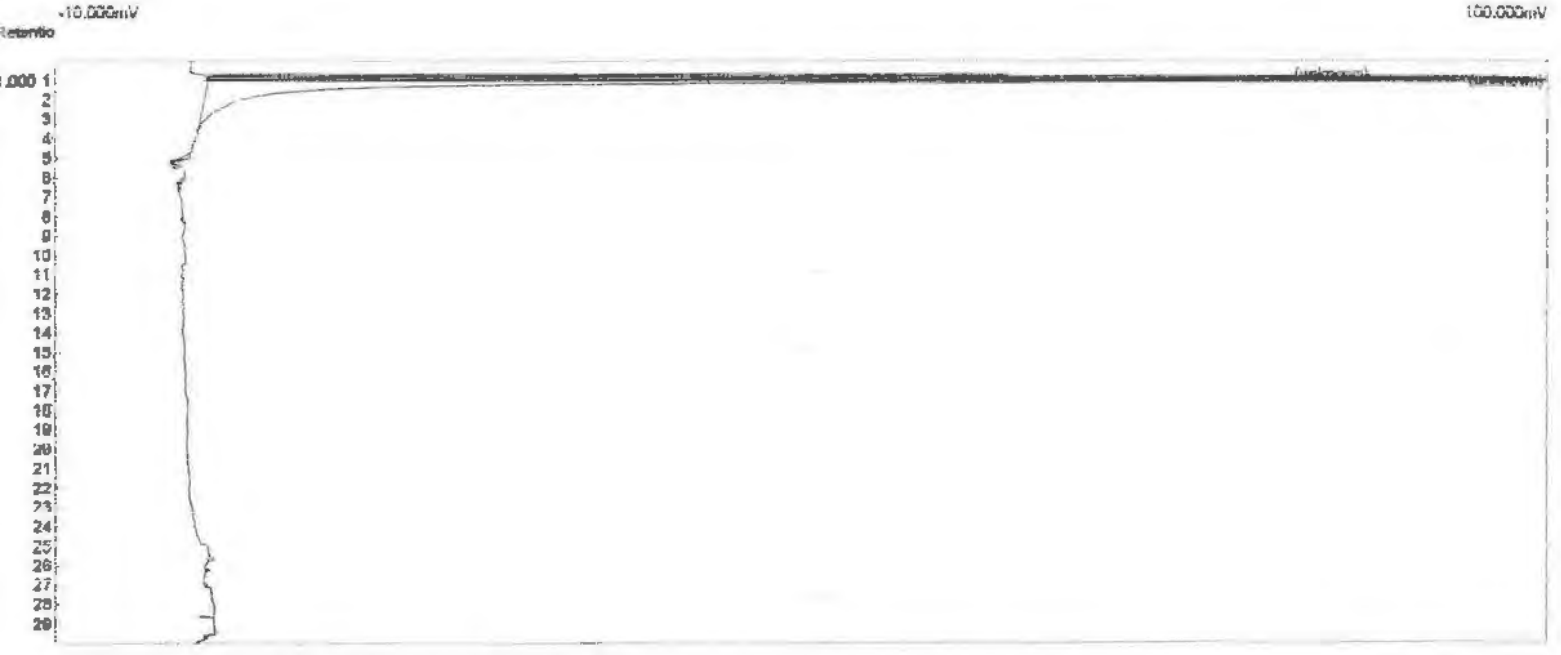
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 14:34:27
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0319FB6.CHR ()
Sample: ILA028/0314CH2M
Operator: MAP



Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 14:04:27
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319FD6.chr ()
Sample: ILA027/0314CH2M
Operator: MAP

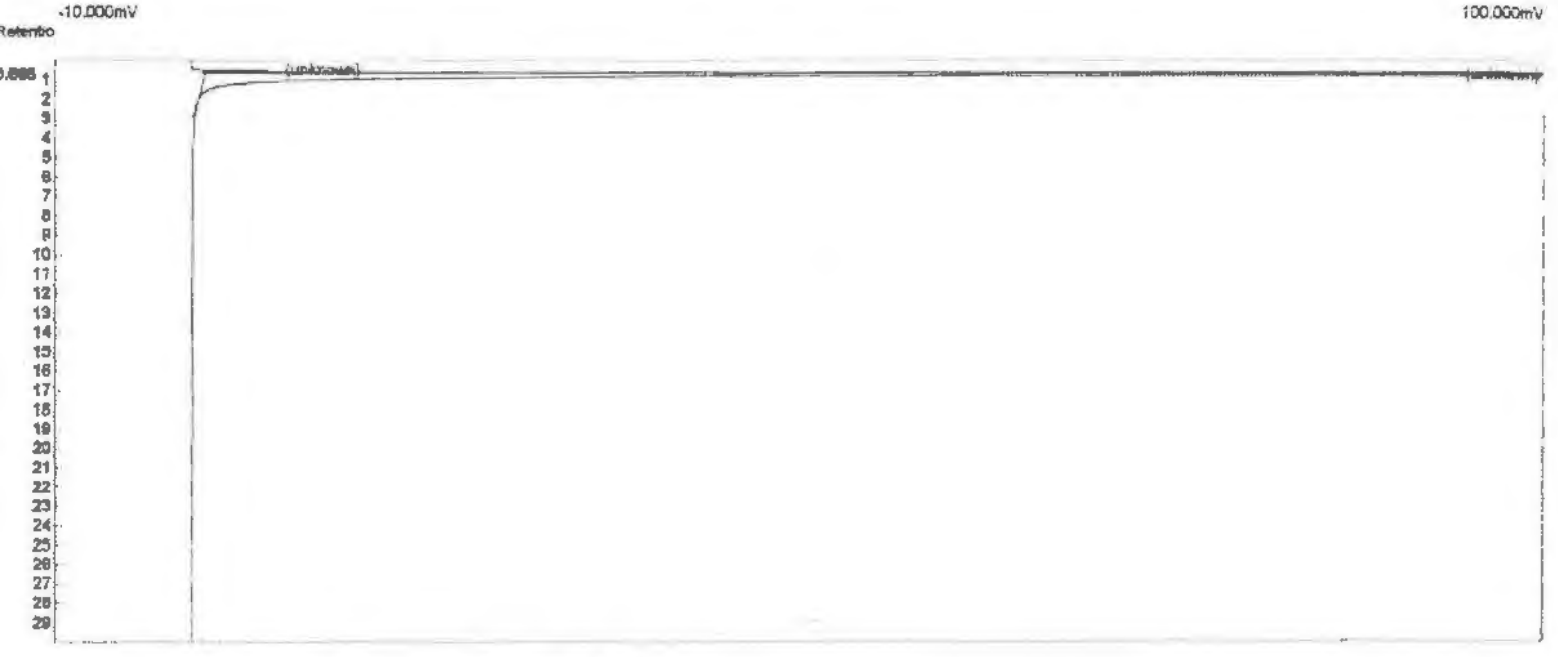


Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 15:06:52
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0319fb7.CHR ()
Sample: JLA029/0314CH2M
Operator: MAP

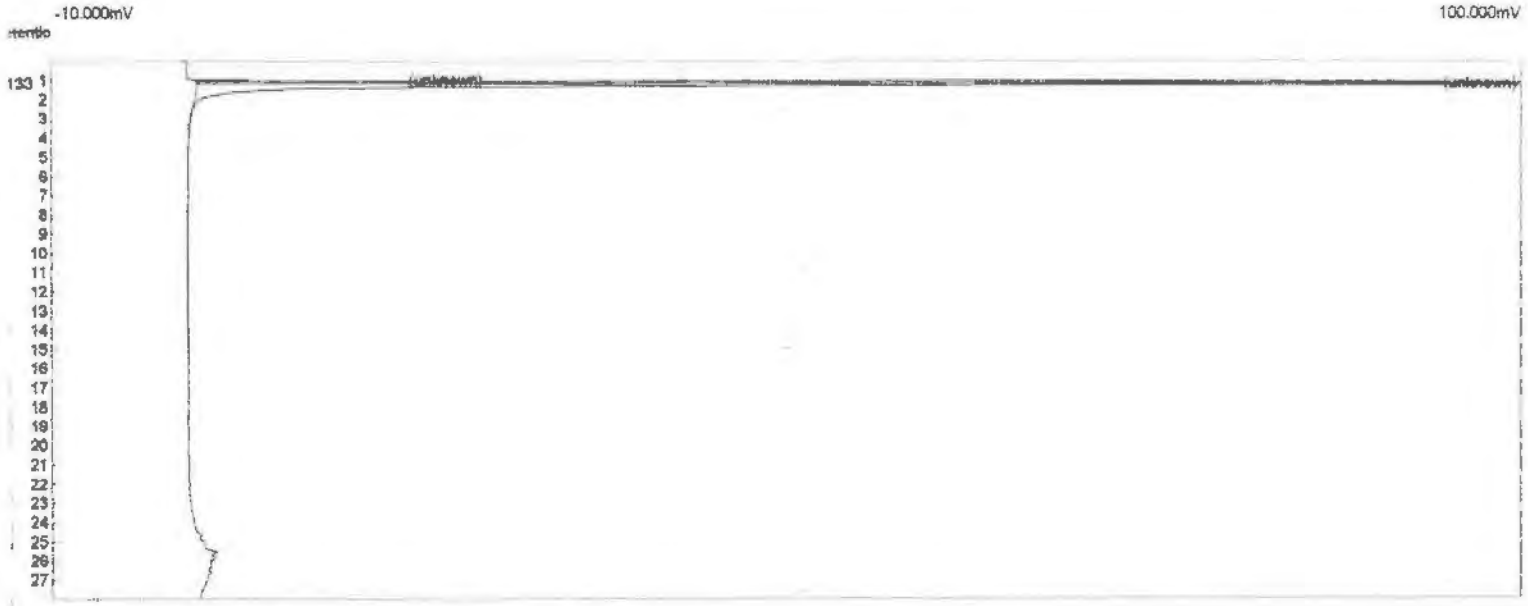
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 15:06:52
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319fc7.CHR ()
Sample: JLA030/0314CH2M
Operator: MAP



Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/19/2002 14:34:27
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0319FC8.chr ()
Sample: JLA031/0314CH2M
Operator: MAP



Component	Retention	Area	External	Units
		0.000	0.00	

QA/QC REPORT - CALIBRATION DATA

OSL Project #02I0314CH2M
DAILY CALIBRATION DATE: 03/19/02

CH2M HILL PROJECT NO. 167722.FI.FS
PROJECT NAME: RRNAS SITES 88 AND 1970, CEIBA

			INITIAL		OPENING			CLOSING		
COMPOUND	DETECTOR	CALIB RANGE	RF	%RSD	AREA	RF	%DIFF	AREA	RF	%DIFF
BENZENE	P&T - GC3	0.5 - 75.0	85.78	8.1%	750.34	83.37	2.8%	552.01	92.00	7.3%
TOLUENE	P&T - GC3	0.5 - 75.0	81.33	8.2%	716.29	79.59	2.1%	535.26	89.21	9.7%
ETHYLBENZENE	P&T - GC3	0.5 - 75.0	65.84	13.6%	529.98	58.89	10.6%	422.17	70.36	6.9%
m&p-XYLENES	P&T - GC3	1.0 - 150	98.46	16.8%	1689.61	93.87	4.7%	1240.29	103.36	5.0%
o-XYLENES	P&T - GC3	0.5 - 75.0	73.19	17.4%	639.28	71.03	2.9%	467.43	77.90	6.4%

CALIB RANGE - RANGE OF CALIBRATION CURVE IN ppb
INITIAL RF - AVERAGE RESPONSE FACTOR FROM MULTIPOINT CALIBRATION CURVE
% RSD - LINEARITY OF MULTIPOINT CALIBRATION CURVE (+/- 20% ACCEPTABLE LIMITS)
AREA - AREA COUNTS FROM DAILY CALIBRATION STANDARD
RF - DETECTOR RESPONSE FACTOR FROM MID-POINT CALIBRATION STANDARD
% DIFF - DIFFERENCE, IN PERCENT, BETWEEN THE AVERAGE RF AND THE OPENING OR CLOSING RF (+/- 20% ACCEPTABLE LIMITS)
OPENING - MID-POINT CALIBRATION STANDARD ANALYZED BEFORE SAMPLE ANALYSES BEGIN
CLOSING - MID-POINT CALIBRATION STANDARD ANALYZED AFTER SAMPLES ANALYSES ARE COMPLETE

ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

ON SITE LABS, INC
PMB 627 HC 01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE (787) 720-0329 FAX 769-3858

QA/QC REPORT - MS/MSD DATA

MATRIX SPIKE (MS)/MATRIX SPIKE DUPLICATE (MSD)

OSL PROJECT #02I0314CH2M
DATE: 03/19/02

CH2M HILL PROJECT NO 167722.FI FS
PROJECT NAME: RRNAS SITES 88 AND 1970

COMPOUND	SPK CONC (ppb)	MS CONC (ppb)	%REC MS	MSD CONC (ppb)	%REC MSD	RPD	ACCEPTABLE RPD	ACCEPTABLE RECOVERY
BENZENE	6.0	6.2	103%	5 4	90%	14%	20%	82% - 117%
TOLUENE	6.0	6.3	105%	5.4	89%	16%	20%	87% - 120%
ETHYLBENZENE	6.0	5 6	94%	5 0	83%	12%	20%	83% - 131%
TOTAL XYLENES	18.0	19 1	106%	15 7	87%	20%	20%	87% - 123%

ppb = PARTS PER BILLION

MS CONC - ANALYZED CONCENTRATION OF SPIKED SAMPLE

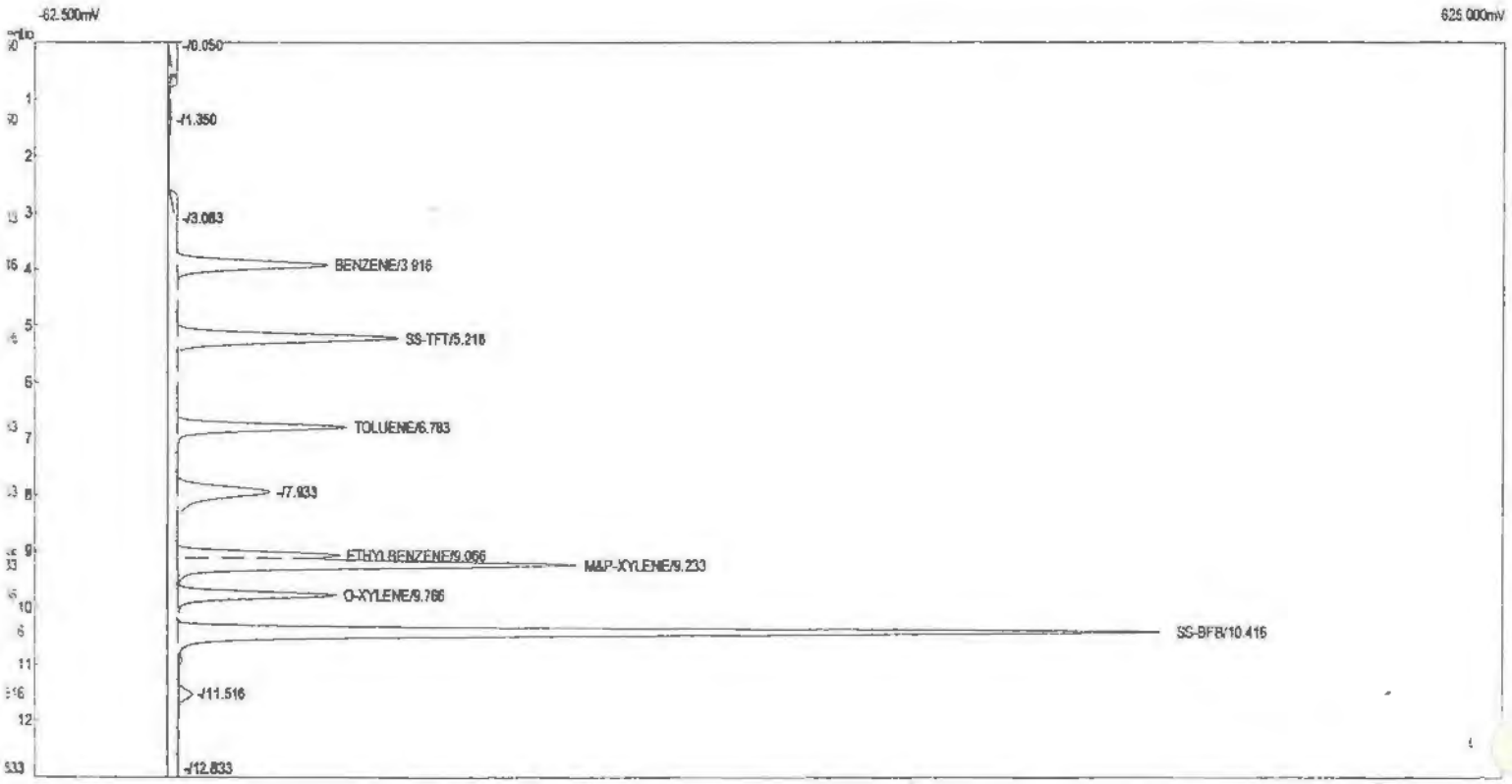
% REC - PERCENT RECOVERY OF SPIKE FROM MATRIX

RPD - RELATIVE PERCENT DIFFERENCE BETWEEN MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES

ANALYSES PERFORMED BY MARCO A PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

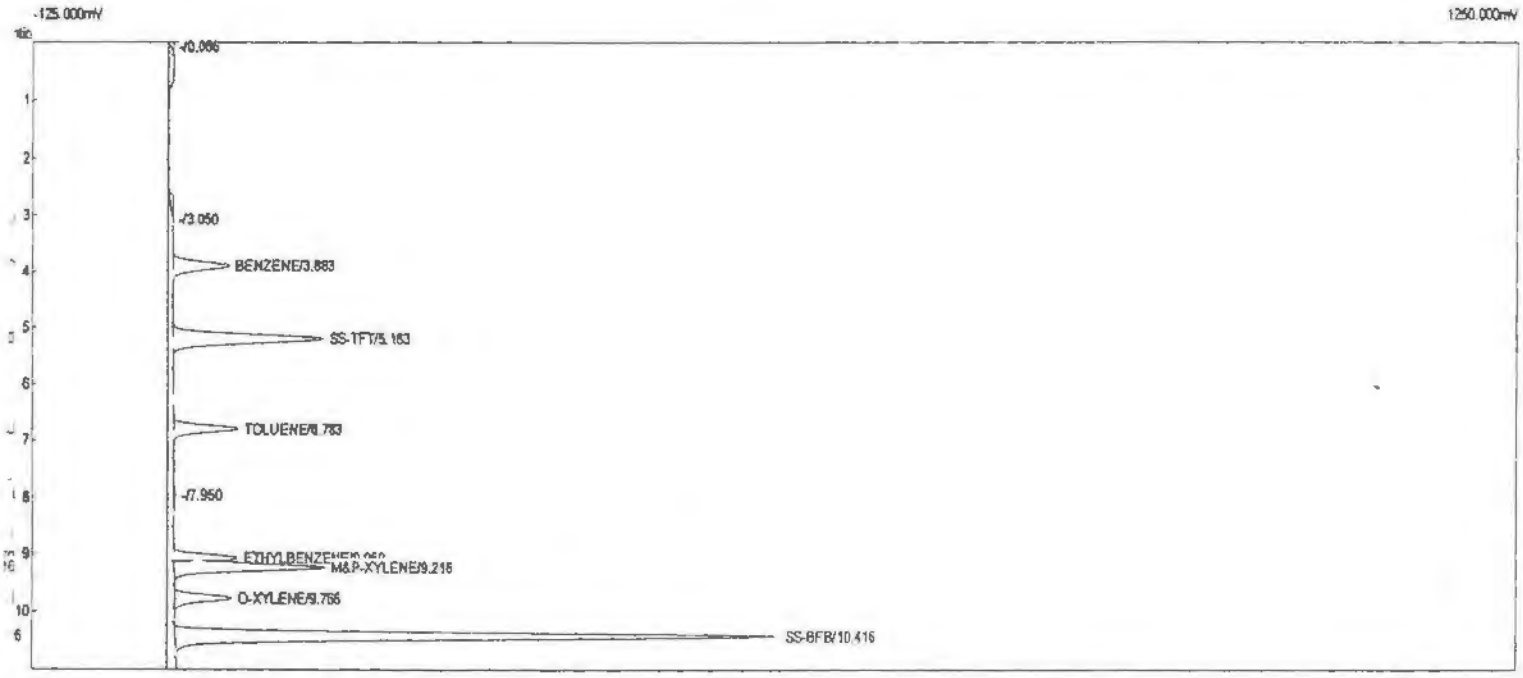
ON SITE LABS, INC
PMB 627, HC-01 BOX 29030, CAGUAS, P R 00725
TELEPHONE (787) 720-0329 FAX 789 3859

nalysis date: 03/19/2002 10:42:39
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P23.CHR ()
Sample: 9 ppb BTEX OPEN STD
Operator: MAP



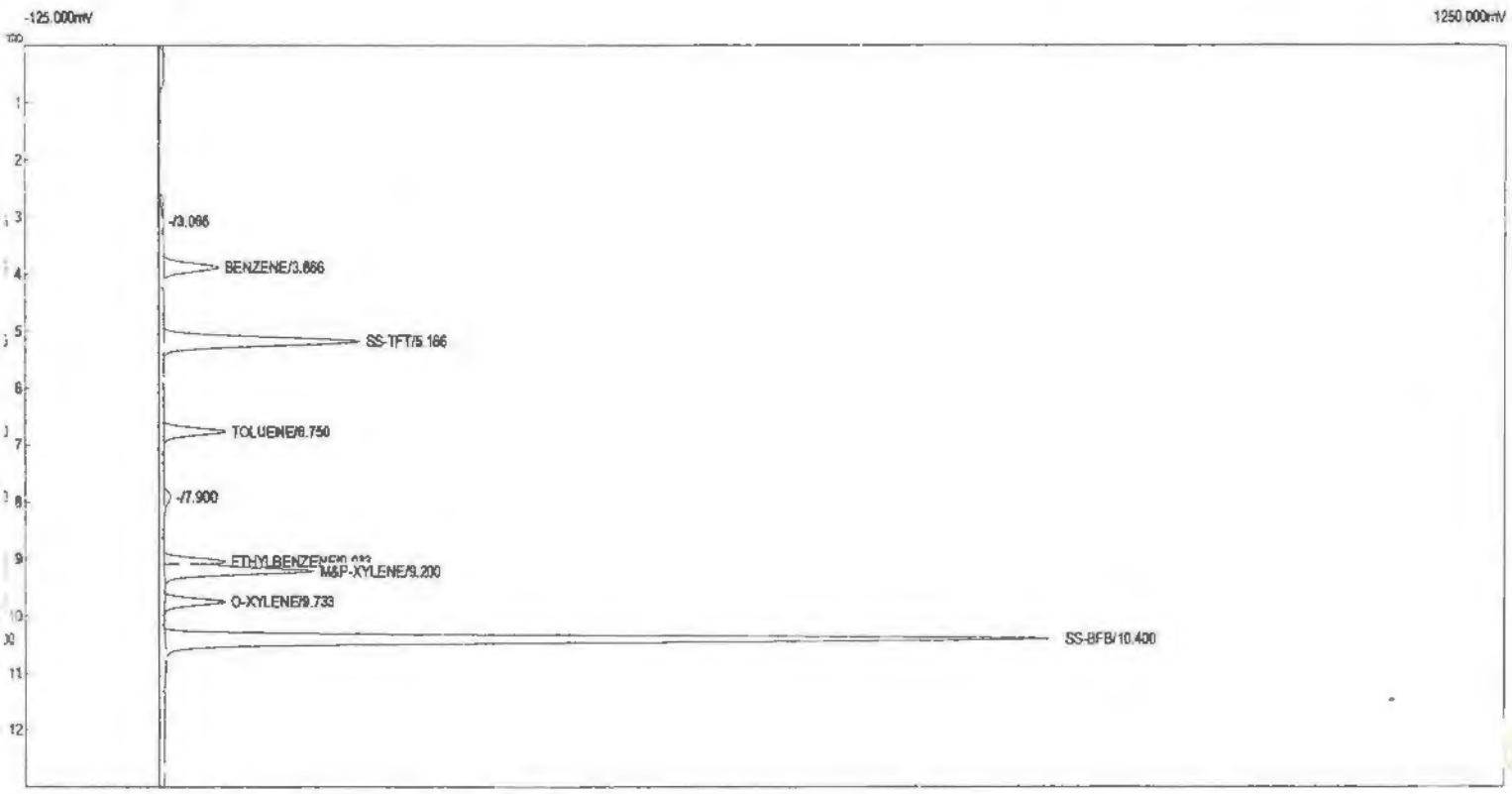
Component	Retention	Height	Area	External	Internal	Units
ENZENE	3.916	70.705	750.343	8.75	8.7473	ppb
S-TFT	5.216	104.217	1123.736	12.57	12.5669	ppb
OLUENE	6.783	79.883	716.291	8.81	8.8072	ppb
THYLBENZENE	9.066	76.214	529.984	8.05	8.0496	ppb
&P-XYLENE	9.233	187.987	1689.608	17.16	17.1603	ppb
-XYLENE	9.766	74.925	639.280	8.73	8.7345	ppb
S-BFB	10.416	465.025	3841.746	16.85	16.8498	ppb
			9290.988	80.92	80.9157	

Lab name: On Site Labs Inc.
alysis date: 03/19/2002 18:02:05
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
D a: 0318P42.CHR ()
le: 6 ppb BTEX CLOSE
Operator: MAP



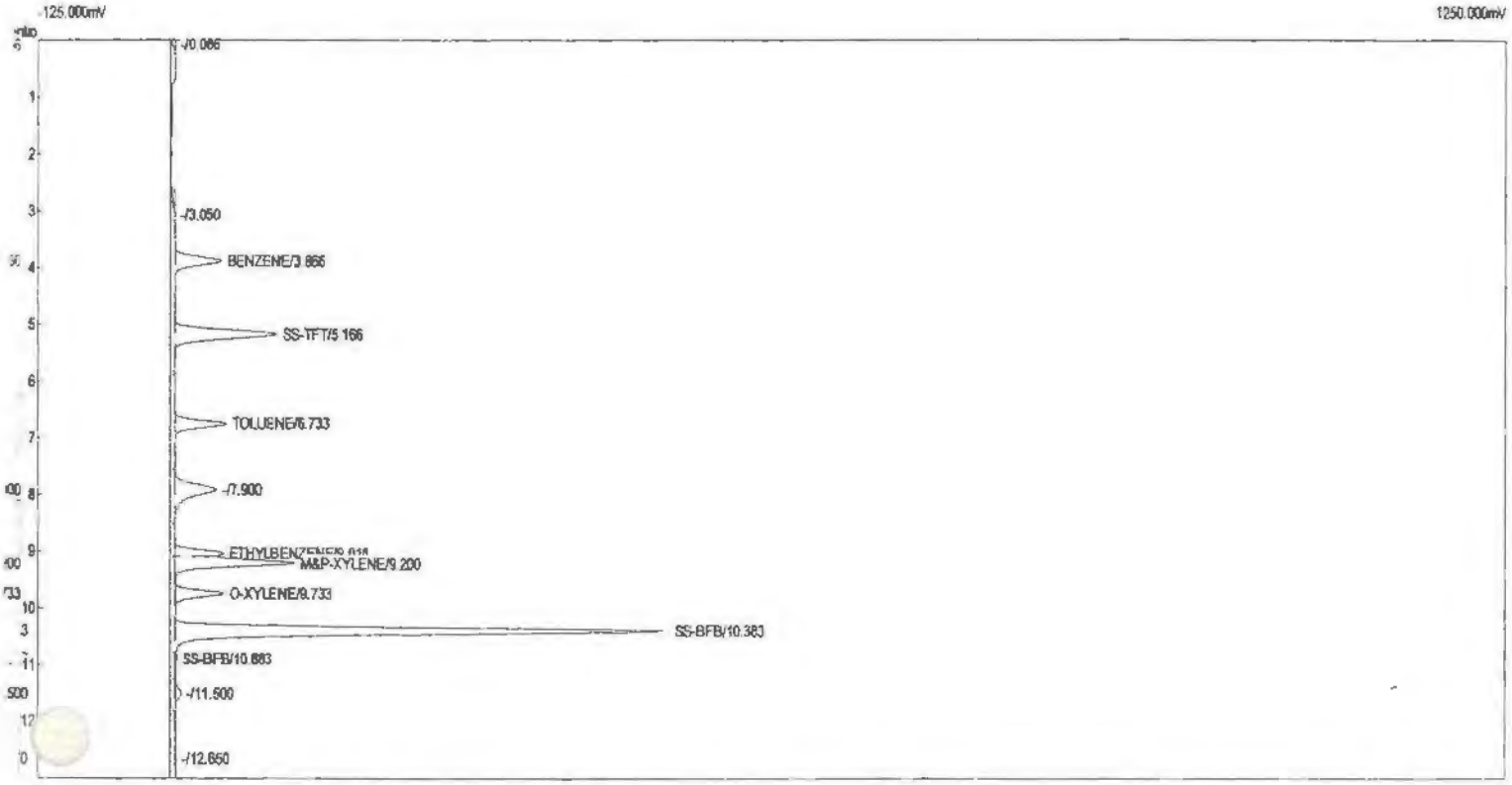
Co nt	Retention	Area	External	Internal	Units
ENZENE	3.883	552.014	6.44	6.4352	ppb
S-TFT	5.163	1516.293	16.96	16.9570	ppb
OLUENE	6.783	535.264	6.58	6.5814	ppb
HYLBENZENE	9.050	422.168	6.41	6.4120	ppb
P-XYLENE	9.216	1240.290	12.60	12.5969	ppb
-XYLENE	9.766	467.429	6.39	6.3865	ppb
S-BFB	10.416	4459.536	19.56	19.5594	ppb
		9192.994	74.93	74.9284	

Lab name: On Site Labs Inc.
Analysis date: 03/19/2002 11:01:29
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P24.CHR ()
Sample: ~~ILA019~~matrix spike
Operator: MAP BLANK matrix Spike



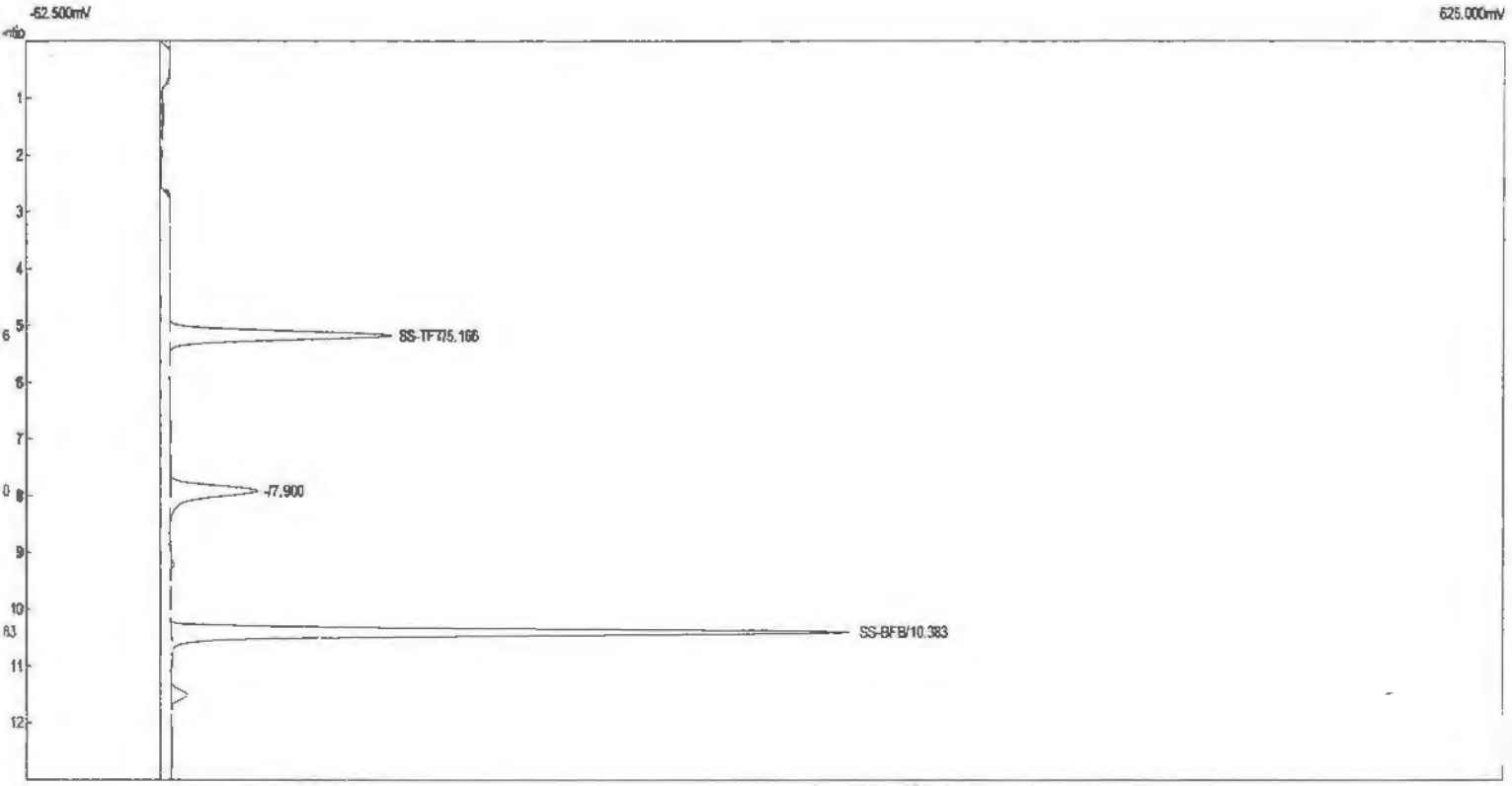
Component	Retention	Area	External	Internal	Units
NZENE	3.866	532.138	6.20	6.2035	ppb
-TFT	5.166	1959.194	21.91	21.9100	ppb
LUENE	6.750	512.010	6.30	6.2955	ppb
HYLBENZENE	9.033	369.856	5.62	5.6175	ppb
P-XYLENE	9.200	1254.893	12.75	12.7452	ppb
XYLENE	9.733	466.953	6.38	6.3800	ppb
-BFB	10.400	6726.937	29.50	29.5041	ppb
		11821.981	88.66	88.6558	

Lab name: On Site Labs Inc.
nalysis date: 03/19/2002 11:33:26
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P25.CHR ()
le: blank matrix spike duplicat
tor: MAP



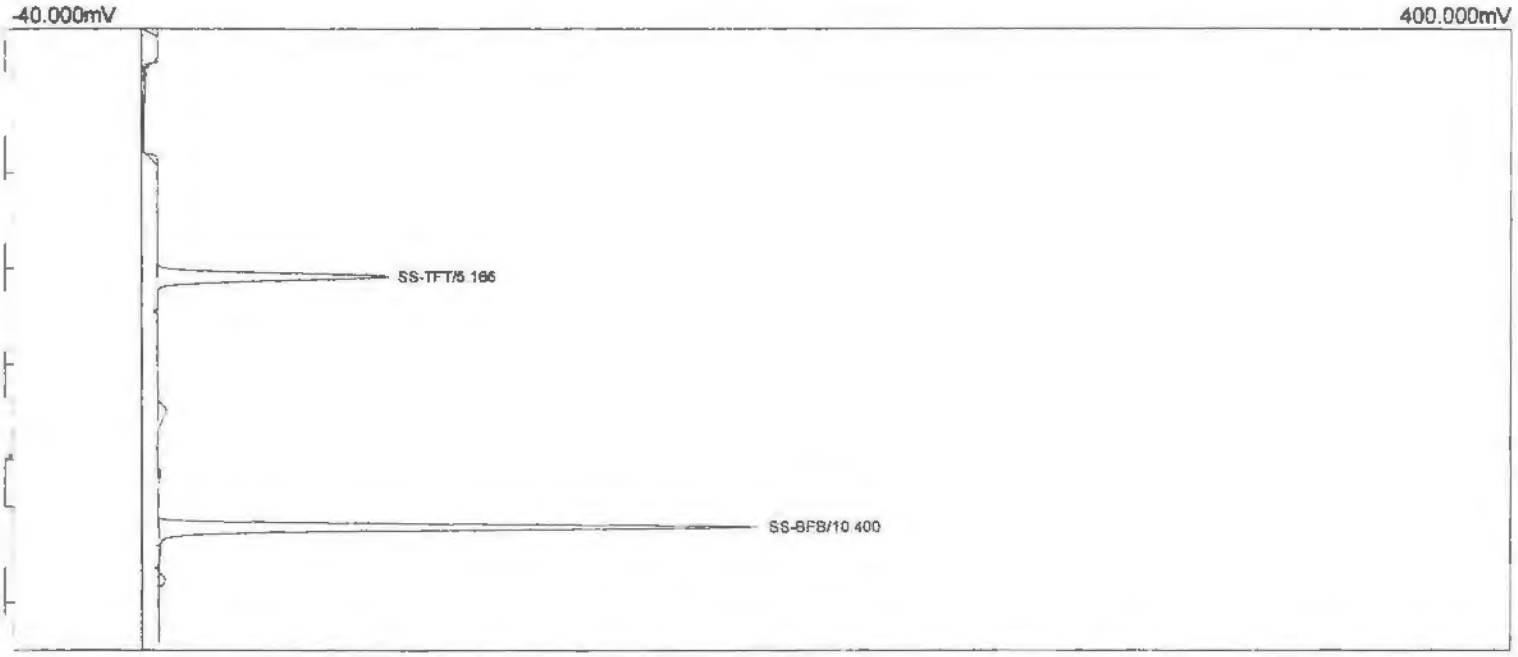
Component	Retention	Height	Area	External	Internal	Units
NZENE	3.866	43.635	460.600	5.37	5.3696	ppb
S-TFT	5.166	95.756	1033.290	11.56	11.5555	ppb
OLUENE	6.733	47.816	435.686	5.36	5.3570	ppb
HYLBENZENE	9.016	45.348	326.324	4.96	4.9563	ppb
P-XYLENE	9.200	111.955	1014.997	10.31	10.3087	ppb
-XYLENE	9.733	45.552	396.738	5.42	5.4207	ppb
S-BFB	10.383	461.366	3826.613	16.78	16.7834	ppb
-BFB	10.883	1.834	28.444	0.12	0.1248	ppb
			7522.690	59.88	59.8759	

nalysis date: 03/19/2002 12:02:36
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P26.CHR ()
Sample: METHOD BLANK
Operator: MAP



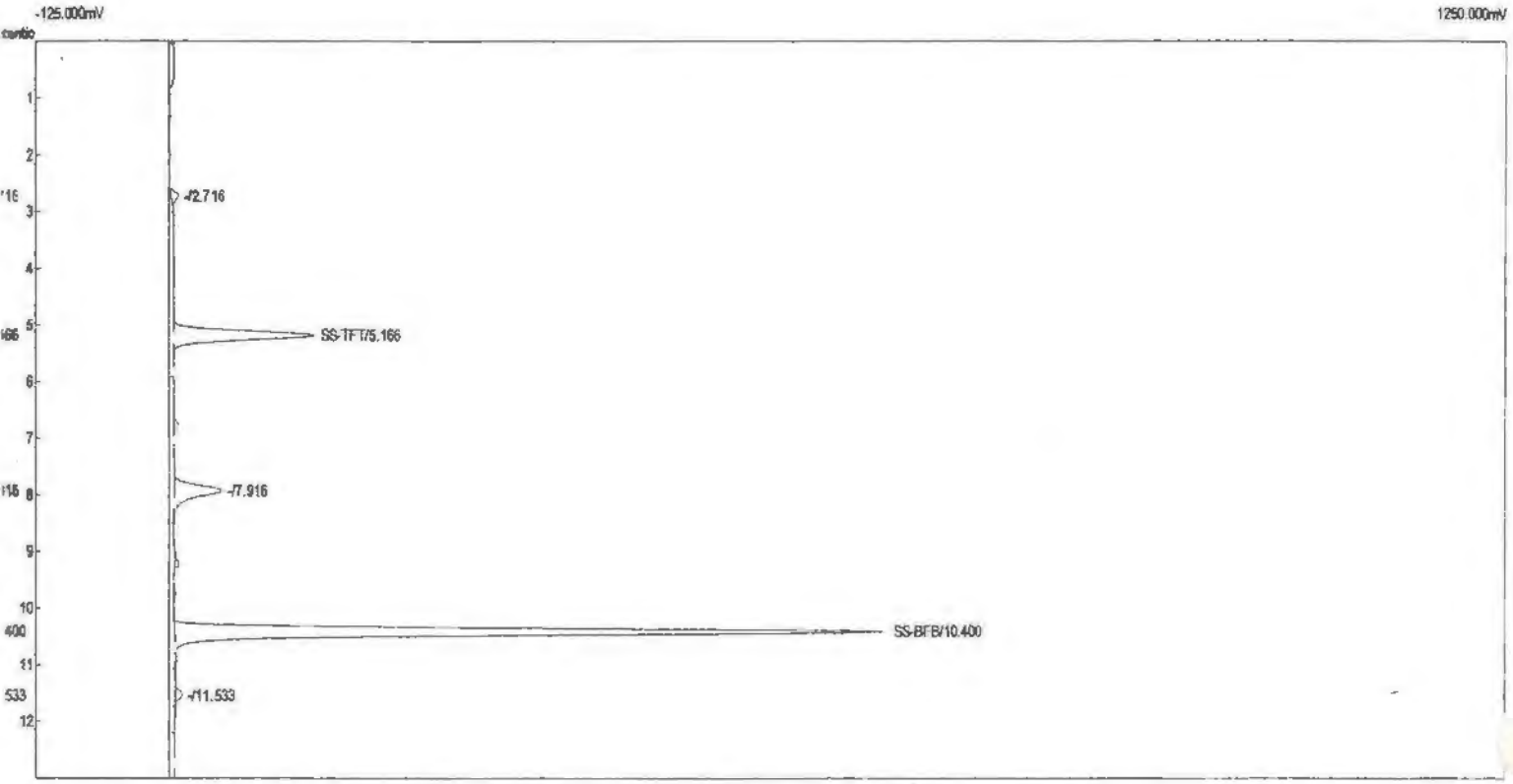
Component	Retention	Height	Area	External	Internal	Units
i-TFT	5.166	103.299	1119.418	12.52	12.5187	ppb
i-BFB	10.383	317.288	2646.296	11.61	11.6066	ppb
			3765.714	24.13	24.1252	

Lab name: On Site Labs Inc.
nalysis date: 03/19/2002 12:36:44
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P27.CHR ()
le: ILA024/0314CH2M
tor: MAP



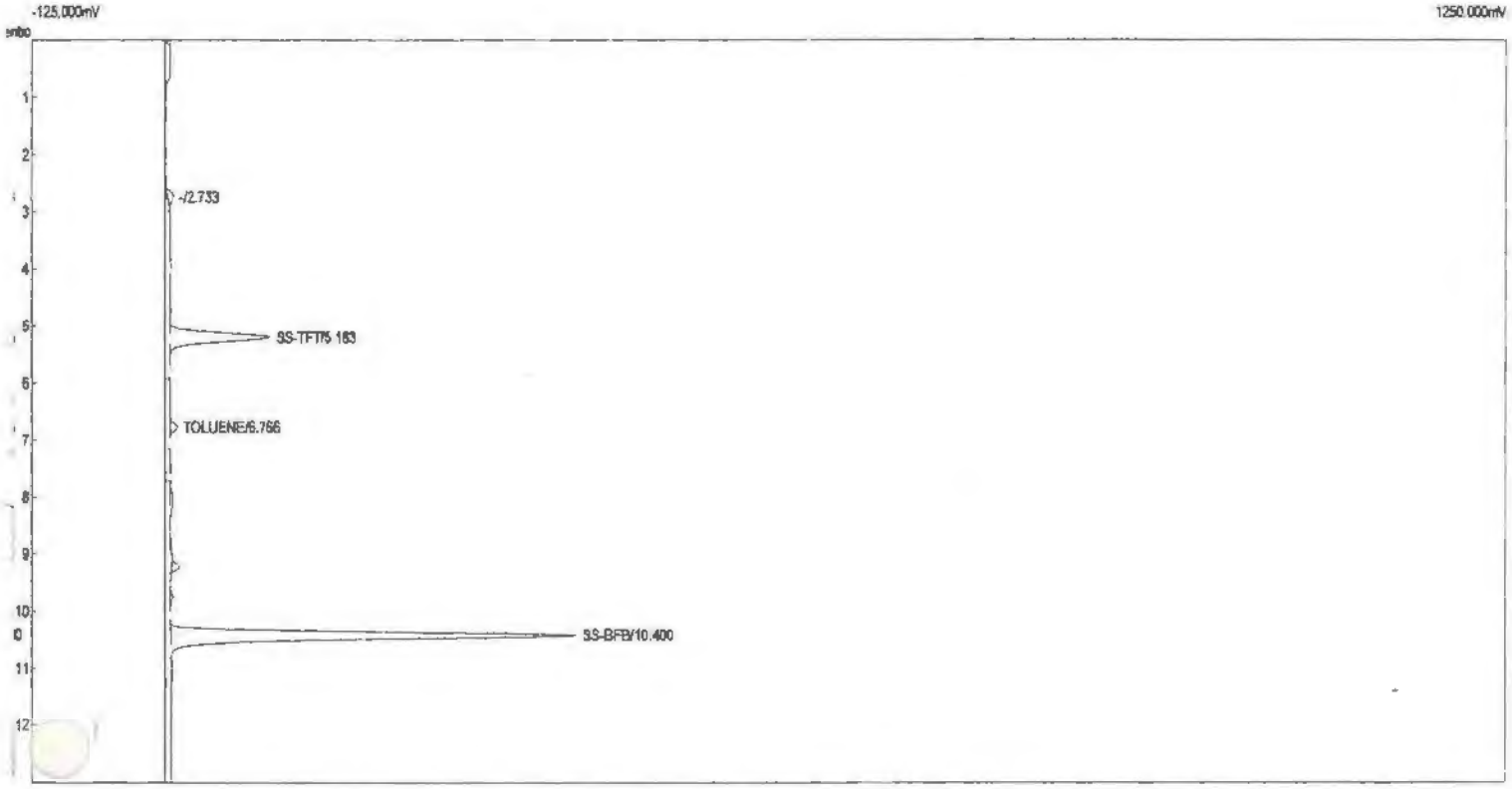
Component	Retention	Area	External	Internal	Units
-T	5.166	741.399	8.29	8.2912	ppb
-B	10.400	1505.316	6.60	6.6023	ppb
		2246.715	14.89	14.8935	

Analysis date: 03/19/2002 13:17:19
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P28.CHR ()
Sample: ILA025/0314CH2M
Operator: MAP



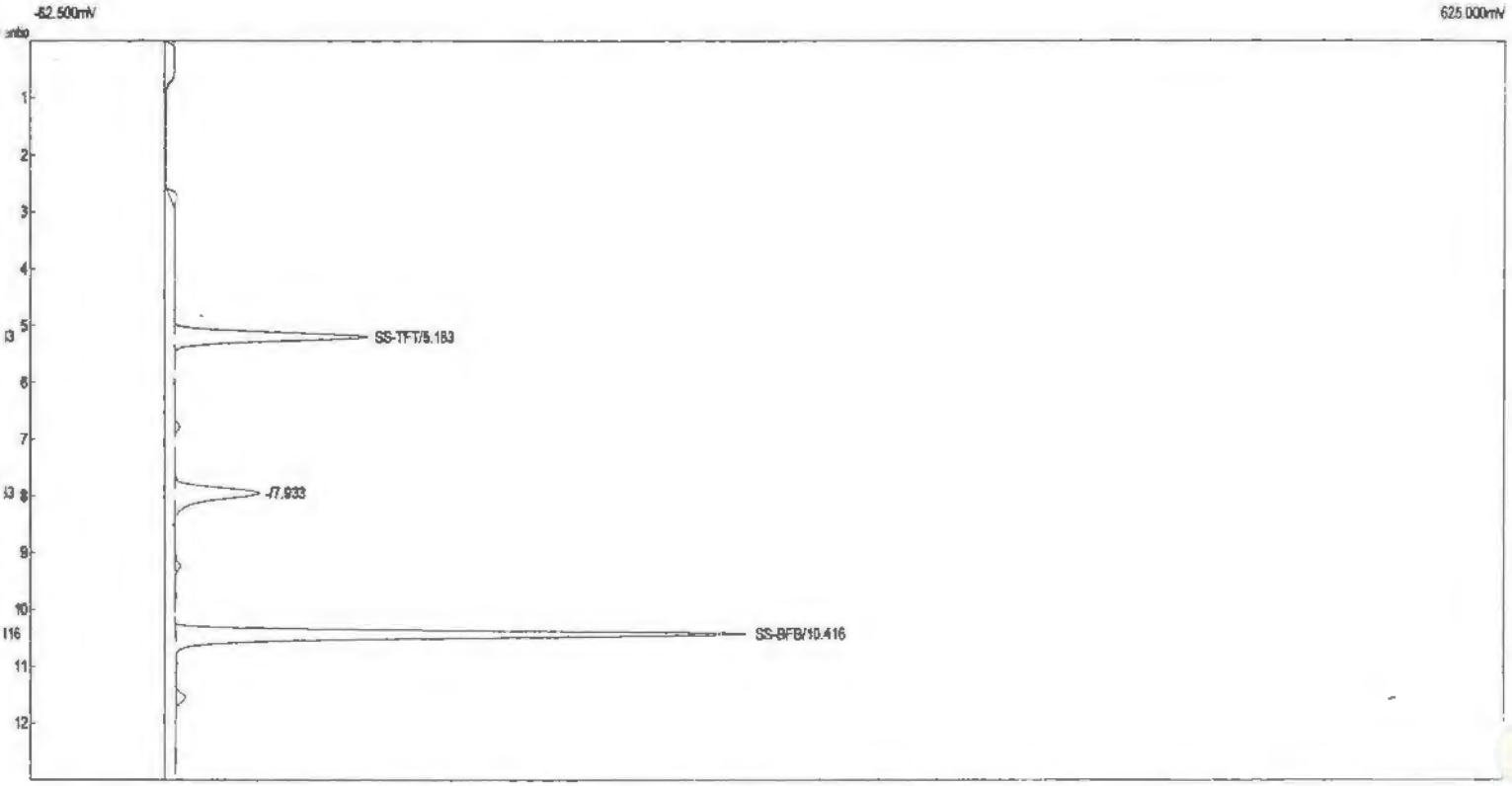
Component	Retention	Height	Area	External	Internal	Units
S-TFT	5.166	131.148	1416.602	15.84	15.8421	ppb
S-BFB	10.400	665.429	5551.930	24.35	24.3506	ppb
			6968.532	40.19	40.1927	

Lab name: On Site Labs Inc.
nalysis date: 03/19/2002 13:33:32
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P29.CHR ()
le: ILA027/0314CH2M
or: MAP



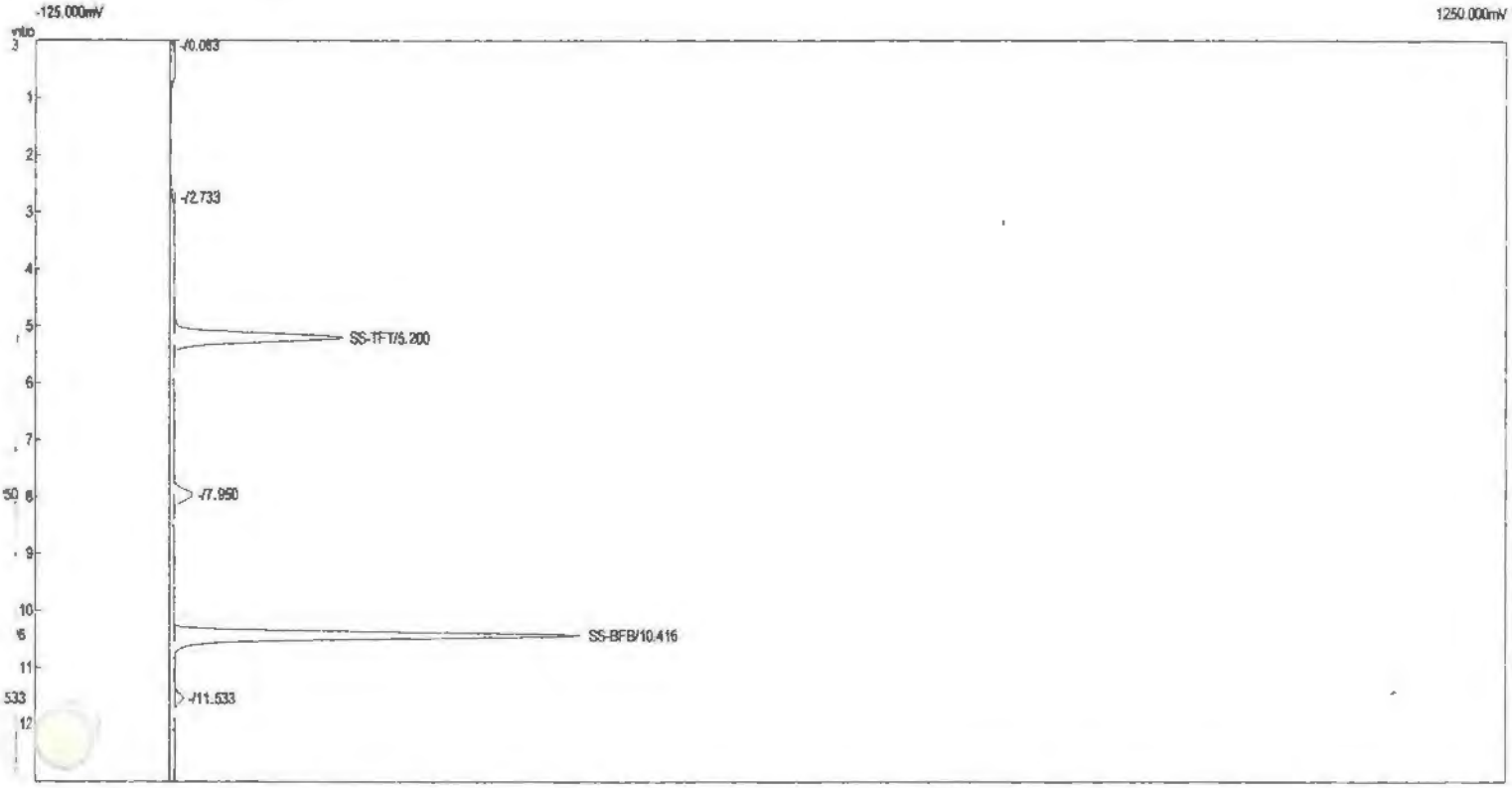
Component	Retention	Height	Area	External	Internal	Units
-TFT	5.183	94.418	1014.244	11.34	11.3425	ppb
OLUENE	6.766	7.133	65.064	0.80	0.8000	ppb
S-BFB	10.400	379.078	3321.164	14.57	14.5665	ppb
			4400.472	26.71	26.7090	

nalysis date: 03/19/2002 14:06:48
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P30.CHR ()
Sample: ILA028/0314CH2M
Operator: MAP



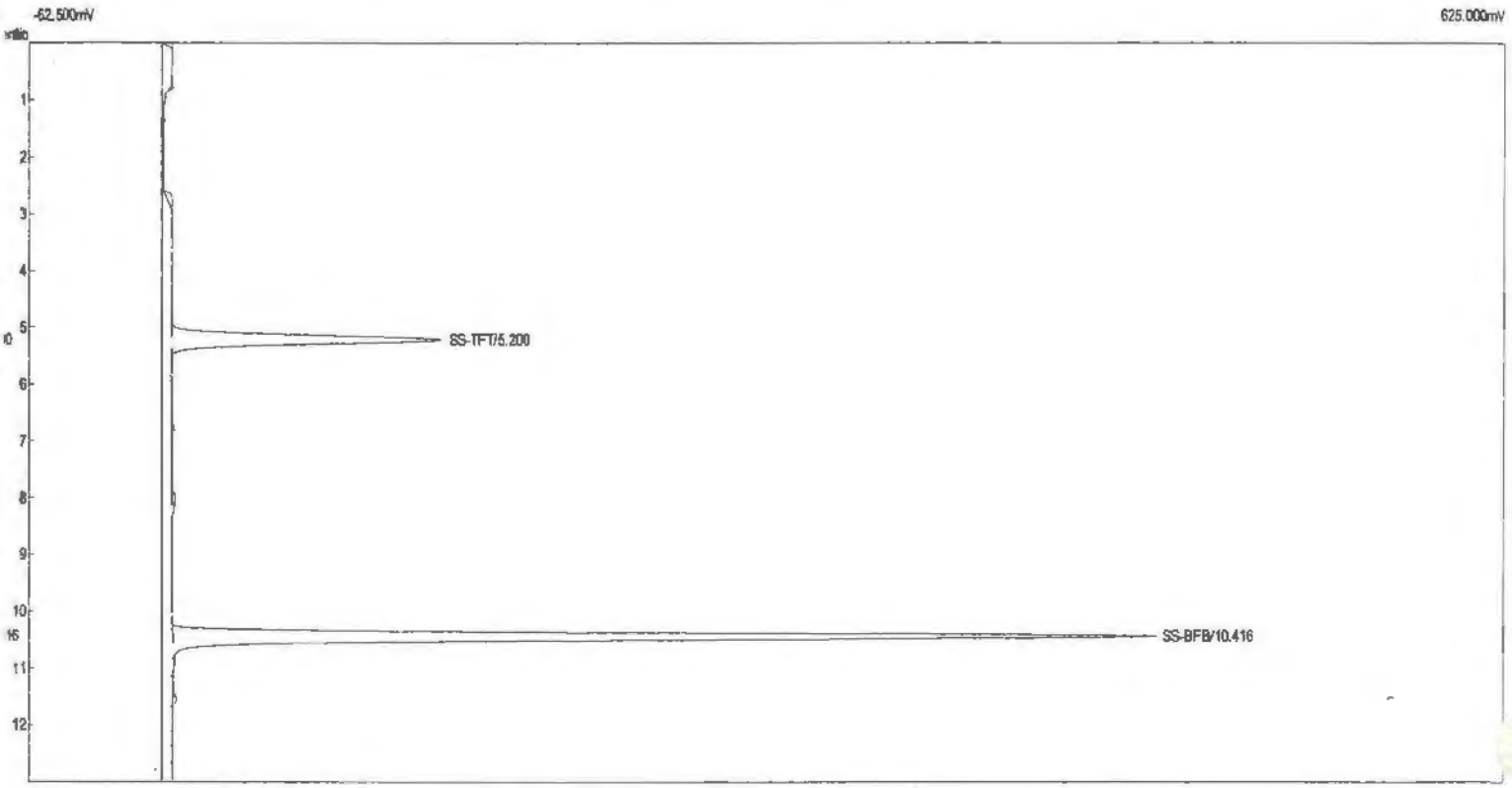
Component	Retention	Height	Area	External	Internal	Units
-TFT	5.183	90.932	983.713	11.00	11.0010	ppb
-BFB	10.416	268.227	2401.838	10.53	10.5344	ppb
			3385.551	21.54	21.5354	

Lab name: On Site Labs Inc.
Analysis date: 03/19/2002 14:36:54
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P31.CHR ()
File: JLA029/0314CH2M
Operator: MAP



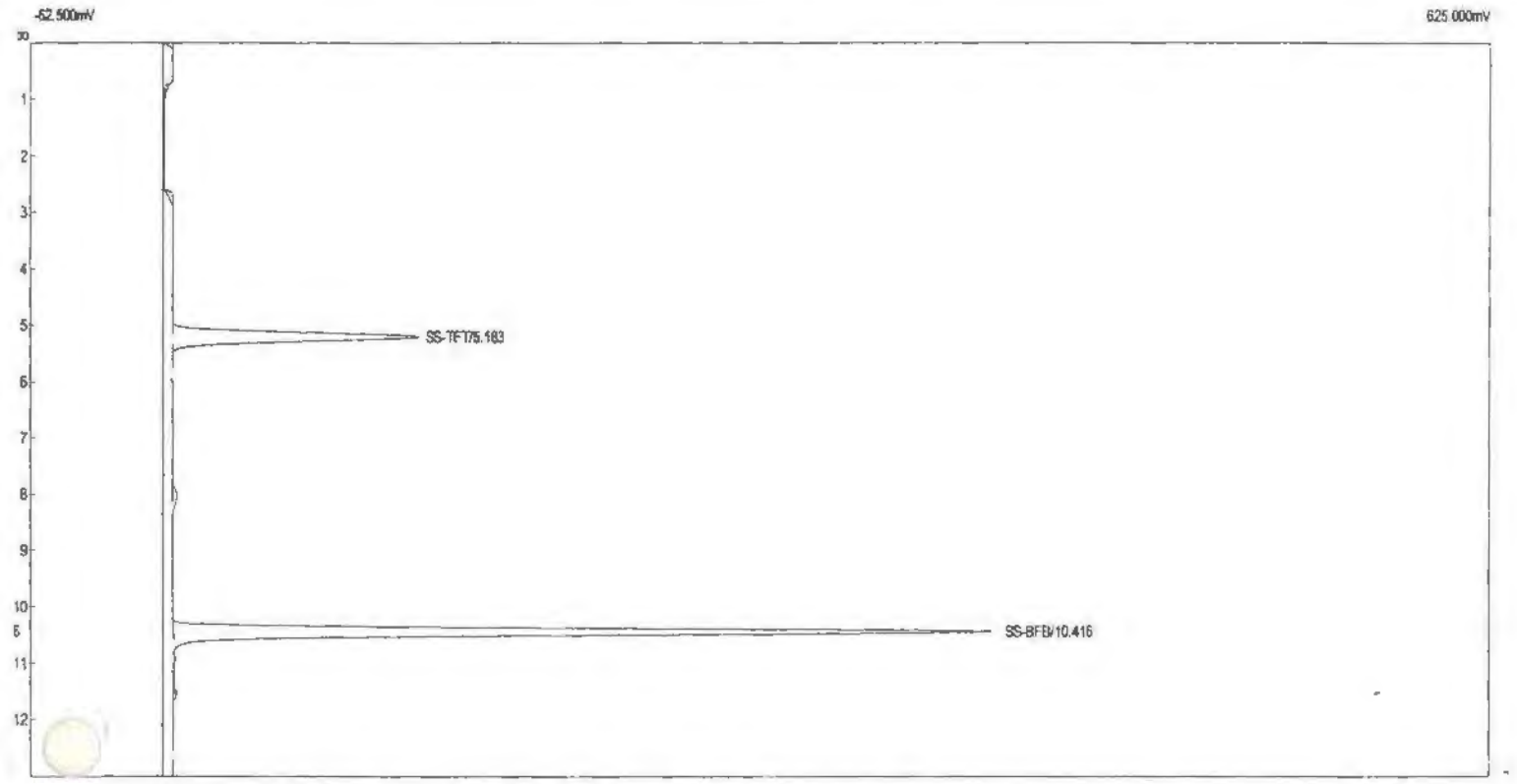
Component	Retention	Area	External	Internal	Units
-TFT	5.200	1724.820	19.29	19.2890	ppb
S-BFB	10.416	3253.286	14.27	14.2688	ppb
		4978.106	33.56	33.5578	

nalysis date: 03/19/2002 14:58:02
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P32.CHR ()
Sample: JLA030/0314CH2M
Operator: MAP



Component	Retention	Area	External	Internal	Units
S-TFT	5.200	1353.578	15.14	15.1373	ppb
S-BFB	10.416	3879.734	17.02	17.0164	ppb
		5233.312	32.15	32.1537	

alysis date: 03/19/2002 15:20:11
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
)escription: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P33.CHR ()
S-): JLA031/0314CH2M
C r: MAP



Component	Retention	Area	External	Internal	Units
-TFT	5.183	1262.136	14.11	14.1147	ppb
-BFB	10.416	3234.040	14.18	14.1844	ppb
		4496.178	28.30	28.2991	

On Site Labs, Inc.

PMB 627, HC-01 Box 29030 Caguas, PR 00725
Telephone 787-720-0329 Fax 787-789-3858

March 22, 2002
OSL Projects #02J0311CH2M

Mr. Tunch Orsoy
CH2M HILL
4350 W. Cypress Street, Suite 600
Tampa, Florida 33607

SUBJECT: DATA REPORT - CH2M HILL PROJECT NO. 167722.FI.FS
SITES 88 AND 1970 ROOSEVELT ROADS NAS
CEIBA, PUERTO RICO

Dear Mr. Orsoy:

Please find enclosed the analytical report for the samples collected by CH2M HILL personnel from the above-referenced site and delivered to On Site Labs' (OSL) facility under the proper chain-of-custody protocol. An OSL Puerto Rico certified-chemist performed the following analyses:

- 3 water samples analyzed for TPH-gas/diesel by modified EPA test method 8015B.
- 3 water samples analyzed for BTEX by modified EPA test method 8020A.
- Laboratory QA/QC analyses for TPH-gas/diesel and BTEX.

The analytical results are summarized in the attached table. Applicable detection limits, QA/QC data, chromatograms, a chain-of-custody and an invoice are attached.

OSL appreciates the opportunity to provide analytical services for this project. If you have any questions relating to the data or report, please do not hesitate to contact us.

Sincerely,
On Site Labs, Inc.

Kevin Shelburne
Principal

Attachments

QA/QC REPORT - CALIBRATION DATA

OSL Project #02I0318CH2M-3 — CH2M HILL PROJECT NO. 167722.FI.FQ

DAILY CALIBRATION DATE: 03/21/02 — PROJECT NAME: RRNAS SITES 1970 AND 88

			INITIAL		OPENING			CLOSING		
COMPOUND	DETECTOR	CALIB RANGE	RF	%RSD	AREA	RF	%DIFF	AREA	RF	%DIFF
TPH GASOLINE	FID #2 (gc5)	10 - 30,000	0.26	17.6%	152.69	0.25	0.6%	145.94	0.24	5.0%
TPH GASOLINE	FID #3 (gc5)	10 - 30,000	0.36	15.0%	201.99	0.34	7.0%	190.41	0.32	12.3%
TPH GASOLINE	FID #4 (gc5)	10 - 30,000	0.31	15.4%	195.21	0.33	6.3%	195.01	0.33	6.2%
TPH DIESEL	FID #2 (gc5)	25 - 20,000	0.69	14.1%	938.75	0.78	12.7%	839.48	0.70	0.8%
TPH DIESEL	FID #3 (gc5)	25 - 20,000	0.74	13.6%	962.29	0.80	8.5%	971.54	0.81	9.6%
TPH DIESEL	FID #4 (gc5)	25 - 20,000	0.61	11.1%	801.13	0.67	10.2%	729.31	0.61	0.3%

CALIB RANGE - RANGE OF CALIBRATION CURVE IN ppm
INITIAL RF - AVERAGE RESPONSE FACTOR FROM MULTIPOINT CALIBRATION CURVE
% RSD - LINEARITY OF MULTIPOINT CALIBRATION CURVE (+/- 20% ACCEPTABLE LIMITS)
AREA - AREA COUNTS FROM DAILY CALIBRATION STANDARD
RF - DETECTOR RESPONSE FACTOR FROM MID-POINT CALIBRATION STANDARD
% DIFF - DIFFERENCE, IN PERCENT, BETWEEN THE AVERAGE RF AND THE OPENING OR CLOSING RF (+/- 15% ACCEPTABLE LIMITS)
OPENING - MID-POINT CALIBRATION STANDARD ANALYZED BEFORE SAMPLE ANALYSES BEGIN
CLOSING - MID-POINT CALIBRATION STANDARD ANALYZED AFTER SAMPLES ANALYSES ARE COMPLETE

ANALYSES PERFORMED BY MARCO A PEDRAZA
DATA REVIEWED BY KEVIN SHELBURNE

ON SITE LABS, INC
PMB 627, HC-01 BOX 29030 CAGUAS, P R 00725
TELEPHONE (787) 720-0329 FAX 789-3858

QA/QC REPORT - MS/MSD DATA

MATRIX SPIKE (MS)/MATRIX SPIKE DUPLICATE (MSD)

OSL Project #02I0318CH2M-3
DATE: 03/21/02

CH2M HILL PROJECT NO. 167722 FI FO
PROJECT NAME. RRNAS SITES 1970 AND 88

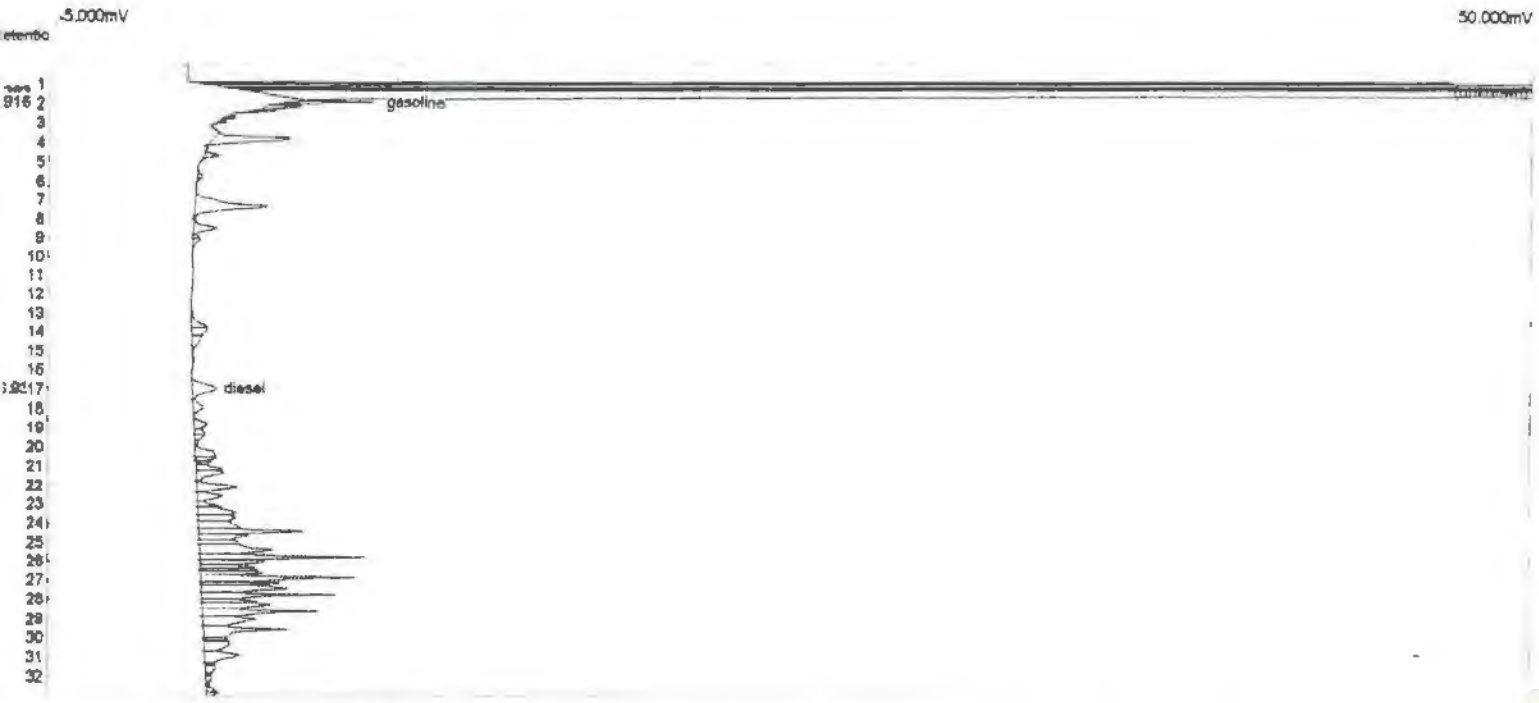
COMPOUND	SPK CON (ppm)	MS CONC (ppm)	%REC MS	MSD CONC (ppm)	%REC MSD	RPD	ACCEPTABLE RPD	ACCEPTABLE RECOVERY
TPH-GASOLINE	200	213	107%	189	94%	12%	15%	81% - 126%
TPH-DIESEL	400	392	98%	370	92%	6%	15%	74% - 131%

ppm = PARTS PER MILLION
MS CONC - ANALYZED CONCENTRATION OF SPIKED SAMPLE
% REC - PERCENT RECOVERY OF SPIKE FROM MATRIX
RPD - RELATIVE PERCENT DIFFERENCE BETWEEN MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES

ANALYSES PERFORMED BY MARCO A PEDRAZA
DATA REVIEWED BY KEVIN SHELBURNE

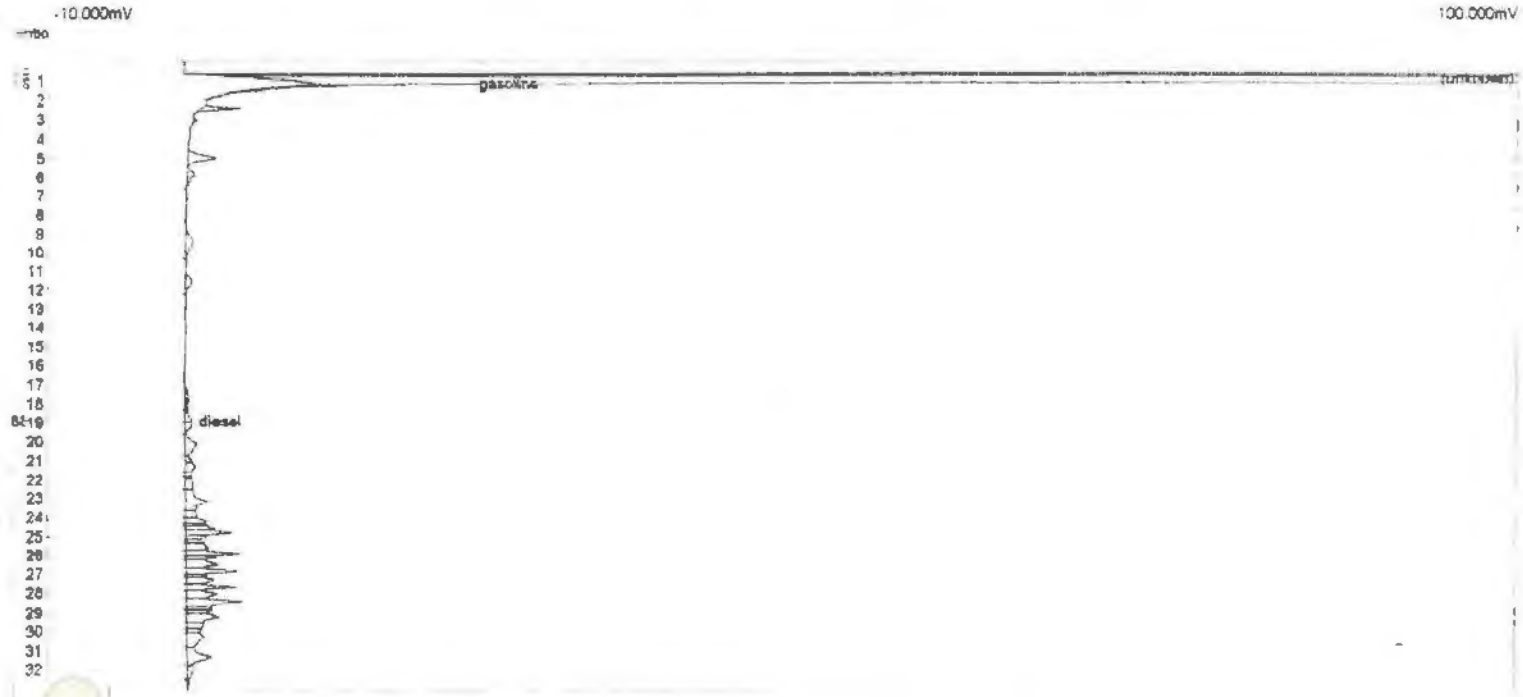
ON SITE LABS, INC
PMB 627, HC-01 BOX 29030, CAGUAS, P R 00725
TELEPHONE (787) 720-0329 FAX 789-3858

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 11:07:52
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0318fb17.CHR ()
Sample: 150/300 ppm G/D open
Operator: MAP



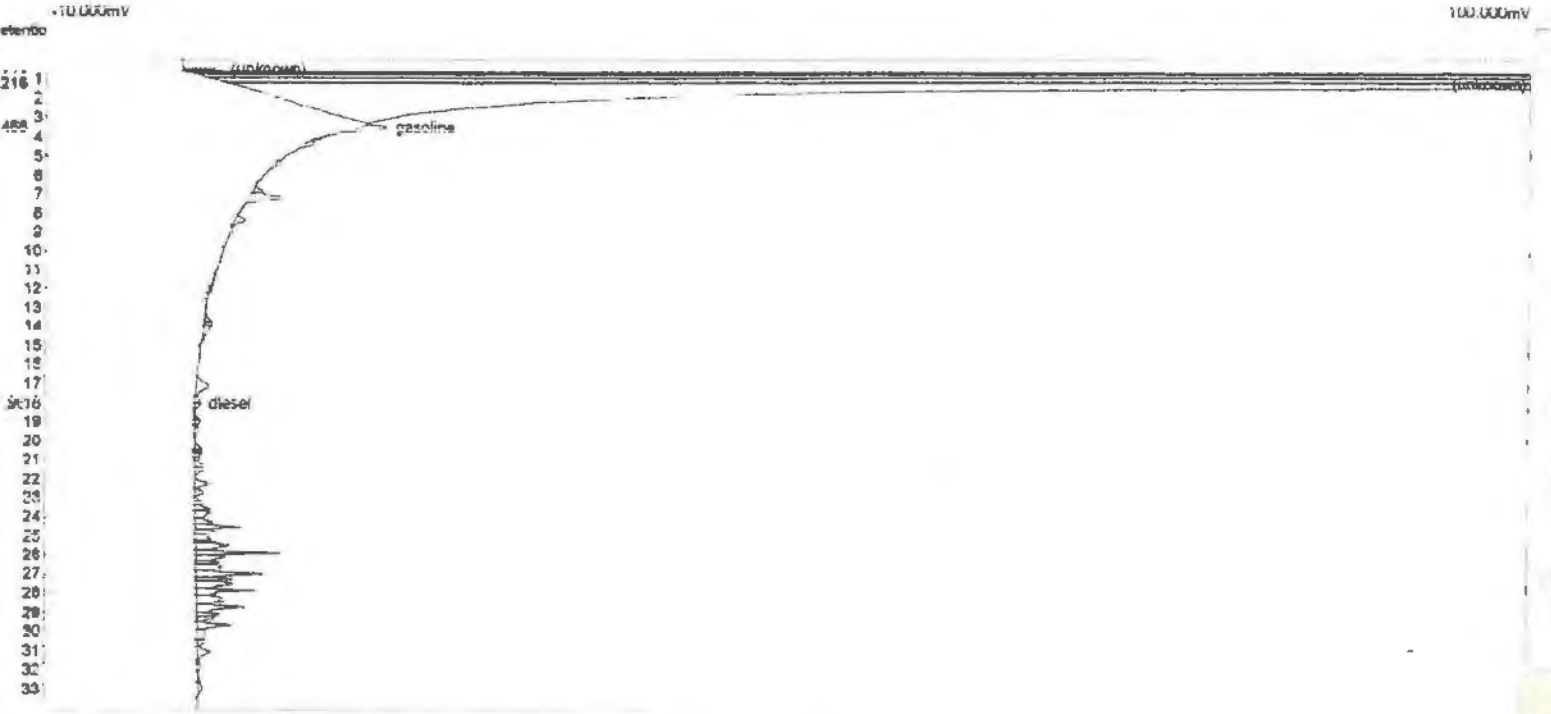
Component	Retention	Area	External	Units
asoline	1.916	152.694	149.12	
esel	16.933	938.746	338.16	ppm
		1091.440	487.28	

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 11:07:52
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0318fc17.CHR ()
Sample: 150/300 ppm G/D open
Operator: MAP



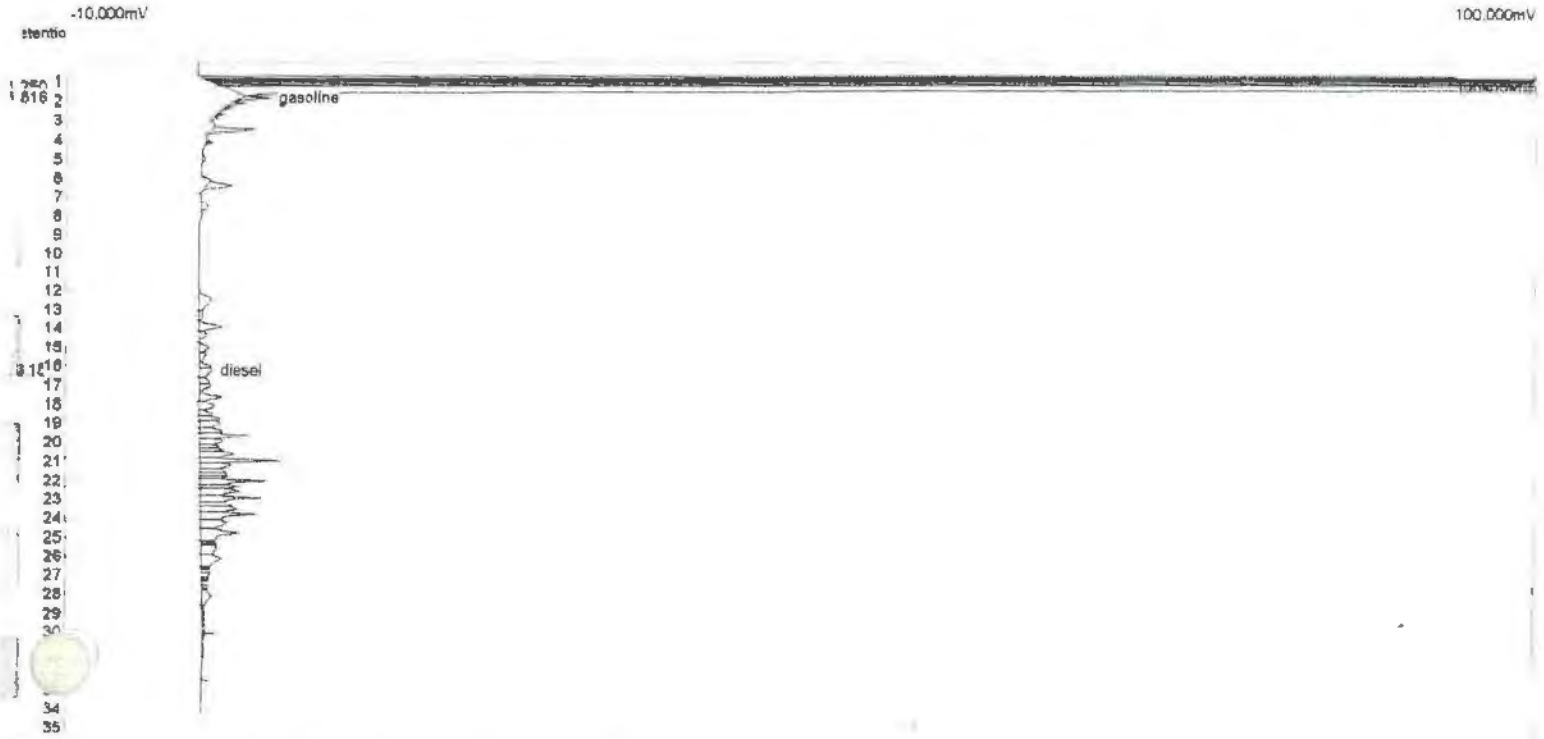
Component	Retention	Area	External	Units
gasoline	1.116	201.989	139.50	
diesel	18.883	962.289	325.54	ppm
		1164.278	465.03	

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 11:07:52
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0321fd1.CHR ()
Sample: 150/300 ppm G/D open
Operator: MAP



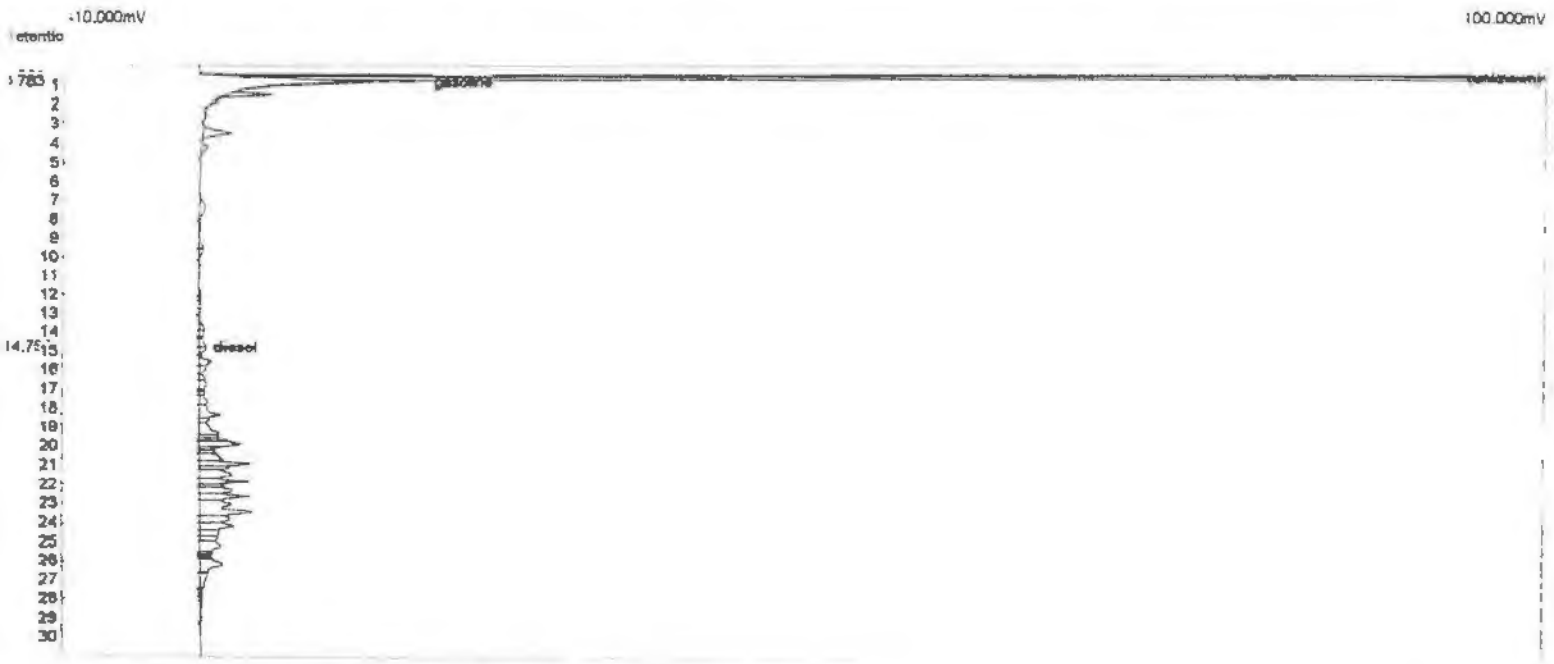
Component	Retention	Area	External	Units
gasoline	3.466	195.209	159.48	
diesel	17.956	801.131	330.50	ppm
		996.341	489.98	

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 15:08:20
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0321fb8.CHR ()
Sample: 150/300 ppm G/D CLOSE
Operator: MAP



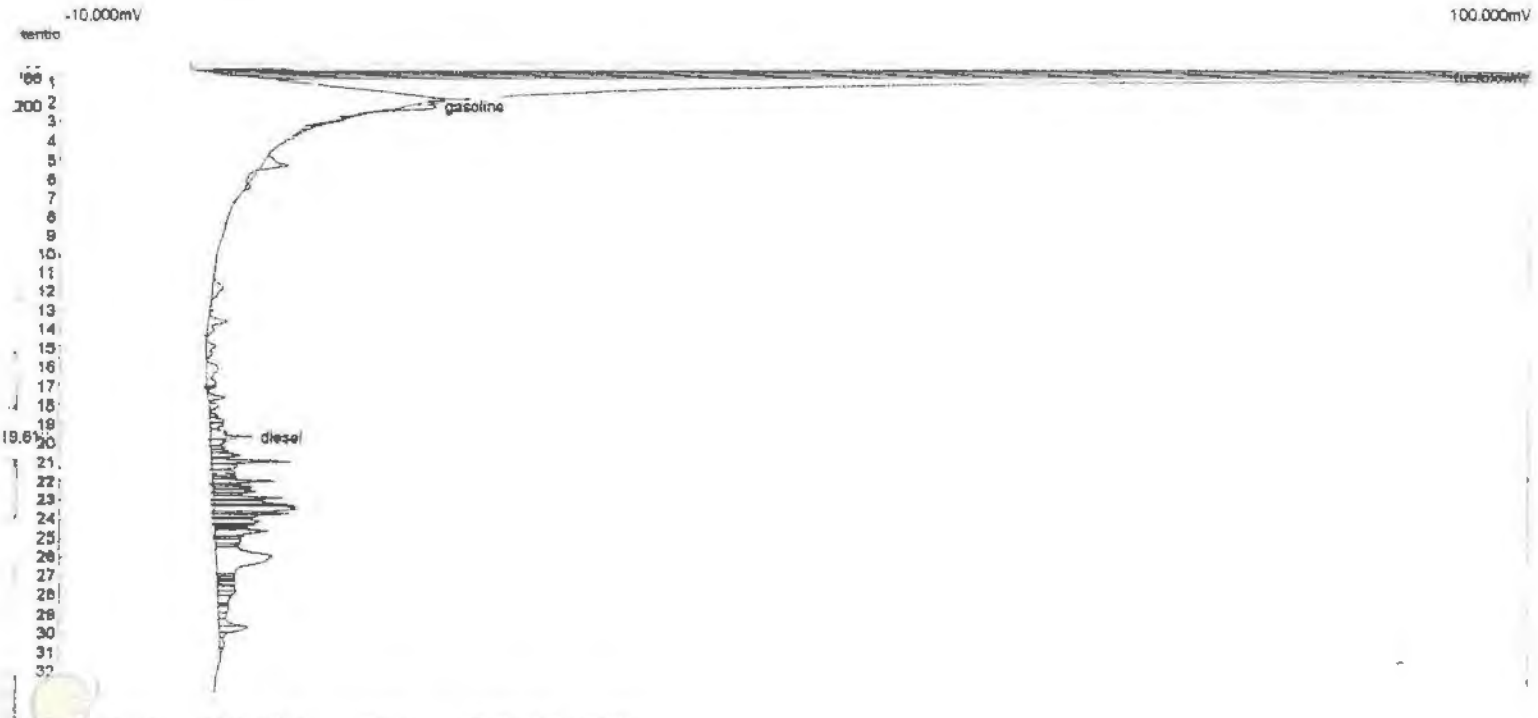
Component	Retention	Area	External	Units
gasoline	1.816	145.940	142.52	
diesel	16.183	839.476	302.40	ppm
		985.417	444.92	

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 15:08:20
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0321fc8.CHR ()
Sample: 150/300 ppm G/D CLOSE
Operator: MAP



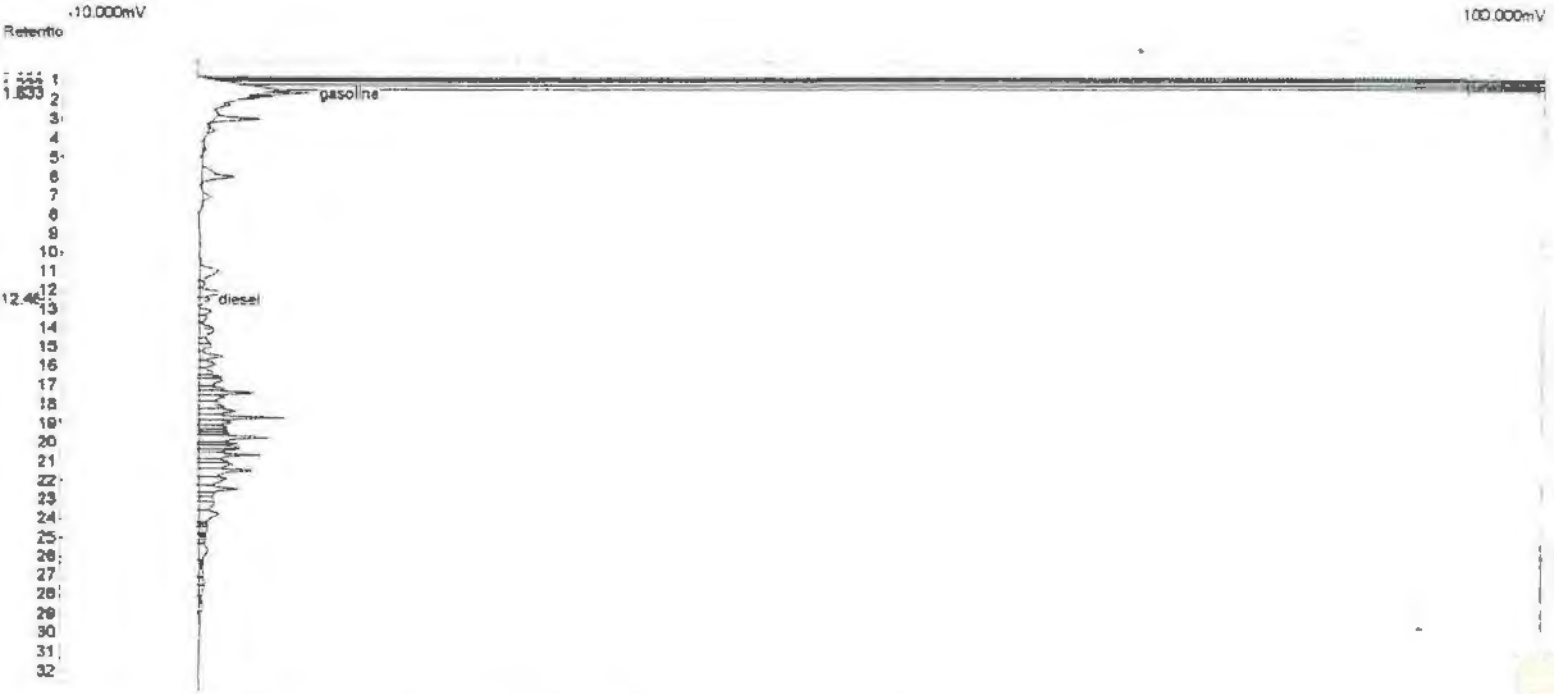
Component	Retention	Area	External	Units
gasoline	0.783	190.411	131.50	
diesel	14.750	971.542	328.67	ppm
		1161.953	460.17	

Lab name: On Site Labs Inc
nalysis date: 03/21/2002 15:08:20
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
ier: N2
file: 0321fd8.CHR ()
ample: 150/300 ppm G/D CLOSE
Operator: MAP



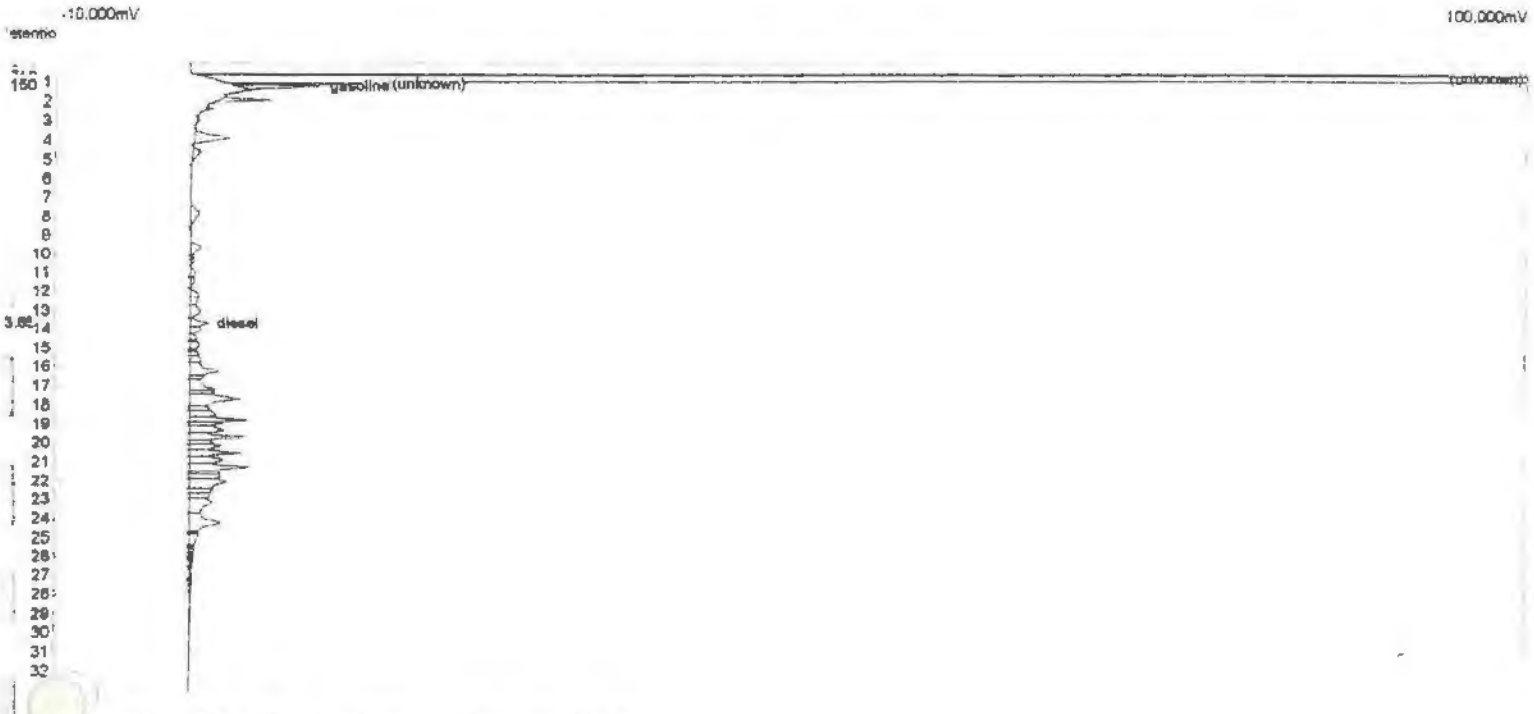
Component	Retention	Area	External	Units
asoline	2.200	195.013	159.32	
iesel	19.616	729.306	300.87	ppm
		924.319	460.19	

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 12:02:46
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0321fb2.CHR ()
Sample: blank matrix spike
Operator: MAP



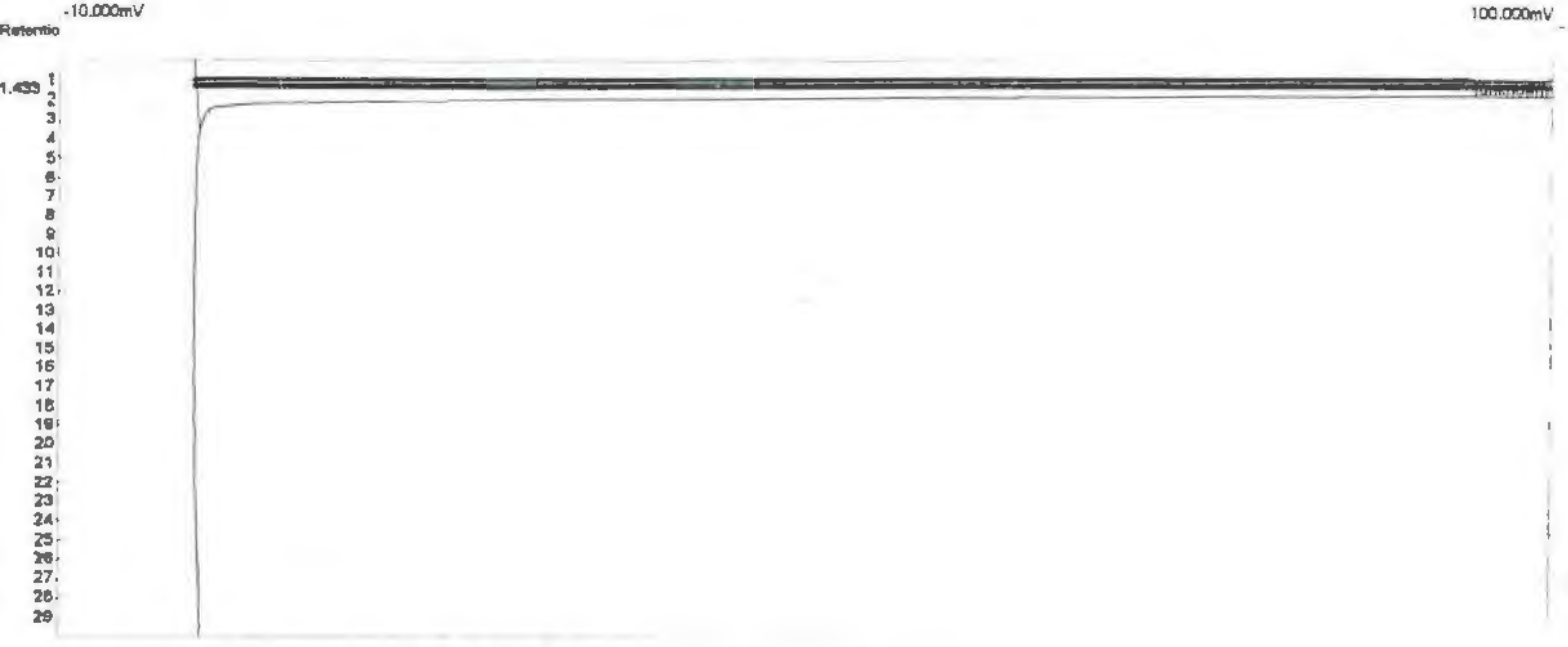
Component	Retention	Area	External	Units
gasoline	1.633	218.396	213.28	
diesel	12.466	1089.296	392.40	ppm
		1307.691	605.67	

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 12:02:46
Method: EPA 8015B mod
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
rier: N2
file: 0321fc2.CHR ()
mple: blank matrix spike duplicat
Operator: MAP



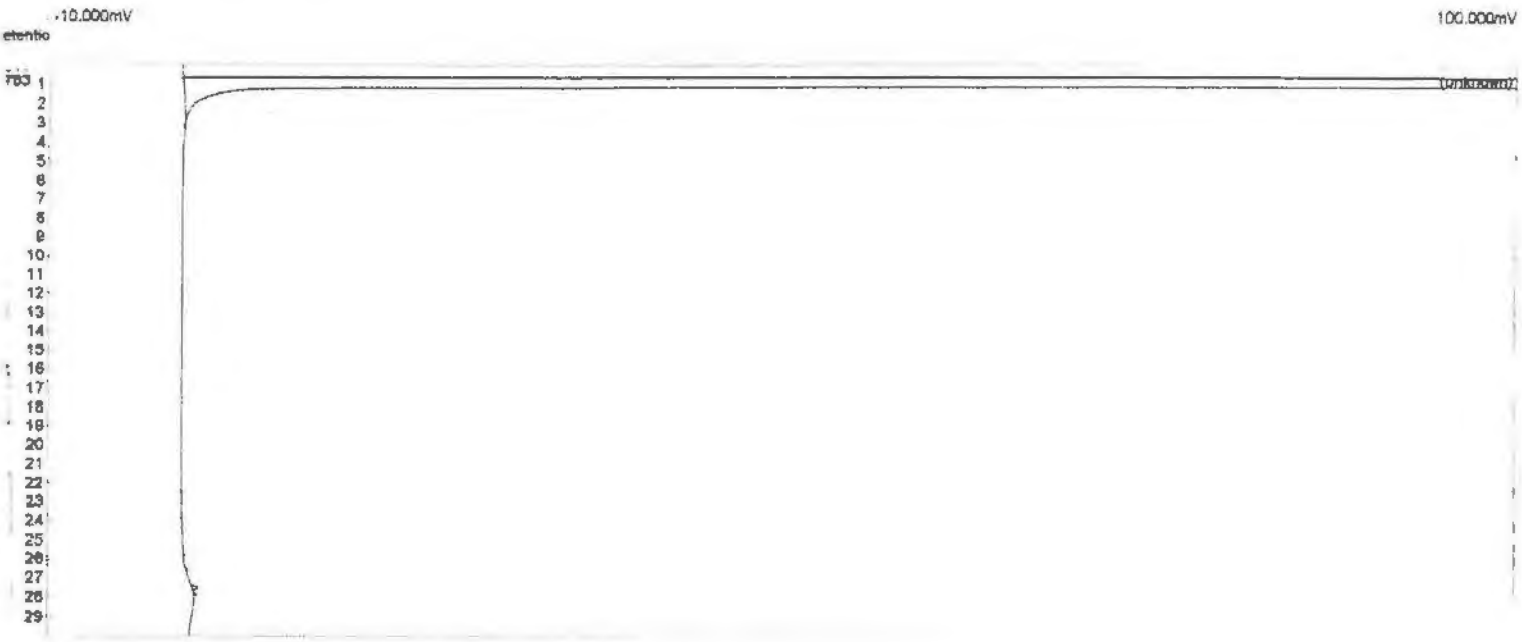
Component	Retention	Area	External	Units
asoline	1.150	273.542	188.91	
esel	13.650	1093.666	369.98	ppm
		1367.208	558.89	

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 12:45:13
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0321fb3.CHR ()
Sample: METHOD BLANK
Operator: MAP



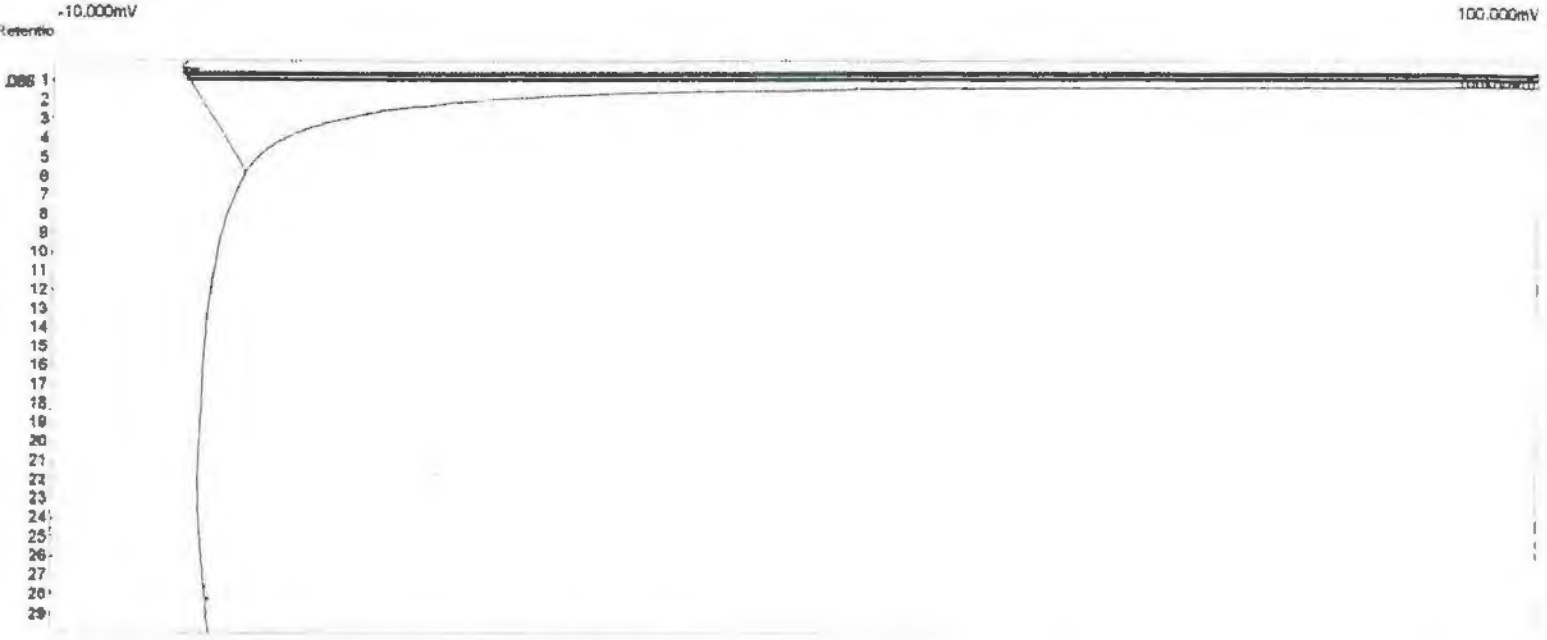
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 12:45:13
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0321fc3.CHR ()
Sample: METHOD BLANK
Operator: MAP



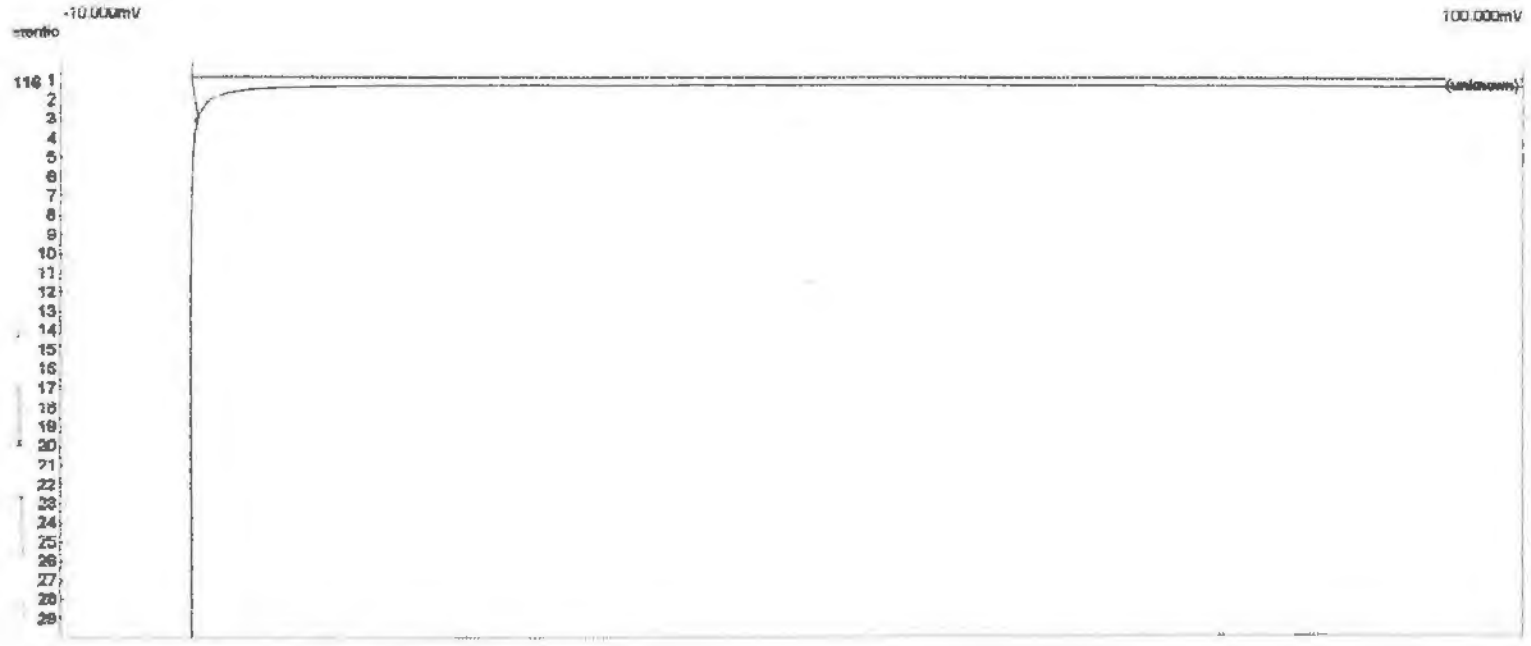
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 12:45:13
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0321fd3.CHR ()
Sample: METHOD BLANK
Operator: MAP



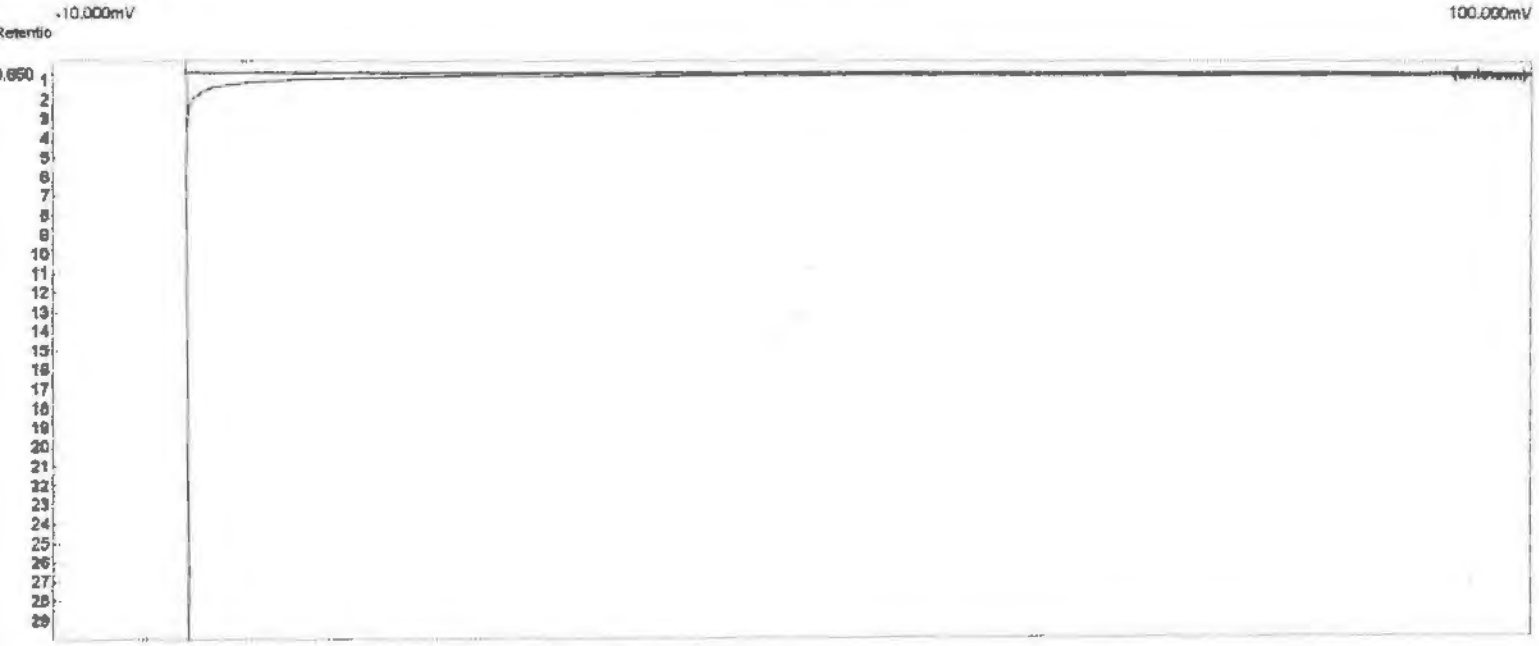
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 13:21:35
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
[illegible] file: 0321fb4.CHR ()
[illegible]ple: ILA029/0318CH2M-3
[illegible]rator: MAP



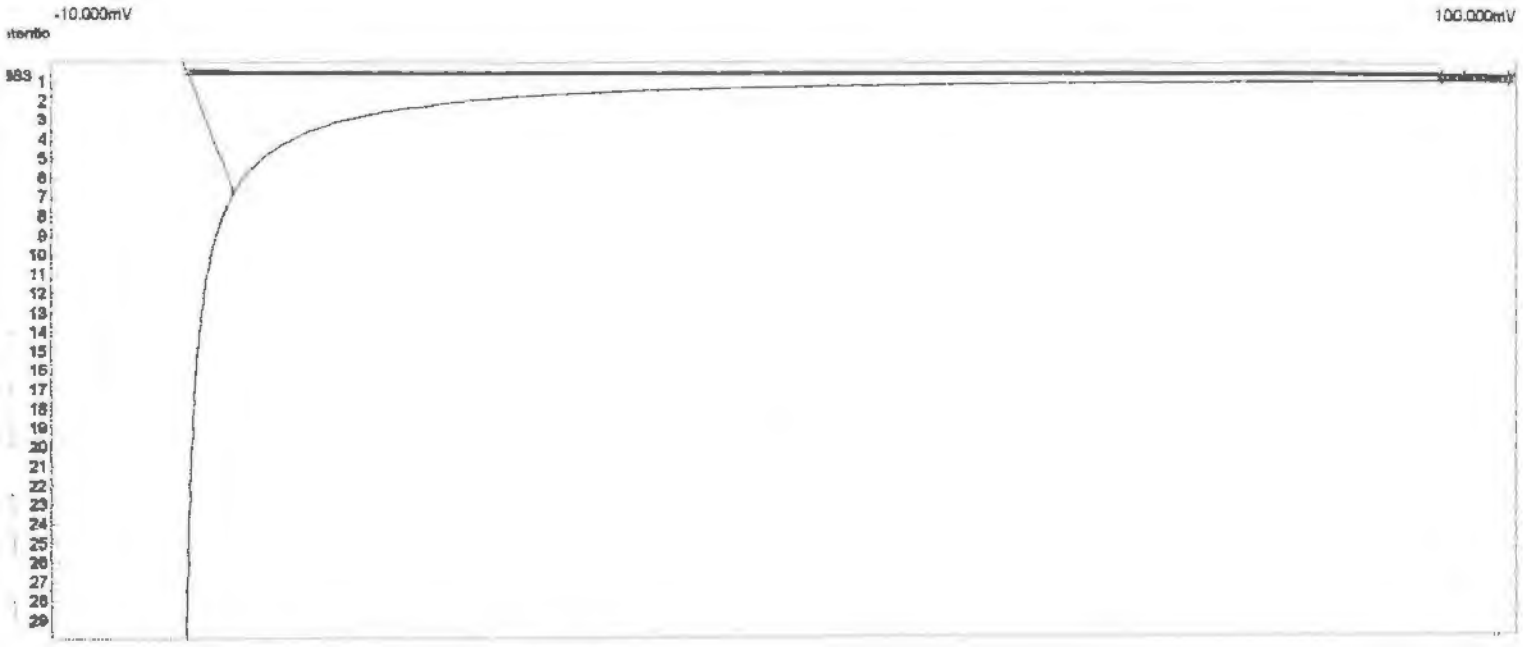
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 13:21:35
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0321fc4.CHR ()
Sample: ILA030/0318CH2M-3
Operator: MAP



Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/21/2002 13:21:35
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0321fd4.CHR ()
Sample: JLA032/0318CH2M-3
Operator: MAP



Component	Retention	Area	External	Units
		0.000	0.00	

QA/QC REPORT - CALIBRATION DATA

OSL Project #02I0318CH2M-3
DAILY CALIBRATION DATE: 03/21/02

CH2M HILL PROJECT NO. 167722.FI.FQ
PROJECT NAME: RRNAS SITES 1970 AND 88, CEIBA

			INITIAL		OPENING			CLOSING		
COMPOUND	DETECTOR	CALIB RANGE	RF	%RSD	AREA	RF	%DIFF	AREA	RF	%DIFF
BENZENE	P&T - GC3	0.5 - 75.0	85.78	8.1%	435.45	87.09	1.5%	607.25	86.75	1.1%
TOLUENE	P&T - GC3	0.5 - 75.0	81.33	8.2%	410.30	82.06	0.9%	585.47	83.64	2.8%
ETHYLBENZENE	P&T - GC3	0.5 - 75.0	65.84	13.6%	308.07	61.61	6.4%	463.54	66.22	0.6%
m&p-XYLENES	P&T - GC3	1.0 - 150	98.46	16.8%	983.32	98.33	0.1%	1386.49	99.04	0.6%
o-XYLENES	P&T - GC3	0.5 - 75.0	73.19	17.4%	370.11	74.02	1.1%	532.58	76.08	4.0%

CALIB RANGE - RANGE OF CALIBRATION CURVE IN ppb
INITIAL RF - AVERAGE RESPONSE FACTOR FROM MULTIPOINT CALIBRATION CURVE
% RSD - LINEARITY OF MULTIPOINT CALIBRATION CURVE (+/- 20% ACCEPTABLE LIMITS)
AREA - AREA COUNTS FROM DAILY CALIBRATION STANDARD
RF - DETECTOR RESPONSE FACTOR FROM MID-POINT CALIBRATION STANDARD
% DIFF - DIFFERENCE, IN PERCENT, BETWEEN THE AVERAGE RF AND THE OPENING OR CLOSING RF (+/- 20% ACCEPTABLE LIMITS)
OPENING - MID-POINT CALIBRATION STANDARD ANALYZED BEFORE SAMPLE ANALYSES BEGIN
CLOSING - MID-POINT CALIBRATION STANDARD ANALYZED AFTER SAMPLES ANALYSES ARE COMPLETE

ANALYSES PERFORMED BY MARCO A. PEDRAZA
DATA REVIEWED BY KEVIN SHELBURNE

ON SITE LABS, INC
PMB 627 HC-01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE (787) 720-0329 FAX 789-3858

QA/QC REPORT - MS/MSD DATA

MATRIX SPIKE (MS)/MATRIX SPIKE DUPLICATE (MSD)

OSL PROJECT #02I0318CH2M-3 — CH2M HILL PROJECT NO 167722 FI FO

DATE: 03/21/02 — PROJECT NAME: RRNAS SITES 1970 AND 88

COMPOUND	SPK CONC (ppb)	MS CONC (ppb)	%REC MS	MSD CONC (ppb)	%REC MSD	RPD	ACCEPTABLE RPD	ACCEPTABLE RECOVERY
BENZENE	7.0	7.1	102%	6.9	99%	3%	20%	82% - 117%
TOLUENE	7.0	7.3	105%	7.0	100%	5%	20%	87% - 120%
ETHYLBENZENE	7 0	7 0	100%	6 6	94%	6%	20%	83% - 131%
TOTAL XYLENES	21 0	21.1	100%	21 0	100%	0%	20%	87% - 123%

ppb = PARTS PER BILLION

MS CONC - ANALYZED CONCENTRATION OF SPIKED SAMPLE

% REC - PERCENT RECOVERY OF SPIKE FROM MATRIX

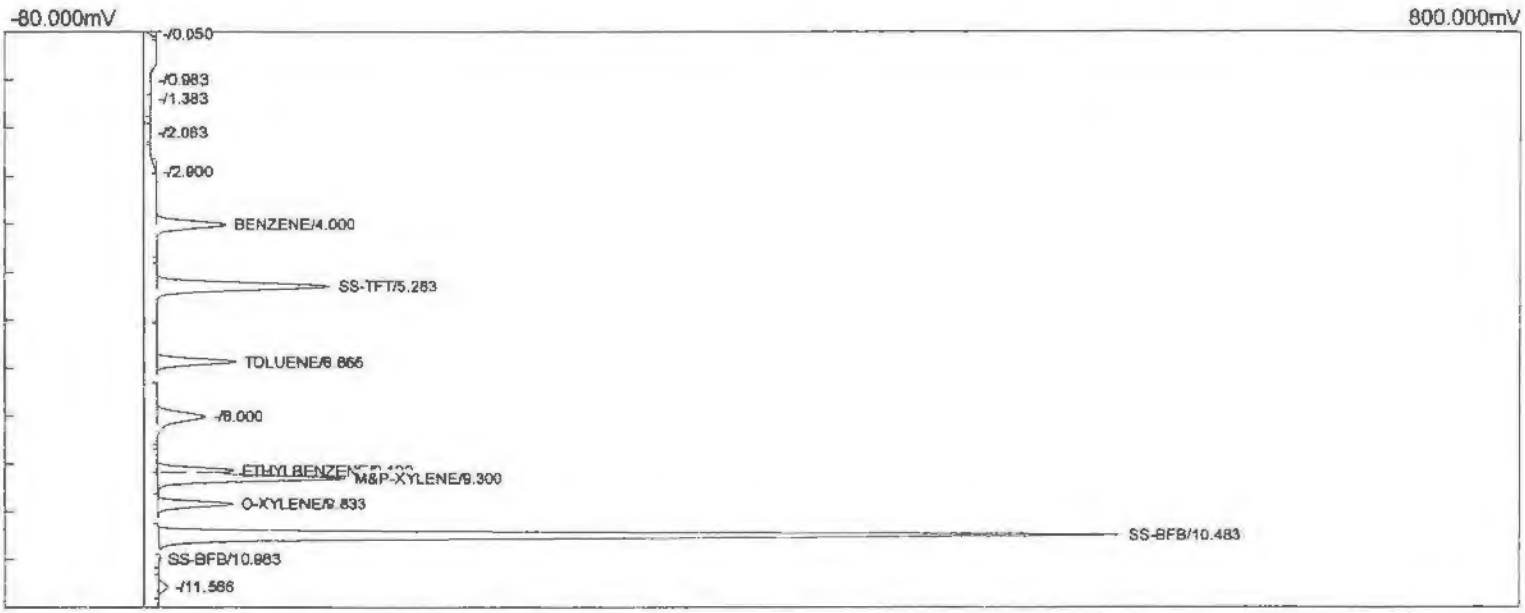
RPD - RELATIVE PERCENT DIFFERENCE BETWEEN MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES

ANALYSES PERFORMED BY MARCO A PEDRAZA

DATA REVIEWED BY KEVIN SHELBURNE

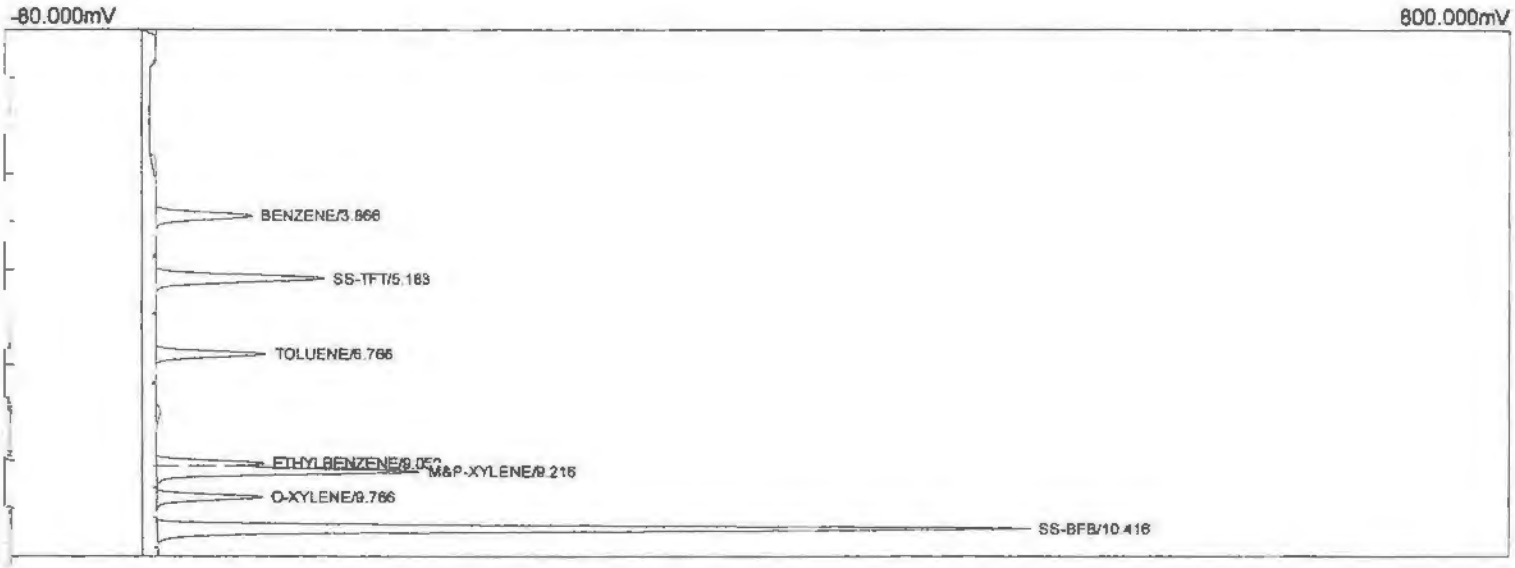
ON SITE LABS, INC
PMB 627, HC-01 BOX 29030, CAGUAS, P R 00725
TELEPHONE (787) 720-0329 FAX 789-3858

Analysis date: 03/21/2002 10:08:11
Method: EPA 8020A mod.
Lab ID: GC-1
Description: PID-CHANNEL 1
Column: Rtx-5 30m, .53mm, 5.0um
Carrier: Nitrogen 1 kg/cm3
Data file: 0213P34.CHR ()
Sample: 5 ppb BTEX OPEN STD
Operator: MAP



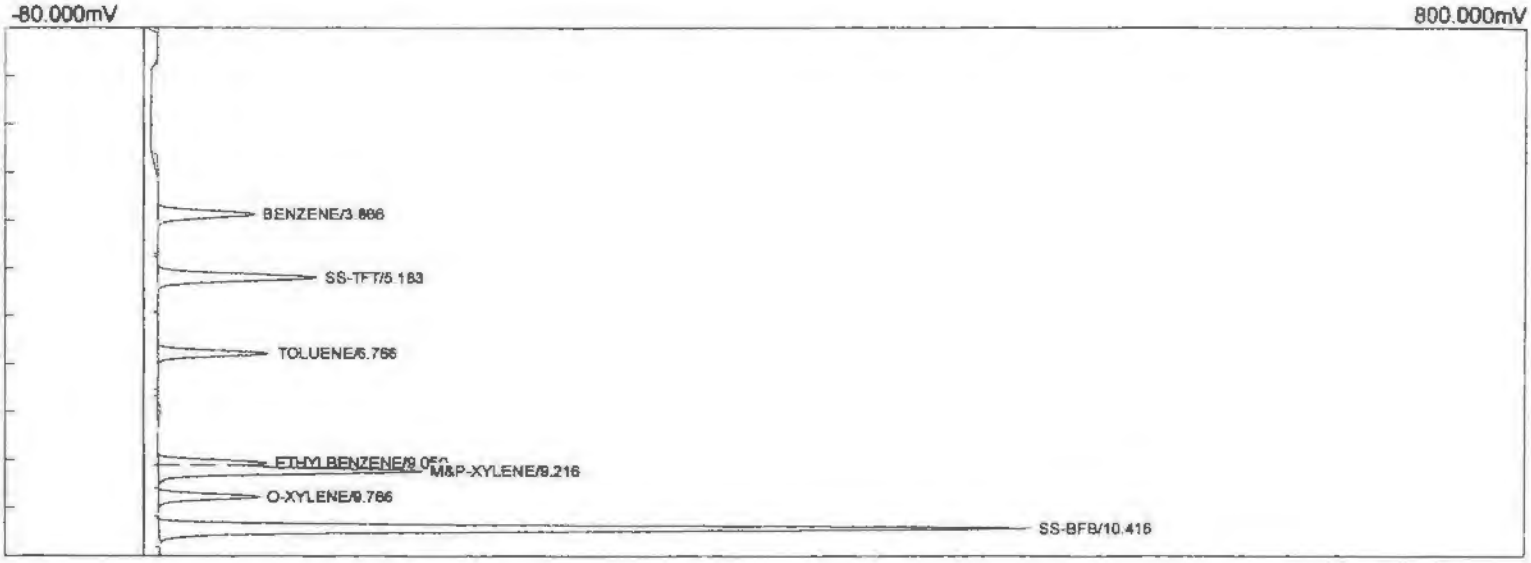
Component	Retention	Area	External	Internal	Units
ENZENE	4.000	435.448	5.08	5.0763	ppb
S-TFT	5.283	1087.754	12.16	12.1645	ppb
OLUENE	6.866	410.303	5.04	5.0449	ppb
THYLBENZENE	9.133	308.065	4.68	4.6790	ppb
&P-XYLENE	9.300	983.321	9.99	9.9870	ppb
-XYLENE	9.833	370.108	5.06	5.0568	ppb
S-BFB	10.483	4485.610	19.67	19.6737	ppb
S-BFB	10.983	7.084	0.03	0.0311	ppb
		8087.692	61.71	61.7134	

Lab name: On Site Labs Inc.
Analysis date: 03/21/2002 14:37:03
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: C:\PEAKWIN\0321P11.CHR ()
File: 7 ppb BTEX CLOSE STD
Operator: MAP



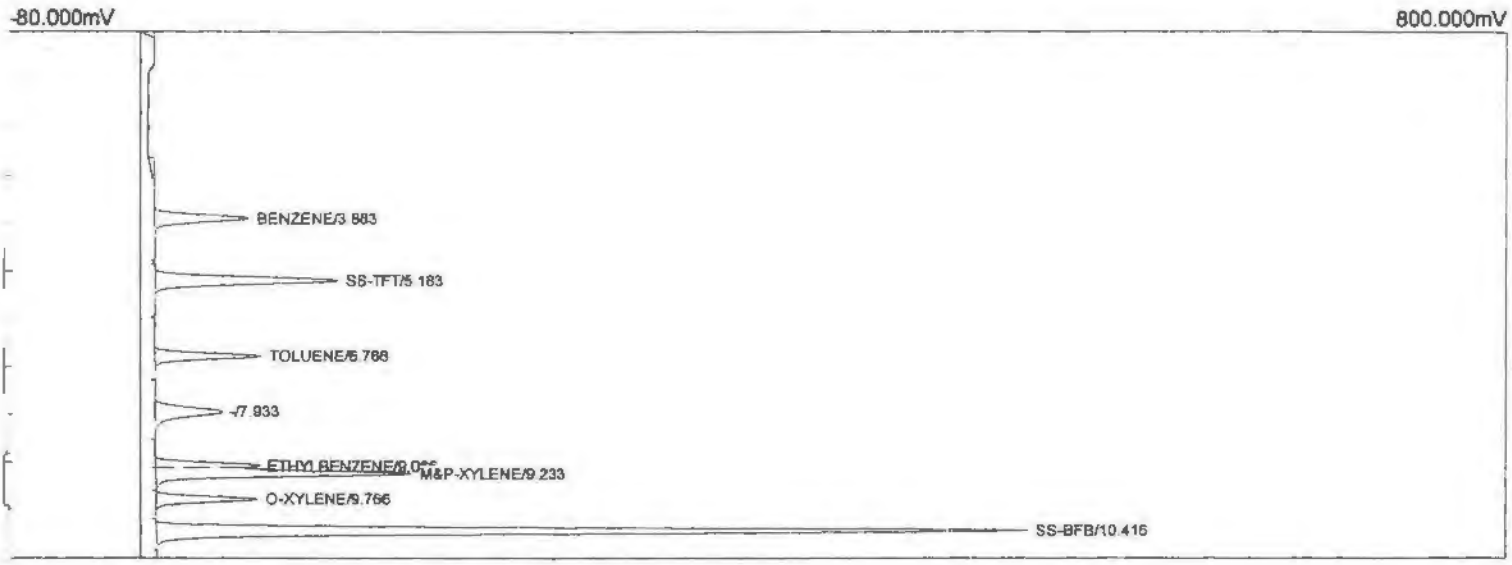
Component	Retention	Area	External	Internal	Units
NZENE	3.866	607.250	7.08	7.0792	ppb
-TFT	5.183	1090.307	12.19	12.1931	ppb
OLUENE	6.766	585.474	7.20	7.1987	ppb
THYL IZENE	9.050	463.541	7.04	7.0404	ppb
.NE	9.216	1386.492	14.08	14.0818	ppb
E	9.766	532.578	7.28	7.2766	ppb
S-BFB	10.416	4226.782	18.54	18.5385	ppb
		8892.424	73.41	73.4084	

Analysis date: 03/21/2002 13:27:02
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0321P9.CHR ()
Sample: JLA032matrix spike
Operator: MAP



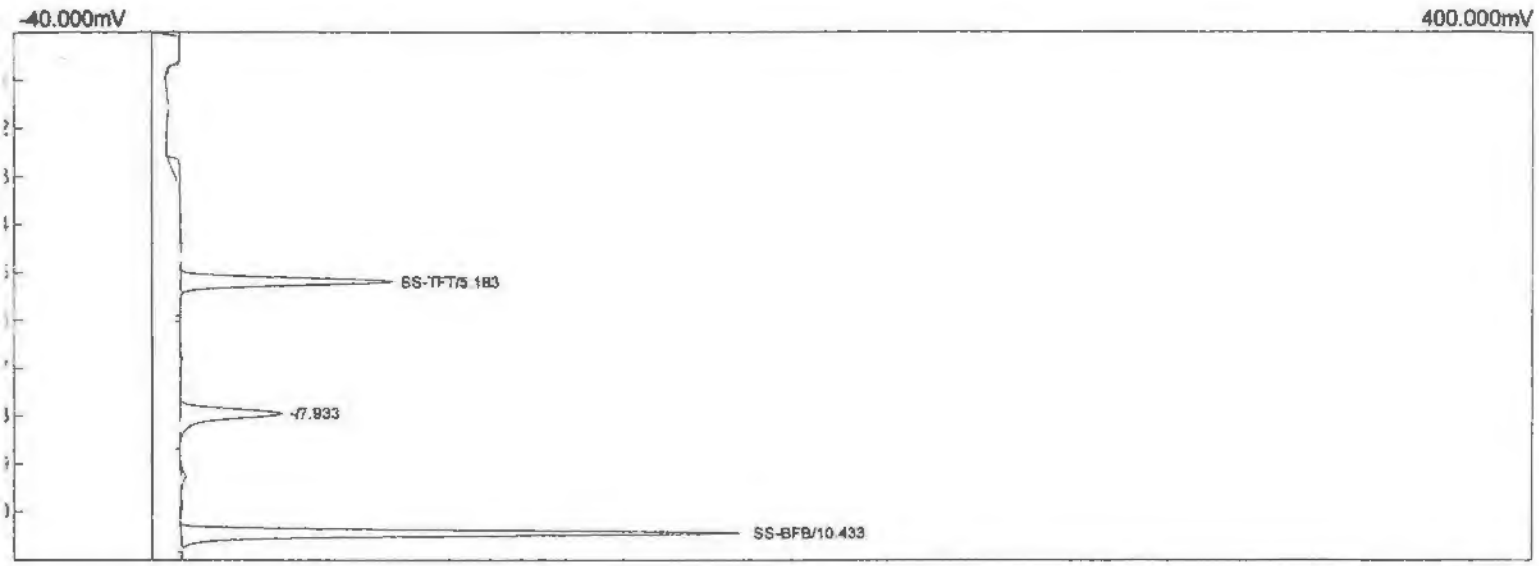
Component	Retention	Area	External	Internal	Units
ENZENE	3.866	611.165	7.12	7.1248	ppb
S-TFT	5.183	1017.734	11.38	11.3815	ppb
OLUENE	6.766	596.074	7.33	7.3291	ppb
THYLBENZENE	9.050	459.167	6.97	6.8740	ppb
I&P-XYLENE	9.216	1396.044	14.18	14.1788	ppb
-XYLENE	9.766	505.144	6.90	6.9018	ppb
S-BFB	10.416	4233.215	18.57	18.5667	ppb
		8818.543	72.46	72.4567	

Lab Name: On Site Labs Inc.
Analysis date: 03/21/2002 14:17:33
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0321P10.CHR ()
File: JLA032matrix spike duplica
Operator: MAP



Component	Retention	Area	External	Internal	Units
NZENE	3.883	594.572	6.93	6.9314	ppb
-TFT	5.183	1175.886	13.15	13.1501	ppb
OLUENE	6.766	569.652	7.00	7.0042	ppb
THYL ZENE	9.066	433.808	6.59	6.5888	ppb
P NE	9.233	1375.638	13.97	13.9715	ppb
XYL E	9.766	514.662	7.03	7.0319	ppb
S-BFB	10.416	4271.073	18.73	18.7328	ppb
		8935.291	73.41	73.4107	

Analysis date: 03/21/2002 10:46:29
Method: EPA 8020A mod.
Lab ID: GC-1
Description: PID-CHANNEL 1
Column: Rtx-5 30m, .53mm, 5.0um
Carrier: Nitrogen 1 kg/cm3
Data file: 0321P2.CHR ()
Sample: METHOD BLANK
Operator: MAP



Component	Retention	Area	External	Internal	Units
S-TFT	5.183	678.241	7.58	7.5849	ppb
S-BFB	10.433	1381.106	6.06	6.0575	ppb
		2059.347	13.64	13.6424	

LABORATORY QA/QC

CH2M HILL PROJECT NO. 167722.FI.FQ

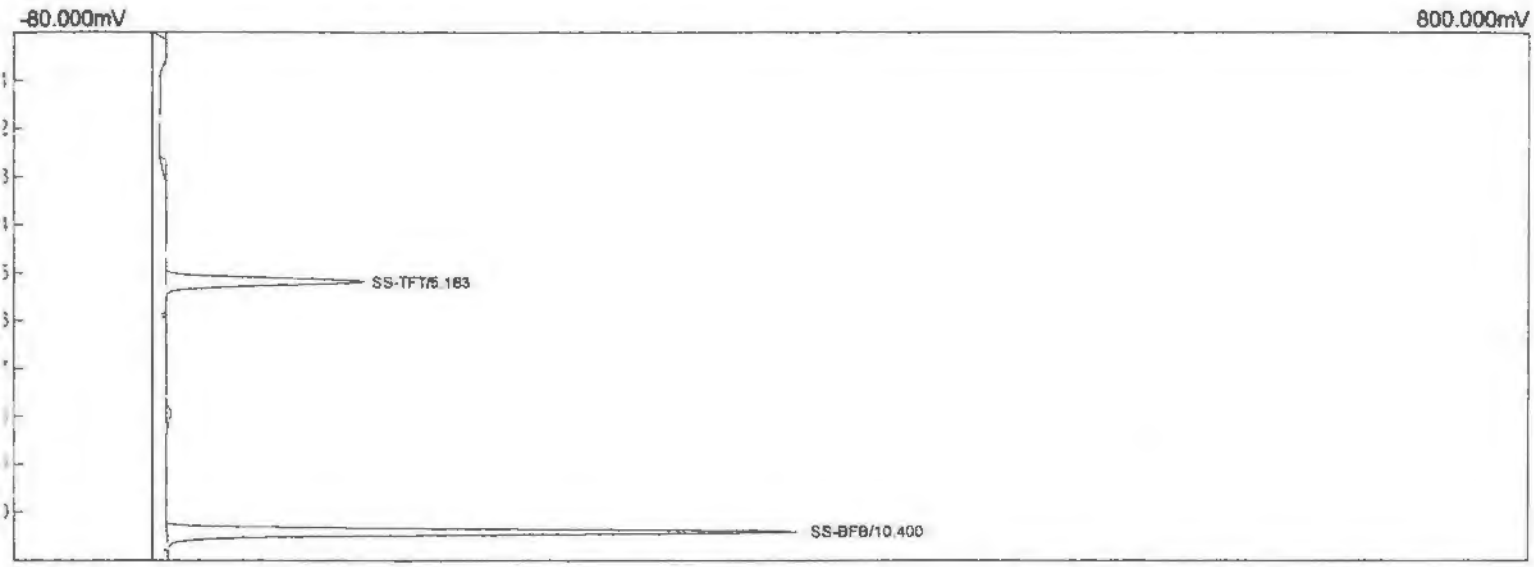
OSL Project #02I0318CH2M-3

BTEX (Mod. EPA Method 8020A) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL-BENZENE (µg/L)	TOTAL XYLENES (µg/L)
JLA032	03/21/02	ND	ND	ND	ND
JLA032 DUP	03/21/02	ND	ND	ND	ND
DETECTION LIMIT (µg/L)		1.0	1.0	1.0	3.0

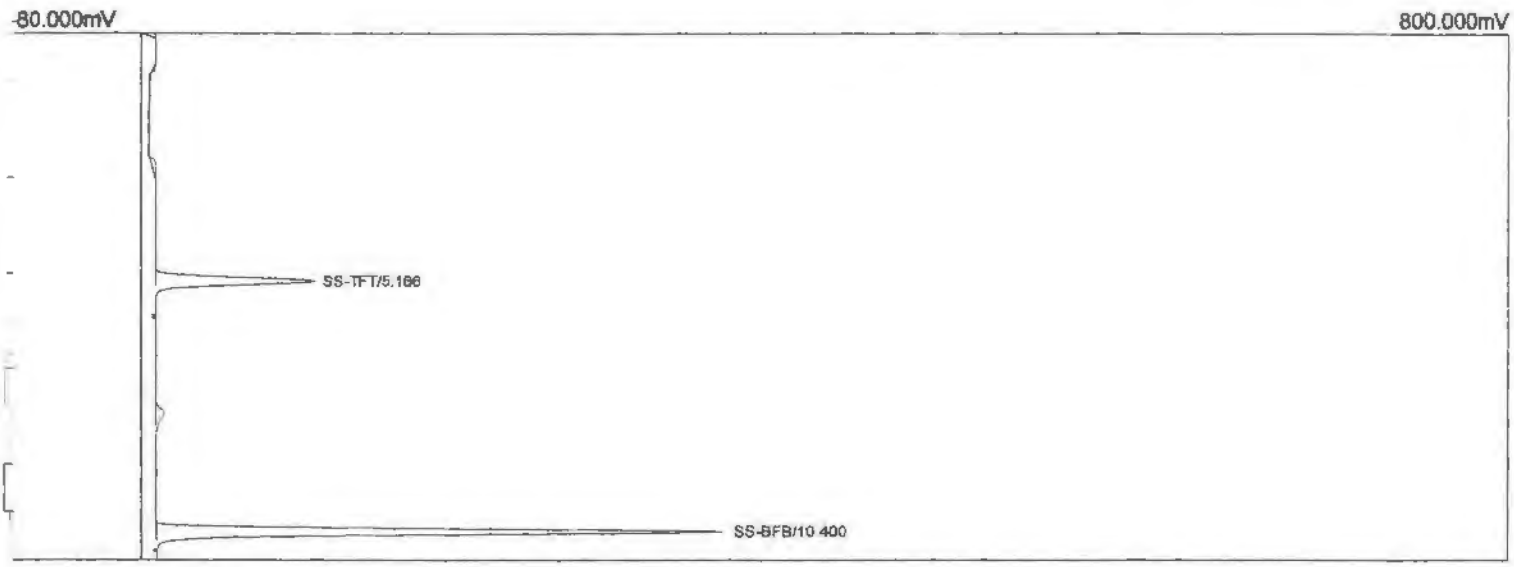
"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE THE LISTED DETECTION LIMIT
DUP = LABORATORY DUPLICATE
µg/L = MICROGRAMS PER LITER
ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

Analysis date: 03/21/2002 11:13:49
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0321P3.CHR ()
Sample: ILA029/0318CH2M-3
Operator: MAP



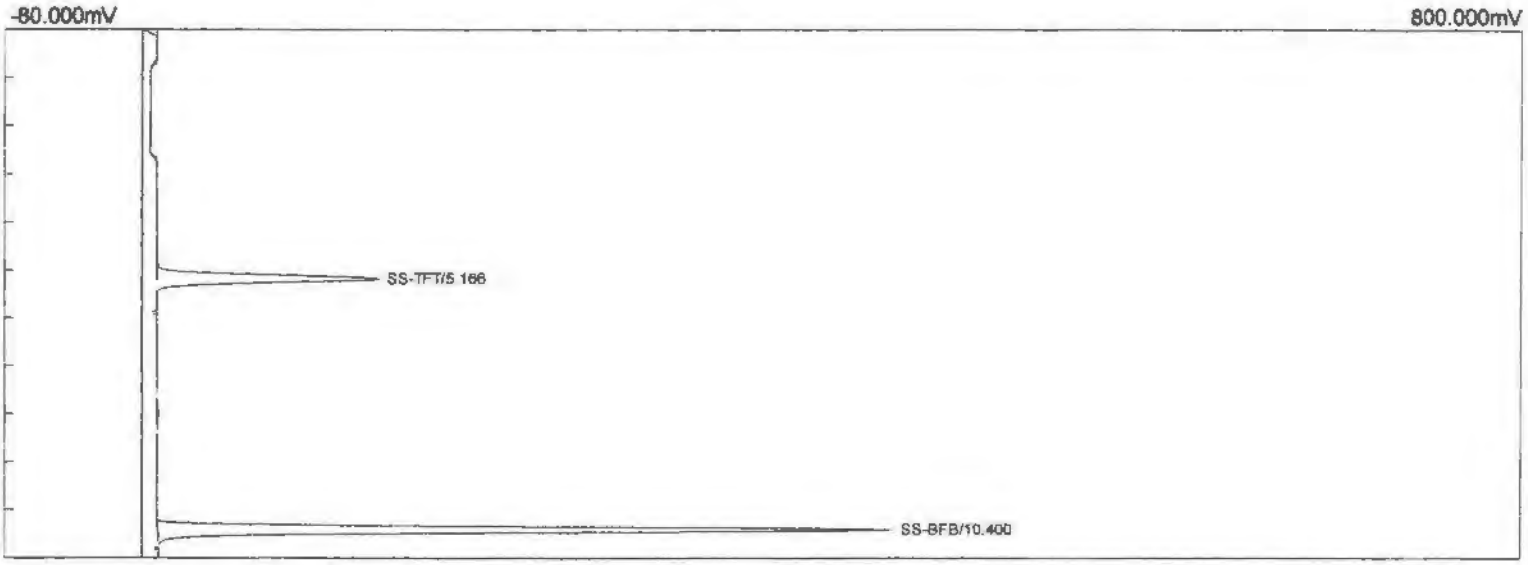
Component	Retention	Area	External	Internal	Units
S-TFT	5.183	1260.788	14.10	14.0996	ppb
S-BFB	10.400	3056.968	13.41	13.4078	ppb
		4317.756	27.51	27.5074	

Lab name: On Site Labs Inc.
Analysis date: 03/21/2002 11:39:43
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0321P4.CHR ()
S[illegible]e: ILA030/0318CH2M-3
C[illegible]or: MAP



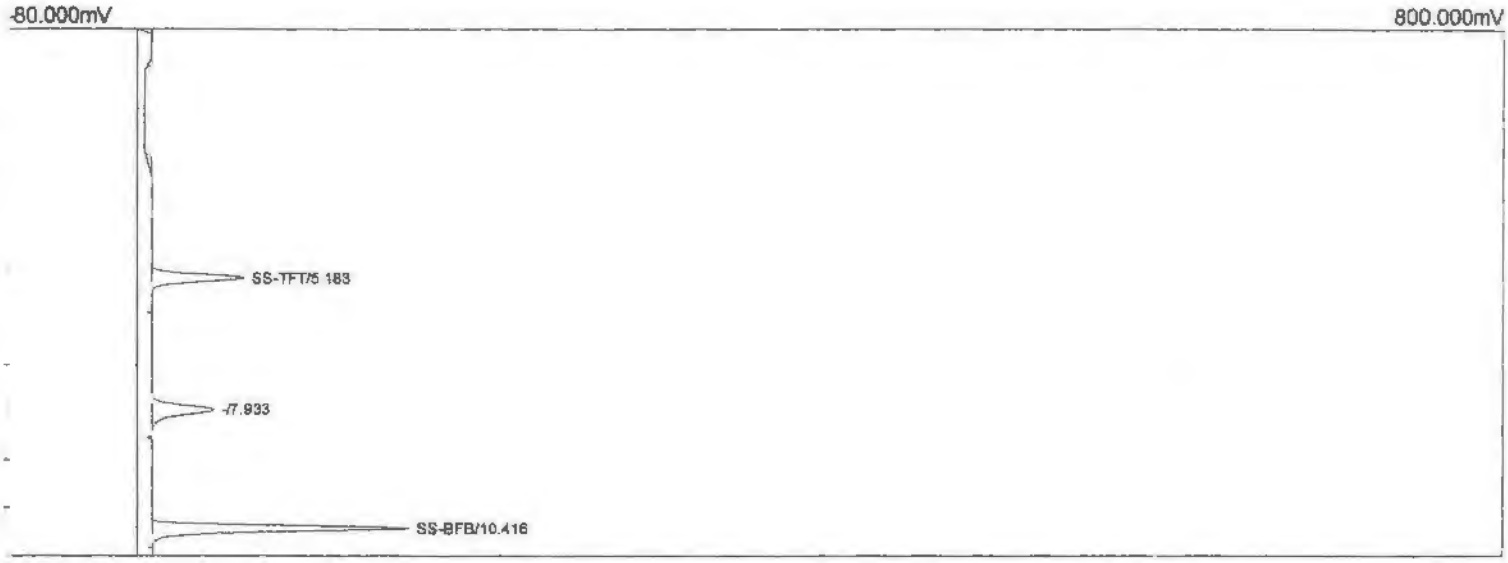
Component	Retention	Area	External	Internal	Units
-TFT	5.166	1028.918	11.51	11.5066	ppb
-BFB	10.400	2827.221	12.40	12.4001	ppb
		3856.139	23.91	23.9067	

Analysis date: 03/21/2002 11:57:54
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0321P5.CHR ()
Sample: JLA032/0318CH2M-3
Operator: MAP



Component	Retention	Area	External	Internal	Units
S-TFT	5.166	1423.546	15.92	15.9198	ppb
S-BFB	10.400	3543.362	15.54	15.5411	ppb
		4966.908	31.46	31.4608	

alysis date: 03/21/2002 12:26:39
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0321P6.CHR ()
Sr): JLA032/0318CH2M-3 DUP
C r: MAP



Component	Retention	Area	External	Internal	Units
-TFT	5.183	601.646	6.73	6.7283	ppb
-BFB	10.416	1348.534	5.91	5.9146	ppb
		1950.180	12.64	12.6429	

On Site Labs, Inc.

PMB 627 HC-01 Box 29030 Caguas, PR 00725
Telephone 787-720-0329 Fax 787-789-3858

March 20, 2002
OSL Projects #02I0311CH2M

Mr. Tunch Orsoy
CH2M HILL
4350 W. Cypress Street, Suite 600
Tampa, Florida 33607

SUBJECT: DATA REPORT - CH2M HILL PROJECT NO. 167722.FI.FS
SITES 88, 1970 AND 2036 ROOSEVELT ROADS NAS
CEIBA, PUERTO RICO

Dear Mr. Orsoy:

Please find enclosed the analytical report for the samples collected by CH2M HILL personnel from the above-referenced site and delivered to On Site Labs' (OSL) facility under the proper chain-of-custody protocol. An OSL Puerto Rico certified-chemist performed the following analyses:

- 7 soil samples analyzed for TPH-gas/diesel by modified EPA test method 8015B.
- 4 water sample analyzed for TPH-gas/diesel by modified EPA test method 8015B.
- 1 equipment blank water sample analyzed for TPH-gas/diesel.
- 4 water samples analyzed for BTEX by modified EPA test method 8020A.
- 1 trip and 1 equipment blank water sample analyzed for BTEX.
- Laboratory QA/QC analyses for TPH-gas/diesel and BTEX.

The analytical results are summarized in the attached table. Applicable detection limits, QA/QC data, chromatograms, a chain-of-custody and an invoice are attached.

OSL appreciates the opportunity to provide analytical services for this project. If you have any questions relating to the data or report, please do not hesitate to contact us.

Sincerely,
On Site Labs, Inc.

Kevin Shelburne
Principal

Attachments

QA/QC REPORT - CALIBRATION DATA

OSL Project #02I0311CH2M
DAILY CALIBRATION DATE: 03/12/02

CH2M HILL PROJECT NO. 167722.FI.FS
PROJECT NAME: RRNAS SITES 88, 1970 AND 2036

			INITIAL		OPENING			CLOSING		
COMPOUND	DETECTOR	CALIB RANGE	RF	%RSD	AREA	RF	%DIFF	AREA	RF	%DIFF
TPH GASOLINE	FID #2 (gc5)	10 - 30,000	0.26	17.6%	46.40	0.23	9.4%	48.16	0.24	5.9%
TPH GASOLINE	FID #3 (gc5)	10 - 30,000	0.36	15.0%	131.44	0.33	9.2%	264.80	0.33	8.6%
TPH GASOLINE	FID #4 (gc5)	10 - 30,000	0.31	15.4%	116.59	0.29	4.7%	116.22	0.29	5.0%
TPH DIESEL	FID #2 (gc5)	25 - 20,000	0.69	14.1%	260.20	0.65	6.3%	276.06	0.69	0.6%
TPH DIESEL	FID #3 (gc5)	25 - 20,000	0.74	13.6%	590.77	0.74	0.1%	1322.14	0.83	11.8%
TPH DIESEL	FID #4 (gc5)	25 - 20,000	0.61	11.1%	508.65	0.64	4.9%	536.63	0.67	10.7%

CALIB RANGE - RANGE OF CALIBRATION CURVE IN ppm
INITIAL RF - AVERAGE RESPONSE FACTOR FROM MULTIPOINT CALIBRATION CURVE
% RSD - LINEARITY OF MULTIPOINT CALIBRATION CURVE (+/- 20% ACCEPTABLE LIMITS)
AREA - AREA COUNTS FROM DAILY CALIBRATION STANDARD
RF - DETECTOR RESPONSE FACTOR FROM MID-POINT CALIBRATION STANDARD
% DIFF - DIFFERENCE, IN PERCENT, BETWEEN THE AVERAGE RF AND THE OPENING OR CLOSING RF (+/- 15% ACCEPTABLE LIMITS)
OPENING - MID-POINT CALIBRATION STANDARD ANALYZED BEFORE SAMPLE ANALYSES BEGIN
CLOSING - MID-POINT CALIBRATION STANDARD ANALYZED AFTER SAMPLES ANALYSES ARE COMPLETE

ANALYSES PERFORMED BY MARCO A PEDRAZA
DATA REVIEWED BY KEVIN SHELBURNE

ON SITE LABS, INC
PMB 627, HC-01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE (787) 720-0329 FAX 789-3858

QA/QC REPORT - MS/MSD DATA

MATRIX SPIKE (MS)/MATRIX SPIKE DUPLICATE (MSD)

OSL Project #02I0311CH2M
DATE: 03/12/02

CH2M HILL PROJECT NO. 167722.FI.FS
PROJECT NAME: RRNAS SITES 88, 1970 AND 2036

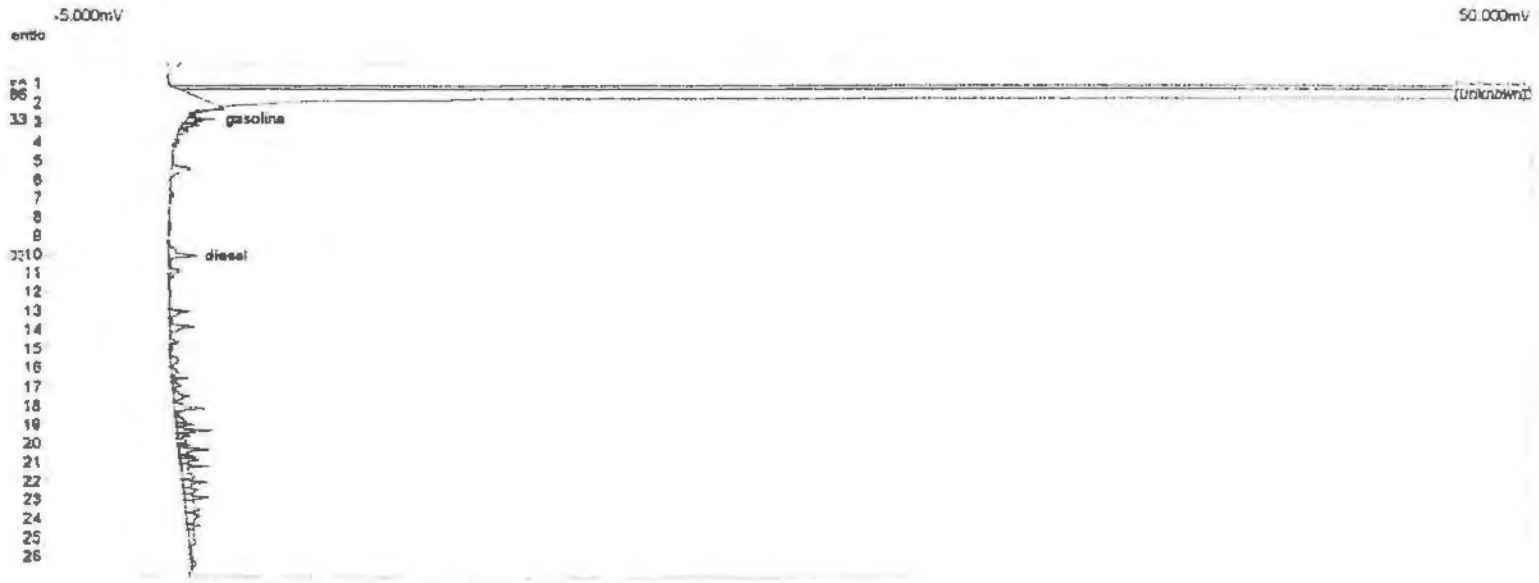
COMPOUND	SPK CON (ppm)	MS CONC (ppm)	%REC MS	MSD CONC (ppm)	%REC MSD	RPD	ACCEPTABLE RPD	ACCEPTABLE RECOVERY
TPH-GASOLINE	100	98	98%	96	96%	2%	15%	81% - 126%

ppm = PARTS PER MILLION
MS CONC - ANALYZED CONCENTRATION OF SPIKED SAMPLE
% REC - PERCENT RECOVERY OF SPIKE FROM MATRIX
RPD - RELATIVE PERCENT DIFFERENCE BETWEEN MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES

ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

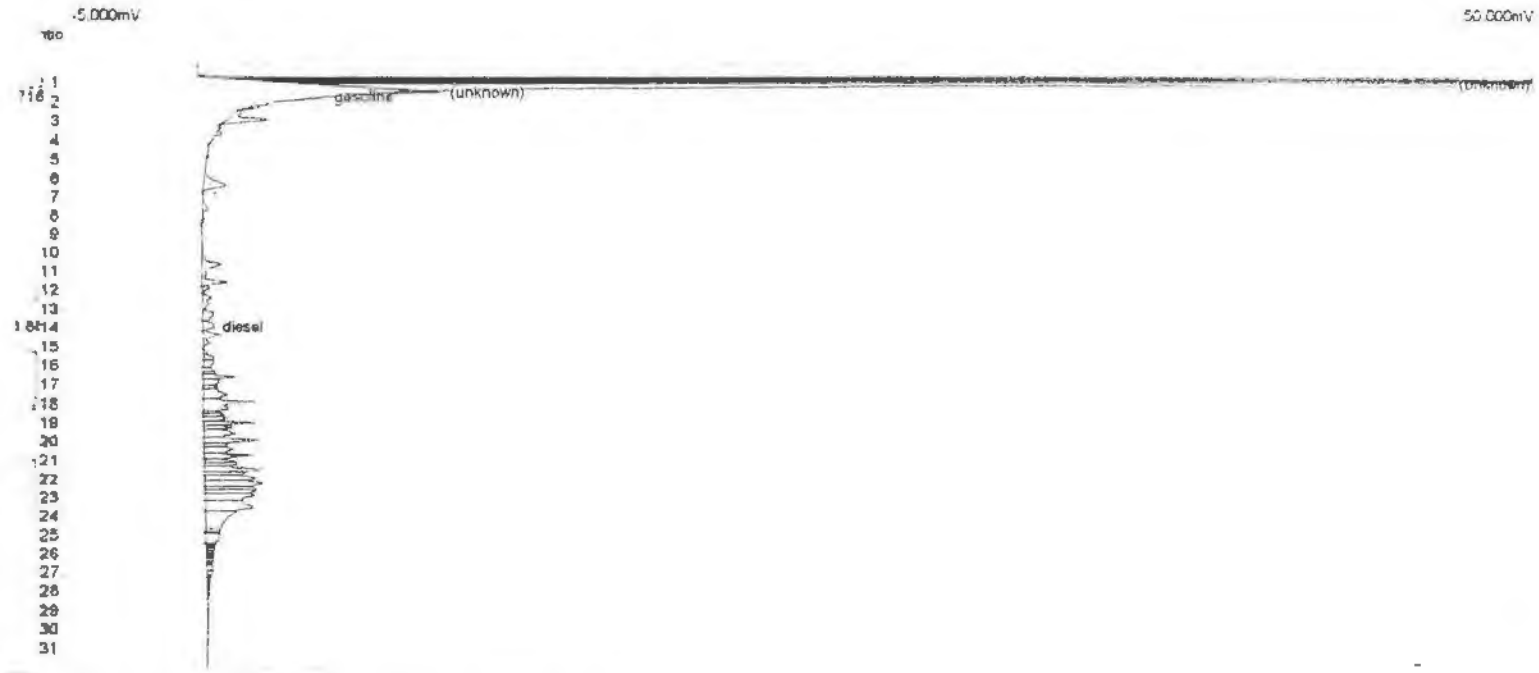
ON SITE LABS, INC
PMB 627, HC-01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE (787) 720-0329 FAX 789-3856

Lab name: On Site Labs Inc
alysis date: 03/12/2002 11:42:56
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0312FB3.chr ()
Sample: 50/100 ppm G/D OPEN
Operator: MAP



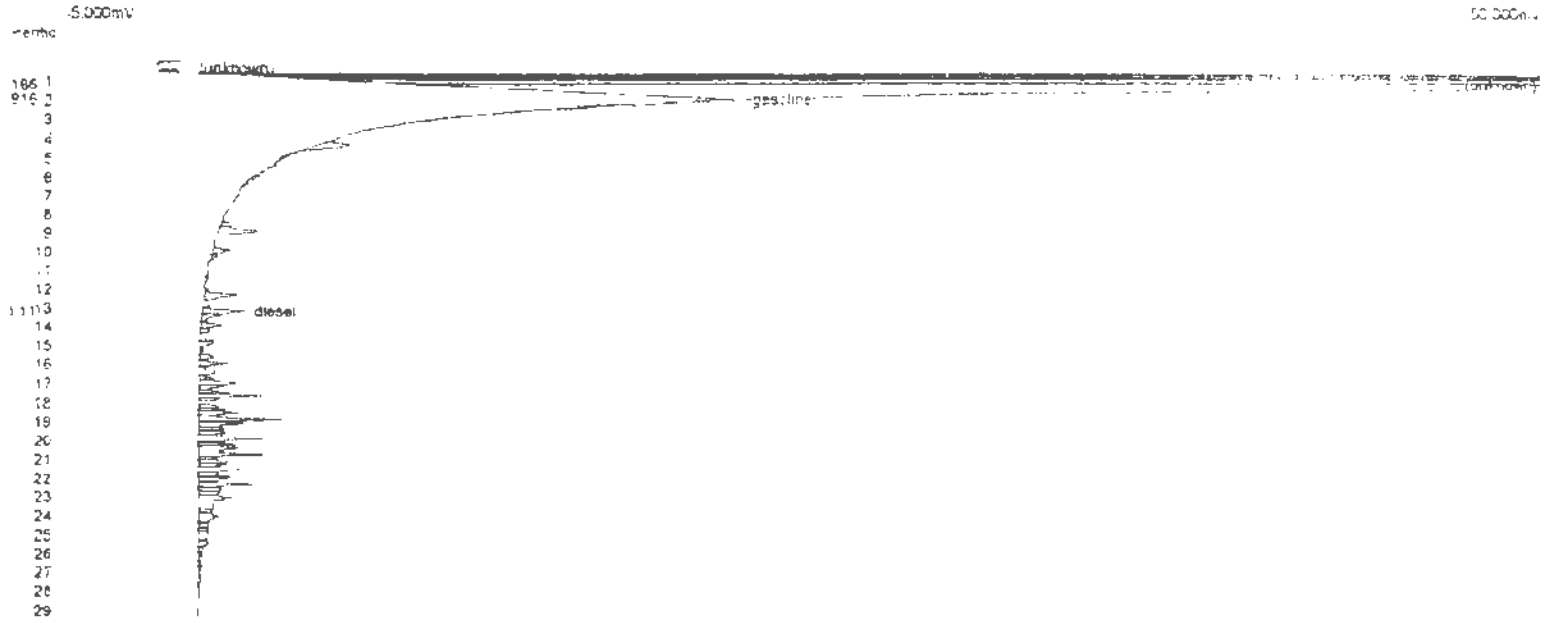
Component	Retention	Area	External	Units
soline	2.833	46.401	45.31	
esel	10.033	260.198	93.73	ppm
		306.600	139.05	

Lab name: On Site Labs Inc
alysis date: 03/12/2002 10:08:45
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
ier: N2
ile: 0312fc1.CHR ()
iple: 100/200 ppm G/D open
Operator: MAP



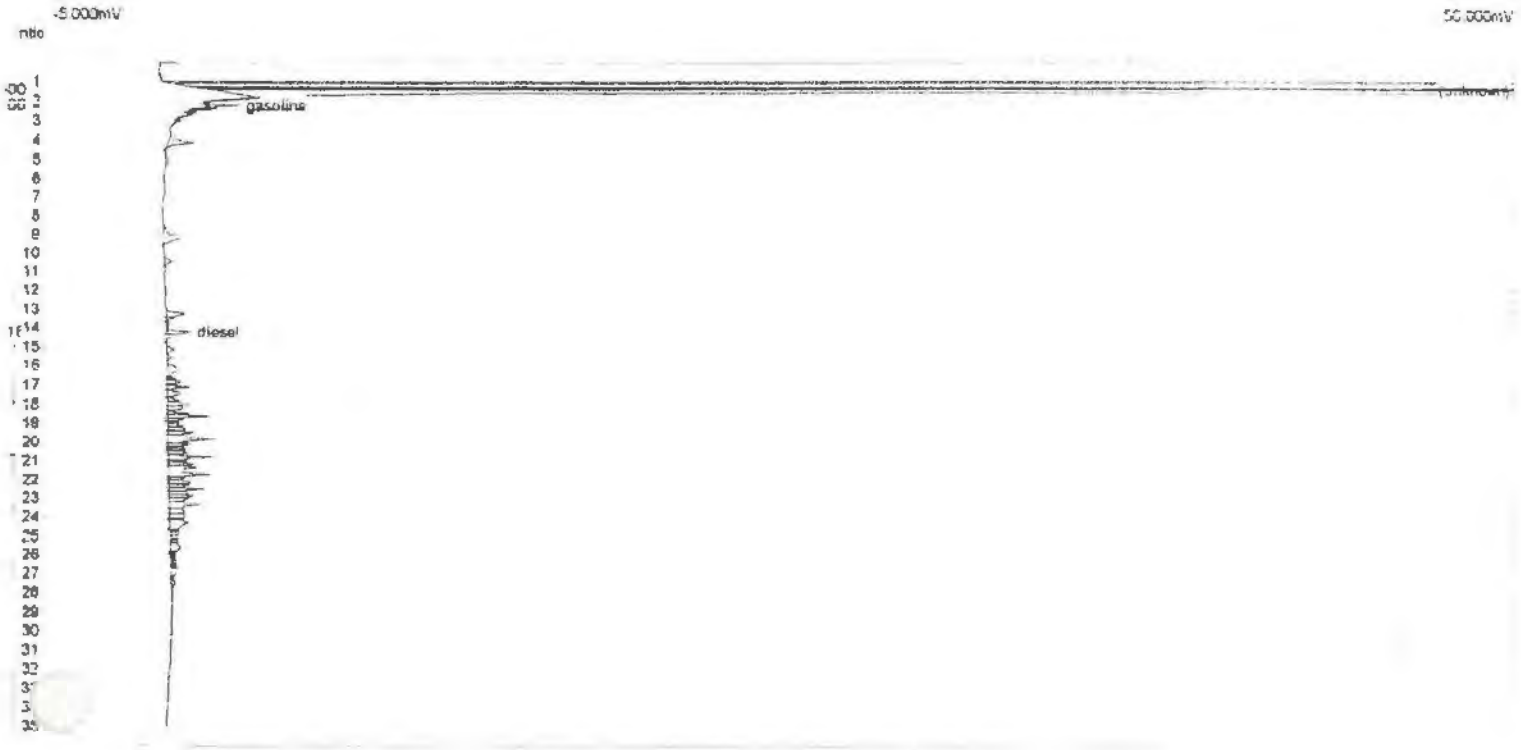
onent	Retention	Area	External	Units
jasoline	1.716	131.436	90.77	
sel	13.883	590.769	199.85	ppm
		722.205	290.62	

Lab name: On Site Labs Inc
Analysis date: 03/12/2002 10:48:47
Method: EPA 8015B mod
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0312fd2.CHR ()
Sample: 100/200 ppm G/D open
Operator: MAP



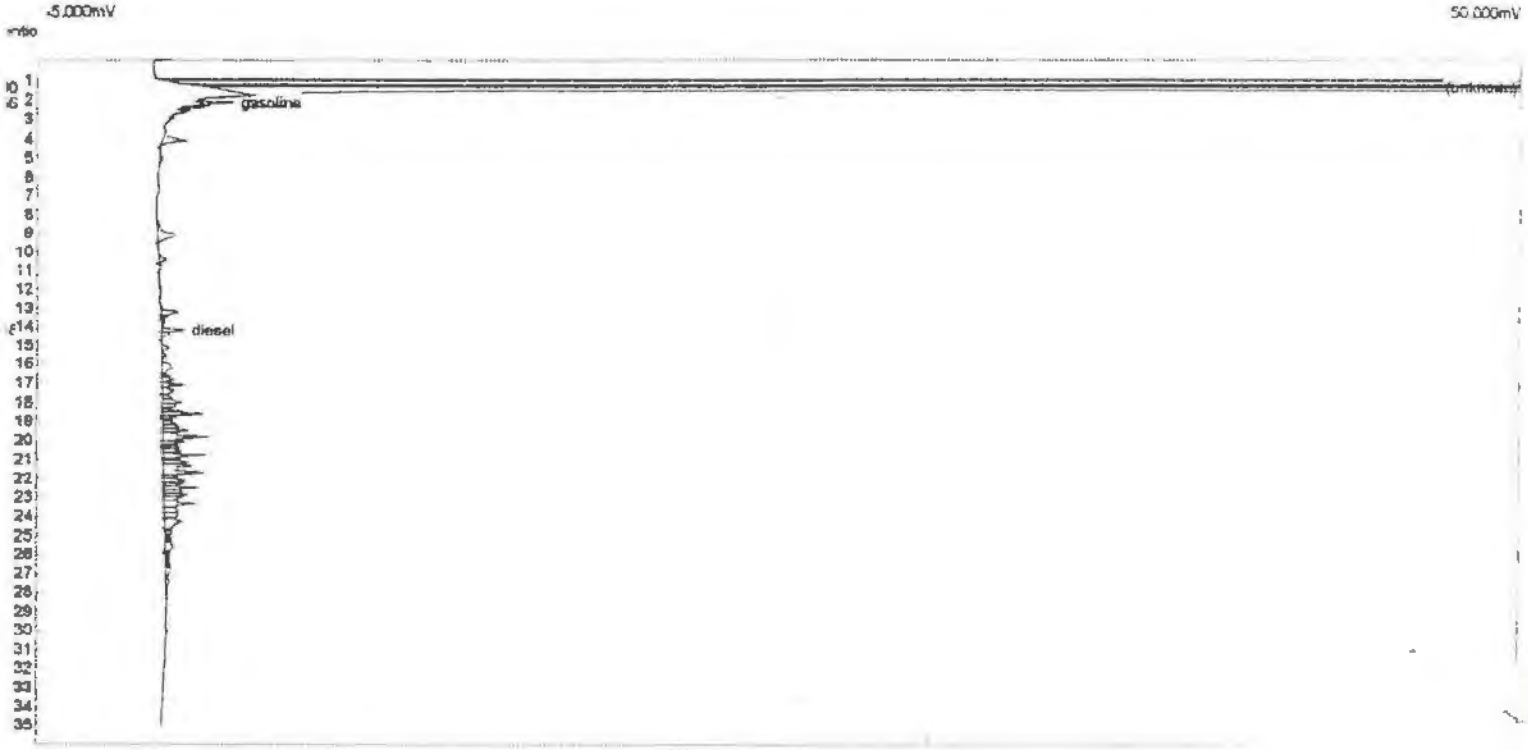
Component	Retention	Area	External	Units
Gasoline	1.916	116.589	95.25	
Diesel	13.116	508.650	209.84	ppm
		625.239	305.09	

Lab name: On Site Labs Inc
alysis date: 03/12/2002 18:39:55
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
er: N2
ile: 0312fb18.CHR ()
Sample: 50/100 ppm G/D CLOSE
Operator: MAP



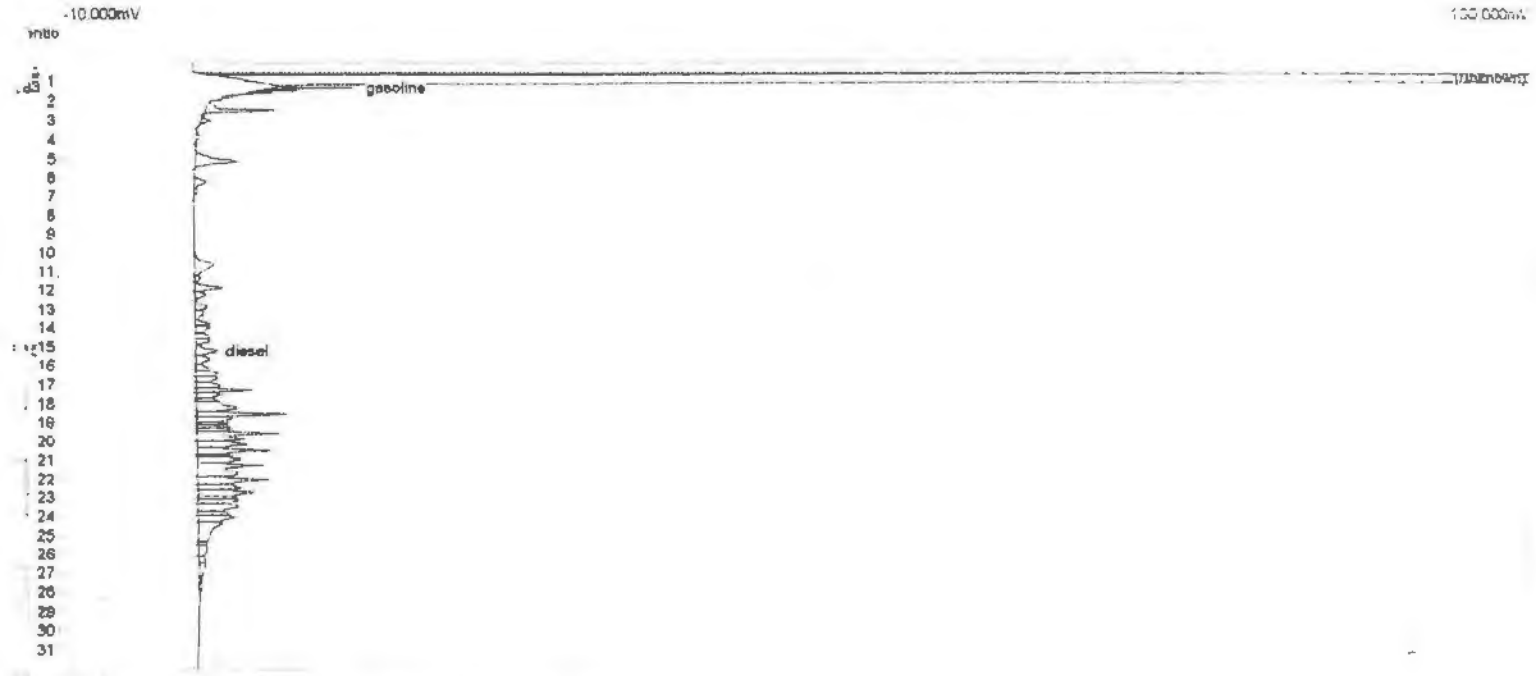
Component	Retention	Area	External	Units
asoline	2.166	48.162	47.03	
iesel	14.183	276.055	99.44	ppm
		324.217	146.48	

Lab name: On Site Labs Inc
nalysis date: 03/12/2002 18:39:55
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0312fb16.CHR ()
Sample: 50/100 ppm G/D CLOSE
Operator: MAP



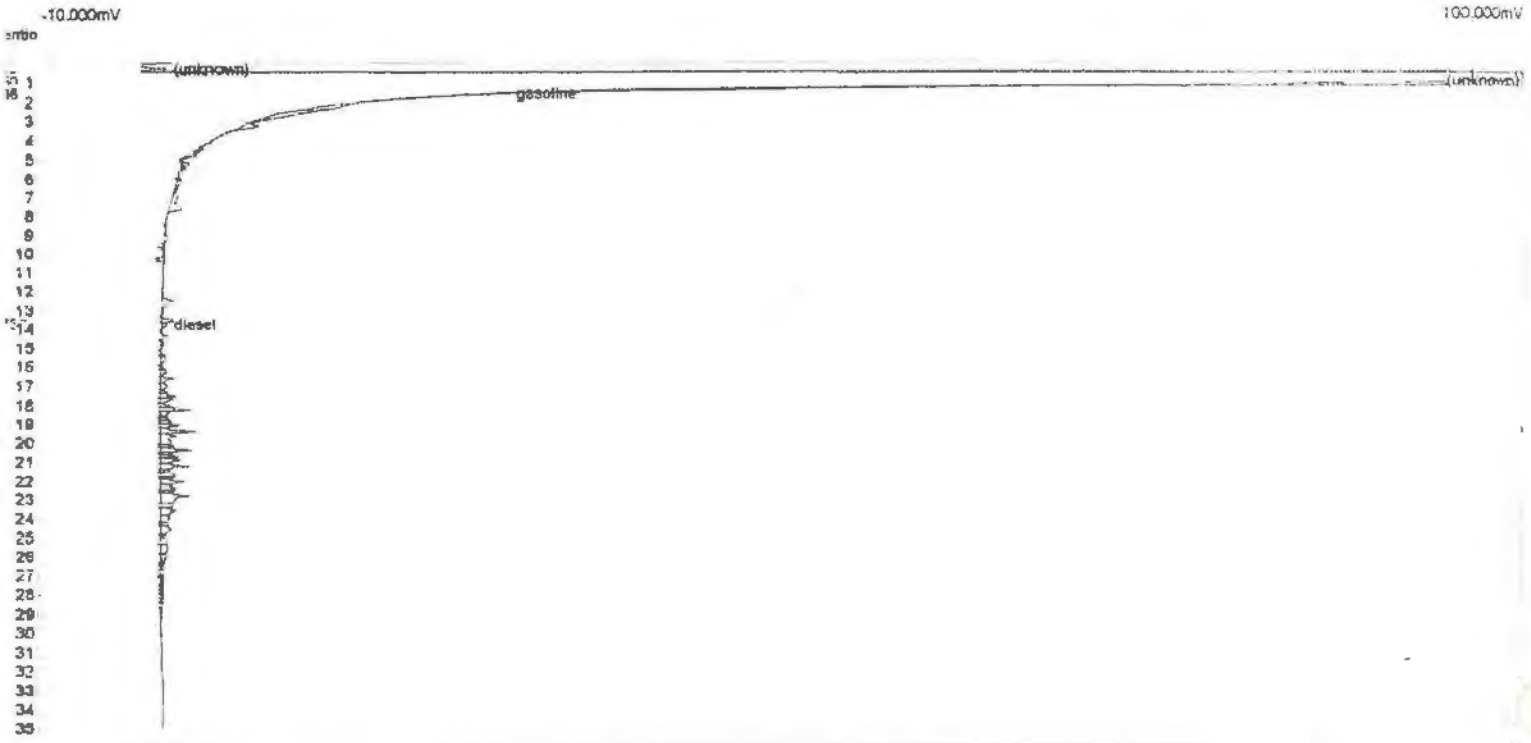
Component	Retention	Area	External	Units
soline	2.166	46.162	47.03	
sel	14.183	276.055	99.44	ppm
		324.217	146.48	

Lab name: On Site Labs Inc
alysis date: 03/12/2002 16:39:55
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
er: N2
ile: 0312fc16.CHR ()
mple: 200/400 ppm G/D CLOSE
Operator: MAP



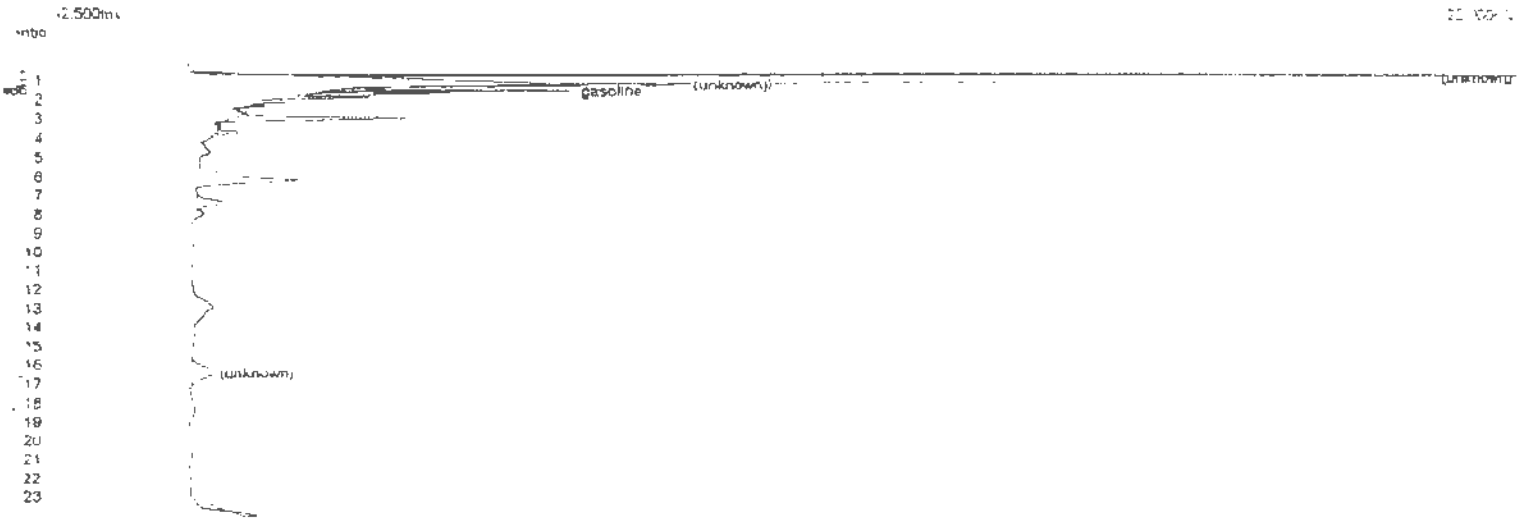
Component	Retention	Area	External	Units
gasoline	1.283	264.803	182.87	
diesel	15.150	1322.143	447.27	ppm
		1586.946	630.15	

Lab name: On Site Labs Inc
alysis date: 03/12/2002 16:39:55
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0312fd16.CHR ()
Sample: 100/200 ppm G/D CLOSE
Operator: MAP



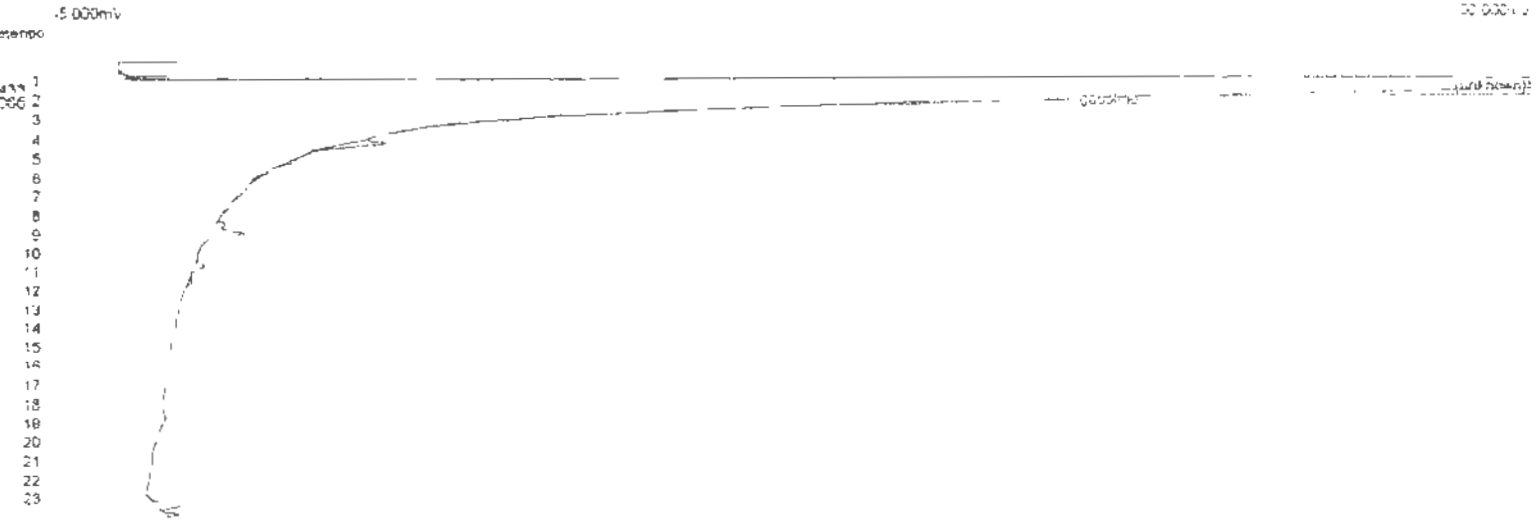
Component	Retention	Area	External	Units
soline	1.566	116.221	94.95	
sel	13.733	536.627	221.38	ppm
		652.848	316.33	

Lab name: On Site Labs Inc
alysis date: 03/12/2002 16:13:16
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
jer: N2
file: 0312fc12.CHR ()
Sample: CA-S-80matrix spike
Operator: MAP



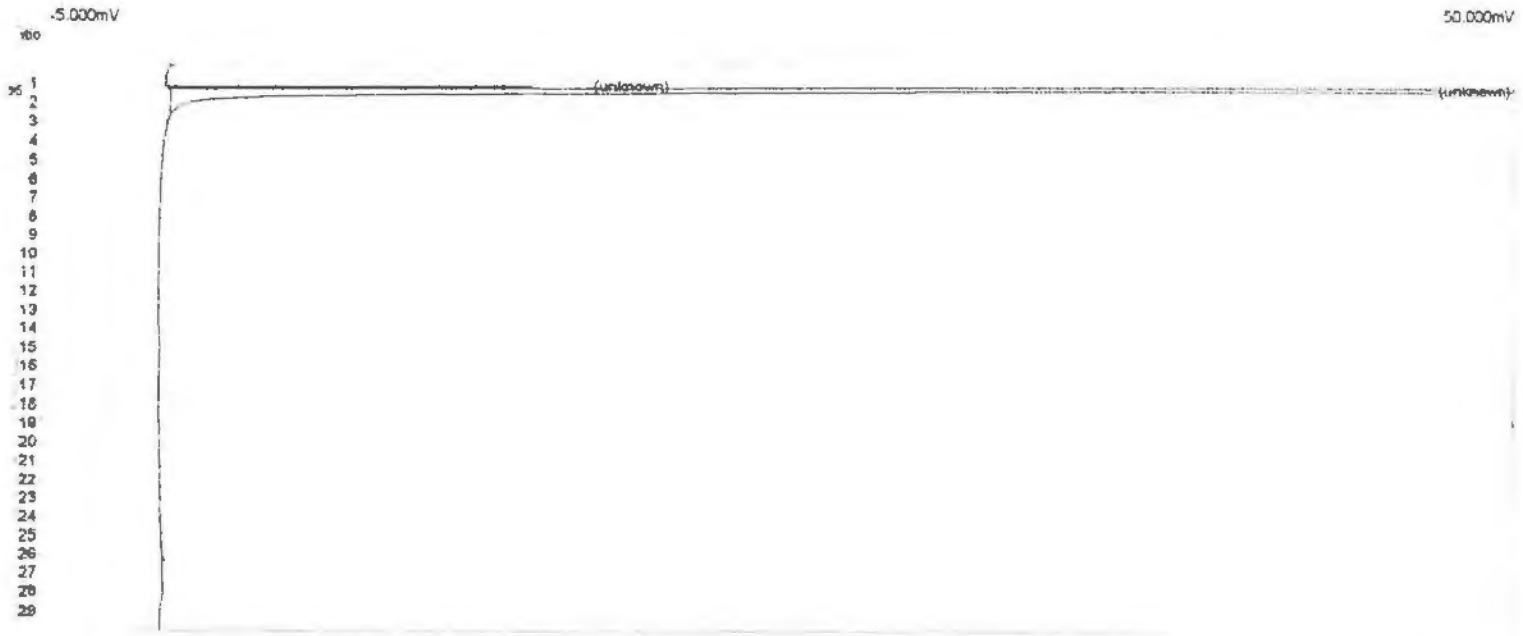
Component	Retention	Area	External	Units
soline	1.466	141 900	98.00	
		141.900	98.00	

Lab name: On Site Labs Inc
Analysis date: 03/12/2002 16:13:18
Method: EPA 8015B mod
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0312fd12.CHR ()
Sample: CA-S-80matrix spike dupli
Operator: MAP



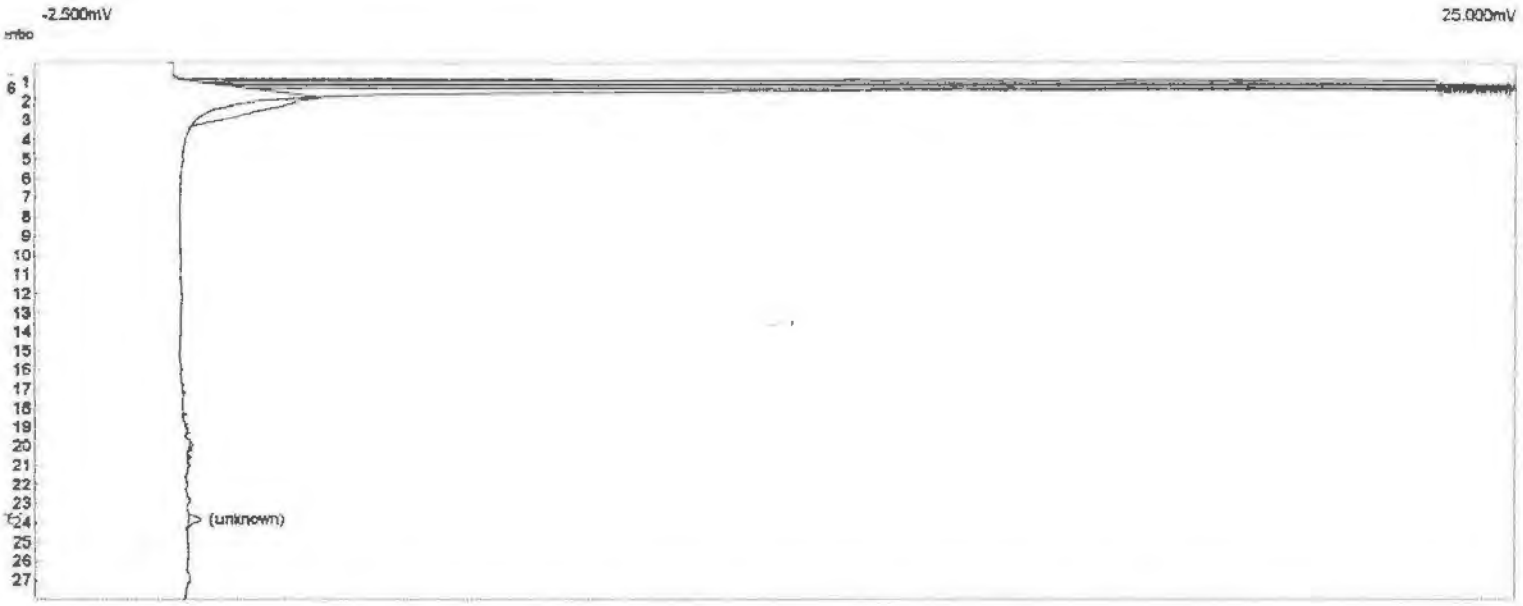
Component	Retention	Area	External	Units
Gasoline	2.066	117.382	95.90	
		117.382	95.90	

Lab name: On Site Labs Inc
alysis date: 03/12/2002 12:29:19
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
r: N2
e: 0312fb4.CHR ()
Sample: METHOD BLANK
Operator: MAP



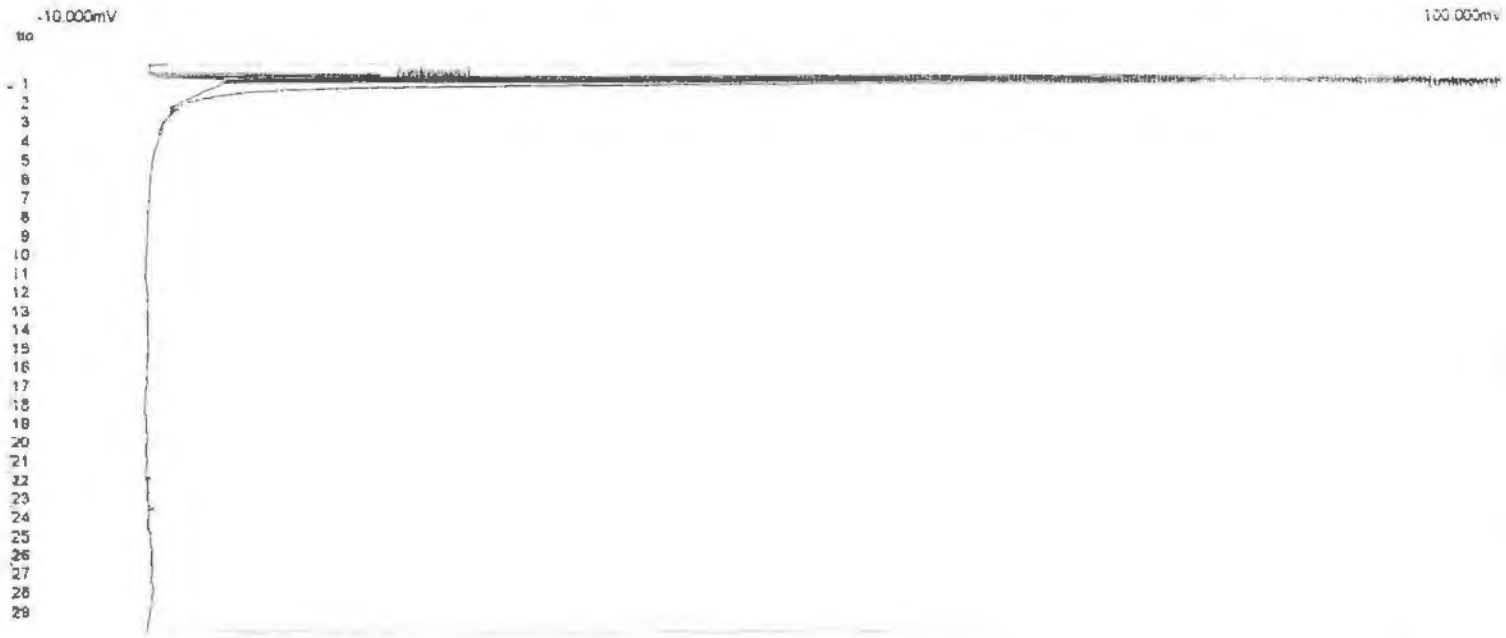
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/12/2002 17:06:30
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0312fc13.CHR ()
Sample: METHOD BLANK
Operator: MAP



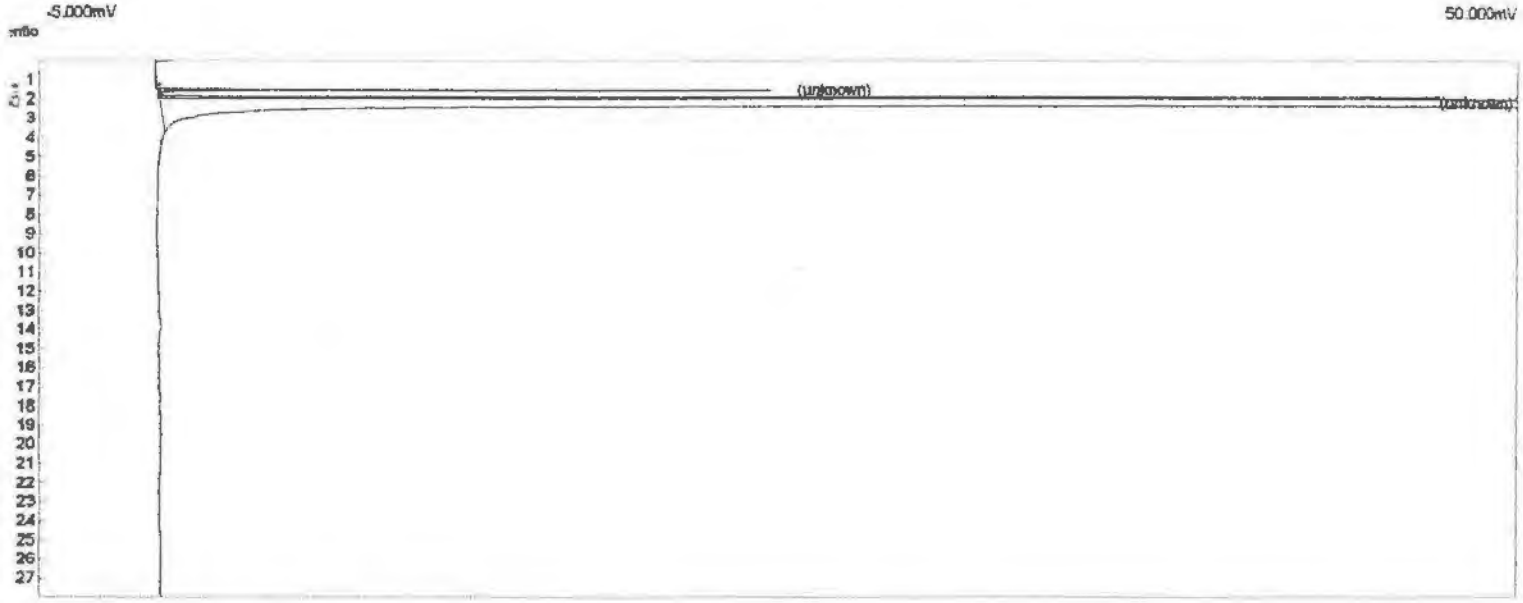
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
lysis date: 03/12/2002 12:29:19
Method: EPA 8015B mod.
Lab ID: GC - 5
escription: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
C r: N2
E e: 0312fd4.CHR ()
Sa ple: METHOD BLANK
Operator: MAP



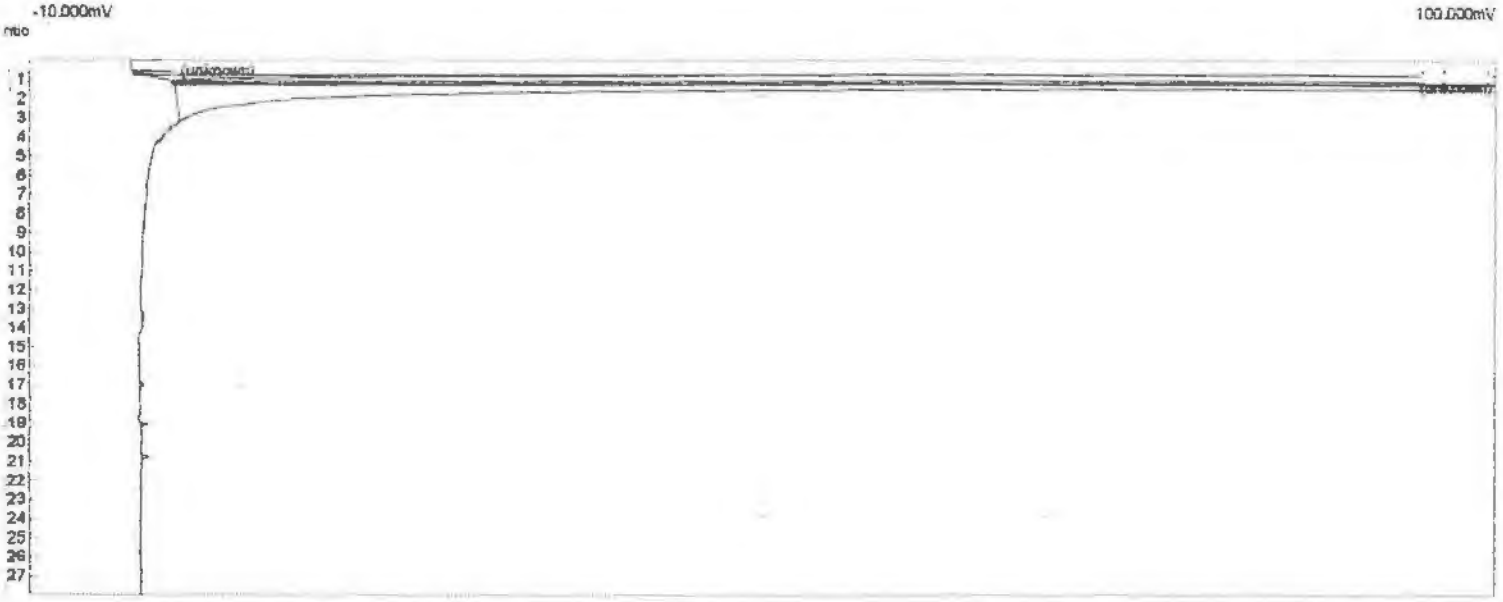
Com nent	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
alysis date: 03/12/2002 17:06:30
Method: EPA 8015B mod.
Lab ID: GC - 5
escription: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0312fb13.CHR ()
Sample: JLA020/0311CH2M
Operator: MAP



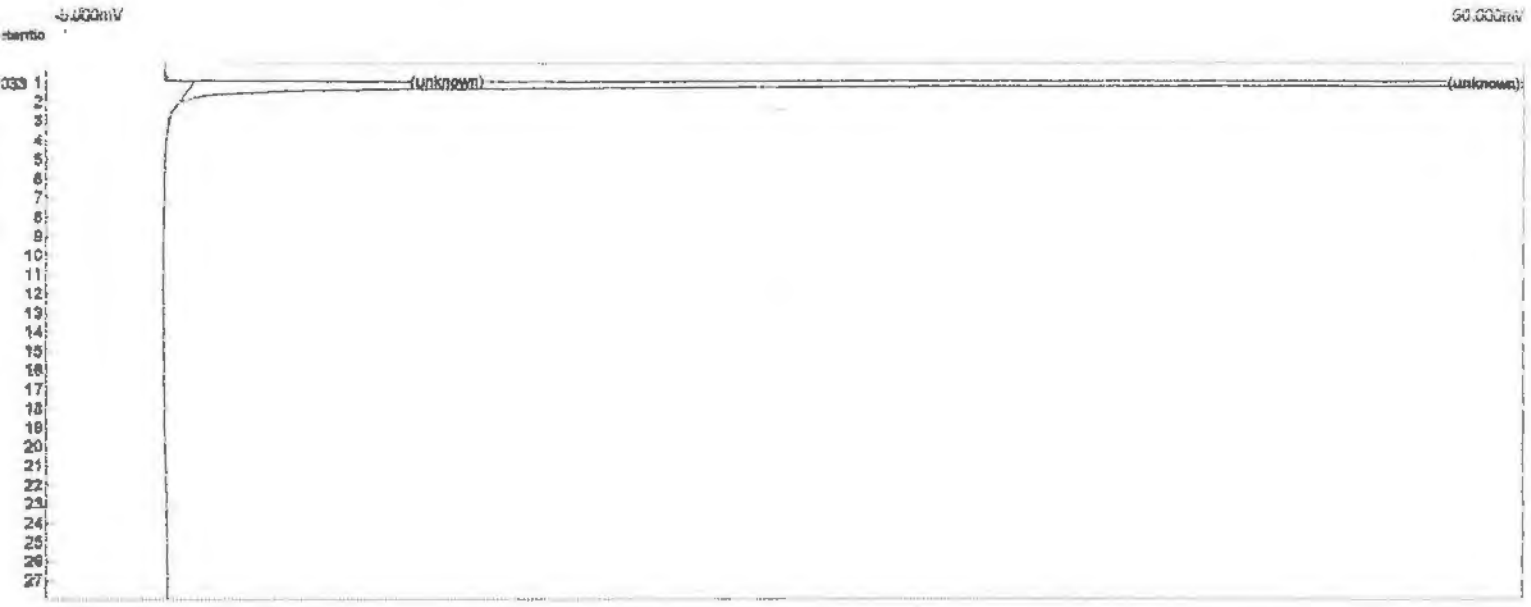
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
alysis date: 03/12/2002 17:06:30
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
D[illegible]: 0312fd13.CHR ()
S[illegible]e: JLA021/0311CH2M
Operator: MAP



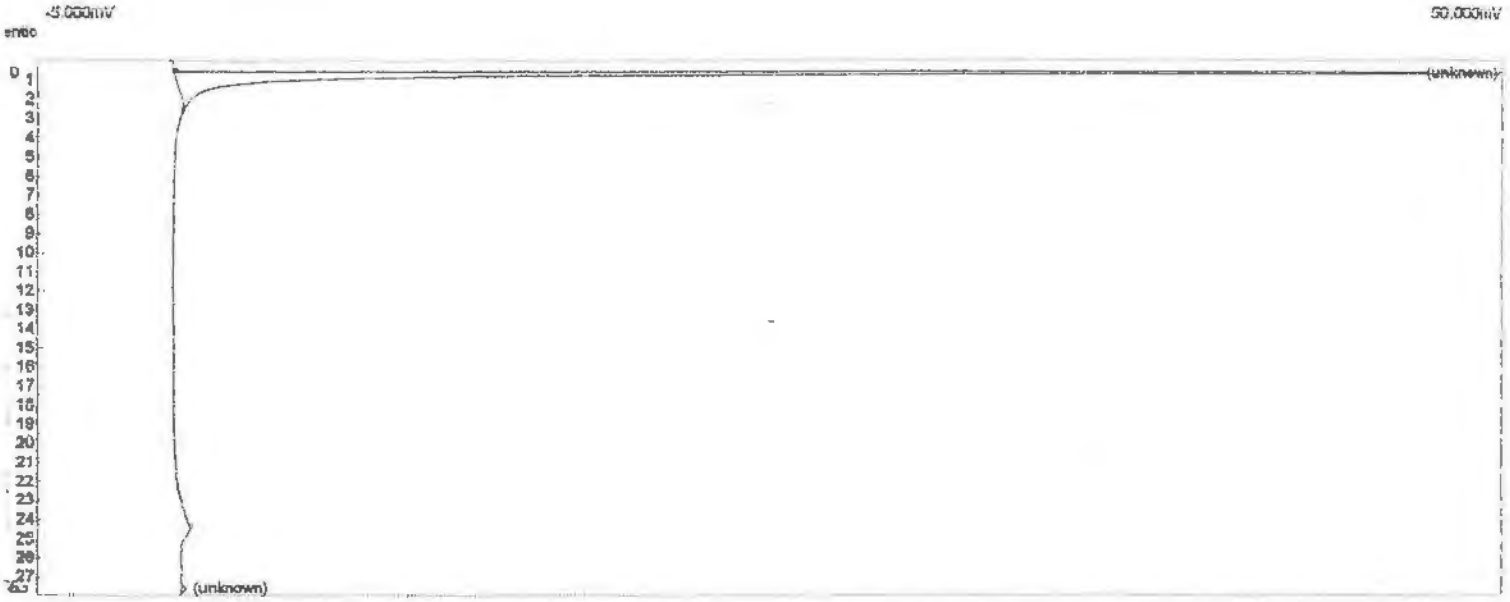
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/12/2002 17:36:44
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0312fb14.CHR ()
Sample: JLA022/0311CH2M
Operator: MAP



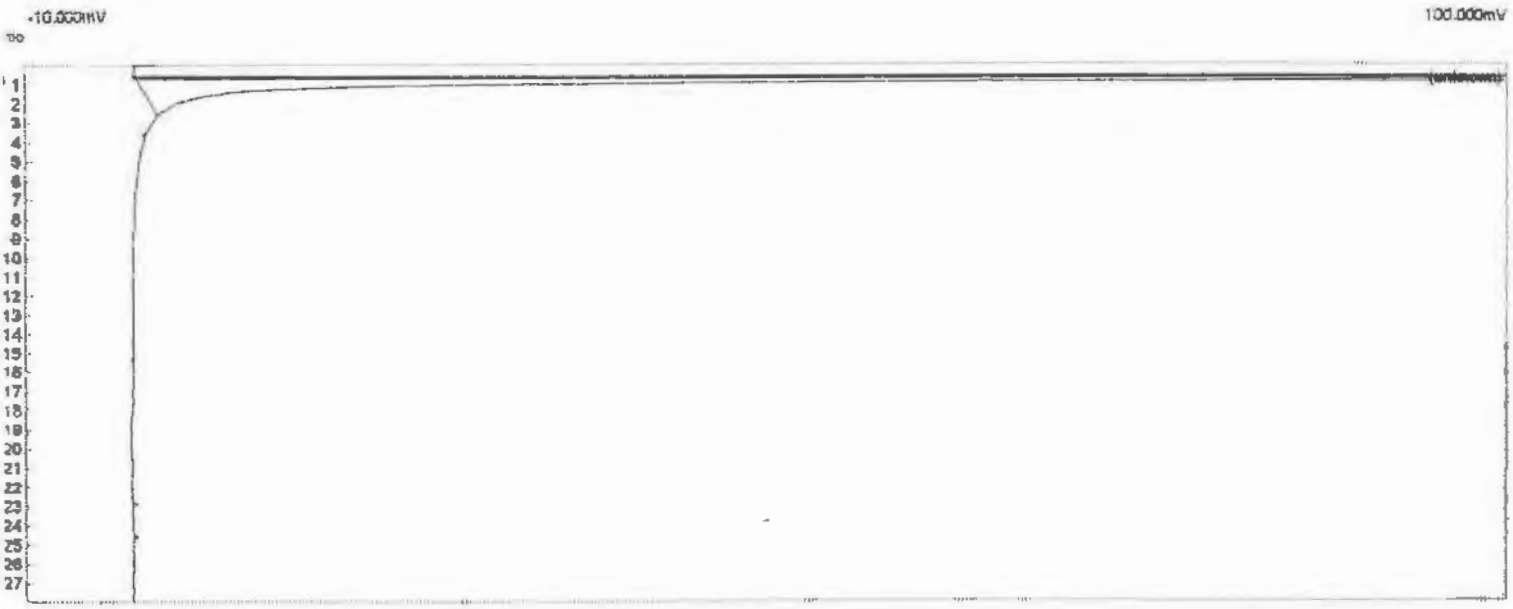
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
alysis date: 03/12/2002 17:38:44
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0312fc14.CHR ()
File: JLA023/0311CH2M
Operator: MAP



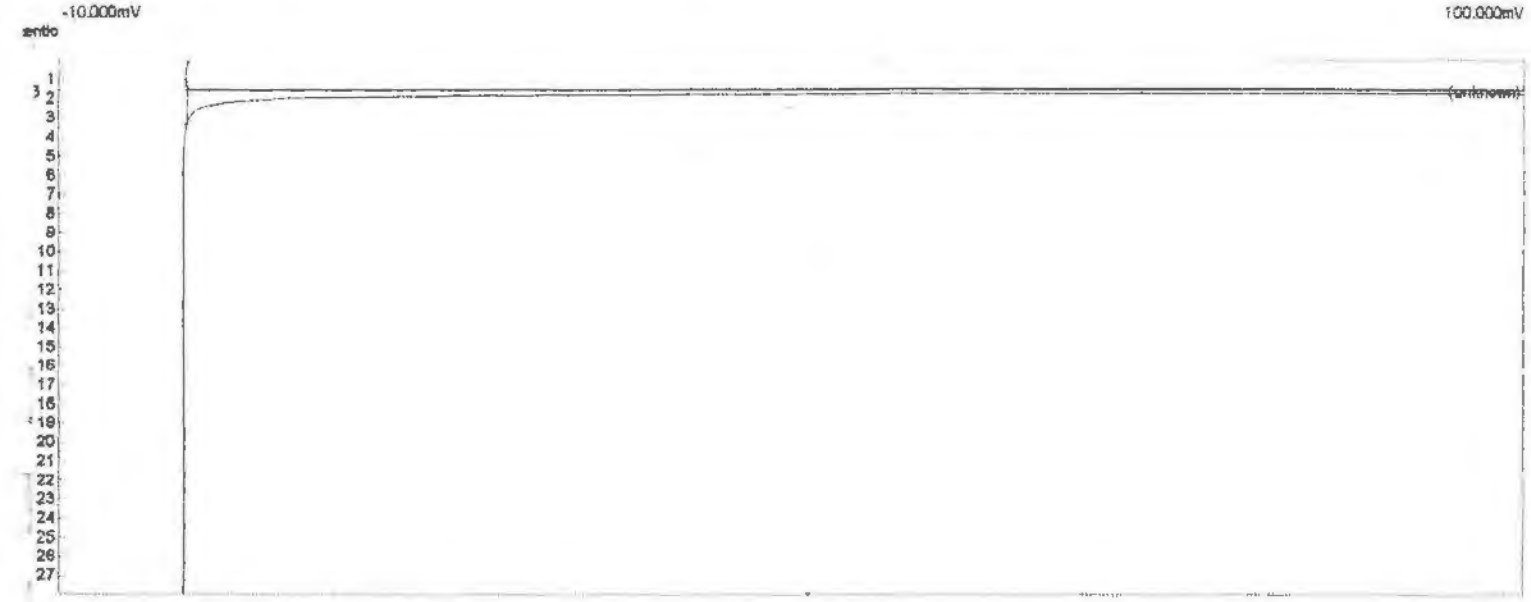
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
lysis date: 03/12/2002 17:36:44
Method: EPA 80158 mod.
Lab ID: GC - 5
escription: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0312fd14.CHR ()
Sample: JLA026FD3/0311CH2M
Operator: MAP



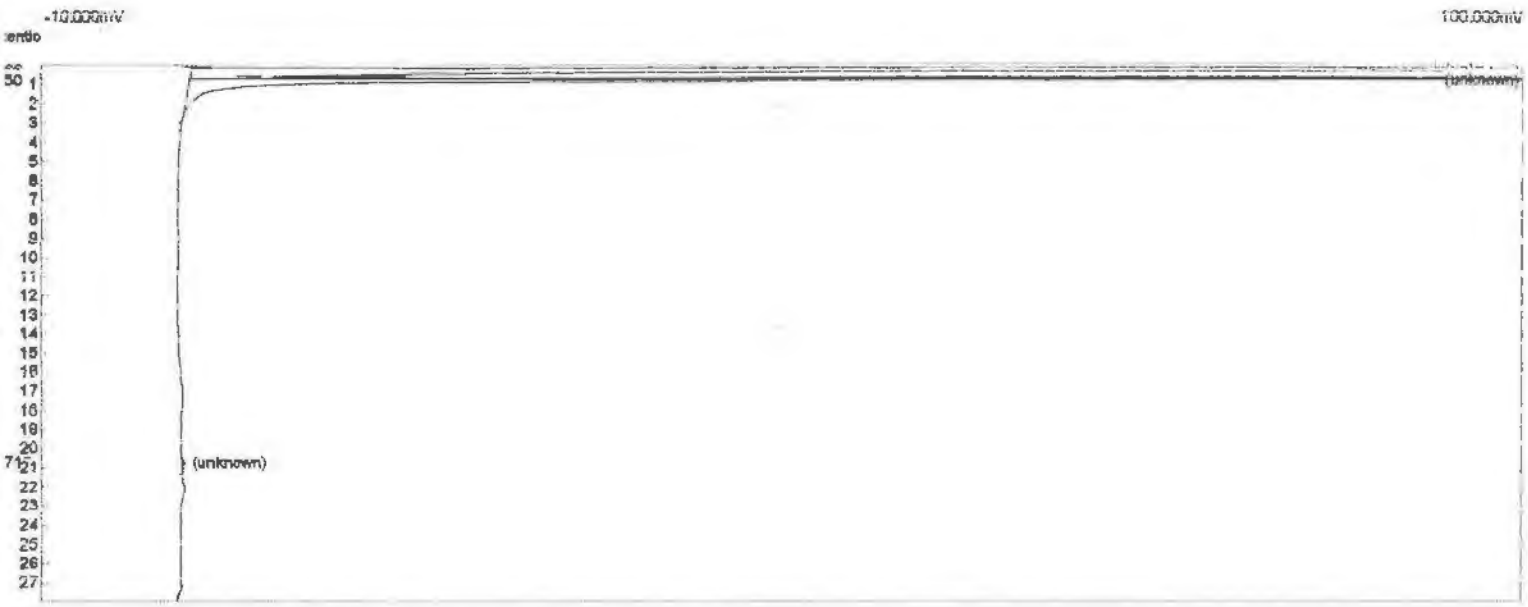
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs inc
alysis date: 03/12/2002 16:09:42
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
e: 0312fb15.CHR ()
ple: ILA017/0311CH2M
Operator: MAP



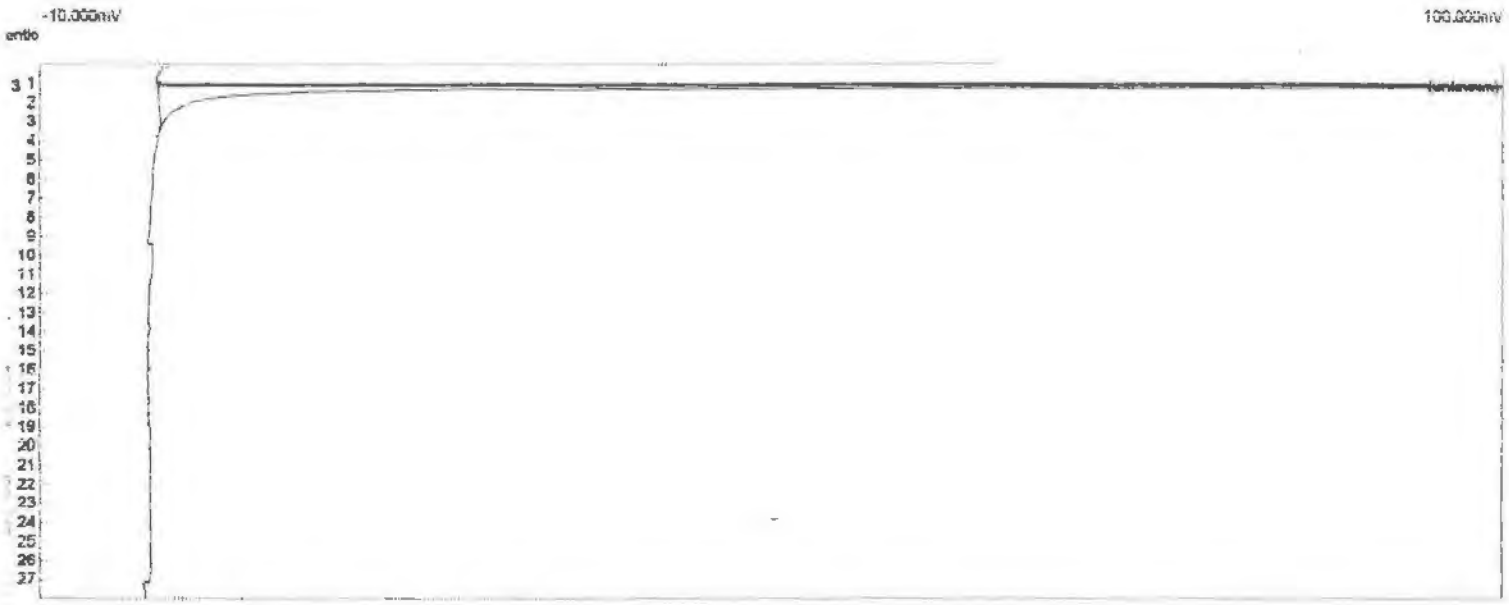
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
nalysis date: 03/12/2002 18:09:42
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0312fc15.CHR ()
Sample: ILA018/0311CH2M
Operator: MAP



Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
alysis date: 03/12/2002 18:09:42
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0312fd15.CHR ()
File: ILA019/0311CH2M
Operator: MAP



Component	Retention	Area	External	Units
		0.000	0.00	

QA/QC REPORT - CALIBRATION DATA

OSL Project #02I0311CH2M
DAILY CALIBRATION DATE: 03/18/02

CH2M HILL PROJECT NO. 167722.FI.FS
PROJECT NAME: RRNAS SITES 88, 1970 AND 2036

			INITIAL		OPENING			CLOSING		
COMPOUND	DETECTOR	CALIB RANGE	RF	%RSD	AREA	RF	%DIFF	AREA	RF	%DIFF
TPH GASOLINE	FID #2 (gc5)	10 - 30,000	0.26	17.6%	210.68	0.26	2.9%	210.39	0.26	2.7%
TPH GASOLINE	FID #3 (gc5)	10 - 30,000	0.36	15.0%	63.33	0.32	12.5%	138.73	0.35	4.2%
TPH GASOLINE	FID #4 (gc5)	10 - 30,000	0.31	15.4%	260.33	0.33	6.3%	258.56	0.32	5.6%
TPH DIESEL	FID #2 (gc5)	25 - 20,000	0.69	14.1%	1040.89	0.65	6.3%	1218.97	0.76	9.8%
TPH DIESEL	FID #3 (gc5)	25 - 20,000	0.74	13.6%	327.45	0.82	10.8%	614.26	0.77	3.9%
TPH DIESEL	FID #4 (gc5)	25 - 20,000	0.61	11.1%	1067.23	0.67	10.1%	1051.81	0.66	8.5%

CALIB RANGE - RANGE OF CALIBRATION CURVE IN ppm
INITIAL RF - AVERAGE RESPONSE FACTOR FROM MULTIPOINT CALIBRATION CURVE
% RSD - LINEARITY OF MULTIPOINT CALIBRATION CURVE (+/- 20% ACCEPTABLE LIMITS)
AREA - AREA COUNTS FROM DAILY CALIBRATION STANDARD
RF - DETECTOR RESPONSE FACTOR FROM MID-POINT CALIBRATION STANDARD
% DIFF - DIFFERENCE, IN PERCENT, BETWEEN THE AVERAGE RF AND THE OPENING OR CLOSING RF (+/- 15% ACCEPTABLE LIMITS)
OPENING - MID-POINT CALIBRATION STANDARD ANALYZED BEFORE SAMPLE ANALYSES BEGIN
CLOSING - MID-POINT CALIBRATION STANDARD ANALYZED AFTER SAMPLES ANALYSES ARE COMPLETE

ANALYSES PERFORMED BY MARCO A. PEDRAZA
DATA REVIEWED BY KEVIN SHELBURNE

ON SITE LABS, INC
PMB 627, HC-01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE (787) 720-0329 FAX 769-3858

QA/QC REPORT - MS/MSD DATA

MATRIX SPIKE (MS)/MATRIX SPIKE DUPLICATE (MSD)

OSL Project #0210311CH2M
DATE: 03/18/02

CH2M HILL PROJECT NO. 167722.FI.FS
PROJECT NAME: RRNAS SITES 88, 1970 AND 2036

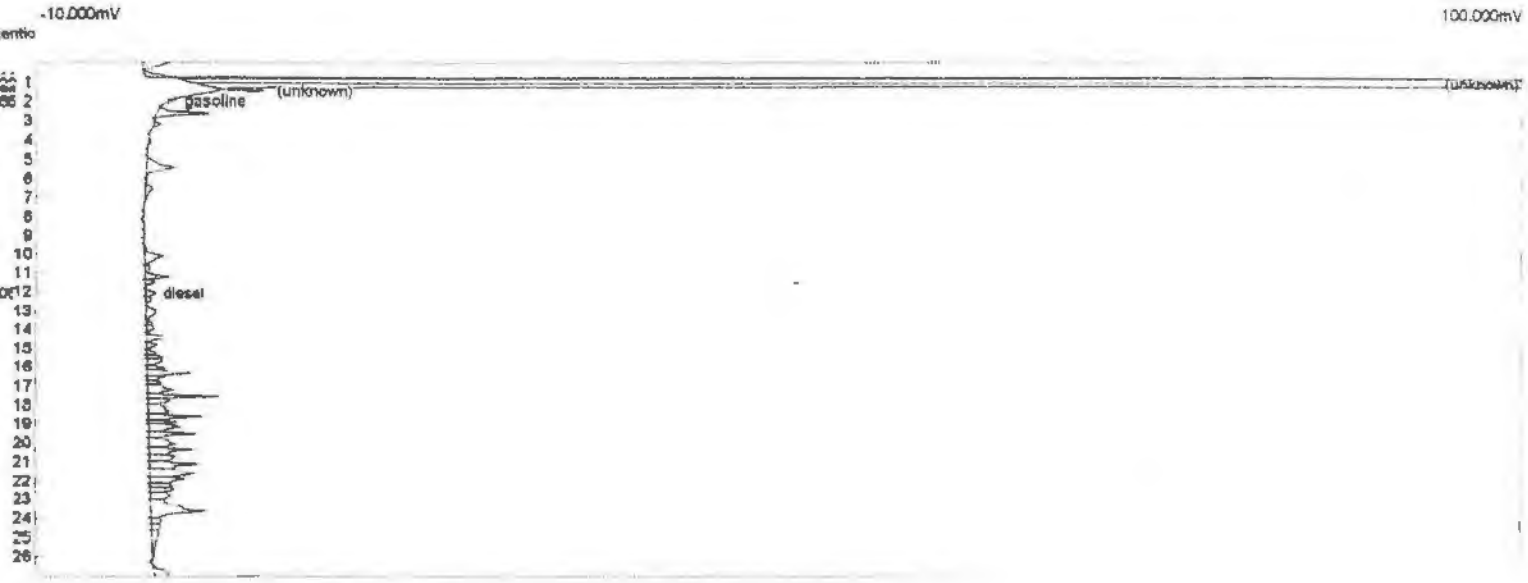
COMPOUND	SPK CON (ppm)	MS CONC (ppm)	%REC MS	MSD CONC (ppm)	%REC MSD	RPD	ACCEPTABLE RPD	ACCEPTABLE RECOVERY
TPH-GASOLINE	200	194	97%	179	90%	8%	15%	81% - 126%
TPH-DIESEL	400	437	109%	444	111%	2%	15%	74% - 131%

ppm = PARTS PER MILLION
MS CONC - ANALYZED CONCENTRATION OF SPIKED SAMPLE
% REC - PERCENT RECOVERY OF SPIKE FROM MATRIX
RPD - RELATIVE PERCENT DIFFERENCE BETWEEN MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES

ANALYSES PERFORMED BY MARCO A. PEDRAZA
DATA REVIEWED BY KEVIN SHELBURNE

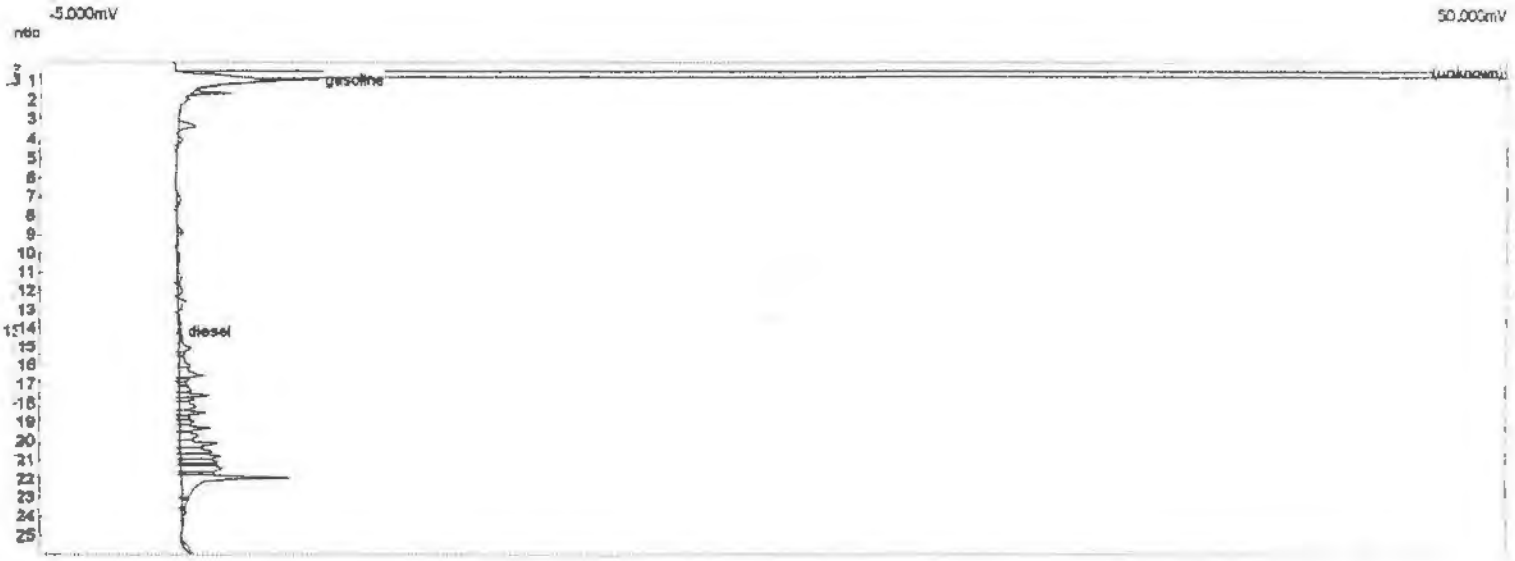
ON SITE LABS, INC
PMB 627, HC-01 [illegible]030, CAGUAS, P.R. 00725
TELEPHONE [illegible]-0329 FAX 789-3858

Lab name: On Site Labs Inc
nalysis date: 03/18/2002 11:57:03
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0318fb2.CHR ()
Sample: 200/400 ppm G/D open
Operator: MAP



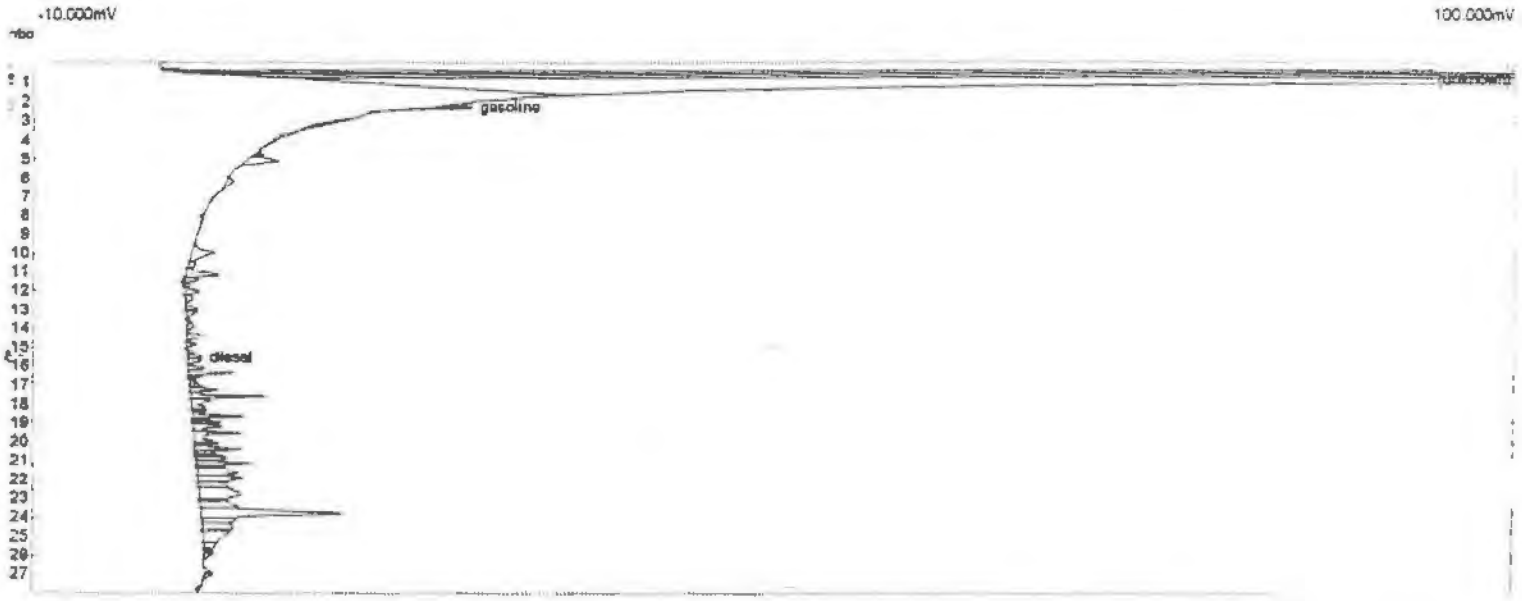
Component	Retention	Area	External	Units
soline	1.966	210.681	205.74	
sel	12.066	1040.886	374.96	ppm
		1251.567	580.70	

Lab name: On Site Labs Inc
ralysis date: 03/18/2002 11:57:03
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
er: N2
le: 0318fc2.CHR ()
Sample: 50/100 ppm G/D open
Operator: MAP



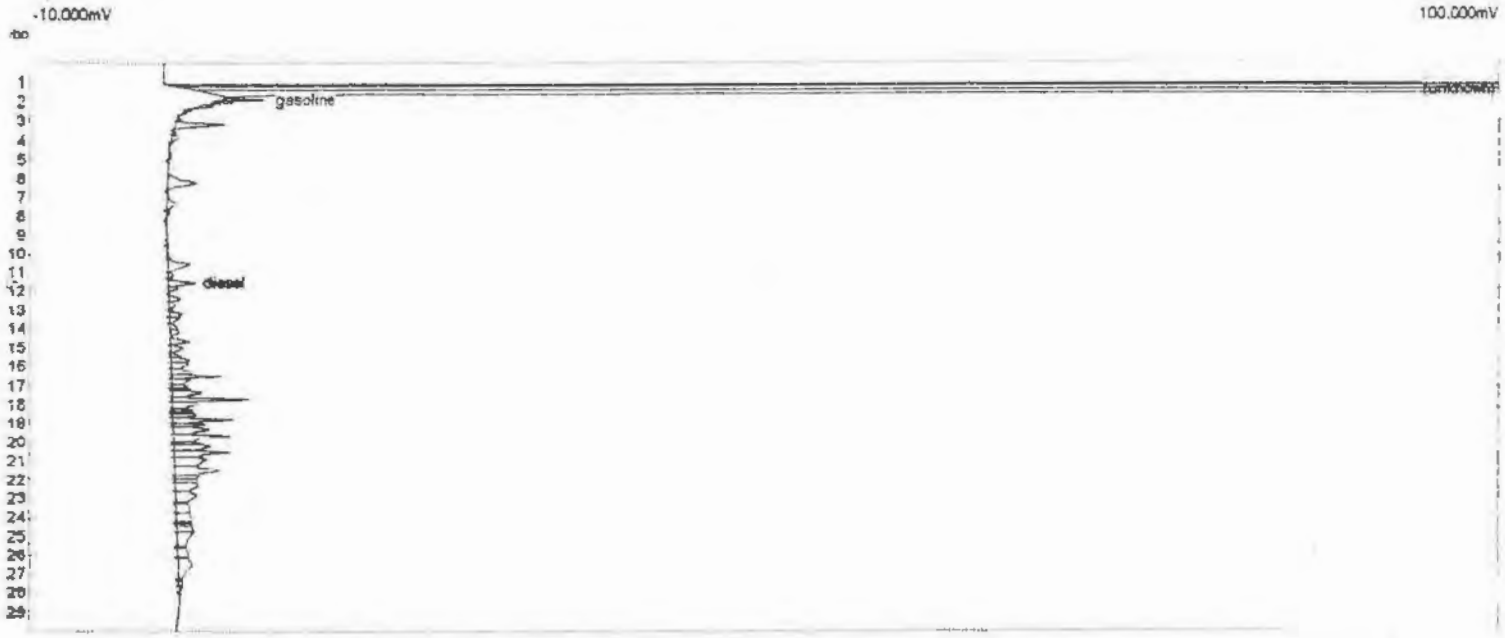
Component	Retention	Area	External	Units
soline	0.883	63.328	43.73	
el	14.133	327.451	110.78	ppm
		390.779	154.51	

Lab name: On Site Labs Inc
alysis date: 03/18/2002 11:57:03
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0316FD2.chr ()
Sample: 200/400 G/D OPEN STD
Operator: MAP



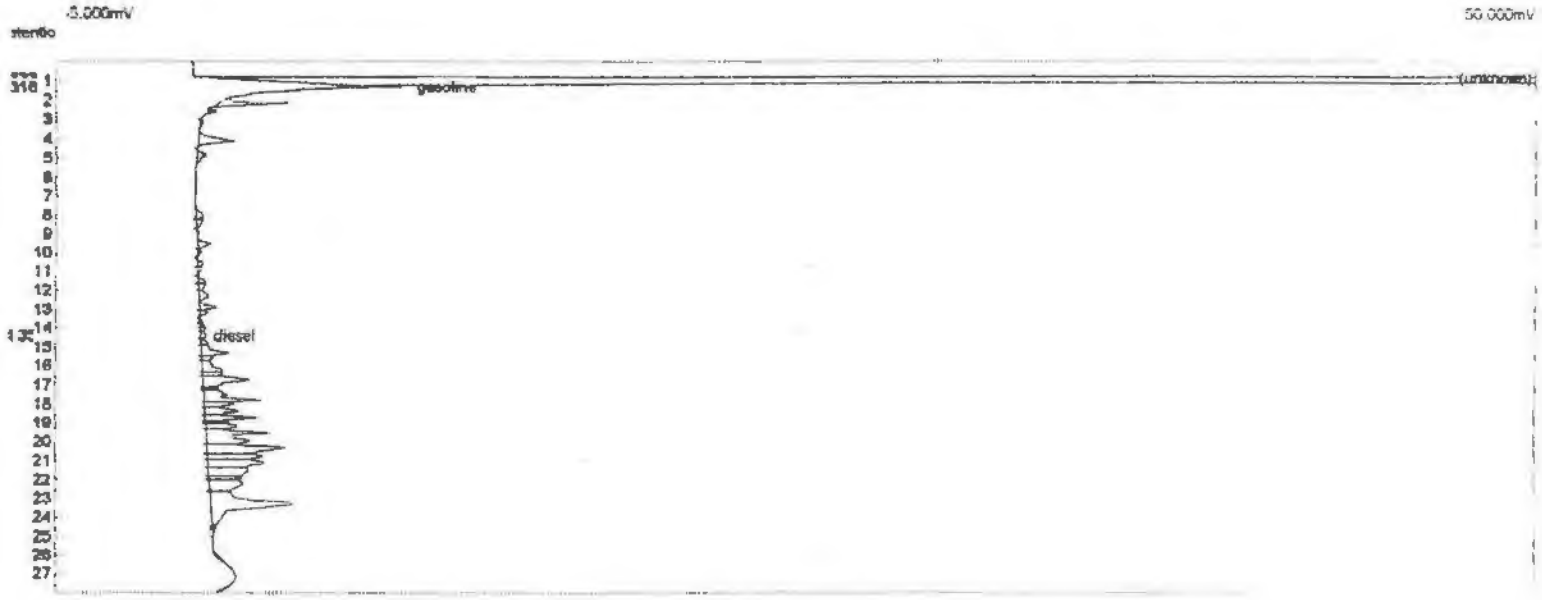
Component	Retention	Area	External	Units
soline	2.250	260.332	212.69	
sel	15.483	1067.232	440.28	ppm
		1327.564	652.97	

Lab name: On Site Labs Inc
lysis date: 03/18/2002 18:48:09
Method: EPA 8015B mod.
Lab ID: GC - 5
escription: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
C : N2
D e: 0318fb17.CHR 0
Sample: 200/400 ppm G/D close
Operator: MAP



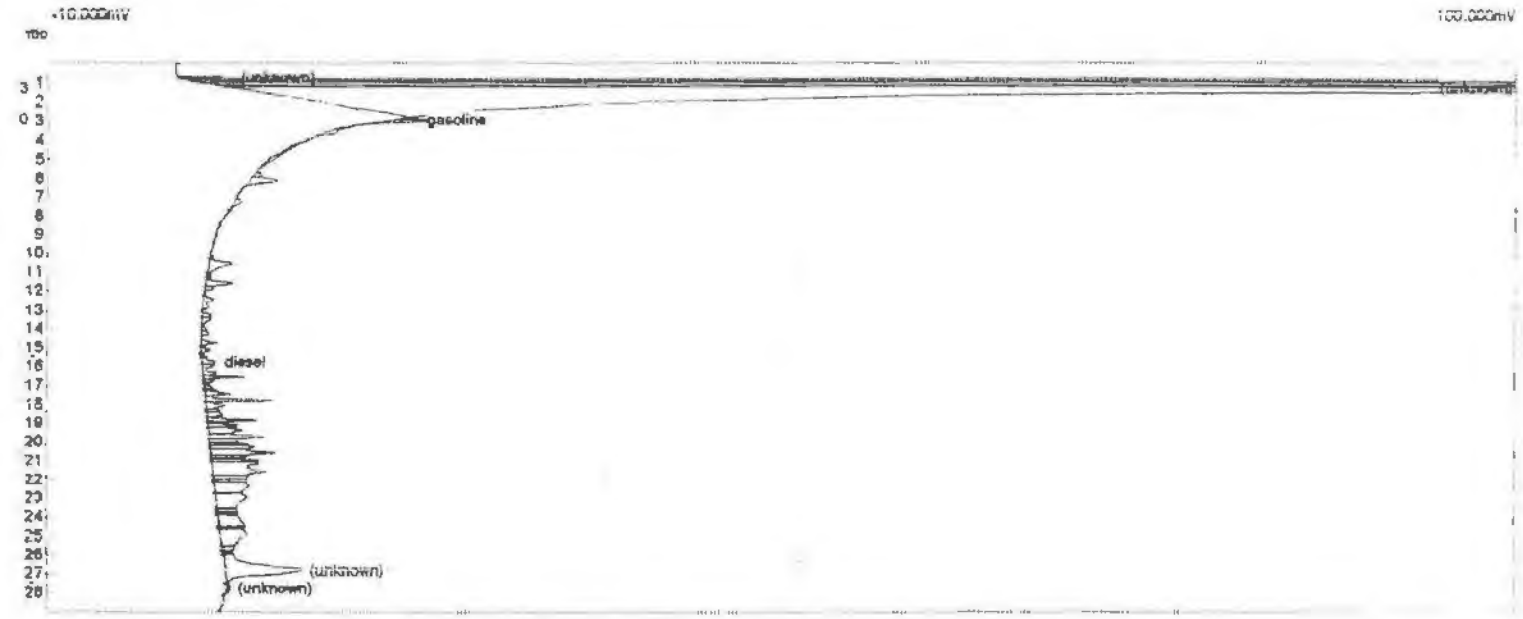
Com ant	Retention	Area	External	Units
oline	1.883	210.391	205.46	
sel	11.516	1218.967	439.11	ppm
		1429.359	644.57	

Lab name: On Site Labs Inc
Analysis date: 03/18/2002 18:48:09
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0318fc17.CHR ()
Sample: 100/200 ppm G/D close
Operator: MAP



Component	Retention	Area	External	Units
Gasoline	1.316	138.731	95.81	
Diesel	14.350	614.261	207.80	ppm
		752.991	303.61	

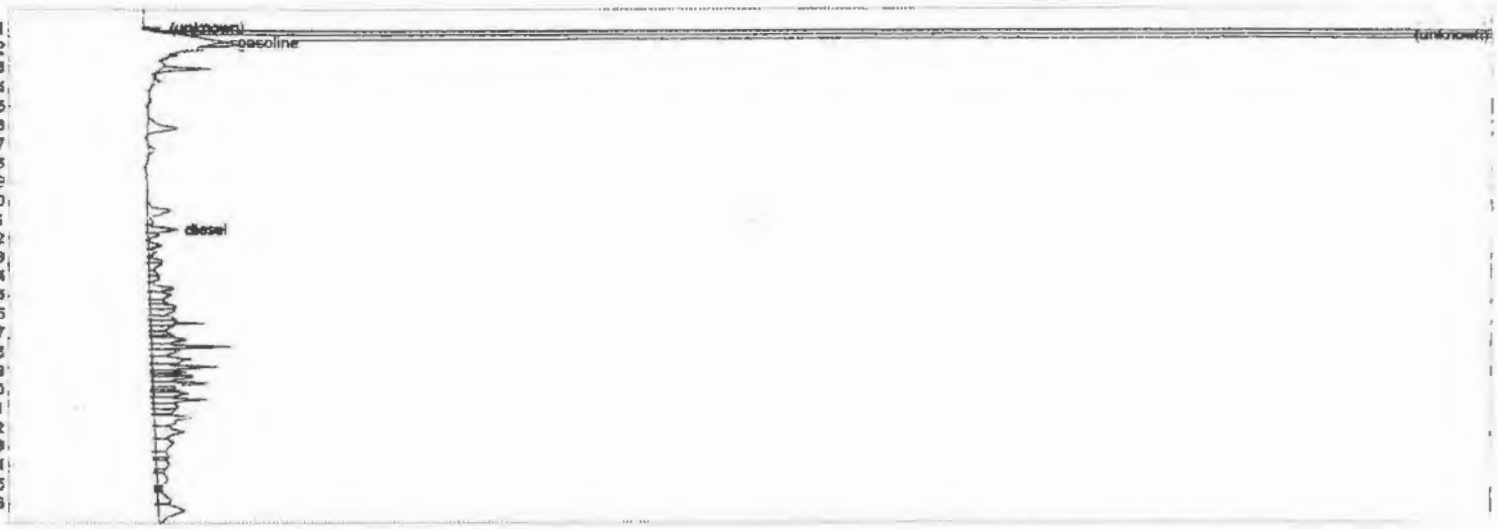
Lab name: On Site Labs inc
alysis date: 03/18/2002 18:48:09
Method: EPA 8015B mod.
Lab ID: GC - 5
)escription: FID 4 - Ch. 4
Col[illegible]n: XTI-5, 30m, 0.53mm, 1.5um
[illegible]r: N2
D[illegible]e: 0318fd17.CHR ()
Sample: 200/400 ppm G/D close
Operator: MAP



Component	Retention	Area	External	Units
o[illegible]	2.900	258.564	211.24	
asel	15.750	1051.809	433.91	ppm
		1310.372	645.16	

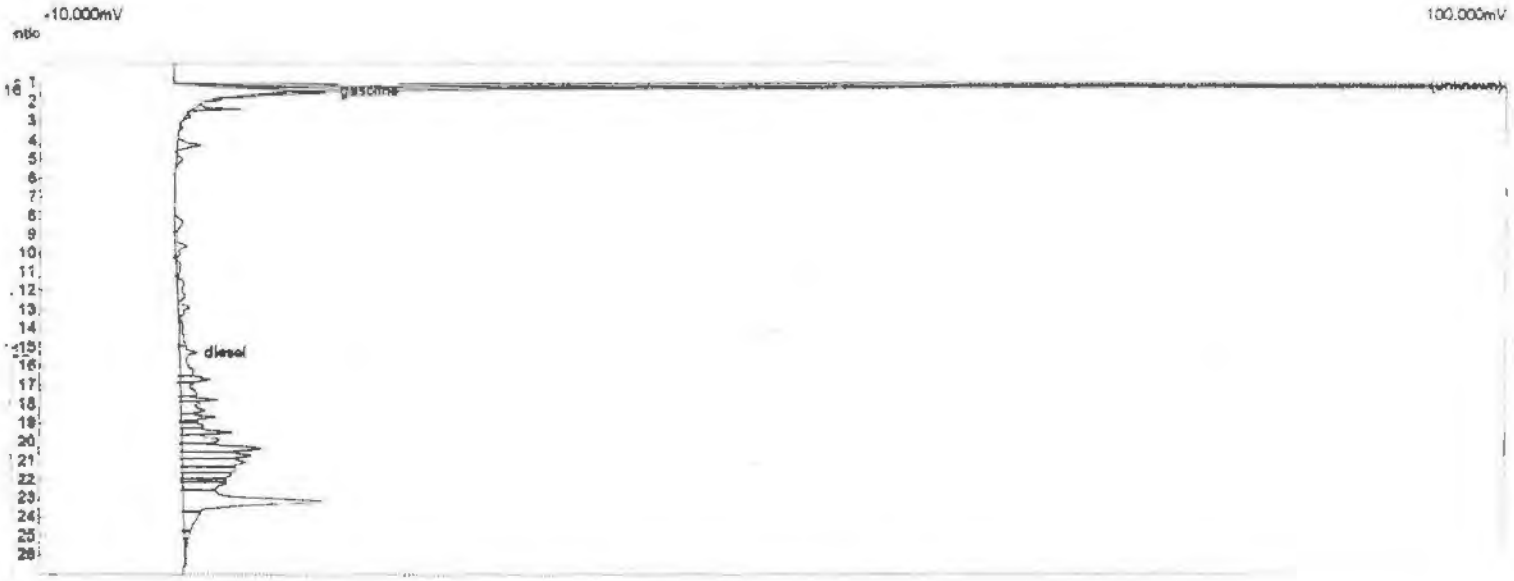
Lab name: On Site Labs Inc
nalysis date: 03/18/2002 18:17:30
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0318fb16.CHR ()
Sample: HLA03matrix spike
Operator: MAP

-10.000mV 100.000mV



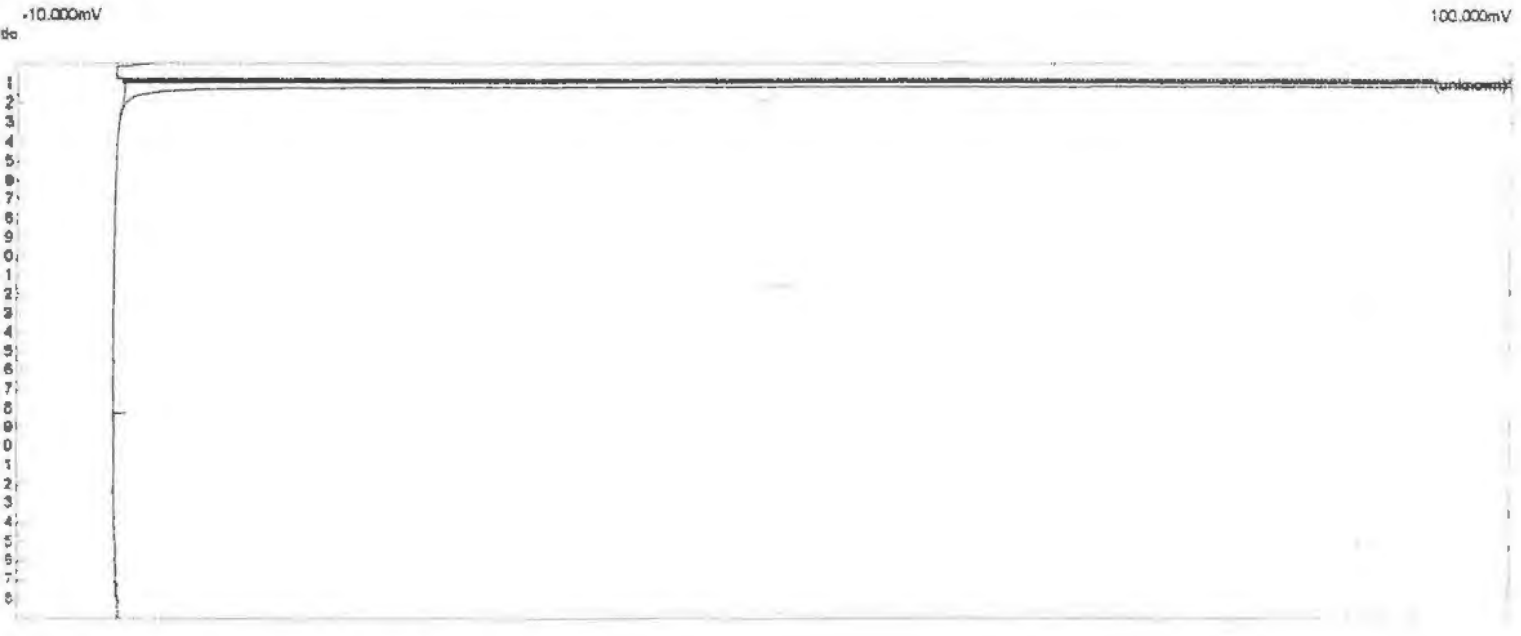
Component	Retention	Area	External	Units
soline	1.716	198.609	193.95	
sel	11.500	1214.061	437.34	ppm
		1412.670	631.30	

Lab name: On Site Labs Inc
alysis date: 03/18/2002 18:17:30
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
er: N2
le: 0318fc16.CHR ()
Sample: HLA03matrix spike duplicat
Operator: MAP



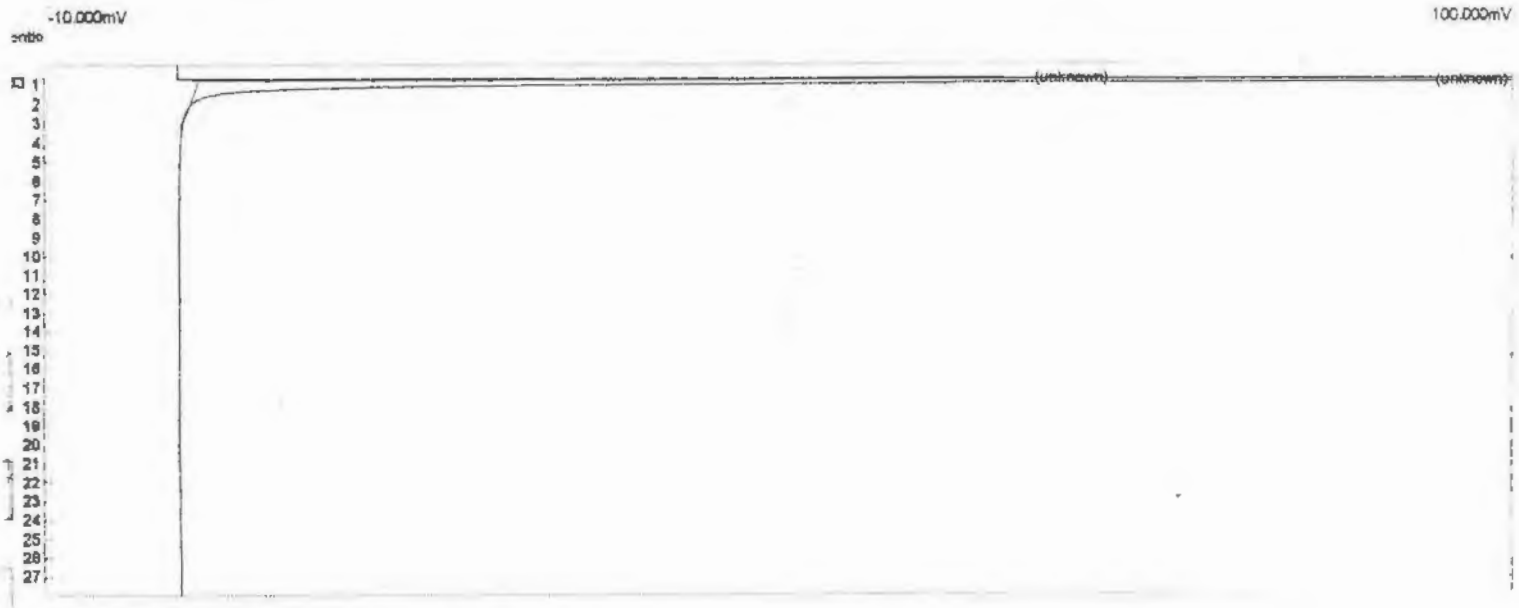
Component	Retention	Area	External	Units
asolin	1.416	258.561	178.56	
s	15.233	1313.525	444.36	ppm
		1572.086	622.92	

Lab name: On Site Labs Inc
alysis date: 03/18/2002 13:14:19
Method: EPA 8015B mod.
Lab ID: GC - 5
escription: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0316fb4.CHR ()
Sample: method blank
Operator: MAP



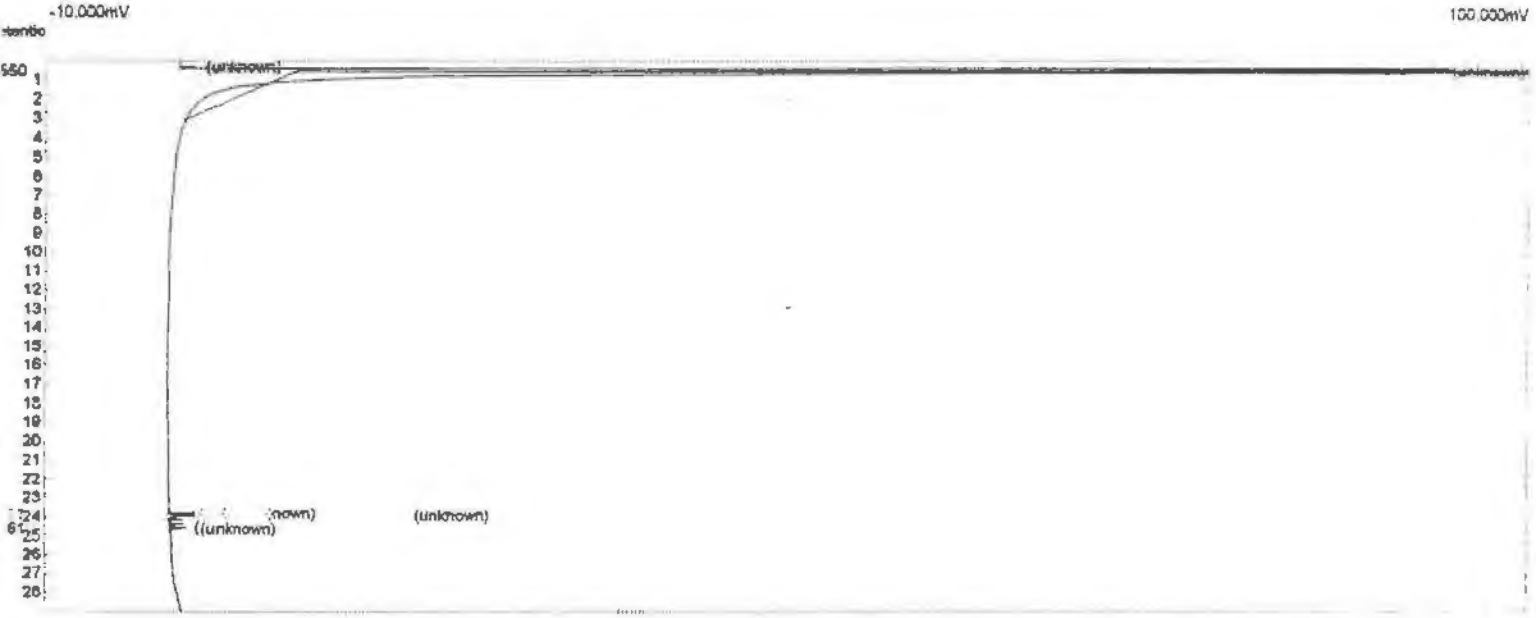
omponent	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/18/2002 13:54:41
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0318fc6.CHR ()
Sample: method blank
Operator: MAP



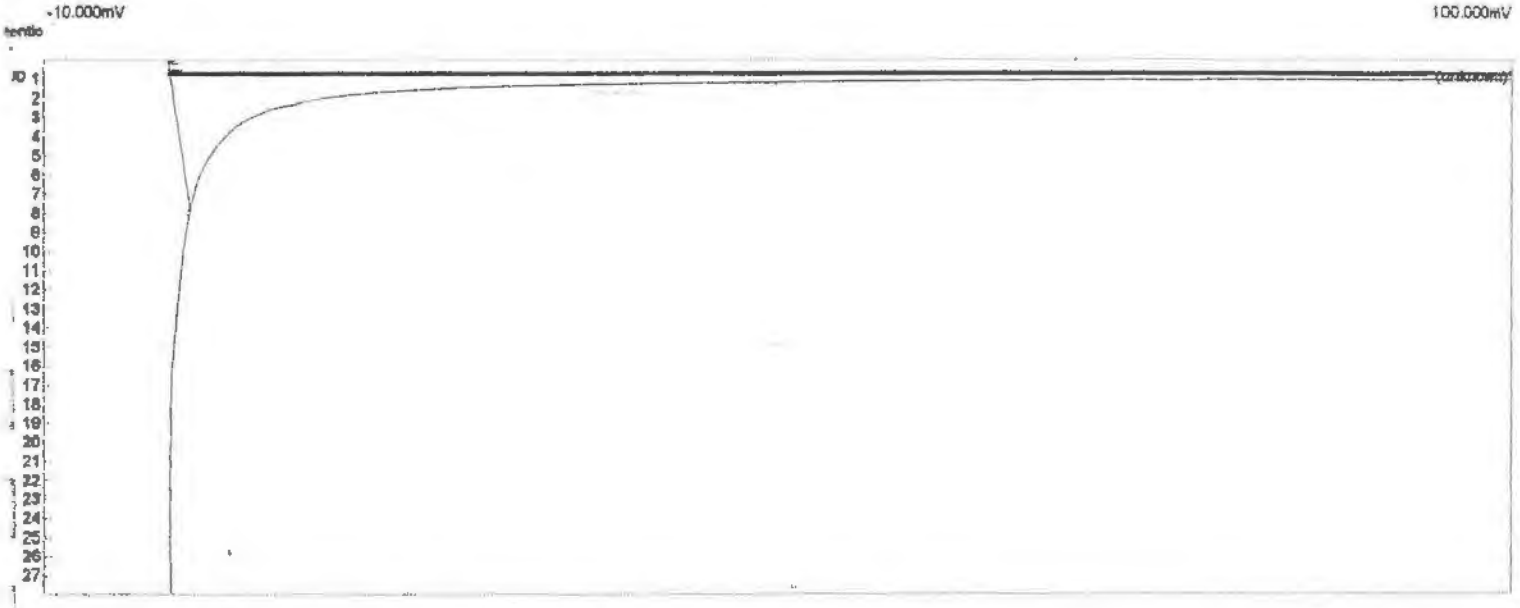
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/18/2002 13:14:19
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0318fd4.CHR ()
Sample: method blank
Operator: MAP



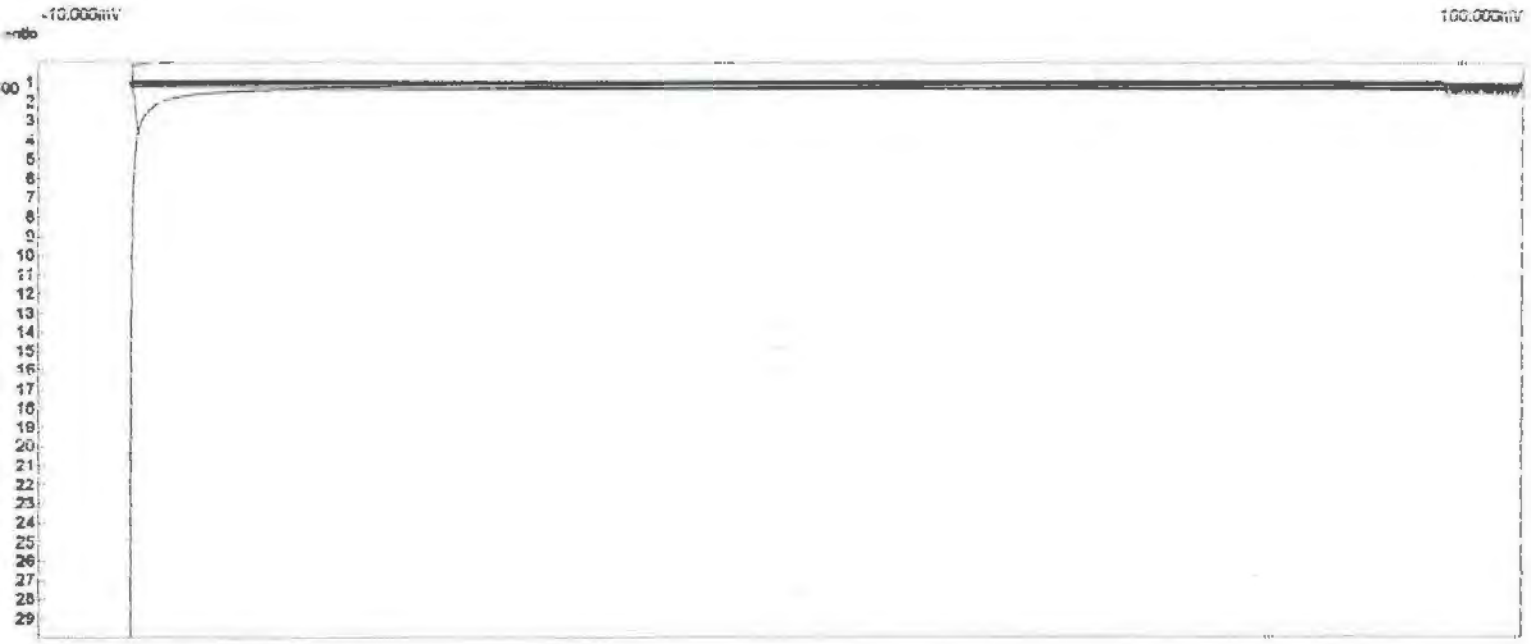
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
nalysis date: 03/18/2002 16:44:14
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
File: 0318FD13.chr ()
ple: HLA031/0311CH2M
Operator: MAP



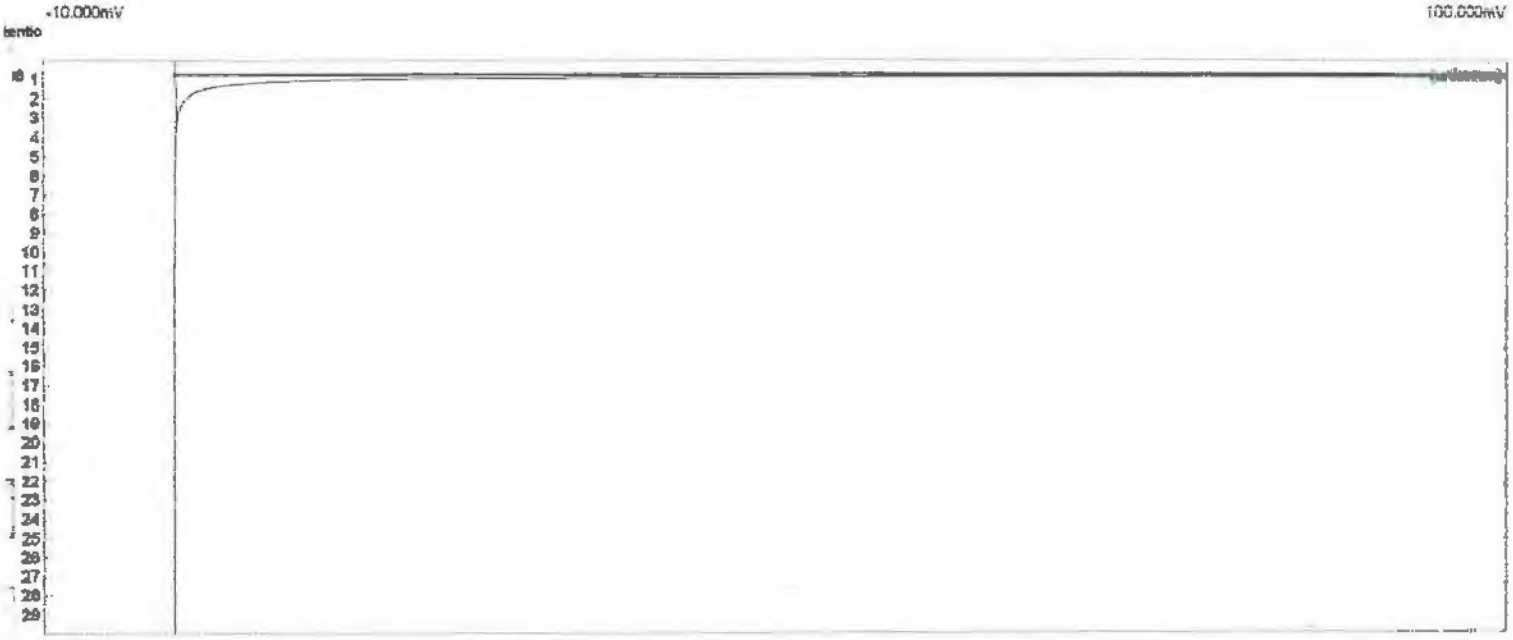
Component	Retention	Area	Externai	Units
		0.000	0.00	

Lab name: On Site Labs Inc
Analysis date: 03/18/2002 17:15:27
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID2 - Ch. 2
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0318FB14.chr ()
Sample: JLA024/0311CH2M
Operator: MAP



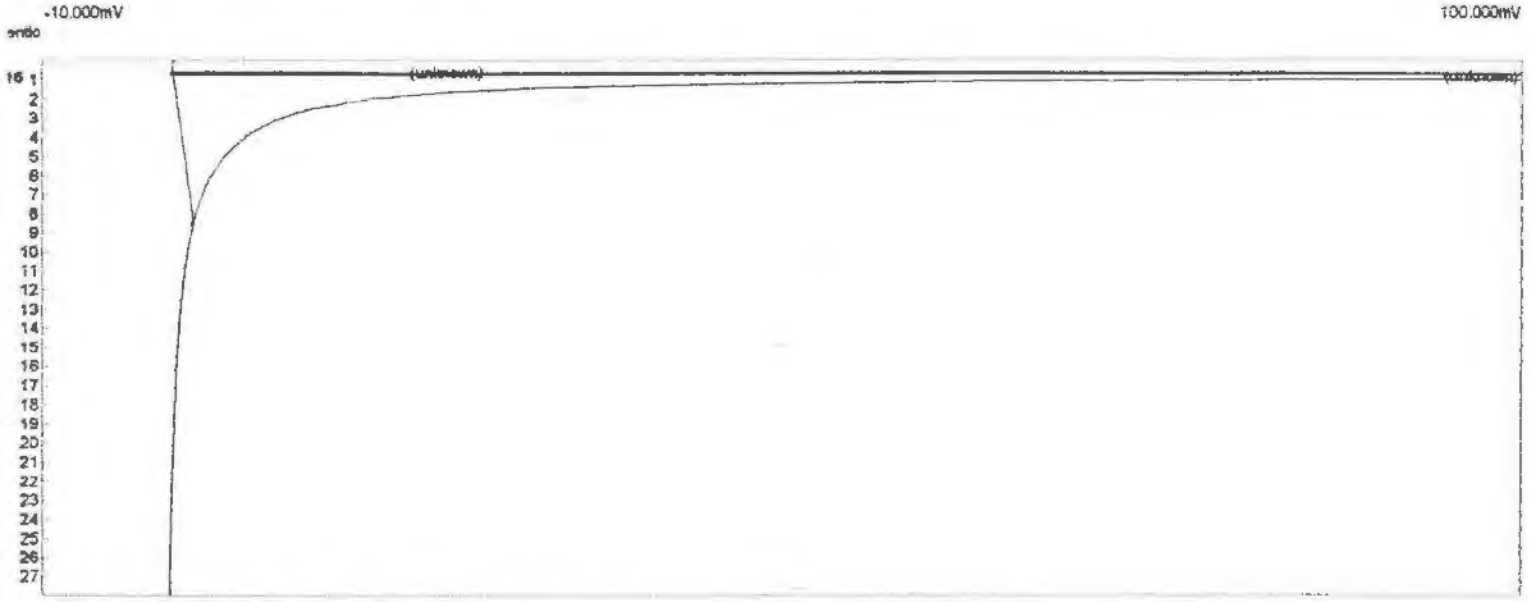
Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
alysis date: 03/18/2002 17:15:27
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 3 - Ch. 3
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
D ile: 0318FC14.chr ()
ple: JLA025/0311CH2M
C, ator: MAP



Component	Retention	Area	External	Units
		0.000	0.00	

Lab name: On Site Labs Inc
nalysis date: 03/18/2002 17:15:27
Method: EPA 8015B mod.
Lab ID: GC - 5
Description: FID 4 - Ch. 4
Column: XTI-5, 30m, 0.53mm, 1.5um
Carrier: N2
Data file: 0318FD14.chr ()
Sample: JLA027EB3/0305CH2M
Operator: MAP



Component	Retention	Area	External	Units
		0.000	0.00	

QA/QC REPORT - CALIBRATION DATA

OSL Project #02I0311CH2M
DAILY CALIBRATION DATE: 03/18/02

CH2M HILL PROJECT NO. 167722.FI.FS
PROJECT NAME: RRNAS SITES 88, 1970 AND 2036, CEIBA

			INITIAL		OPENING			CLOSING		
COMPOUND	DETECTOR	CALIB RANGE	RF	%RSD	AREA	RF	%DIFF	AREA	RF	%DIFF
BENZENE	P&T - GC3	0.5 - 75.0	85.78	8.1%	727.06	90.88	5.9%	716.49	89.56	4.4%
TOLUENE	P&T - GC3	0.5 - 75.0	81.33	8.2%	689.17	86.15	5.9%	681.21	85.15	4.7%
ETHYLBENZENE	P&T - GC3	0.5 - 75.0	65.84	13.6%	467.28	58.41	11.3%	478.09	59.76	9.2%
m&p-XYLENES	P&T - GC3	1.0 - 150	98.46	16.8%	1614.99	100.94	2.5%	1625.49	101.59	3.2%
o-XYLENES	P&T - GC3	0.5 - 75.0	73.19	17.4%	566.88	70.86	3.2%	607.29	75.91	3.7%

CALIB RANGE - RANGE OF CALIBRATION CURVE IN ppb
INITIAL RF - AVERAGE RESPONSE FACTOR FROM MULTIPOINT CALIBRATION CURVE
% RSD - LINEARITY OF MULTIPOINT CALIBRATION CURVE (+/- 20% ACCEPTABLE LIMITS)
AREA - AREA COUNTS FROM DAILY CALIBRATION STANDARD
RF - DETECTOR RESPONSE FACTOR FROM MID-POINT CALIBRATION STANDARD
% DIFF - DIFFERENCE, IN PERCENT, BETWEEN THE AVERAGE RF AND THE OPENING OR CLOSING RF (+/- 20% ACCEPTABLE LIMITS)
OPENING - MID-POINT CALIBRATION STANDARD ANALYZED BEFORE SAMPLE ANALYSES BEGIN
CLOSING - MID-POINT CALIBRATION STANDARD ANALYZED AFTER SAMPLES ANALYSES ARE COMPLETE

ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

ON SITE LABS, INC
PMB 627, HC-01 BOX 29030, CAGUAS, P R 00725
TELEPHONE (787) 720-0329 FAX 789-3858

QA/QC REPORT - MS/MSD DATA

MATRIX SPIKE (MS)/MATRIX SPIKE DUPLICATE (MSD)

OSL PROJECT #02I0311CH2M — CH2M HILL PROJECT NO. 167722.FI.FS

DATE: 03/18/02 — PROJECT NAME: RRNAS SITES 88, 1970 AND 2036

COMPOUND	SPK CONC (ppb)	MS CONC (ppb)	%REC MS	MSD CONC (ppb)	%REC MSD	RPD	ACCEPTABLE RPD	ACCEPTABLE RECOVERY
BENZENE	8.0	9.3	117%	9.3	117%	0%	20%	82% - 117%
TOLUENE	8.0	9.5	119%	9.3	117%	2%	20%	87% - 120%
ETHYLBENZENE	8.0	8.0	99%	8.0	100%	1%	20%	83% - 131%
TOTAL XYLENES	24.0	28.2	117%	28.1	117%	0%	20%	87% - 123%

ppb = PARTS PER BILLION

MS CONC - ANALYZED CONCENTRATION OF SPIKED SAMPLE

% REC - PERCENT RECOVERY OF SPIKE FROM MATRIX

RPD - RELATIVE PERCENT DIFFERENCE BETWEEN MATRIX SPIKE AND MATRIX SPIKE DUPLICATE RECOVERIES

ANALYSES PERFORMED BY MARCO A. PEDRAZA

DATA REVIEWED BY KEVIN SHELBURNE

ON SITE LABS, INC
PMB 627, HC-01 BOX 29030, CAGUAS, P.R. 00725
TELEPHONE (787) 720-0329 FAX 789-3858

LABORATORY QA/QC

CH2M HILL

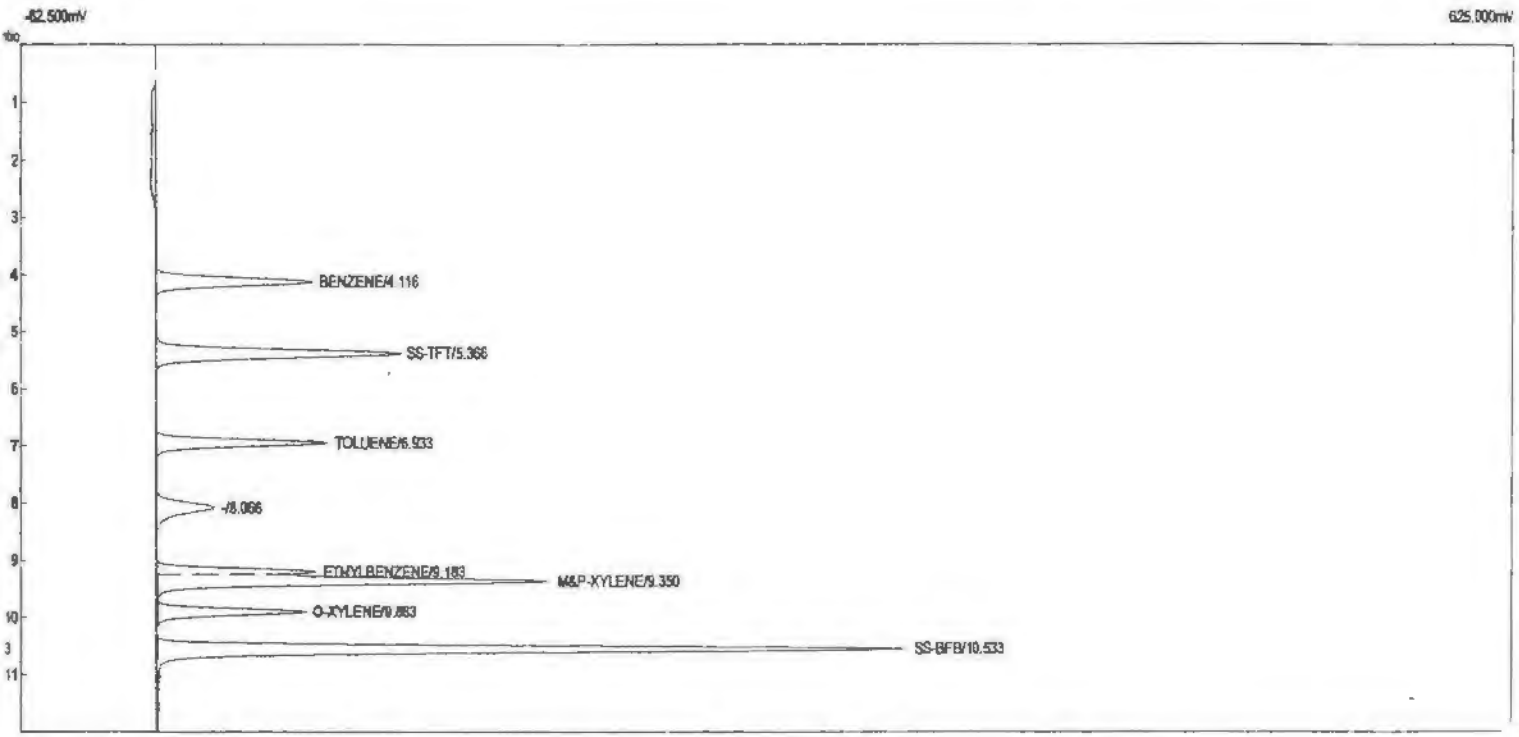
OSL Project #02I0311CH2M

BTEX (Mod. EPA Method 8020A) ANALYSES OF WATER

SAMPLE NUMBER	DATE ANALYZED	BENZENE (µg/L)	TOLUENE (µg/L)	ETHYL-BENZENE (µg/L)	TOTAL XYLENES (µg/L)
ILA019	03/18/02	ND	ND	ND	ND
ILA019 DUP.	03/18/02	ND	ND	ND	ND
DETECTION LIMIT (µg/L)		1.0	1.0	1.0	3.0

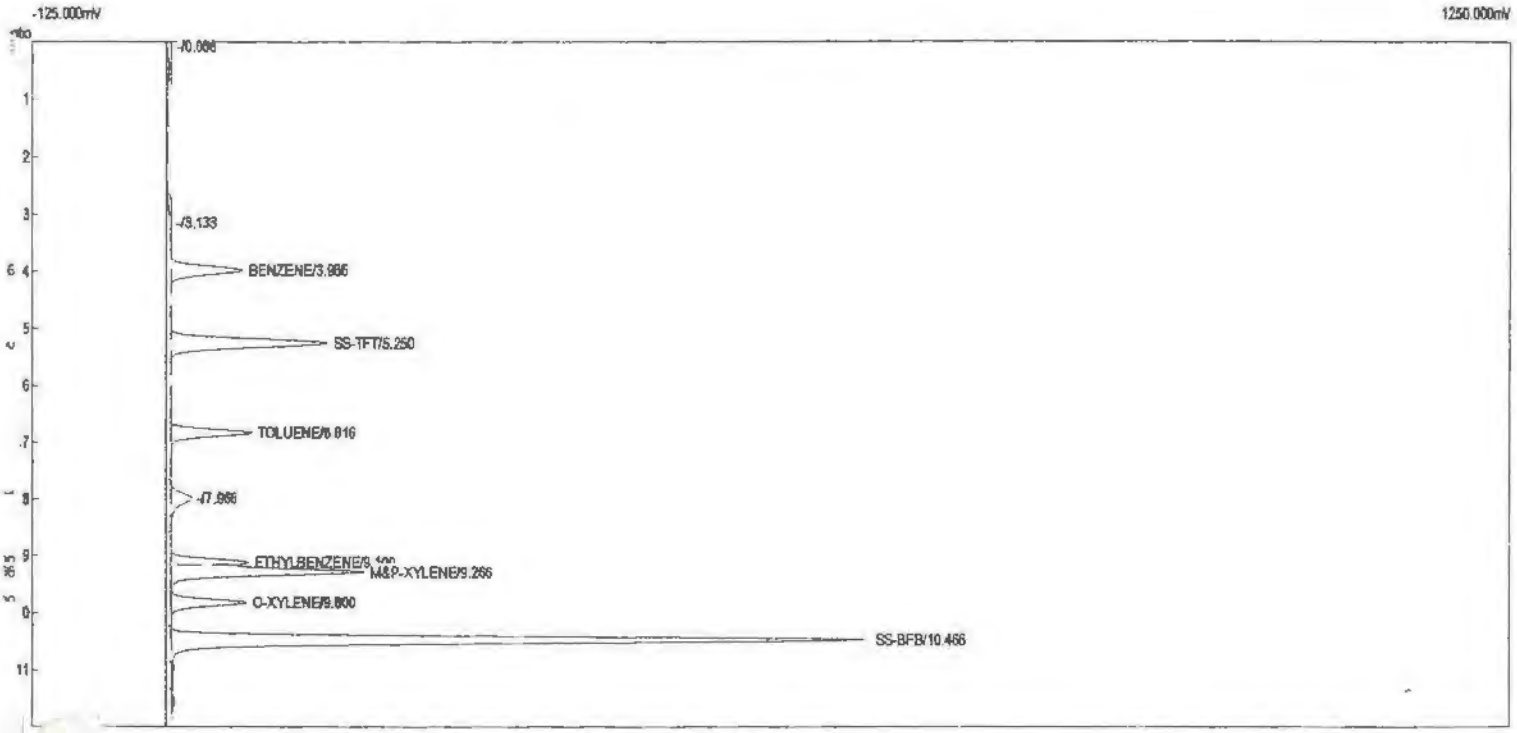
"ND" INDICATES ANALYTE NOT DETECTED AT OR ABOVE THE LISTED DETECTION LIMIT
DUP. = LABORATORY DUPLICATE
µg/L = MICROGRAMS PER LITER
ANALYSES PERFORMED BY: MARCO A. PEDRAZA
DATA REVIEWED BY: KEVIN SHELBURNE

alysis date: 03/18/2002 10:39:59
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P1.CHR ()
Sample: 8 ppb BTEX OPEN STD
Operator: MAP



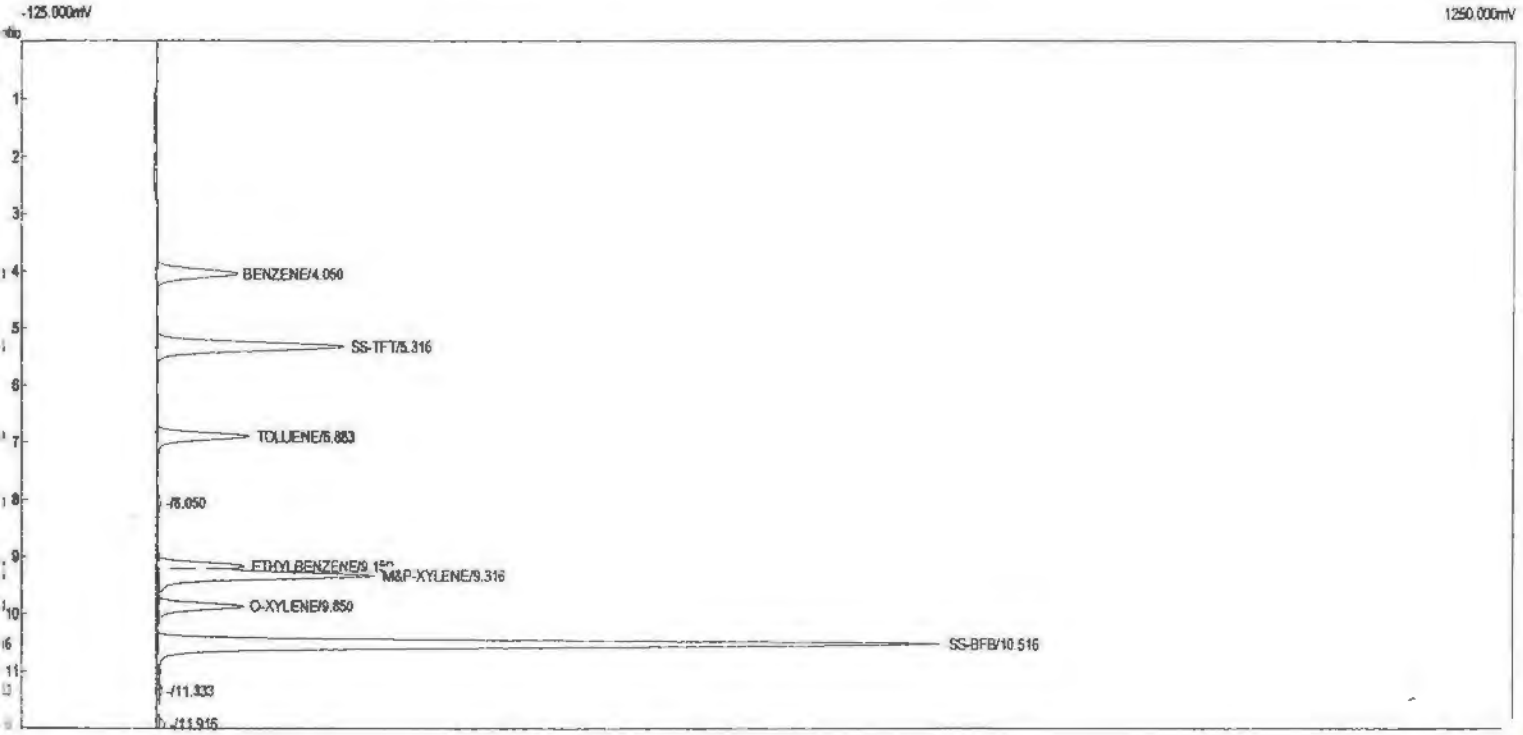
Component	Retention	Height	Area	External	Internal	Units
NZENE	4.116	71.676	727.064	8.48	8.4759	ppb
-TFT	5.366	111.960	1188.597	13.29	13.2923	ppb
LUENE	6.933	78.680	689.170	8.47	8.4737	ppb
HYLBENZENE	9.183	72.818	467.283	7.10	7.0972	ppb
P-XYLENE	9.350	181.067	1614.985	16.40	16.4024	ppb
YLENE	9.883	67.820	566.881	7.75	7.7453	ppb
-BFB	10.533	345.781	2848.708	12.49	12.4943	ppb
			8102.687	73.98	73.9813	

Lab name: On Site Labs Inc.
Analysis date: 03/18/2002 19:14:50
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P22.CHR ()
File: 6 ppb BTEX CLOSE STD
Operator: MAP



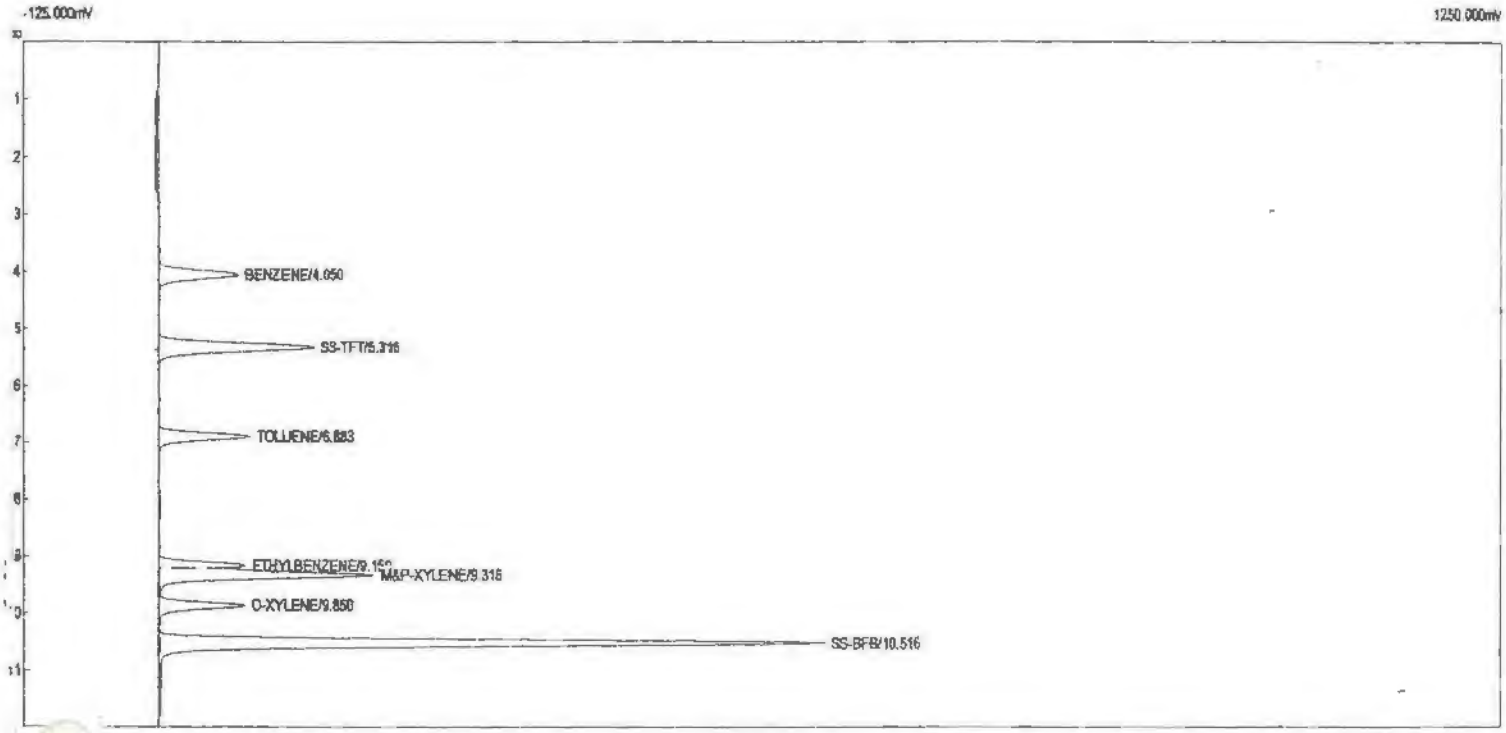
Component	Retention	Height	Area	External	Internal	Units
BENZENE	3.966	67.088	716.491	8.35	8.3527	ppb
TFT	5.250	146.375	1564.790	17.50	17.4993	ppb
UENE	6.816	75.591	681.207	8.38	8.3758	ppb
THYLBENZENE	9.100	72.519	478.088	7.26	7.2614	ppb
&P-XYLENE	9.266	160.475	1625.490	16.51	16.5091	ppb
YLENE	9.800	70.658	607.294	8.30	8.2975	ppb
BFB	10.466	646.805	5237.193	22.97	22.9701	ppb
			10910.553	89.27	89.2660	

nalysis date: 03/18/2002 18:02:40
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P20.CHR ()
Sample: ILA019matrix spike ~~duplica~~
Operator: MAP



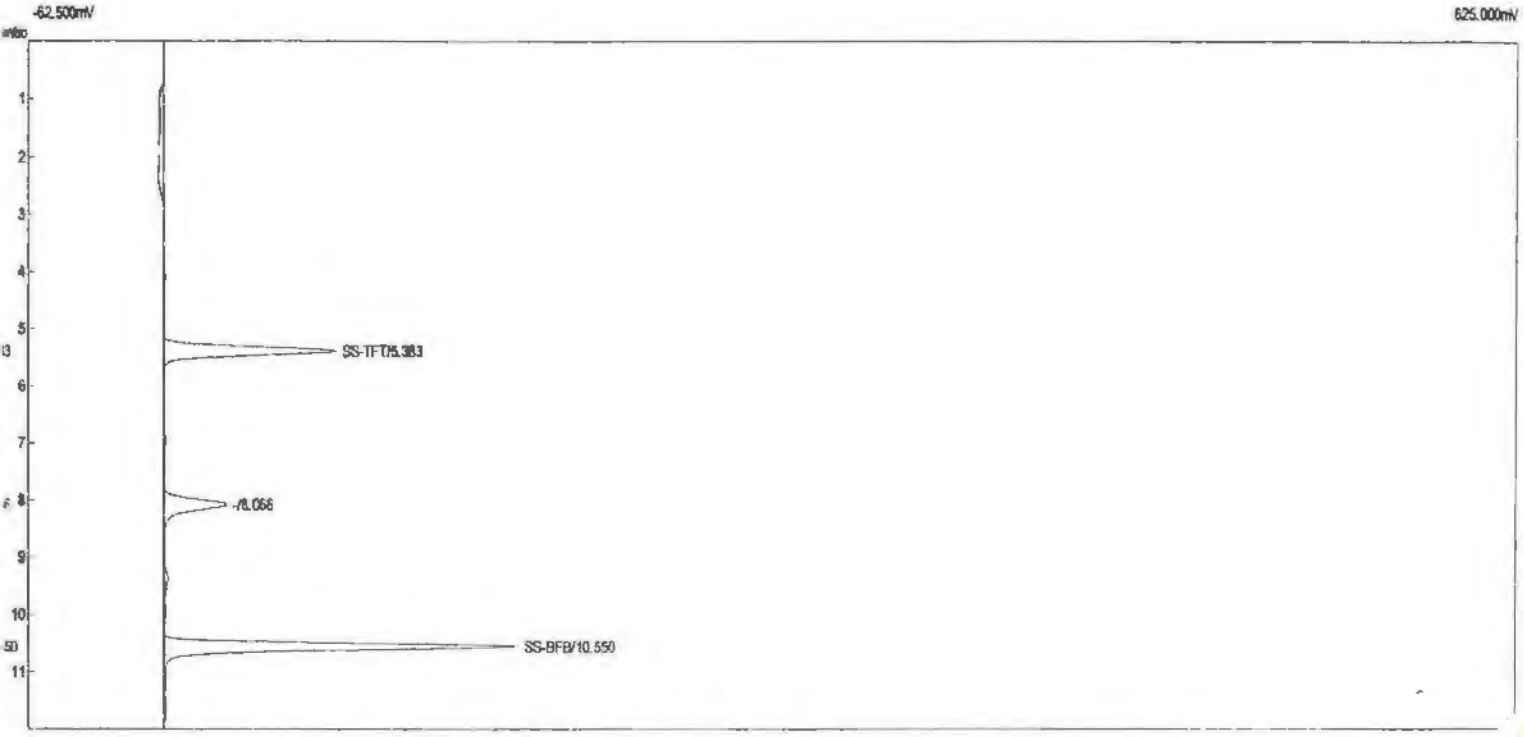
Component	Retention	Height	Area	External	Internal	Units
NZENE	4.050	74.053	799.540	9.32	9.3208	ppb
-TFT	5.316	172.946	1836.926	20.54	20.6427	ppb
LUENE	6.883	85.754	774.375	9.52	9.5214	ppb
HYLBENZENE	9.150	80.379	523.459	7.95	7.9505	ppb
P-XYLENE	9.316	201.816	1857.134	18.86	18.8618	ppb
YLENE	9.850	78.554	680.146	9.29	9.2929	ppb
-BFB	10.516	724.062	5972.136	26.19	26.1936	ppb
			12443.716	101.68	101.6836	

Lab Name: On Site Labs Inc.
Analysis date: 03/18/2002 18:20.30
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P21.CHR ()
S[illegible]: ILA019matrix spike duplica
O[illegible]r: MAP



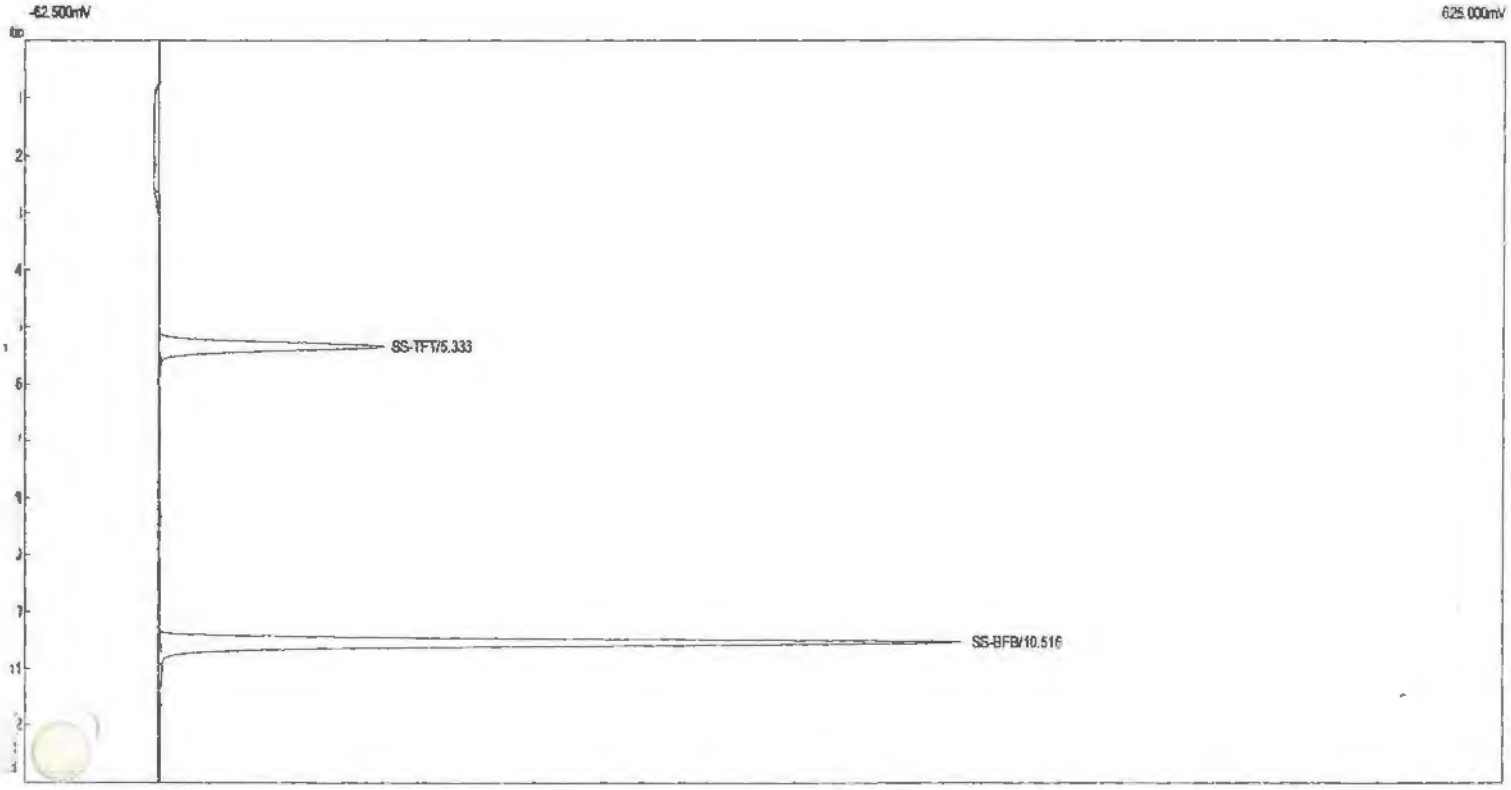
Co[illegible]ent	Retention	Height	Area	External	Internal	Units
NZENE	4.050	74.807	801.364	9.34	9.3421	ppb
TFT	5.316	145.040	1533.984	17.15	17.1548	ppb
UENE	6.883	85.370	759.008	9.33	9.3324	ppb
HYLBENZENE	9.150	80.800	528.273	8.02	8.0236	ppb
&P-XYLENE	9.316	201.783	1835.918	18.65	18.6463	ppb
YLENE	9.850	79.993	689.524	9.42	9.4210	ppb
BFB	10.516	618.143	5082.878	22.29	22.2933	ppb
			11230.948	94.21	94.2136	

nalysis date: 03/18/2002 11:30:48
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P2.CHR ()
Sample: method blank
Operator: MAP



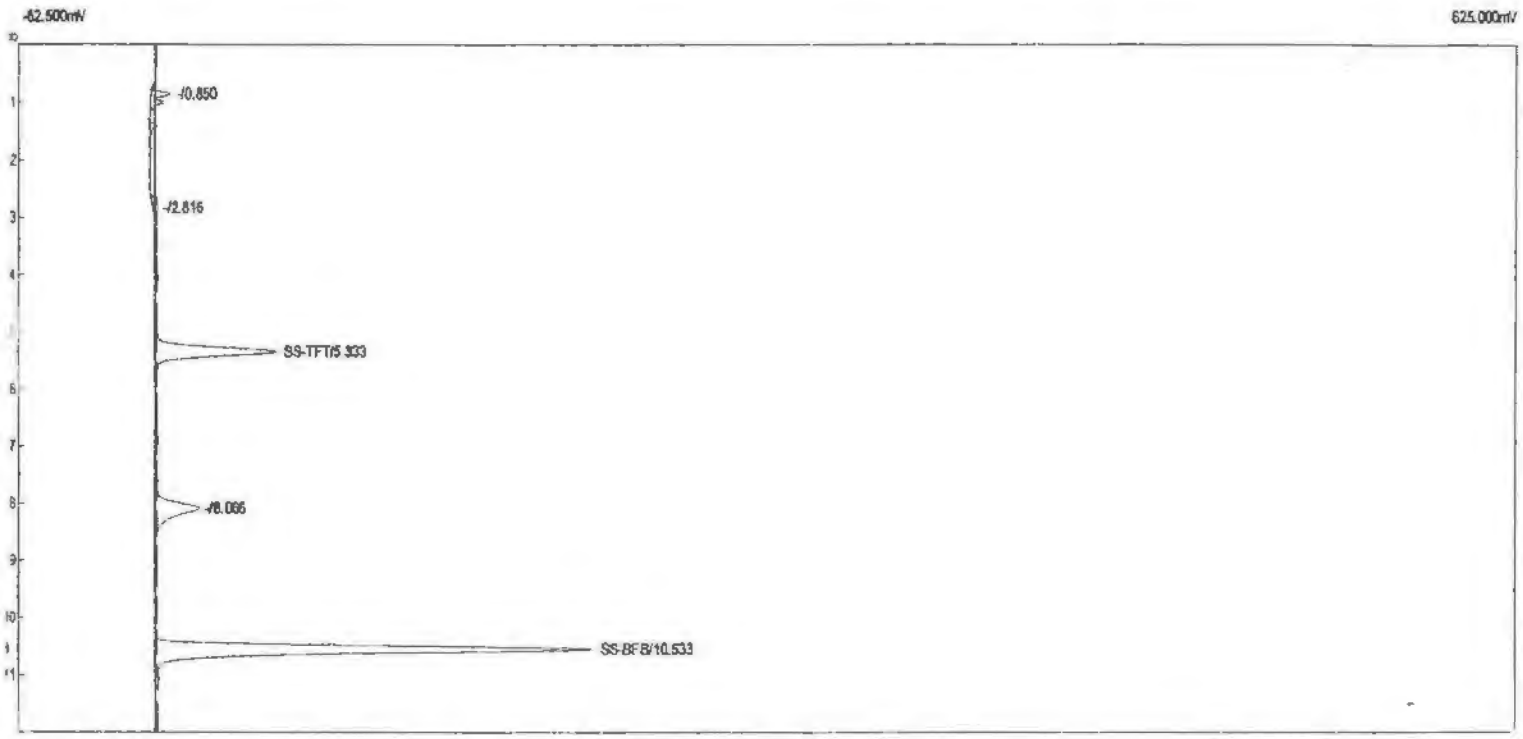
Component	Retention	Height	Area	External	Internal	Units
-TFT	5.383	79.558	837.175	9.36	9.3623	ppb
-BFB	10.550	163.309	1406.245	6.17	6.1677	ppb
			2243.420	15.53	15.5300	

Lab name: On Site Labs Inc.
Analysis date: 03/18/2002 15:48:30
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P13.CHR ()
S[illegible]: HLA0319/0311CH2M
C[illegible]r: MAP



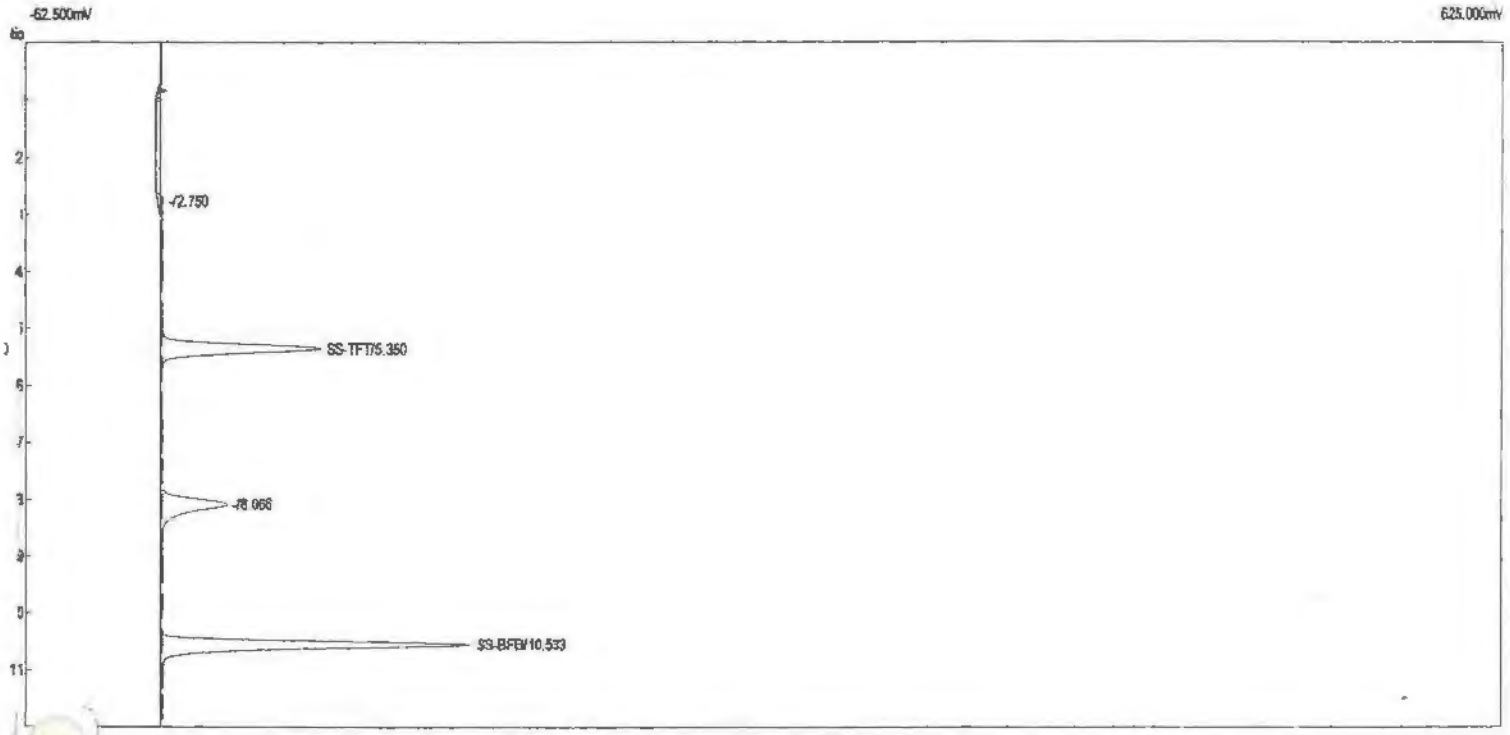
Component	Retention	Height	Area	External	Internal	Units
TFT	5.333	104.844	1105.736	12.37	12.3656	ppb
S-BFB	10.516	373.626	3273.720	14.36	14.3584	ppb
			4379.456	26.72	26.7241	

alysis date: 03/18/2002 14:42:18
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
)escription: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P10.CHR ()
Sample: JLA024/0305CH2M
Operator: MAP 03//



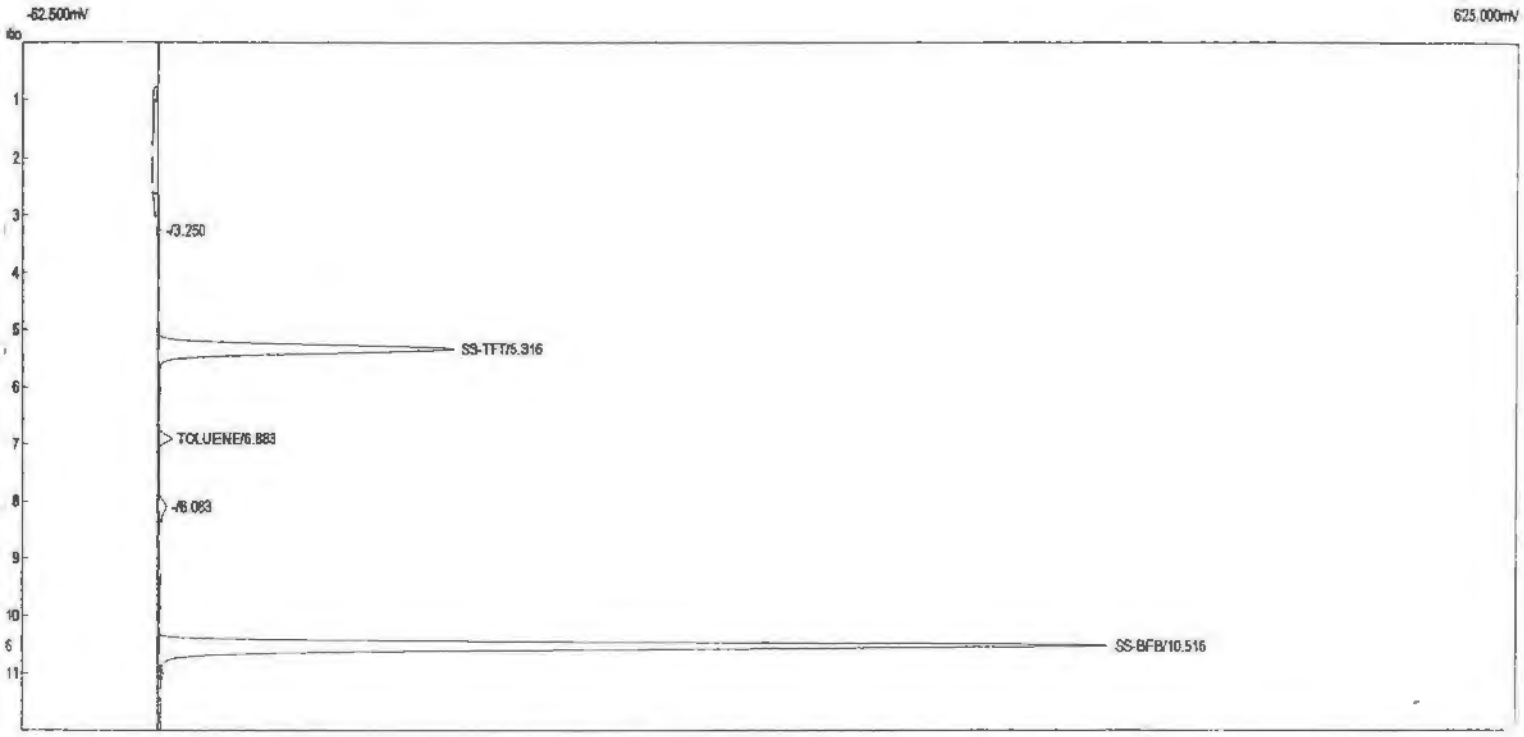
Component	Retention	Height	Area	External	Internal	Units
TFT	5.333	55.701	596.424	6.67	6.6699	ppb
BFB	10.533	202.204	1846.796	8.10	8.1000	ppb
			2443.220	14.77	14.7699	

Lab name: On Site Labs Inc.
alysis date: 03/18/2002 15:05:56
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
)escription: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P11.CHR ()
: JLA025/0305CH2M
C or: MAP 0311



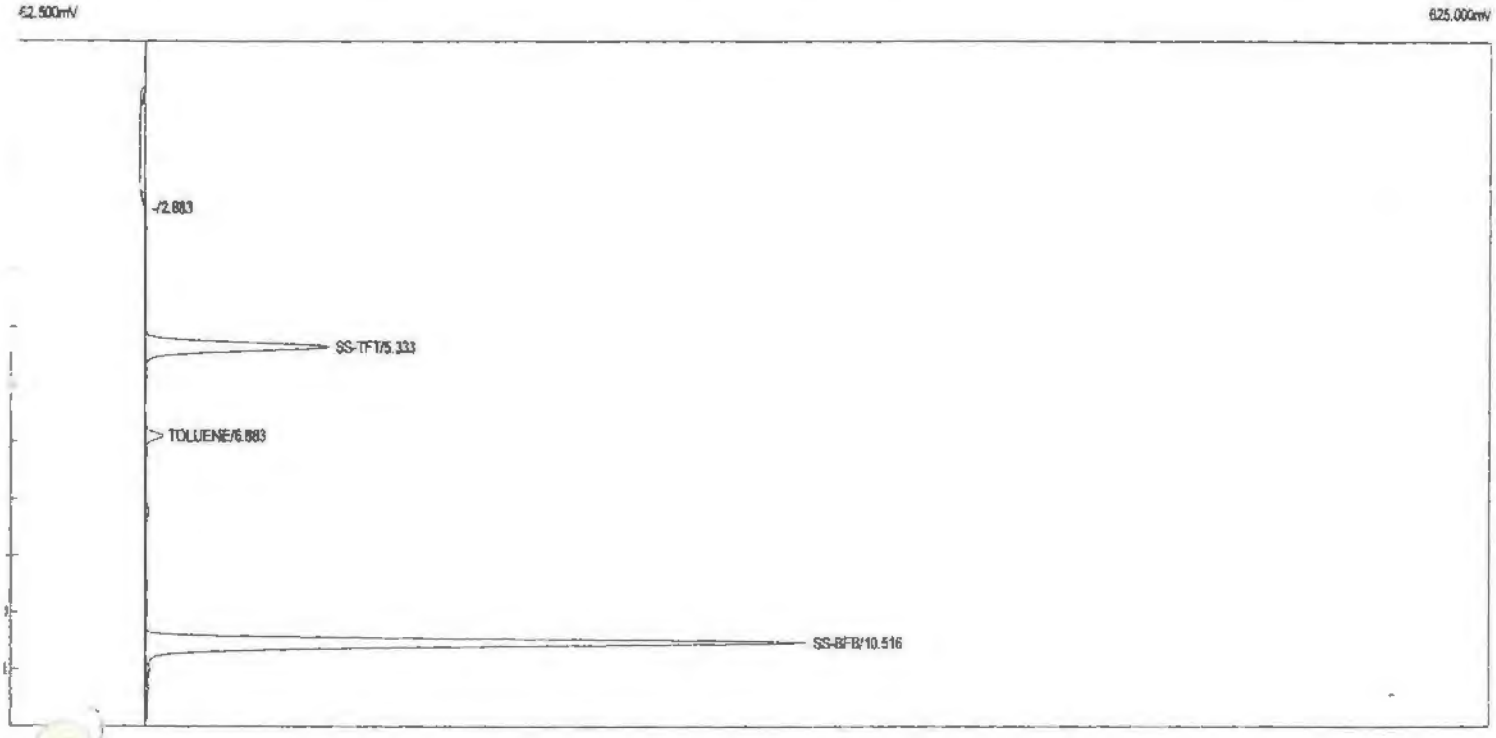
Component	Retention	Height	Area	External	Internal	Units
S-TFT	5.350	73.717	791.054	8.85	8.8465	ppb
BFB	10.533	143.708	1309.928	5.75	5.7453	ppb
			2100.982	14.59	14.5918	

nalysis date: 03/18/2002 16:43:00
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P16.CHR ()
Sample: JLA027EB3/0305CH2M
Operator: MAP



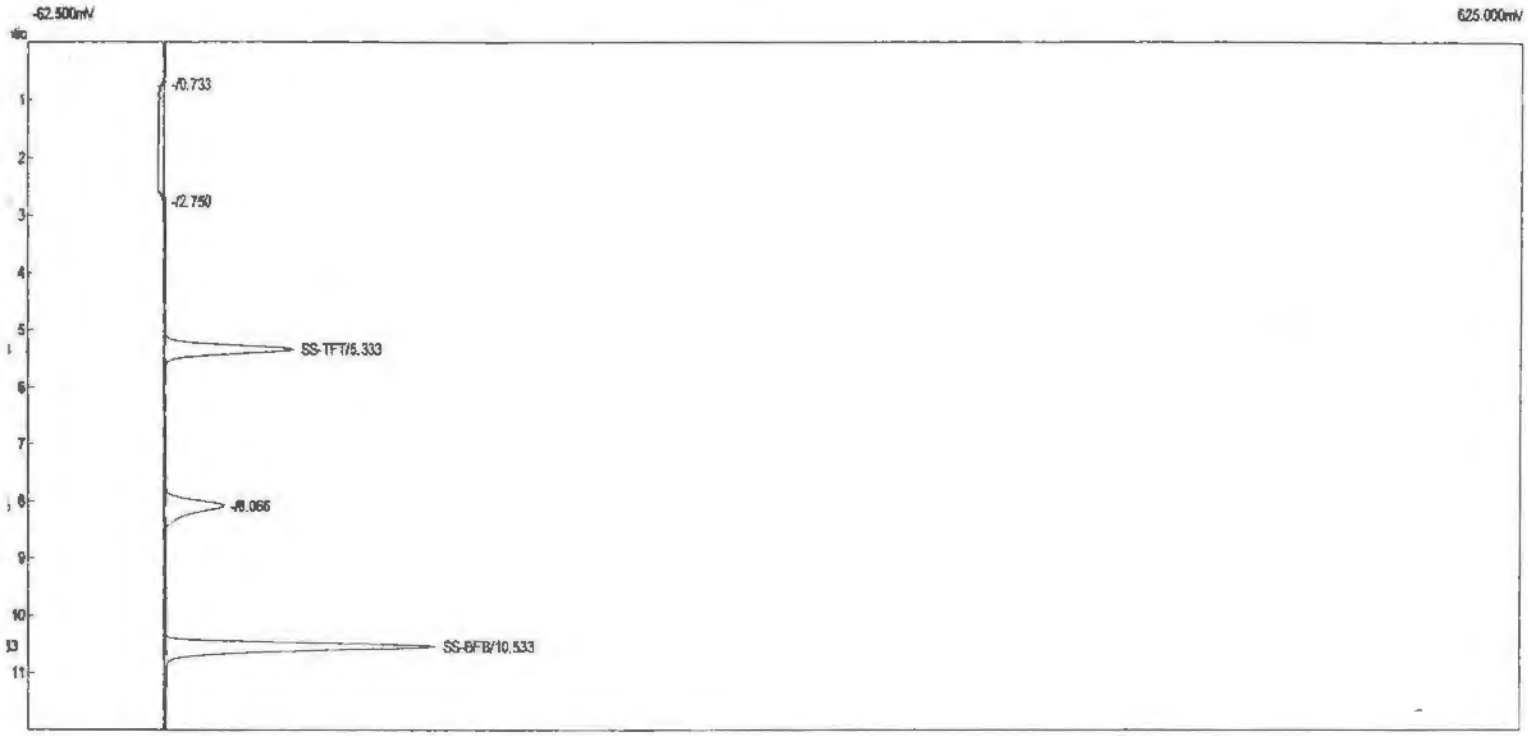
Component	Retention	Height	Area	External	Internal	Units
-TFT	5.316	136.660	1458.655	16.31	16.3124	ppb
LUENE	6.883	5.946	54.392	0.67	0.6688	ppb
-BFB	10.516	437.579	3754.789	16.47	16.4684	ppb
			5267.836	33.45	33.4496	

Lab name: On Site Labs Inc.
Analysis date: 03/18/2002 17:02:34
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P17.CHR ()
Sample: ULA028TB3/0305CH2M
Operator: MAP



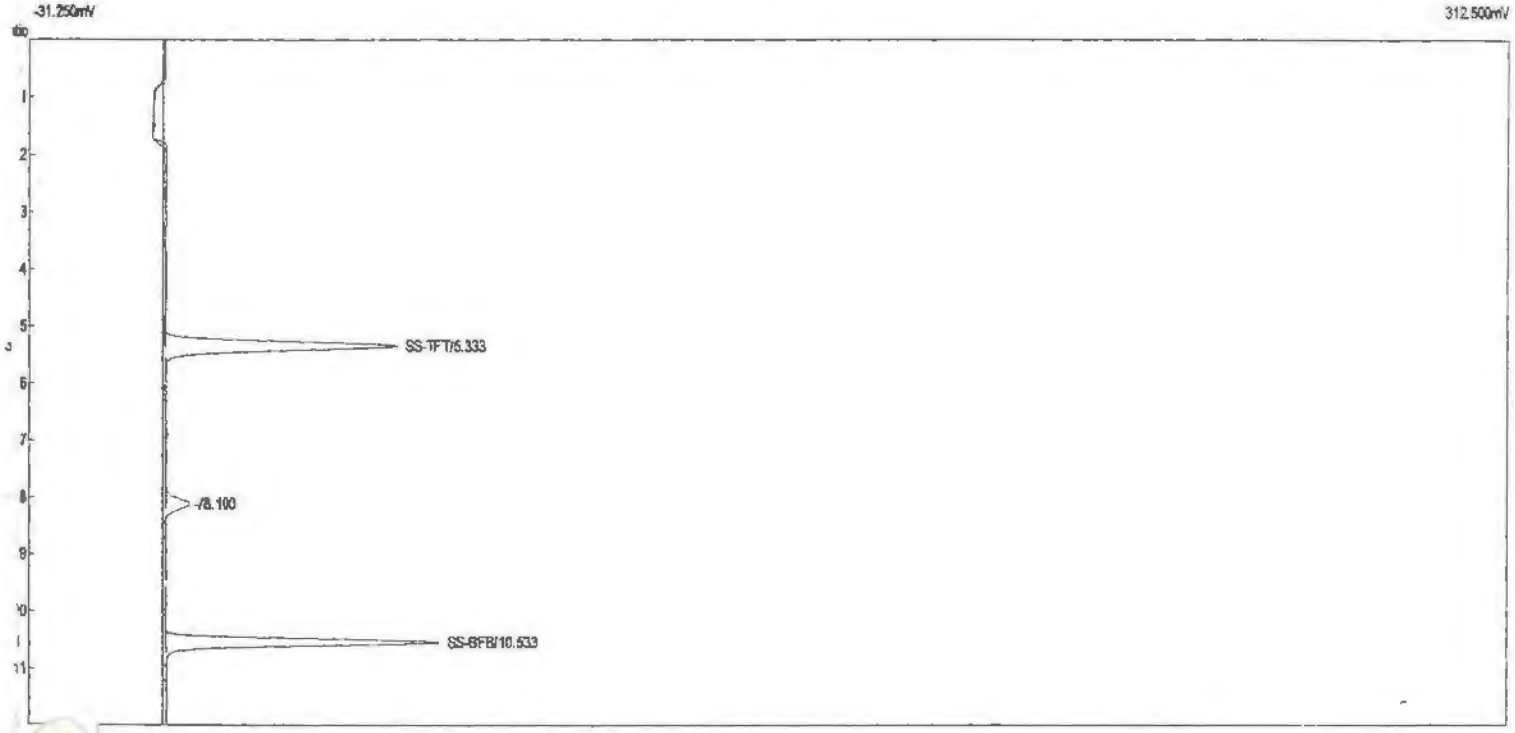
Component	Retention	Height	Area	External	Internal	Units
TFT	5.333	85.165	911.518	10.19	10.1937	ppb
UENE	6.883	7.381	68.152	0.84	0.8380	ppb
3FB	10.516	306.718	2912.570	12.77	12.7744	ppb
			3892.240	23.81	23.8061	

alysis date: 03/18/2002 15:28:14
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P12.CHR ()
Sample: ILA019/0311CH2M
Operator: MAP



Component	Retention	Height	Area	External	Internal	Units
-TFT	5.333	59.784	638.917	7.15	7.1451	ppb
-BFB	10.533	125.292	1197.936	5.25	5.2541	ppb
			1836.853	12.40	12.3992	

Lab name: On Site Labs Inc.
Analysis date: 03/18/2002 16:25:14
Method: EPA 8020A mod.
Lab ID: GC-3-P&T
Description: PID1-CHANNEL 1
Column: Rtx-5, 30m,ID.53mm,5um
Carrier: Nitrogen 1 kg/cm3
Data file: 0318P15.CHR ()
[illegible]: ILA019/0305CH2M DUP
[illegible]: MAP



Component	Retention	Height	Area	External	Internal	Units
SS-TFT	5.333	54.209	584.744	6.54	6.5393	ppb
SS-BFB	10.533	63.848	548.181	2.40	2.4043	ppb
			1132.925	8.94	8.9436	