August 4, 1999

Alameda County Department of
Environmental Health
1131 Harbor Bay Parkway, 2nd Floor
Alameda, CA 94502-6577

Attention: Ms. Susan Hugo

Subject: Report of Soil and Groundwater Investigation
And Partial Risk Assessment
Liquid Sugars UST Site, 1275 66th Street
Emeryville, California
GA Project No. 149-01-03

Ladies and Gentlemen:

Gribi Associates is pleased to submit this report on behalf of Liquid Sugars, Inc. documenting a recently-completed soil and groundwater investigation and a partial risk assessment for the Liquid Sugars, Inc. underground storage tank (UST) site located at 1275 66th Street in Emeryville, California. The soil and groundwater investigation included: (1) Drilling and sampling seven soil borings (IB-1 through IB-7) using direct-push coring equipment; and (2) Drilling, installing, and sampling three groundwater monitoring wells (MW-3, MW-4, and MW-5) using hollow-stem auger equipment. A risk assessment was conducted for the small hydrocarbon-impacted area which extends west-northwestward from the former Mohawk bulk fuel facility onto the 1285 66th Street parcel. The goal of these activities has been to provide additional site characterization in order to address regulatory site closure.

Both soil and groundwater hydrocarbon plumes appear to be adequately defined, with one small plume extending to the west-northwest from the former Mohawk above ground tanks and another plume extending approximately 100 feet southwest from the former Liquid Sugars USTs. Results from investigative boring IB-6 confirm that the elevated levels of gasoline-range hydrocarbons encountered in shallow clay soils in the previous All Environmental AEI-1 boring appear to represent a small, localized release, limited to a relatively small portion of the warehouse area (approximately 225 square feet out of a total warehouse area of about 3,500 square feet).

Soil analytical results from investigative borings IB-1, IB-5, and IB-7, as well as from previous borings TB-2, TB-8, and MW-2, showed levels of gasoline- and diesel-range hydrocarbons in sands and gravels extending southwestward from the former USTs. However, both field and laboratory analytical results from the downgradient (southwest) well boring MW-4 showed no hydrocarbon impacts in this sand and gravel layer.

While shallow groundwater southwest from the former Liquid Sugars USTs appears to be both gasoline- and diesel-impacted, hydrocarbon impacts appear to decrease markedly in median

downgradient wells MW-5 and MW-4. Thus, it appears that the combination of past source removal activities and ongoing natural attenuation have resulted in limited hydrocarbon impacts.

In order to determine whether or not additional investigative or remedial measures will be warranted for the small west-northwest hydrocarbon-impacted area, Gribi Associates conducted a Risk-Based Corrective Action (RBCA) assessment for this portion of the project site. Based on model risk estimates, it appears that there is no significant risk of exposure from any identified hydrocarbon constituents present at the project site. The total pathway individual and cumulative toxic risk (risk from toluene, ethylbenzene, and xylenes exposure) associated with indoor vapor exposure for the west-northwest project site area is 9.4×10^{-1}. and 9.5×10^{-1}, respectively. These individual and cumulative risk values are below the individual and cumulative risk target level of 1.0. The only calculated risk value which exceeds target risk levels is the individual carcinogenic risk value associated with possible indoor air exposure to benzene. This individual risk value for indoor benzene vapor exposure is 5.7×10^{-5}. We believe that since this risk value is only slightly above the target risk of 1×10^{-5}, it does not represent a significant risk.

Factors which we believe would tend to mitigate the low levels of risk associated with indoor vapor exposure in the 1285 66th Street warehouse building include:

- **Subsurface soils have very low permeabilities and would not be expected to transmit benzene vapors very readily.** Except where noted, the RBCA model used default values to calculate vapor exposure concentrations, rather than site-specific values. Given the low permeability soils beneath the site, we would expect risk values based on actual site conditions to be lower than those calculated using default values.

- **Grab groundwater sample results used for the risk assessment are probably elevated relative to true groundwater conditions.** It is our experience that grab groundwater samples from open borings can be significantly higher than true groundwater conditions.

We believe that these mitigating factors would tend to decrease the risk associated with the indoor air exposure pathway to below the target risk level. Based on these results, and on the limited extent of soil and groundwater impacts, we request that no additional investigative or remedial measures be required for the west-northwest portion of the project site.

In order to address regulatory closure of the southwest plume area, Gribi Associates recommends conducting groundwater monitoring of project site wells, followed by a risk assessment. Groundwater monitoring will include conducting quarterly groundwater monitoring of the three new wells (MW-3, MW-4, and MW-5) for one year. In addition, we recommend conducting semi-annual monitoring of pre-existing wells MW-1 and MW-2 for one year. Results of these monitoring activities will help to establish baseline hydrocarbon concentrations in groundwater necessary to conduct meaningful risk calculations for this portion of the site.

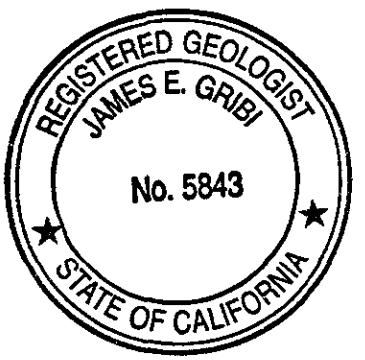
Following one year of quarterly groundwater monitoring, we recommend conducting a detailed risk assessment for the southwest area, incorporating all available soil and groundwater data. Based on our experience in the Emeryville/Berkeley area, we expect that the only potentially complete

exposure pathways requiring risk assessment calculations for commercial receptors will include: (1) Indoor air exposure; (2) Outdoor air exposure; and (3) Soil exposure (construction worker).

We appreciate the opportunity to present this report for your review. Please call if you have questions or require additional information.

Very truly yours,

James E. Gribi
Registered Geologist
California No. 5843



For Stanton Stubbs
Environmental Scientist

JEG/ct
Enclosure

c Mr. Rory Campbell, Hansen, Bridgett, Marcus, Vlahos & Rudy, LLP
Mr. Mike Alo, Liquid Sugars, Inc.
Mr. Bill Warren
Ms. Hagit Coen-Goldberg

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1.0 INTRODUCTION

This report documents a recently-completed soil and groundwater investigation and a partial risk assessment conducted by Gribi Associates for the Liquid Sugars underground storage tank (UST) site located at 1275 66th Street in Emeryville, California (see Figure 1 and Figure 2). The soil and groundwater investigation included: (1) Drilling and sampling seven soil borings using direct-push coring equipment; and (2) Drilling, installing, and sampling three groundwater monitoring wells using hollow-stem auger equipment. A risk assessment was conducted for the small hydrocarbon-impacted area which extends westward from the former Mohawk bulk fuel facility onto the 1285 66th Street parcel. The goal of these activities has been to provide additional site characterization in order to address regulatory site closure.

1.1 Site Background

Mohawk Petroleum Company operated a bulk fuel facility on the project site from the late 1940s until the mid-1970s. This bulk fuel facility included three to four steel above ground storage tanks (ASTs) on concrete bases located within a concrete-bermed enclosure on the west side of the project site, in the approximate current location of the LSI boiler room.

Liquid Sugars, Inc. has occupied part or all of the project site parcel since the early 1960s. The Liquid Sugars facility formerly contained two 1,000-gallon gasoline USTs and one 10,000-gallon diesel UST located on the southwest side of the project site parcel. The three USTs were removed in November 1990, and soil samples collected beneath the removed USTs indicated both gasoline and diesel releases from the USTs.

Several investigations were conducted by Liquid Sugars to assess the nature and extent of releases from the former USTs. These investigations included: (1) The drilling and sampling of eight soil borings at the site in November 1991; (2) The drilling, installation, and sampling of two groundwater monitoring wells at the site in April 1993; and (3) The purging and sampling of the two site wells on nine occasions between July 1993 and February 1998. Results of these investigations seem to indicate limited hydrocarbon impact to subsurface soils immediately adjacent to the south and northeast sides of the former UST excavation cavity, with little downgradient (west to southwest) soil impacts. Groundwater monitoring results from the two site wells has shown both gasoline and diesel impacts to groundwater, with diesel-range hydrocarbons in the well closer to the former USTs (MW-2) and gasoline-range hydrocarbons in the well further southwest from the former USTs (MW-1). Groundwater samples from MW-1 collected in November 1998 and February 1999 showed significant decreases in Total Petroleum Hydrocarbons as Gasoline (TPH-G) and Benzene from historical TPH-G and Benzene levels between 1993 and 1995.

As part of pending property transactions on four Liquid Sugars, Inc. (LSI) land parcels in Emeryville, Phase I and Phase II Environmental Site Assessments (ESAs) were conducted by consultants for both potential buyers and seller (LSI). Phase II ESAs were conducted on the project site and on the adjacent west LSI office/warehouse parcel by Aqua Science Engineers, Inc. and All Environmental, respectively (see Figure 3). Results of these investigations, along with previous investigation results, indicate that hydrocarbon impacts to subsurface soils are limited to two main areas: (1) An area extending a short distance southwest from the former USTs; and (2) An area immediately west from the former Mohawk bulk fuel plant ASTs. Groundwater impacts have not been fully defined.

On April 12, 1999, Gribi Associates submitted *Workplan to Conduct Soil and Groundwater Investigation* to Alameda County Department of Environmental Health. This workplan, which proposed the drilling and sampling of approximately six investigative soil borings at the site, was approved by Alameda County Department of Environmental Health on April 27, 1999. On June 17, 1999, Gribi Associates submitted *Workplan to Conduct Site Closure Activities*, proposing the installation of three groundwater monitoring wells at the site, conducting quarterly groundwater monitoring for the site, and conducting a risk assessment for the site. This workplan was approved by Alameda County Department of Environmental Health on June 18, 1999.

1.2 Scope of Work

Gribi Associates was contracted by Liquid Sugars, Inc. to conduct the following scope of work:

- **Task 1** **Conduct prefield activities.**
- **Task 2** **Conduct drilling and sampling activities.**
- **Task 3** **Conduct laboratory analyses.**
- **Task 4** **Conduct risk assessment for the west-northwest area.**
- **Task 5** **Prepare report of findings.**

These tasks were conducted in accordance with the approved workplans and with generally accepted investigative methods and guidelines.

1.3 Limitations

The services provided under this contract as described in this report include professional opinions and judgments based on data collected. These services have been provided according to generally accepted environmental protocol. The opinions and conclusions contained in this report are typically based on information obtained from:

1. Observations and measurements made by our field staff.
2. Contacts and discussions with regulatory agencies and others.
3. Review of available hydrogeologic data.

2.0 DESCRIPTION OF FIELD ACTIVITIES

The soil boring investigation, which included the drilling and sampling of seven investigative borings (IB-1 through IB-7), was conducted on Thursday and Friday, May 27 and 28, 1999. On Wednesday, June 23, 1999, Gribi Associated installed three groundwater monitoring wells (MW-3, MW-4, and MW-5) at the site. The two pre-existing wells (MW-1 and MW-2) were purged and sampled on Wednesday, June 2, 1999, and all five project site wells were purged and sampled on Monday, June 28, 1999.

2.1 Prefield Activities

Prior to initiating drilling and well installation activities, soil boring and well installation permits were obtained from Alameda Department of Public Works. Copies of these permits are included in Appendix A. In addition, Gribi Associates notified Ms. Susan Hugo of Alameda County Department of Environmental Health at least two days prior to drilling and well installation activities. Prior to conducting well installation activities, an Encroachment Permit was obtained from the City of Emeryville for the two wells, MW-3 and MW-4, located in the 65th Street sidewalk. A copy of this permit is included in Appendix A.

Prior to initiating drilling and well installation activities, proposed soil boring and well locations were marked with white paint, and Underground Services Alert (USA) was notified. Also, ForeSite Utility Surveys, a private underground utility locator, cleared proposed soil boring and monitoring well locations. Prior to initiating drilling activities, a Site Safety Plan was prepared, and a tailgate safety meeting was conducted with all site workers.

In order to identify a possible historical creek beds on the project site which might act as preferential migratory pathways, Gribi Associates reviewed available historical Sanborn Fire Insurance Maps at the Oakland Public Library. The 1903 Sanborn Map shows a creek running approximately north-northeast to south--southwest approximately 40 feet east from the Liquid Sugars maintenance building at the southwest corner of the site. The Sanborn Map shows a bridge on 65th Street over the creek and indicates that the creek was dry in the summer. The alignment of this creek on the Sanborn Map does not match the delineation of the sand and gravel layer encountered below five feet in depth in soil borings southwest from the former Liquid Sugars USTs. However, a creek bed of this type would normally be expected to migrate laterally over it's lifetime. Thus, the sand and gravel layer encountered below five feet in depth southwest from the Liquid Sugars USTs may represent an earlier alignment of the creek, still flowing from north-northeast to south-southwest.

2.2 Location of Soil Borings

Locations of the seven investigative soil borings, IB-1 through IB-7, and the three groundwater monitoring wells, MW-3, MW-4, and MW-5, are shown on Figure 2. Three of the borings, IB-1, IB-2, and IB-5, were sited on the adjacent Autumn Press site in a west to southwest direction from both the LSI maintenance shop and the former LSI USTs. One of the four remaining borings, IB-7, was located near the LSI maintenance shop, adjacent to a recent Aqua Science Engineers, Inc. boring (B-1) which encountered an elevated concentration of Benzene in a grab groundwater sample. The three remaining borings, IB-3, IB-4, and IB-6, were sited immediately west to southwest from the former Mohawk ASTs, with one boring (IB-6) sited inside the adjacent warehouse building at 1285 66th Street and two of the borings (IB-3 and IB-4) sited on the adjacent Autumn Press site at 1280 65th Street.

Two of the wells, MW-4 and MW-5, were located southwest from the former USTs, along the expected median of the hydrocarbon plume, in order to attempt to assess the downgradient extent of hydrocarbon impacts. The third well, MW-3, was located in the 65th Street sidewalk south from the LSI maintenance shop and former USTs, in order to help confirm the groundwater flow gradient, as well as define the lateral extent of hydrocarbons.

2.3 Drilling and Sampling of Soil Borings

The seven investigative borings, IB-1 through IB-7, were drilled to total depths ranging from 14 feet to 28 feet below surface grade by Kvilhaug Well Drilling using Geoprobe hydraulically-driven soil coring equipment. This coring system allowed for the retrieval of almost continuous soil cores, which were contained in a clear plastic acetate tube nested inside a stainless steel core barrel. After the core barrel was brought to the surface and exposed, the soil core was examined, logged, and field screened for hydrocarbons using sight and smell by a qualified Gribi Associates scientist. Boring logs for the seven investigative soil borings are contained in Appendix B.

Soil samples were collected from each of the investigative borings at depths of about four feet, seven feet, and 11 feet below surface grade. After the sample and core barrel was raised to the surface, each sample was collected as follows: (1) The soil-filled clear acetate tube was exposed for visual examination; (2) The selected sampling interval was collected by cutting the sample and acetate plastic tubing to the desired length (typically about six inches); (3) The ends of the selected sample were quickly wrapped with foil, capped with plastic end caps, labeled and wrapped tightly with tape; and (4) The sealed soil sample was labeled and immediately placed in cold storage for transport to the analytical laboratory under formal chain-of-custody. Following completion, the seven investigative borings, were grouted to match existing surface grade. All coring and sampling equipment was thoroughly cleaned and decontaminated between each sample collection by triple rinsing first with water, then with dilute tri-sodium phosphate solution, and finally with distilled water.

Grab groundwater samples were collected from each of the seven Geoprobe borings as follows: (1) 3/4-inch diameter well casing was placed in the boring; (2) Laboratory-supplied containers were completely filled using a clean small-diameter bailer; and (3) Each sample container was tightly sealed, labeled, and placed in cold storage for transport to the laboratory under formal chain-of-custody. All sampling equipment was thoroughly cleaned and decontaminated between each sample collection by triple-rinsing as described previously in this report..

2.4 Drilling and Sampling of Groundwater Monitoring Wells

The three well borings, MW-3, MW-4, and MW-5, were drilled to a total depth of approximately 20 feet below grade (groundwater was encountered at approximately eight feet to 11 feet in depth) using hollow stem auger equipment. Soils from each well boring were logged by a qualified Gribi Associates scientist using sight and smell. Boring logs for the three well borings are contained in Appendix B. Soil cuttings from the well borings were placed in sealed 55-gallon drums pending laboratory results.

Soil samples were collected from the three well borings at depths of about five feet, ten feet, and 15 feet below surface grade. Undisturbed soils were sampled in advance of the auger as follows: (1) A two-inch inside diameter California-style split spoon sampler was driven into undisturbed soil ahead of the drill bit; (2) The sampler was raised quickly to the surface and the brass liners exposed; (3) The brass liner containing the most undisturbed soil was quickly sealed with aluminum foil and plastic end caps, labeled, and wrapped tightly with tape; and (4) The sealed soil sample was immediately placed in a cooler with crushed ice for transport to the analytical laboratory under formal chain-of-custody. All sampling equipment was thoroughly cleaned and decontaminated between each sample collection by triple-rinsing as described previously in this report..

2.5 Installation of Groundwater Monitoring Wells

The three groundwater monitoring wells were constructed using two-inch diameter Schedule 40 threaded PVC casing according to the following specifications: (1) 0.020-inch slotted well casing was placed from approximately 20 feet to 4.5 feet in depth; (2) Filter sand was placed around the casing to a depth of approximately four feet below grade; (3) A one-foot bentonite seal was placed above the filter sand to approximately three feet below surface grade; and (4) The remaining annulus was grouted using a cement/sand slurry (bentonite less than 5 percent) to approximate grade. The top of the well was enclosed in a traffic-rated locking box set in concrete slightly above grade. Well construction details for each well are included with the well boring logs in Appendix B.

On Wednesday, June 30, 1999, wellhead top of casing mean sea level elevations were surveyed for the three newly-installed wells MW-3, MW-4, and MW-5 and for the two pre-existing wells MW-1 and MW-2 by Ahmad Moghaddas, P.E. A copy of the surveyor's report is contained in Appendix C.

2.6 Well Purging and Sampling

The two pre-existing wells (MW-1 and MW-2) were purged and sampled on Wednesday, June 2, 1999, and all five project site wells were purged and sampled on Monday, June 28, 1999.

2.6.1 Purging and Sampling on June 2, 1999

On June 2, 1999, a qualified Gribi Associates scientist conducted groundwater monitoring activities for the two pre-existing site wells, MW-1 and MW-2. Groundwater monitoring was conducted in accordance with California LUFT Field Manual guidelines as follows:

- After unlocking and opening both of the monitoring wells, the water levels were measured to the nearest 0.01 foot with an electronic probe.
- Using a disposable PVC bailer, a single bail of groundwater was taken from each well to check for the presence or absence of floating free product.
- The wells were purged of approximately three well volumes using a clean PVC bailer. During purging, temperature, pH, conductivity, and turbidity of the well water were periodically monitored and recorded until they stabilized. All purged water was stored onsite in sealed 55-gallon metal drums. Groundwater sampling data sheets for each well are contained in Appendix D.
- After purging the required volume of water, groundwater was poured directly from the bailer into laboratory-supplied containers. Each container was then tightly sealed with teflon-lined septa, making sure that no air bubbles were present in the containers. Each container was then labeled and placed in cold storage for transport to the analytical laboratory under formal chain-of-custody.

2.6.2 Purging and Sampling on June 28, 1999

After allowing the cement seal to cure for approximately three days, newly-installed wells MW-3, MW-4, and MW-5, along with pre-existing wells MW-1 and MW-2, were each purged and sampled

by a qualified Gribi Associates scientist. Groundwater monitoring was conducted in accordance with California LUFT Field Manual guidelines as follows:

- After unlocking and opening both of the monitoring wells, the water levels were measured to the nearest 0.01 foot with an electronic probe.

- Using a disposable PVC bailer, a single bail of groundwater was taken from each well to check for the presence or absence of floating free product.

- The wells were purged of approximately three well volumes using a clean 12-volt electric purge pump. During purging, temperature, pH, conductivity, and turbidity of the well water were periodically monitored and recorded until they stabilized. All purged water was stored onsite in sealed 55-gallon metal drums. Groundwater sampling data sheets for each well are contained in Appendix D.

- After purging the required volume of water, groundwater was poured directly from the pump outlet into laboratory-supplied containers. Each container was then tightly sealed with teflon-lined septa, making sure that no air bubbles were present in the containers. Each container was then labeled and placed in cold storage for transport to the analytical laboratory under formal chain-of-custody.

2.7 Laboratory Analysis of Soil and Groundwater Samples

For the soil boring investigation, a total of 17 soil samples and seven grab groundwater samples from the seven investigative soil borings, along with two groundwater samples from the MW-1 and MW-2, were analyzed for the following parameters with standard method turn around time on results. For the groundwater investigation, a total of five soil samples and five groundwater samples were analyzed for the following parameters with standard and expedited turn around time on results.

USEPA 8015M Total Petroleum Hydrocarbons as Gasoline (TPH-G)
USEPA 8020/602 Benzene, Toluene, Ethylbenzene, Xylenes (BTEX)
USEPA 8020/602 Methyl-t-butyl Ether (MTBE)
USEPA 8015M Total Petroleum Hydrocarbons as Diesel/Motor Oil (TPH-D/MO)

In addition, two soil samples, one boring grab groundwater sample, and one well groundwater sample collected during the soil boring investigation were analyzed for the following parameters with standard turn around on results.

USEPA 8270/625 Semi-Volatile Organic Compounds (SVOCs)
USEPA 239.1 Total Lead (Pb)

In addition, the MTBE result for the MW-5 groundwater sample was confirmed using USEPA Method 8260B. All analyses were conducted by Acculabs, Inc., a California-certified analytical laboratory.

3.0 RESULTS OF INVESTIGATION

3.1 General Subsurface Conditions

Soils encountered in borings IB-2, IB-3, IB-4, and IB-6, located west to northwest from former LSI USTs and Mohawk ASTs, generally consisted of silts and clays down to at least 15 feet in depth. Soils encountered in MW-3, located south-southeast from the former LSI USTs, consisted of brown silts and clays down to total depth. In investigative borings IB-1 IB-5, and IB-7, and well borings MW-4 and MW-5, a sand and gravel layer was encountered from about five feet to ten feet in depth, sandwiched between silts and clays.

Moderate to strong hydrocarbon odors were noted in soils in investigative borings IB-1, IB-5, and IB-7, and in well boring MW-5. Slight to no hydrocarbon odors were noted in soils in investigative borings IB-2, IB-3, IB-4, and IB-6, and in well borings MW-3 and MW-4..

3.2 Hydrologic Conditions

Wet, water-saturated soils were not encountered in borings IB-2, IB-3, IB-4, and IB-6, and grab groundwater sampling was only possible after allowing these borings to sit for two or more hours. Groundwater was produced more readily from borings IB-1, IB-5, and IB-7, and groundwater from these borings exhibited moderate to strong hydrocarbon odors and sheens.

During the June 28, 1999 monitoring activities, groundwater was measured in the five site wells at a depth of about eight feet below surface grade, with a flow gradient of about 0.006 feet/feet to the southwest (see Figure 3).

No free product was encountered in any of the site wells. Moderate hydrocarbon odors with very slight hydrocarbon sheens were noted in purged water from MW-2. Moderate hydrocarbon odors decreasing to slight hydrocarbon odors, with no sheens, were noted in purged water from MW-1. Very slight hydrocarbon odors and sheens were noted in purged water from MW-5, and no hydrocarbon odors or sheens were noted in purged water from MW-3 and MW-4.

3.3 Results of Laboratory Analyses

Soil and grab groundwater analytical results from the soil boring investigation are summarized in Table 1. Soil and grab groundwater analytical results from the groundwater investigation are summarized in Table 2. Soil and groundwater analytical results are also summarized on Figure 3 and Figure 4, respectively. Laboratory data reports and chain-of-custody records for all analyses are included in Appendix E.

Table 1
SUMMARY OF ANALYTICAL RESULTS FROM SOIL BORING INVESTIGATION
Liquid Sugars UST Site, 1275 66th Street

Sample ID	Sample Depth	Concentration (ppm)									
		TPH-D	TPH-MO	TPH-G	B	T	E	X	MTBE	SVOCs	PB
	Soil Samples										
IB-1.1	6.5 ft	**19**	<10	<1.0	<0 0050	<0.0050	<0 0050	<0.0050	<0.050	--	--
IB-1.2	10.5 ft	**440**	**11**	**4.3[1]**	**0.010**	**0.0088**	**0.0051**	<0 0050	<0.050	<0.67[2]	<5.0
IB-2.1	6 0 ft	<1.0	<10	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	--	--
IB-2.2	10.0 ft	<1.0	<10	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	--	--
IB-3.2	7 0 ft	<1.0	<10	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	--	--
IB-3.3	11.0 ft	<2.0[3]	<10	**23**	<0 025	**0.051**	**0.062**	**0.12**	<0.25	--	--
IB-4.1	3.0 ft	<3 0[4]	34	<1 0	<0.0050	<0.0050	<0.0050	<0.0050	<0 050	--	--
IB-4.2	7.5 ft	<2.0[3]	<10	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	--	--
IB-4.3	10.5 ft	<2.0[3]	<10	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	<0.67[2]	**16**
IB-5.1	3.5 ft	<1 0	<10	<1.0	**0.018**	<0 0050	<0.0050	<0.0050	<0.050	--	--
IB-5.2	6 5 ft	**910**	<20	**74[1]**	**0.16**	**0.24**	**0.096**	**0.11**	<0.25	--	--
IB-5.3	11.5 ft	**490**	<10	**3.5[1]**	**0.0075**	**0.0063**	<0.0050	<0.0050	<0.050	--	--
IB-6.2	7.5 ft	<1.0	<10	<1 0	<0.0050	<0 0050	<0.0050	<0.0050	<0.050	--	--
IB-6.3	10.5 ft	<1.0	<10	**1.5**	**0.0063**	**0.0053**	**0.0078**	<0.0050	<0.050	--	--
IB-7.1	3.5 ft	<1.0	**22**	**1.3**	**0.0067**	<0.0050	<0 0050	<0.0050	<0.050	--	--
IB-7.3	7.5 ft	**1,300**	<20	<1.0	<0 0050	<0.0050	<0.0050	<0.0050	<0.050	--	--
IB-7.4	10.5 ft	<1 0	<10	**32**	**0.055**	**0.010**	**0.047**	**0.046**	<0 10	--	--

Table 1
SUMMARY OF ANALYTICAL RESULTS FROM SOIL BORING INVESTIGATION
Liquid Sugars UST Site, 1275 66th Street

Sample ID	Sample Depth	Concentration (ppm)									
		TPH-D	TPH-MO	TPH-G	B	T	E	X	MTBE	SVOCs	PB
	Grab Groundwater Samples										
IB-1W	7.7 ft	**580**	**22**	**530**	**0.520**	**1.10**	**2.70**	**1.40**	<5.0	--	--
IB-2W	13.6 ft	<0.100[3]	<0.100	**0.590**[1]	<0.00050	<0 00050	**0.0011**	**0.00062**	<0.0050	--	--
IB-3W	10.3 ft	<0.100	<0.200	<0 050	<0 00050	<0.00050	<0.00050	<0.00050	<0.0050	--	--
IB-4W	6.4 ft	<0.050	<0.100	**0.078**	<0 00050	<0.00050	<0.00050	<0.00050	<0.0050	--	--
IB-5W	7.2 ft	**230**	<23.0	**1,300**	**3.70**	<1.0	**1.20**	**1.10**	<10	--	--
IB-6W	13.3 ft	<0.050	<0.100	**0.061**	<0.00050	<0 00050	<0 00050	<0.00050	<0.0050	<0.010	**0.005**
IB-7W	9.0 ft	**310**	<4.9	**6.80**	**2.90**	<0.025	**0.026**	<0 025	<0.250	--	--

TPH-D = Total Petroleum Hydrocarbons as Diesel
TPH-MO = Total Petroleum Hydrocarbons as Motor Oil
TPH-G = Total Petroleum Hydrocarbons as Gasoline
B = Benzene
T = Toluene
E = Ethyl benzene
X = Xylene
MTBE = Methyl-t-Butyl Ether
SVOCs = Semi-volatile Organic Compounds. Includes 69 individual analytes.
PB = Total Lead

-- = Not analyzed for this analyte.
<110 = Not detected above the expressed value.
[1] = Acculabs, Inc. laboratory report states "Product is not typical gasoline."
[2] = No detectable levels of 69 SVOC analytes
[3] = Acculabs, Inc. laboratory report states "Increased reporting limit due to gasoline range interference.
[4] = Acculabs, Inc. laboratory report states "Increased reporting limit due to oil range interference.

Table 2
SUMMARY OF ANALYTICAL RESULTS FROM GROUNDWATER INVESTIGATION
Liquid Sugars UST Site, 1275 66th Street Site

Well Number	Sample Date	Sample Depth/GW Elevation	Constituent (ppm) TPH-D	TPH-MO	TPH-G	B	T	E	X	MTBE	SVOCs	PB
Soil Samples												
MW-3.1	06/23/99	4.5 ft	<1.0	<10	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050	--	--
MW-3.2	06/23/99	9.5 ft	<1.0	<10	<1 0	<0 0050	<0.0050	<0.0050	<0.0050	<0.050	--	--
MW-4.1	06/23/99	4.5 ft	**20**	<10	<1.0	<0.0050	<0 0050	<0.0050	<0 0050	<0 050	--	--
MW-4.2	06/23/99	8.5 ft	**6.9**	<10	<1.0	<0.0050	<0.0050	<0.0050	<0 0050	<0.050	--	--
MW-5.1	06/23/99	9.0 ft	**63**	<10	**25**	**0.032**	**0.028**	<0.015	**0.026**	<0.15	--	--
Groundwater Samples												
MW-1	04/23/93	21 22 ft	**0.99**	--	**0.64**	**0.0063**	<0 0005	**0.0056**	**0.0025**	--	--	--
<27.94>	07/13/93	19.94 ft	**1.50**	--	**0.70**	**0.032**	**0.0012**	**0.0033**	**0.0110**	--	--	--
	11/02/93	18.99 ft	**1.70**	--	**0.87**	**0.019**	<0.0005	**0.0066**	**0.0044**	--	--	--
	02/15/94	20.03 ft	**2.00**	--	**1.20**	**0.022**	**0.0018**	**0.01**	**0.0064**	--	--	--
	05/18/94	20 29 ft	**2.60**[1]	--	**1.70**	**0.057**	**0.021**	**0.30**	**0.13**	--	--	--
	08/17/94	19.43 ft	**2.20**[1]	--	**1.20**	**0.013**	**0.0019**	**0.0008**	**0.0082**	--	--	--
	12/22/94	21.36 ft	**2.40**[2,3]	--	**1.10**	**0.027**	**0.0069**	**0.0014**	**0.0059**	--	--	--
	05/09/95	21 21 ft	**2.00**[2,3]	--	**1.20**	**0.014**	**0.0082**	**0.0120**	**0.0062**	--	--	--
	11/05/98	18.86 ft	<0.050	<0.100	**0.380**	**0.0040**	**0.0064**	**0.0042**	**0.0019**	<0.0050	--	--
	2/05/99	20.66 ft	<0.050	<0.100	**0.490**	**0.0012**	**0.0061**	**0.0046**	**0.0019**	<0.0050	--	--
	06/02/99	19.61 ft	**0.770**	<0.100	**0.340**	**0.029**	**0.0040**	**0.0058**	**0.0015**	<0.0050	--	--
	06/28/99	19.08 ft	<0.050	<0.100	**0.460**	**0.0073**	**0.0049**	**0.0026**	**0.0022**	<0.0050	--	--
MW-2	04/23/93	21.14 ft	**2.10**	--	**1.10**	**0.320**	**0.0065**	**0.0082**	**0.013**	--	--	--
<27.87>	07/13/93	19.49 ft	**0.21**	--	**0.48**	**0.033**	**0.0025**	**0.0052**	**0.0047**	--	--	--
	11/02/93	18.82 ft	**1.80**	--	**0.43**	**0.016**	**0.0009**	**0.0019**	**0.0021**	--	--	--
	02/15/94	21.05 ft	**2.80**	--	**1.40**	**0.056**	**0.0029**	**0.0075**	**0.0071**	--	--	--
	05/18/94	20.31 ft	**3.00**	--	**0.54**	**0.024**	**0.0013**	**0.0026**	**0.0034**	--	--	--

Table 2
SUMMARY OF ANALYTICAL RESULTS FROM GROUNDWATER INVESTIGATION
Liquid Sugars UST Site, 1275 66th Street Site

Well Number	Sample Date	Sample Depth/GW Elevation	Constituent (ppm) TPH-D	TPH-MO	TPH-G	B	T	E	X	MTBE	SVOCs	PB
	08/17/94	19.37 ft	**2.20**[1]	--	**0.88**	**0.025**	**0.0030**	**0.0028**	**0.0086**	--	--	--
	12/22/94	21.64 ft	**3.10**[2,3]	--	**0.61**[4]	**0.0036**	**0.0033**	**0.0054**	**0.0016**	--	--	--
	05/09/95	21.16 ft	**5.20**	--	**2.30**	**0.0150**	**0.0060**	**0.0110**	**0.0130**	--	--	--
	11/05/98	19.04 ft	**9.10**	**0.200**	**1.20**[5]	**0.0065**	**0.0018**	**0.0059**	**0.0014**	<0.010	--	--
	2/05/99	20.96 ft	**3.50**	<0.100	**0.790**[5]	**0.017**	**0.0049**	**0.0064**	**0.0016**	<0.0050	--	--
	06/02/99	19.84 ft	**21.0**	<0.500	**0.480**	**0.032**	**0.0040**	**0.0059**	**0.0016**	<0.0050	<0.010[6]	**0.008**
	06/28/99	19.29 ft	**0.650**	<0.100	**0.380**	**0.010**	**0.0020**	**0.0033**	**0.00077**	<0.0050	--	--
MW-3 <26.19>	06/28/99	18.77 ft	**0.300**	<0.100	**0.066**	<0.00050	<0.00050	<0.00050	<0.00050	<0.0050	--	--
MW-4 <24.90>	06/28/99	18.49 ft	**0.320**	<0.100	**0.110**	**0.00052**	**0.0011**	**0.0022**	<0.00050	<0.0050	--	--
MW-5 <25.90>	06/28/99	18.64 ft	<0.050	<0.100	**0.140**	**0.0030**	**0.0017**	<0.00050	<0.00050	**0.024**[7]	--	--

GW Elevation = Groundwater mean sea level elevation.
TPH-G = Total Petroleum Hydrocarbons as Gasoline
TPH-D = Total Petroleum Hydrocarbons as Diesel
TPH-MO = Total Petroleum Hydrocarbons as Motor Oil.
B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
MTBE = Methyl-t-Butyl Ether
SVOCS = Semi-Volatile Organic Compounds
Pb = Total Lead

<27.94> = Top of casing mean sea level elevation
<0 0005 = Not detected above the expressed detection level.
-- = Not analyzed for this analyte.
1 = Lab report states: "The positive result has an atypical pattern for Diesel analysis."
2 = Lab report states: "The positive result appears to be a heavier hydrocarbon than Diesel."
3 = Lab report states: "The positive result appears to be a lighter hydrocarbon than Diesel."
4 = Lab report states: "The positive result appears to be a heavier hydrocarbon than Gasoline."
5 = Lab report states: "Product is not typical gasoline."
6 = No detectable levels of 69 SVOC analytes.
7 = MTBE result confirmed using USEPA Method 8260B.

4.0 CONCLUSIONS

Both soil and groundwater hydrocarbon plumes appear to be adequately defined, with one small plume extending to the northwest from the former Mohawk above ground tanks and another plume extending approximately 100 feet southwest from the former Liquid Sugars underground storage tanks (USTs). Results from investigative boring IB-6 confirm that the elevated levels of gasoline-range hydrocarbons encountered in shallow clay soils in the previous All Environmental AEI-1 boring appear to represent a small, localized release, limited to a relatively small portion of the warehouse area (approximately 150 square feet out of a total warehouse area of about 3,500 square feet).

Soil analytical results from investigative borings IB-1, IB-5, and IB-7, as well as from previous borings TB-2, TB-8, and MW-2, showed levels of gasoline- and diesel-range hydrocarbons in sands and gravels below five feet in depth and extending southwestward from the former USTs. However, both field and laboratory analytical results from the downgradient (southwest) well boring MW-4 showed no hydrocarbon impacts in this sand and gravel layer.

While shallow groundwater southwest from the former Liquid Sugars USTs appears to be both gasoline- and diesel-impacted, hydrocarbon impacts appear to decrease markedly in median downgradient wells MW-5 and MW-4. Thus, it appears that the combination of past source removal activities and ongoing natural attenuation have resulted in limited hydrocarbon impacts.

5.0 RECOMMENDATIONS

Based on the results of this and previous investigations, Gribi Associates recommends the following closure-related activities for the west-northwest and the southwest hydrocarbon plume areas.

5.1 West-Northwest Area

In order to determine whether or not additional investigative or remedial measures will be warranted for the small west-northwest hydrocarbon-impacted area, Gribi Associates recommends conducing a risk assessment for this portion of the project site. This risk assessment will include conducting risk calculations to determine whether or not residual hydrocarbons identified in this area pose a significant risk to environmental or human receptors in the area.

5.2 Southwest Area

In order to evaluate overall groundwater impacts, we recommend conducting quarterly groundwater monitoring of the three new wells (MW-3, MW-4, and MW-5) for one year. In addition, we recommend conducting semi-annual monitoring of pre-existing wells MW-1 and MW-2 for one year. Results of these monitoring activities will help to establish baseline hydrocarbon concentrations in groundwater necessary to conduct meaningful risk calculations for this portion of the site.

Following one year of quarterly groundwater monitoring, we recommend conducting a detailed risk assessment for the southwest area, incorporating all available soil and groundwater data. Based on our experience in the Emeryville/Berkeley area, we expect that the only potentially complete exposure pathways requiring risk assessment calculations for commercial receptors will include: (1) Indoor air exposure; (2) Outdoor air exposure; and (3) Soil exposure (construction worker).

6.0 RISK-BASED CORRECTIVE ACTION MODELING FOR WEST-NORTHWEST AREA

In order to assess potential risk associated with residual hydrocarbons encountered in soil and grab groundwater samples, Gribi Associates conducted Tier 2 Risk-Based Corrective Action (RBCA) modeling for the west-northwest portion of the project site. The RBCA modeling included: (1) Conducting preliminary exposure pathway screening for the site to eliminate incomplete exposure pathways; (2) Conducting RBCA risk calculations for complete exposure pathways; and (3) Evaluating results of RBCA modeling.

6.1 Preliminary Exposure Pathway Screening

Gribi Associates conducted a preliminary evaluation of all potential exposure pathways for the west-southwest area, which includes a small portion of the warehouse at 1285 66th Street. The purpose of this evaluation was to eliminate those exposure pathways which are not complete and, hence, do not apply to the project site. Results of this evaluation are summarized in Table 3.

Table 3
PRELIMINARY EXPOSURE PATHWAY SCREENING
Liquid Sugars North Parcel, 1266 66th Street

Exposure Pathway	Complete?	Discussion
Air Exposure Pathway		
Surface soil volatilization. to ambient air	No	No evidence of surface soil impacts; entire west-southwest portion of site is indoors.
Subsurface soil volatilization to ambient air	No	Entire west-southwest portion of site is indoors
Subsurface soil volatilization to enclosed space	Possible	Commercial receptors only
Groundwater volatilization to ambient air	No	Entire west-southwest portion of site is indoors
Groundwater volatilization to enclosed space	Possible	Commercial receptors only
Soil Exposure Pathway		
Dermal contact/ingestion of surface soils	No	No evidence of surface soil impacts
Dermal contact/ingestion of subsurface soils	No	No evidence of surface soil impacts
Groundwater Exposure Pathway		
Soil leaching to groundwater, ingestion	No	No nearby water use wells.
Dissolved/free phase groundwater ingestion	No	No nearby water use wells
Surface Water Exposure Pathway		
Soil leaching to surface water	No	No nearby surface water bodies.
Groundwater plume discharge to surface water	No	No nearby surface water bodies.

6.2 RBCA Model Calculations

Gribi Associates conducted Tier 2 RBCA calculations using the *Tier 1 and Tier 2 RBCA Spreadsheet System*, Version 1.01 computer model developed by Groundwater Services, Inc. This

model provides for Tier 2 RBCA calculations in accordance with and using default values contained in ASTM Standard E-1739. Based on preliminary exposure pathway screening, as summarized above, Gribi Associates ran RBCA calculations for the west-northwest project site area for the enclosed space inhalation of hydrocarbon vapors via subsurface soil and groundwater volatilization.

The RBCA modeling process can generally be divided into the following tasks: (1) Input of site specific and general parameters; (2) Calculation of baseline intake rates and risk levels associated with actual site conditions; and (3) Calculation of Site-Specific Target Levels (SSTLs) for individual and multiple constituent health risks. These activities are summarized in the following sections.

6.2.1 Model Input Parameters

Input data tables generated as part of the computer model output are contained in Appendix F. These tables summarize general input parameters, chemical and toxicological data for specific site constituents, and user-specified values for key model parameters. Some of these specified values include the following:

- **Contaminants of concern (COC):** Benzene, toluene, ethylbenzene, and xylenes. Based on site use and investigative results.
- **Onsite and offsite groundwater ingestion exposure:** No receptors
- **Onsite surface soil direct ingestion/dermal contact exposure:** No evidence of surface soil contamination.
- **Onsite and offsite outdoor air exposure:** No exposure; hydrocarbon plume is located indoors.
- **Indoor onsite air exposure:** Commercial receptors only.
- **Contaminated soil area:** 225 square feet. Calculated based on a square area measuring approximately 15 feet by 15 feet.
- **Enclosed space volume to infiltration area ratio:** 10,837 centimeters. Calculated based on a warehouse volume of 80,000 cubic feet (40 feet X 100 feet X 20 feet in height) and a contaminant infiltration area of 225 square feet (15 feet X 15 feet).
- **Depth to top of affected subsurface soils:** 4.0 feet. Based on boring log for All Environmental boring AEI-1.
- **Depth to base of affected subsurface soils:** 11.0 feet. Based on boring log for All Environmental boring AEI-1.
- **Vadose zone thickness:** 11.0 feet.

- **Representative subsurface soil COC concentrations:** Maximum contaminant levels, from All Environmental boring AEI-1. These concentrations are:

Benzene	33 mg/kg
Toluene	0.5 mg/kg
Ethylbenzene	94 mg/kg
Xylenes	160 mg/kg

- **Representative groundwater COC concentrations:** Maximum contaminant levels, from All Environmental boring AEI-1. These concentrations are:

Benzene	0.310 mg/L
Toluene	0.013 mg/L
Ethylbenzene	0.220 mg/L
Xylenes	0.170 mg/L

- **Target Risk Levels:** For benzene, which is a Class A carcinogen, we used Individual and Cumulative Carcinogenic Risk Goals of 10^{-5} and 10^{-4}, respectively, which represent upperbound excess lifetime risks from chronic exposure to individual and multiple constituents. The Individual Carcinogenic Risk Goal of 10^{-5} was used, rather than the ASTM value of 10^{-6}, based on our understanding of Alameda County Department of Environmental Health requirements. In order to evaluate individual and cumulative risk from non-carcinogenic effects, we used default Hazard Quotient and Hazard Index values of 1 for both, which represent the ratio of the exposure level to established hazard threshold levels for the COCs.

- **Slope Factor for Benzene Oral and Inhalation Exposure:** Slope factor of 0.10 (State value), rather than the EPA slope factor of 0.029.

For other parameters, such as exposure parameters and building parameters, we used default values, which conform to ASTM E-1739 default parameter values and are conservative.

6.2.2 Model Calculations of Baseline Risk

Tabulated model calculations of site-specific constituent baseline intake rates and risk levels for each exposure pathway are contained in Appendix G. The baseline risk represents the excess risk to which the receptor would be exposed under current or anticipated future site conditions if no remedial measures are implemented. Total carcinogenic risk and toxic effects risk for each complete pathway are summarized in Table 4.

Table 4
TOTAL PATHWAY RISK ESTIMATES
West-Northwest Area, Liquid Sugars UST Site, 1275 66th Street

Exposure Pathway	Carcinogenic Risk				Toxic Effects Risk			
	Individual COC Risk		Cumulative COC Risk		Individual COC Risk		Cumulative COC Risk	
	Maximum Value	Target Risk	Total Value	Target Risk	Hazard Index	Applicable Limit	Hazard Quotient	Applicable Limit
Indoor air exposure pathways	5.7×10^{-5}	1×10^{-5}	5.7×10^{-5}	1×10^{-4}	9.4×10^{-1}	1	9.5×10^{-1}	1

6.3 Evaluation of RBCA Model Results

Based on model risk estimates, it appears that there is no significant risk of exposure from any identified hydrocarbon constituents present at the project site. The total pathway individual and cumulative toxic risk(risk from toluene, ethylbenzene, and xylenes exposure) associated with indoor vapor exposure for the west-northwest project site area is 9.4×10^{-1}. and 9.5×10^{-1}, respectively. These individual and cumulative risk values are below the individual and cumulative risk target level of 1.0. The only calculated risk value which exceeds target risk levels is the individual carcinogenic risk value associated with possible indoor air exposure to benzene. This individual risk value for indoor benzene vapor exposure is 5.7×10^{-5}. We believe that since this risk value is only slightly above the target risk of 1×10^{-5}, it does not represent a significant risk.

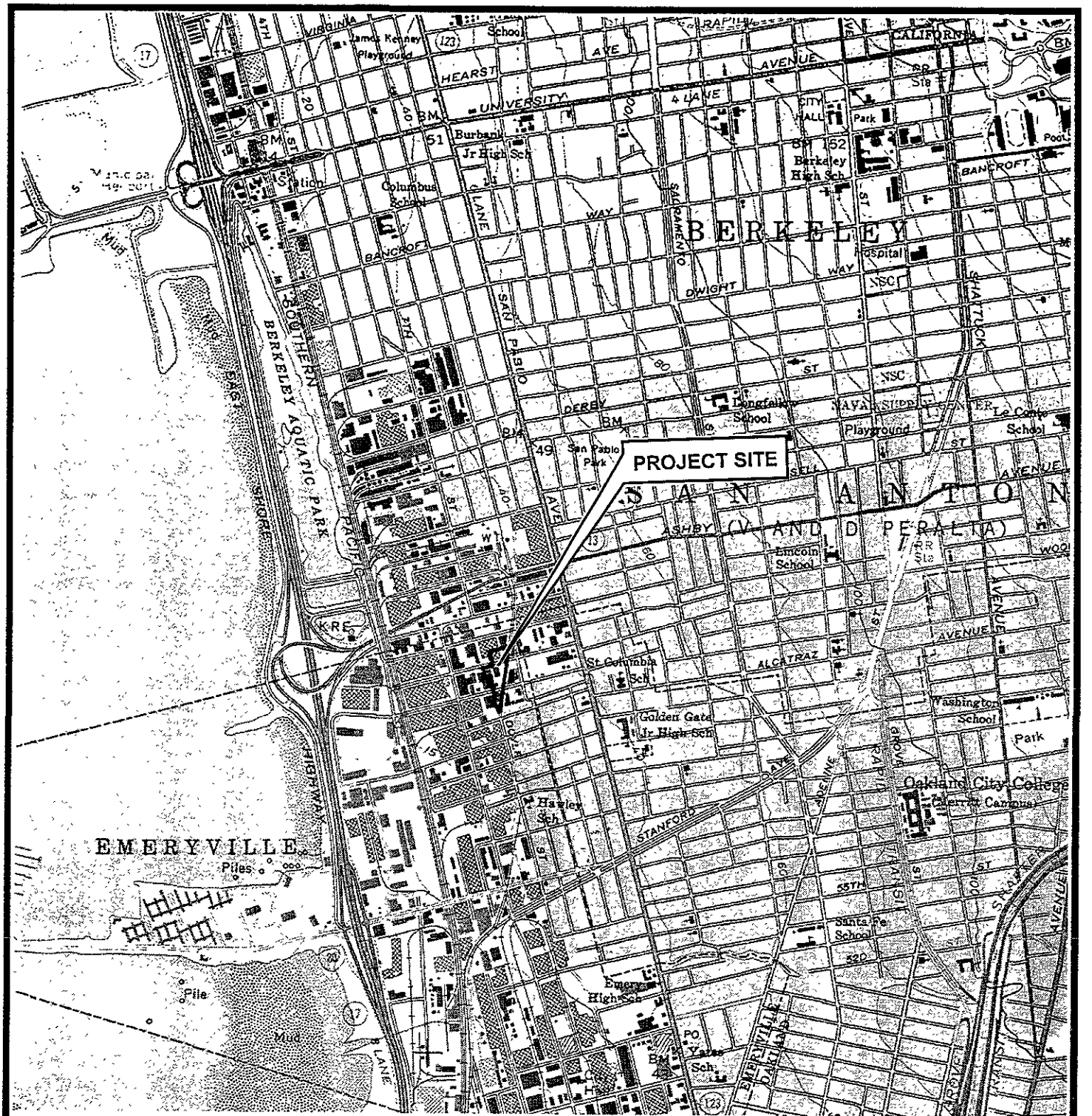
Factors which we believe would tend to mitigate the low levels of risk associated with indoor vapor exposure in the 1285 66th Street warehouse building include:

- **Subsurface soils have very low permeabilities and would not be expected to transmit benzene vapors very readily.** Except where noted, the RBCA model used default values to calculate vapor exposure concentrations, rather than site-specific values. Given the low permeability soils beneath the site, we would expect risk values based on actual site conditions to be lower than those calculated using default values.

- **Grab groundwater sample results used for the risk assessment are probably elevated relative to true groundwater conditions.** It is our experience that grab groundwater samples from open borings can be significantly higher than true groundwater conditions.

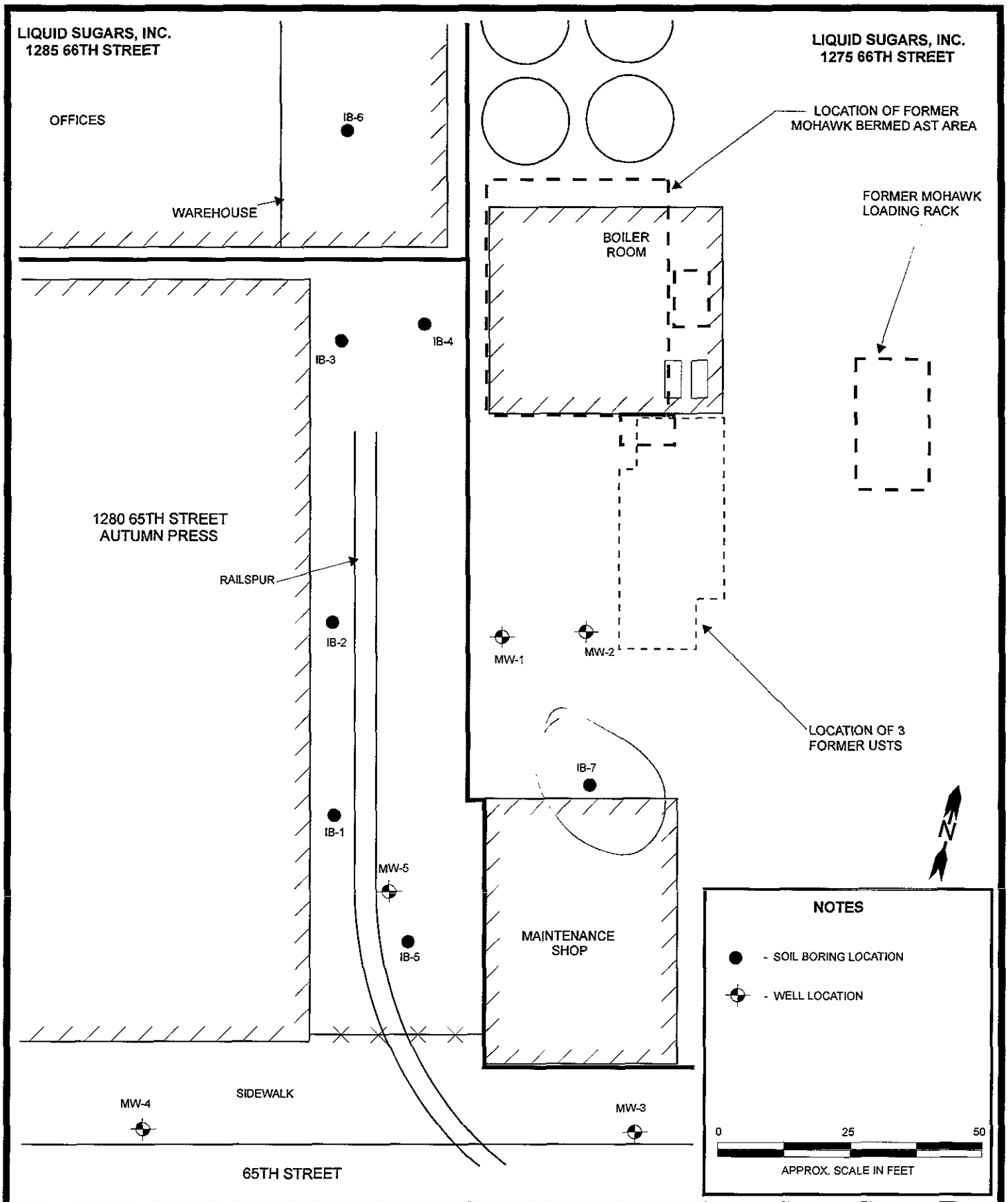
We believe that these mitigating factors would tend to decrease the risk associated with the indoor air exposure pathway to below the target risk level. Based on these results, and on the limited extent of soil and groundwater impacts, we request that no additional investigative or remedial measures be required for the west-northwest portion of the project site.

FIGURES

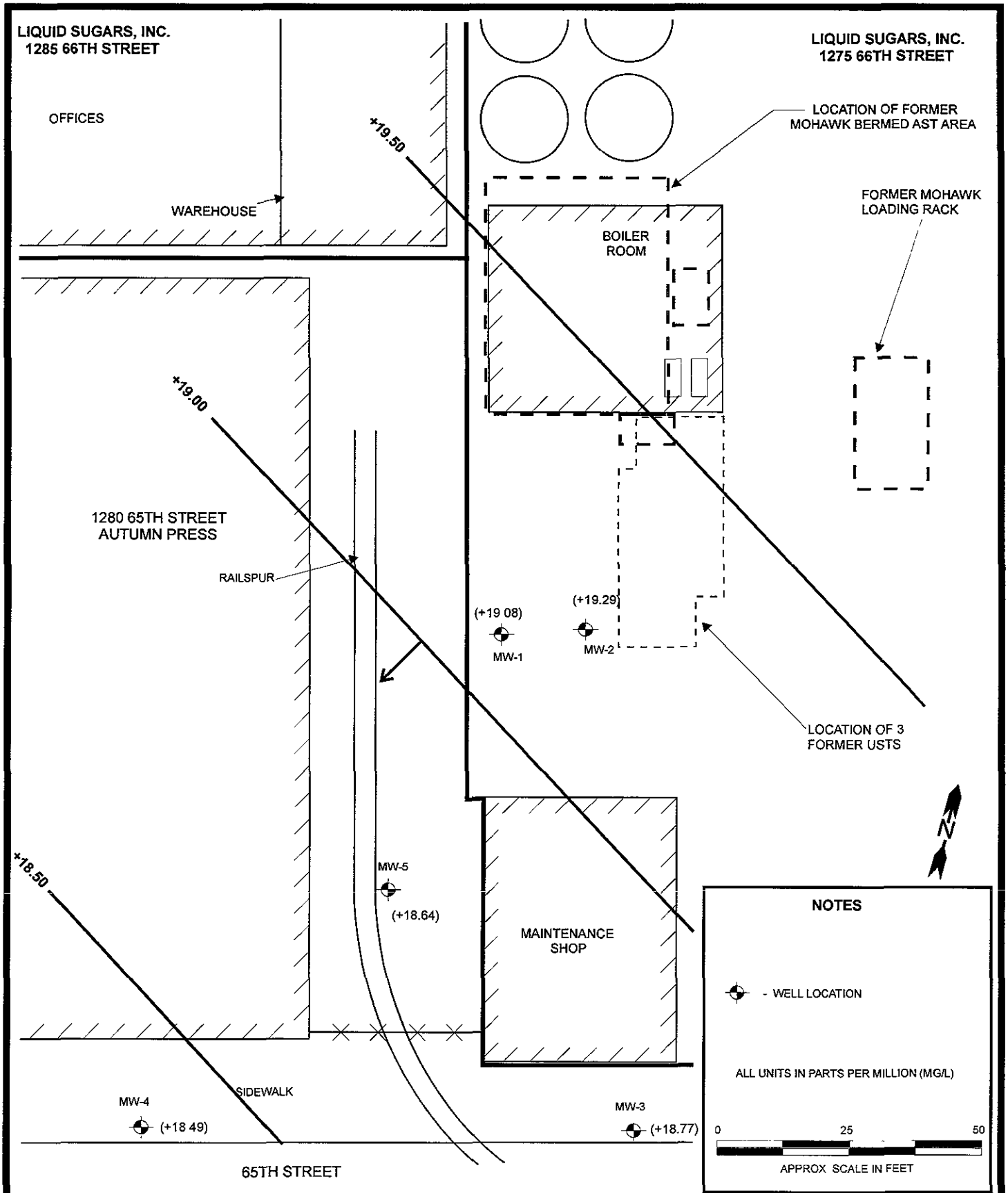


TOPOGRAPHY FROM USGS OAKLAND, WEST, CALIFORNIA
7 5-MINUTE QUADRANGLE MAPS, (TOPO! 1997).

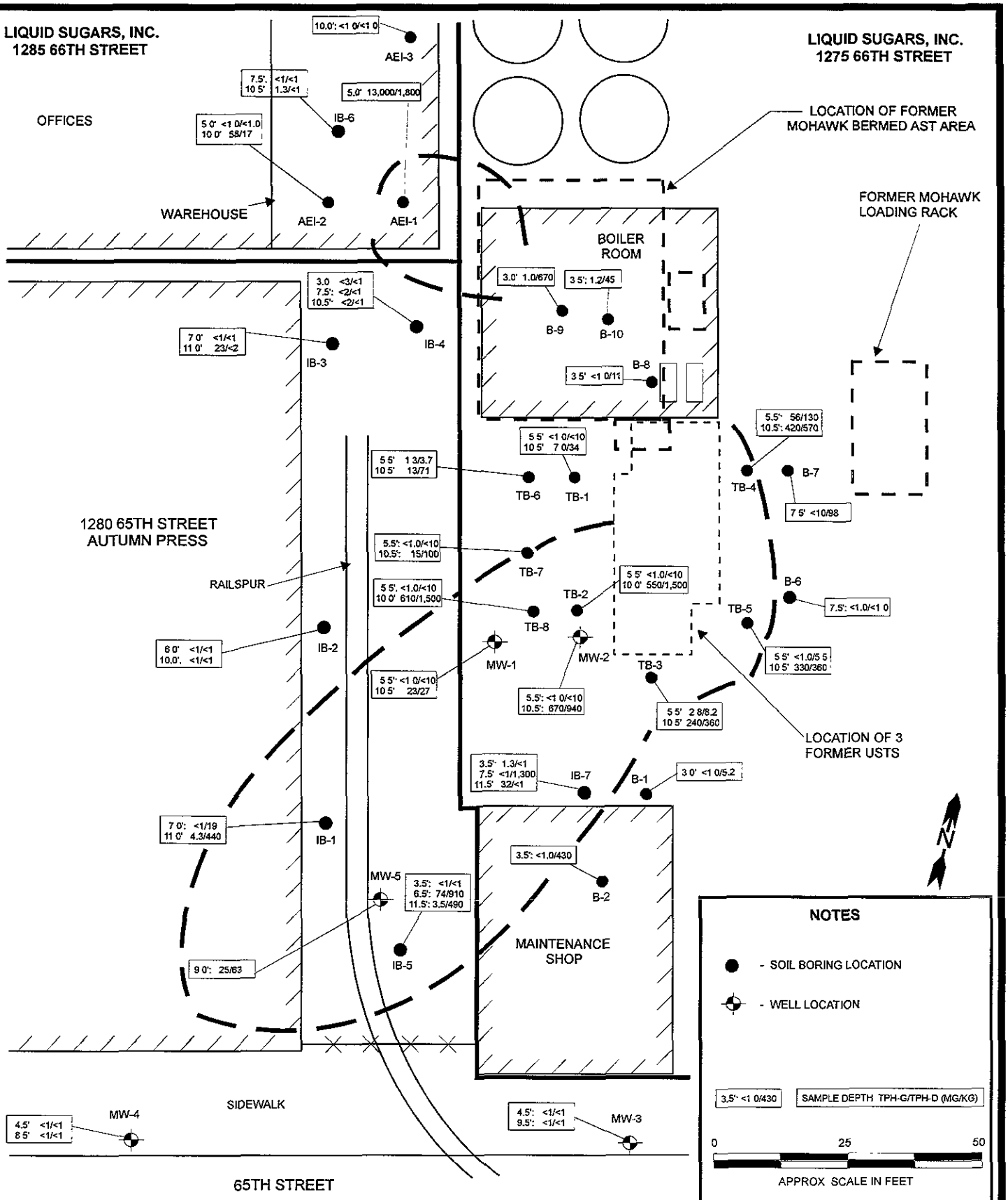
DESIGNED BY:	CHECKED BY:	**SITE VICINITY MAP**	DATE: 11/09/98	FIGURE: 1
DRAWN BY: JG	SCALE. 1:24,000	LIQUID SUGARS, INC. EMERYVILLE, CALIFORNIA	**GRIBI Associates**	
PROJECT NO: 149-01-01				



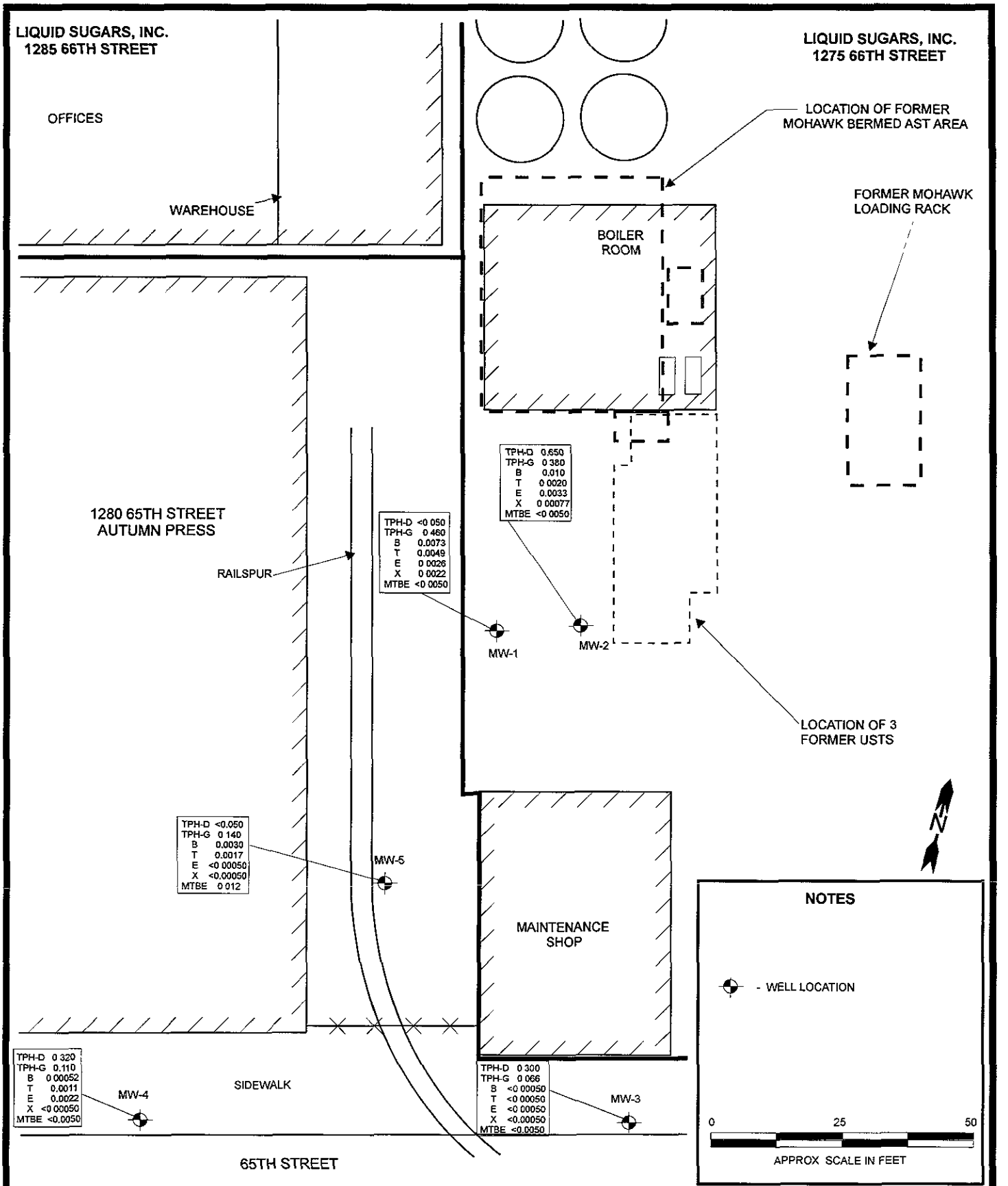
DESIGNED BY:	CHECKED BY:	**SITE PLAN**	DATE: 08/04/99	FIGURE: 2
DRAWN BY: JG	SCALE:	LIQUID SUGARS, INC. SITE 1275 & 1285 66TH STREET EMERYVILLE, CALIFORNIA	**GRIBI Associates**	
PROJECT NO: 149-01-03				



DESIGNED BY:	CHECKED BY:	**GROUNDWATER GRADIENT MAP 06/28/99**	DATE: 08/04/99	FIGURE: 3
DRAWN BY: JG	SCALE:	LIQUID SUGARS, INC. SITE 1275 & 1285 66TH STREET EMERYVILLE, CALIFORNIA	**GRIBI Associates**	
PROJECT NO: 149-01-03				



DESIGNED BY:	CHECKED BY:	**SOIL TPH-G AND TPH-D RESULTS**	DATE: 08/04/99	FIGURE: **4**
DRAWN BY: JG	SCALE:	LIQUID SUGARS, INC. SITE 1275 & 1285 66TH STREET EMERYVILLE, CALIFORNIA	**GRIBI Associates**	
PROJECT NO: 149-01-03				



DESIGNED BY:	CHECKED BY:	**GROUNDWATER HYDROCARBON RESULTS** LIQUID SUGARS, INC. SITE 1275 & 1285 66TH STREET EMERYVILLE, CALIFORNIA	DATE: 08/04/99	FIGURE: **5**
DRAWN BY: JG	SCALE:		**GRIBI Associates**	
PROJECT NO: 149-01-03				

APPENDIX A

REGULATORY PERMITS

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651
PHONE (510) 670-5575 ANDREAS GODFREY FAX (510) 670-5262
(510) 670-5248 ALVIN KAN

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT Liquid Sugars, Inc
1265 66th Street
Emeryville CA

California Coordinates Source _____ ft Accuracy _____ ft
CCN _____ ft CCE _____ ft
APN _____

CLIENT
Name Liquid Sugars, Inc
Address P.O. Box 96 Phone 510/777-9780
City Oakland CA Zip 94604

APPLICANT
Name Jim Gribi
Gribi Associates Fax 707/748-7763
Address 1359 Invers St. Ste E-14 Phone 707/748-7743
City Benicia CA Zip 94510

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	☐	General	☐
Water Supply	☐	Contamination	☒
Monitoring	☐	Well Destruction	☐

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other _____	☐

DRILLING METHOD

Mud Rotary	☐	Air Rotary	☐	Auger	☐
Cable	☐	Other	☒ Geoprobe		

DRILLER'S LICENSE NO. 482390 (Kullhawg)

WELL PROJECTS
Drill Hole Diameter _____ in. Maximum
Casing Diameter _____ in. Depth _____ ft
Surface Seal Depth _____ ft. Number _____

GEOTECHNICAL PROJECTS
Number of Borings 6 Maximum
Hole Diameter 2 1/4 in. Depth 20 ft

ESTIMATED STARTING DATE 5/19/99
ESTIMATED COMPLETION DATE 5/20/99

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68

APPLICANT'S SIGNATURE James A Gribi DATE 5/13/99

FOR OFFICE USE
PERMIT NUMBER 99WR217
WELL NUMBER _____
APN _____

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL
Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

E. CATHODIC
Fill hole above anode zone with concrete placed by tremie

F. WELL DESTRUCTION
See attached

G. SPECIAL CONDITIONS
SEE ATTACHED INFORMATION

APPROVED _____ DATE 5-14-99

** TOTAL PAGE.03 **

CITY - PUBLIC WORKS DEPARTMENT
2200 POWELL ST., 12TH FLR.
EMERYVILLE, CA 94608
(510) 596 4330

DATE 6/22/99

PROPERTY OWNER Liquid Sugars Inc. PHONE NO. 510/777-4700

CONTACT PERSON Ron Mooney

ADDRESS P.O. Box 96 Oakland CA

CONTRACTOR Kvilhaug Well Drilling LICENSE NO. 482390 CLASS C-57

CONTACT PERSON Dan Kvilhaug PHONE NO. 925/685-6613

ADDRESS 1109 Landini LN Concord, CA 94520

LOCATION OF WORK (INCLUDE ADDRESS AND STREET NAME AND CROSS STREETS)

1274 65th Street; North 65th Street sidewalk, West of Vallejo Street.

PLANNED DATE OF COMMENCEMENT 6/23/99 PLANNED DATE OF COMPLETION 6/23/99

DESCRIPTION OF WORK (INCLUDE AVERAGE DEPTH OF EXCAVATION, MAXIMUM DEPTH, AVERAGE WIDTH, LENGTH, AND ESTIMATED COST OF WORK)

Drill and Install two (2) groundwater monitoring wells to ~ 20 feet in depth using Hollow Stem auger. Flush-mounted wellboxes set in concrete to remain for approximately one year.

CURRENT BUSINESS LICENSE ON FILE _____ YES? _____ NO?

CONTRACTOR SIGNATURE _____

USA# 502-463 DO NOT WRITE BELOW THIS LINE

☐ 24 HOUR NOTICE PRIOR TO START OF WORK ☐ PLAN TO BE SUBMITTED

REMARKS _____

NOTE. PROOF OF ADEQUATE INSURANCE MUST BE PRESENTED PRIOR TO START OF WORK OR THIS PERMIT IS VOID.

SEE ATTACHED ENCROACHMENT PERMIT GENERAL PROVISIONS.

FOR INSPECTION UPON COMPLETION OF WORK, PLEASE CALL JUAN ARREGUIN AT (510) 596-4333. FOR REFUNDABLE DEPOSIT UPON ENGINEER SIGN-OFF, PLEASE CALL KATHLEEN WALLS AT (510) 596-4336. PLEASE REFER TO THE PEPMIT NUMBER LISTED ABOVE.

INSPECTION COMPLETED ON _____ BY _____

REFUNDABLE DEPOSIT RETURNED ON _____ BY _____

(SIGNATURE) Sr Civil Engr (TITLE)

ALAMEDA COUNTY PUBLIC WORKS AGENCY

WATER RESOURCES SECTION
951 TURNER COURT, SUITE 300, HAYWARD, CA 94545-2651
PHONE (510) 670-5575 ANDREAS GODFREY FAX (510) 670-5262
(510) 670-5248 ALVIN KAN

DRILLING PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT LIQUID SUGARS INC.
1275 66TH STREET
EMERYVILLE CA

Thomas Guide Coordinates Source _____ ft. Accuracy ± ___ ft.
GCN ft. CCE ft.
APN _____

CLIENT
Name LIQUID SUGARS INC
Address P.O. BOX 96 Phone 510/777-4700
City OAKLAND Zip 94604

APPLICANT
Name STANTON STUBBS w/
GRIBI ASSOCIATES Fax 707/748-7763
Address 1360 HAYES ST. STE-H Phone 707/748-7243
City BENICIA Zip 94510

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	☐	General	☐
Water Supply	☐	Contamination	☐
Monitoring	☒	Well Destruction	☐

PROPOSED WATER SUPPLY WELL USE

New Domestic	☐	Replacement Domestic	☐
Municipal	☐	Irrigation	☐
Industrial	☐	Other _____	☐

DRILLING METHOD

Mud Rotary	☐	Air Rotary	☐	Auger	☒
Cable	☐	Other	☐		

DRILLER'S LICENSE NO. 482390 (Kvilhaug)

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 20 ft.
Surface Seal Depth 4 ft. Number 3

GEOTECHNICAL PROJECTS
Number of Borings _____ Maximum
Hole Diameter _____ in. Depth _____ ft.

ESTIMATED STARTING DATE 6/23/99
ESTIMATED COMPLETION DATE 6/23/99

I hereby agree to comply with all requirements of this permit and Alameda County Ordinance No. 73-68

APPLICANT'S SIGNATURE Stanton Stubbs DATE 6/18/99

FOR OFFICE USE
PERMIT NUMBER 99WR318 -
WELL NUMBER _____
APN _____

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as to arrive at the ACPWA office five days prior to proposed starting date.
2. Submit to ACPWA within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

B. WATER SUPPLY WELLS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved.

C. GROUNDWATER MONITORING WELLS INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

D. GEOTECHNICAL
Backfill bore hole with compacted cuttings or heavy bentonite and upper two feet with compacted material. In areas of known or suspected contamination, tremied cement grout shall be used in place of compacted cuttings.

E. CATHODIC
Fill hole above anode zone with concrete placed by tremie

F. WELL DESTRUCTION
See attached

G. SPECIAL CONDITIONS

APPROVED [signature] DATE 6-22-99

** TOTAL PAGE.02 **

APPENDIX B

SOIL BORING LOGS

LOG OF WELL BORING

SHEET _1_ OF _1_

BORING NUMBER : **IB-1**

GRIBI Associates

BORING LOCATION:
AUTUMN PRESS - SOUTH

BORING TYPE: INVESTIGATIVE BORING

PROJECT NAME:
LIQUID SUGARS MIDDLE PARCEL

PROJECT NUMBER: 149-01-03

START DATE: 5/27/99

COMPLETION DATE: 5/27/99

DRILLING CONTRACTOR: KVILHAUG DRILLING

DRILLING METHOD: GEOPROBE

BOREHOLE DIAMETER: 2-1/2 INCHES

BORING TOTAL DEPTH: 15 FEET

COMPLETION METHOD: GROUTED

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE DEPTH	INTERVAL	PID READING /DEPTH	USCS	LOG OF MATERIAL	PIEZOMETER/ WELL INSTALLATION
						0 - 0.5 Ft. Asphalt & base rock.	
					CL	0.5 - 5.5 Ft. Dark grey to black silty CLAY, firm, dense, moist, no hydrocarbon odor or staining.	
5	IB-1.1	6.5 FT			ML	5.5 - 9.0 Ft. Grey green clayey SILT, gravelly, friable, slight hydrocarbon odor.	
10	IB-1 2	10.5 FT			SM	9.0 - 12.0 Ft. Grey green clayey SAND, fine to medium grain, silty, friable to firm, strong hydrocabon odor.	
						12.0 - 15 0 Ft. No recovery.	
15						END OF BORING	
20							
25							

TOTAL DEPTH: 15.0 FEET
GROUNDWATER DEPTH: 7.65 FEET

LOG OF WELL BORING

SHEET _1_ OF _1_

BORING NUMBER : **IB-2**

GRIBI Associates

BORING LOCATION:
AUTUMN PRESS NORTH FROM IB-1

BORING TYPE: INVESTIGATIVE BORING

PROJECT NAME:
LIQUID SUGARS MIDDLE PARCEL

PROJECT NUMBER: 149-01-03

START DATE: 5/27/99

COMPLETION DATE: 5/27/99

DRILLING CONTRACTOR: KVILHAUG DRILLING

DRILLING METHOD: GEOPROBE

BOREHOLE DIAMETER: 2-1/2 INCHES

BORING TOTAL DEPTH: 17 FEET

COMPLETION METHOD: GROUTED

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE DEPTH	INTERVAL	PID READING /DEPTH	USCS	LOG OF MATERIAL	PIEZOMETER\ WELL INSTALLATION
						0 - 0.5 Ft. Asphalt & base rock.	
					ML	0.5 - 3.0 Ft. Black clayey SILT, swampy, soft, moist, slight hydrocarbon odor.	
5					SM	3.0 - 6.0 Ft. Gray to olive green clayey SAND, fine to medium grain, silty, friable to firm, ,moist, slight hydrocarbon odor.	
	IB-2.1	6.0 FT					
10	IB-2.2	10.0 FT			ML	6.0 - 15.0 Ft. Brown to tan clayey SILT, firm, moist, no hydrocarbon odor or staining.	
15					SM	15.0 - 17.0 Ft. Brown to tan gravelly silty clayey SAND, slight to moderate hydrocarbon odor.	
						END OF BORING	
20							
25						TOTAL DEPTH: 17 FEET GROUNDWATER DEPTH: 13.6 FEET	

LOG OF WELL BORING

SHEET _1_ OF _1_

BORING NUMBER : **IB-3**

BORING LOCATION:
AUTUMN PRESS - NORTHWEST CORNER

BORING TYPE: INVESTIGATIVE BORING

PROJECT NAME:
LIQUID SUGARS MIDDLE PARCEL

PROJECT NUMBER: 149-01-03

GRIBI Associates

START DATE: 5/27/99

COMPLETION DATE: 5/27/99

DRILLING CONTRACTOR: KVILHAUG DRILLING

DRILLING METHOD: GEOPROBE

BOREHOLE DIAMETER: 2-1/2 INCHES

BORING TOTAL DEPTH: 17 FEET

COMPLETION METHOD: GROUTED

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE DEPTH	INTERVAL	PID READING /DEPTH	USCS	LOG OF MATERIAL	PIEZOMETER\ WELL INSTALLATION
						0 - 0.5 Ft. Asphalt and Base.	
	IB-3 1	3.5 FT			ML	0.5 - 5.0 Ft. Black to dark gray clayey SILT, soft, wet, no hydrocarbon odor or staining.	
5							
	IB-3.2	7 0 FT			ML	5.0 - 10 0 Ft. Gray green clayey SILT, firm, dense, moist, no to very slight hydrocarbon odor.	
10							
	IB-3 3	11.0 FT			CL	10.0 - 12.5 Ft. Brown to gray green silty CLAY, firm, moist, slight to moderate hydrocarbon odor	
15					CL	12.5 - 17.0 Ft. Brown silty CLAY, slightly gravelly, dense, moist, no hydrocarbon odor or staining.	
						END OF BORING	
20							
25						TOTAL DEPTH: 17 FEET GROUNDWATER DEPTH: 10.28 FEET	

LOG OF WELL BORING

SHEET _1_ OF _1_

BORING NUMBER : IB-4

GRIBI Associates

BORING LOCATION:
AUTUMN PRESS - NORTHEAST CORNER

BORING TYPE: INVESTIGATIVE BORING

PROJECT NAME:
LIQUID SUGARS MIDDLE PARCEL

PROJECT NUMBER: 149-01-03

START DATE: 5/27/99

COMPLETION DATE: 5/27/99

DRILLING CONTRACTOR: KVILHAUG DRILLING

DRILLING METHOD: GEOPROBE

BOREHOLE DIAMETER: 2-1/2 INCHES

BORING TOTAL DEPTH: 20 FEET

COMPLETION METHOD: GROUTED

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE DEPTH	INTERVAL	PID READING /DEPTH	USCS	LOG OF MATERIAL	PIEZOMETER\ WELL INSTALLATION
						0 - 0.5 Ft. Asphalt & base rock.	
					ML	0.5 - 3.0 Ft. Black clayey SILT, soft, moist, no hydrocarbon odor staining.	
	IB-4.1	3 5 FT					
5							
	IB-4.2	6.5 FT			ML	3.0 - 11.0 Ft. Olive green clayey sandy SILT, slightly gravelly, firm, friable, moist, slight to moderate hydrocarbon odor.	
10							
	IB-4.3	11.5 FT					
15					CL	11.0 - 20.0 Ft. Tan to brown silty CLAY, dense, moist, no hydrocarbon odor or staining.	
20						END OF BORING	
25							

TOTAL DEPTH: 20 FEET
GROUNDWATER DEPTH: 6.38 FEET

LOG OF WELL BORING

GRIBI Associates

BORING NUMBER : IB-5

SHEET _1_ OF _1_

BORING LOCATION:
AUTUMN PRESS - SOUTH NEAR GATE

BORING TYPE: INVESTIGATIVE BORING

PROJECT NAME:
LIQUID SUGARS MIDDLE PARCEL

PROJECT NUMBER: 149-01-03

START DATE: 5/27/99

COMPLETION DATE: 5/27/99

DRILLING CONTRACTOR: KVILHAUG DRILLING

DRILLING METHOD: GEOPROBE

BOREHOLE DIAMETER: 2-1/2 INCHES

BORING TOTAL DEPTH: 14 FEET

COMPLETION METHOD: GROUTED

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE DEPTH	INTERVAL	PID READING /DEPTH	USCS	LOG OF MATERIAL	PIEZOMETER\ WELL INSTALLATION
						0 - 0.5 Ft. Asphalt & base rock.	
					CL	0.5 - 4.0 Ft. Black to dark gray silty CLAY, firm, moist, moderate hydrocarbon odor.	
	IB-5 1	3.5 FT					
5							
	IB-5.2	6.5 FT			SP	4.0 - 12.0 Ft. Olive green gravelly SAND, friable, wet, strong hydrocarbon odor.	
10							
	IB-5.3	11.5 FT			CL	12.0 - 14.0 Ft. Brown sitly CLAY, firm, moist, no hydrocabon odor or staining.	
						END OF BORING	
15							
20							
25							

TOTAL DEPTH: 14.0 FEET
GROUNDWATER DEPTH: 7.2 FEET

LOG OF WELL BORING

GRIBI Associates

BORING NUMBER : **IB-6**

SHEET _1_ OF _1_

BORING LOCATION:
MIDDLE WAREHOUSE

BORING TYPE: INVESTIGATIVE BORING

PROJECT NAME:
LIQUID SUGARS MIDDLE PARCEL

PROJECT NUMBER: 149-01-03

START DATE: 5/27/99

COMPLETION DATE: 5/27/99

DRILLING CONTRACTOR: KVILHAUG DRILLING

DRILLING METHOD: GEOPROBE

BOREHOLE DIAMETER: 2-1/2 INCHES

BORING TOTAL DEPTH: 28 FEET

COMPLETION METHOD: GROUTED

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE DEPTH	INTERVAL	PID READING /DEPTH	USCS	LOG OF MATERIAL	PIEZOMETER\ WELL INSTALLATION
						0 - 1.0 Ft. Concrete & base rock.	
					ML	1.0 - 4.0 Black clayey SILT, soft, wet, no hydrocarbon odor or staining.	
	IB-6.1	3.5 FT					
5							
	IB-6.2	7.5 FT					
10							
	IB-6.3	10.5 FT			CL	4.0 - 17.5 Ft. Greenish tan silty CLAY, dense, moist, no hydrocarbon odor or staining. (Note: slight hydrocarbon odor at 10.5)	
15							
						END OF BORING	
						NOTE: DUE TO INCREASED SOIL DENSITY, AT 17.5 FEET SWITCHED TO PUNCHING SOIL TO A DEPTH OF 28 FEET TO REACH GROUNDWATER.	
20							
25						TOTAL DEPTH: 28.0 FEET GROUNDWATER DEPTH. 13.28 FEET	

LOG OF WELL BORING

GRIBI Associates

BORING NUMBER: IB-7

SHEET _1_ OF _1_

BORING LOCATION:
NORTH SIDE OF MACHINE SHOP

BORING TYPE: INVESTIGATIVE BORING

PROJECT NAME:
LIQUID SUGARS MIDDLE PARCEL

PROJECT NUMBER: 149-01-03

START DATE: 5/27/99

COMPLETION DATE: 5/27/99

DRILLING CONTRACTOR: KVILHAUG DRILLING

DRILLING METHOD: GEOPROBE

BOREHOLE DIAMETER: 2-1/2 INCHES

BORING TOTAL DEPTH: 14 FEET

COMPLETION METHOD: GROUTED

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE DEPTH	INTERVAL	PID READING /DEPTH	USCS	LOG OF MATERIAL	PIEZOMETER/ WELL INSTALLATION
						0 - 1.0 Ft. Cement & base rock.	
					ML	1.0 - 4.0 Ft. Olive green clayey SILT, gravelly, dense, moist, moderate hydrocarbon odor.	
	IB-7.1	3.5 FT					
5	IB-7.2	5.0 FT			ML	4.0 - 6.0 Ft. Black clayey SILT, soft to firm, moist, moderate hydrocarbon odor.	
					ML	6.0 - 9.0 Ft. Olive green clayey SILT, gravelly, dense, moist, strong hydrocarbon odor.	
	IB-7.3	7 0 FT					
10	IB-7.4	10.5 FT			SP	9.0 - 12.0 Ft. Greenish gray gravelly SAND, wet, friable, strong hydrocarbon odor.	
					ML	12.0 - 14.0 Ft. Tan clayey SILT, soft, wet, slight hydrocarbon odor	
						END OF BORING	
15							
20							
25						TOTAL DEPTH: 14.0 FEET GROUNDWATER DEPTH: 8.97 FEET	

LOG OF WELL BORING

GRIBI Associates

BORING NUMBER : **MW-3**

BORING LOCATION:
SOUTH OF MAINTENANCE SHOP

BORING TYPE: MONITORING WELL

PROJECT NAME: LSI-MIDDLE

PROJECT NUMBER: 149-01-03

START DATE: 6/23/99

COMPLETION DATE: 6/23/99

SHEET _1_ OF _1_

DRILLING CONTRACTOR: KVILHAUG DRILLING

DRILLING METHOD: HOLLOW STEM AUGER

BOREHOLE DIAMETER: 6 INCHES

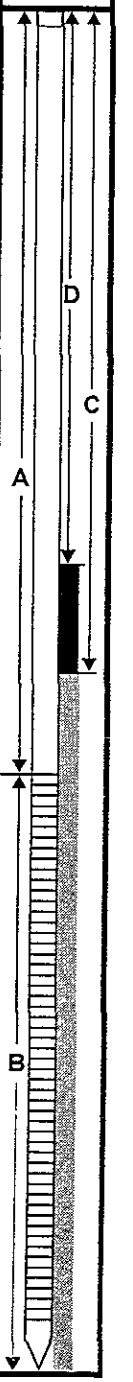
COMPLETION METHOD: WELL

BORING TOTAL DEPTH: 20 FEET

GROUNDWATER TOTAL DEPTH: ~10.5 FEET

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE DEPTH	INTERVAL	RECOVERY	BLOWS PER 6 IN.	USCS	LOG OF MATERIAL
							0 - 1.0 Ft. Concrete & base rock.
						ML	1.0 - 3.0 Ft. Dark gray clayey SILT, soft to firm, moist, no hydrocarbon odor.
5	MW-3.1	4.5 FT			2 5 9	ML	3.0 - 8.0 Ft. Brown to gray green SILT, firm, moist, no hydrocarbon odor or staining.
10	MW-3.2	9.5 FT			6 8 12	CL	8.0 - 12.0 Ft. Brown silty CLAY, dense, moist to wet, no hydrocarbon odor or staining.
15	MW-3.3	14.5 FT			12 22 26	ML	12.0 - 20.0 Ft. Brown clayey SILT, some gravel clasts <0.5", soft to firm, wet, no hydrocarbon odor or staining.
20							END OF BORING

PIEZOMETER/ WELL INSTALLATION



WELL SPECIFICATIONS

A - WELL SCREEN DEPTH:	4.38 FT	CASING TYPE:	SCH 40 PVC
B - WELL SCREEN LENGTH:	15.0 FT	CASING SIZE:	2.0-INCH
C - DEPTH TO TOP OF SAND	4.0 FT	SLOT SIZE:	0.020-INCH
D - DEPTH BENTONITE SEAL	3.0 FT	NO. 3 FILTER SAND	

BORING NUMBER : **MW-4**

BORING LOCATION:
SOUTH OF AUTUMN PRESS

BORING TYPE: MONITORING WELL

PROJECT NAME: LSI-MIDDLE

PROJECT NUMBER: 149-01-03

LOG OF WELL BORING

GRIBI Associates

START DATE: 6/23/99

COMPLETION DATE: 6/23/99

SHEET _1_ OF _1_

DRILLING CONTRACTOR: KVILHAUG DRILLING

DRILLING METHOD: HOLLOW STEM AUGER

BOREHOLE DIAMETER: 6 INCHES

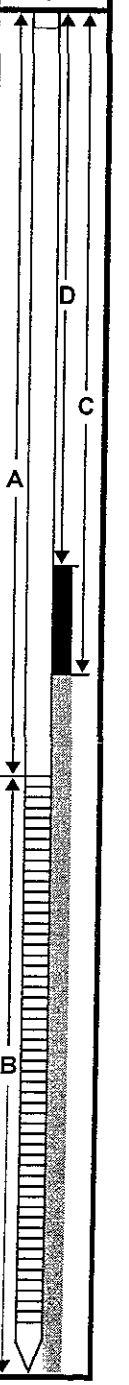
COMPLETION METHOD: WELL

BORING TOTAL DEPTH: 20 FEET

GROUNDWATER TOTAL DEPTH: ~8 FEET

DEPTH SCALE (FEET)	SAMPLE NO.	SAMPLE DEPTH	INTERVAL	RECOVERY	BLOWS PER 6 IN.	USCS	LOG OF MATERIAL
							0 - 1.0 Ft. Concrete & base rock.
						ML	1.0 - 3.0 Ft. Dark gray clayey SILT, soft, moist, no hydrocarbon odor or staining.
5	MW-4.1	4.5 FT			4 14 20	ML	3.0 - 6.0 Ft. Olive green to gray green clayey SILT, soft to firm, moist, slight hydrocarbon odor.
						GM	6.0 - 9.0 Ft. Red brown to gray slightly clayey sandy GRAVEL, friable, wet, no hydrocarbon odor or staining.
	MW-4.2	8.5 FT			18 6 7		
10						CL	9 0 - 12.0 Ft. Red brown CLAY, dense, moist, no hydrocarbon odor or staining.
	MW-4.3	14.5 FT			8 18 25		
15						ML	12.0 - 20.0 Ft. Brown clayey SILT, some gravel clasts <0.5", soft to firm, wet, no hydrocarbon odor or staining.
20							END OF BORING

PIEZOMETER/ WELL INSTALLATION



WELL SPECIFICATIONS

A - WELL SCREEN DEPTH:	4.31 FT	CASING TYPE:	SCH 40 PVC
B - WELL SCREEN LENGTH:	15.0 FT	CASING SIZE:	2.0-INCH
C - DEPTH TO TOP OF SAND	4.0 FT	SLOT SIZE:	0.020-INCH
D - DEPTH BENTONITE SEAL	3.0 FT	NO. 3 FILTER SAND	

LOG OF WELL BORING

GRIBI Associates

BORING NUMBER : **MW-5**

BORING LOCATION:
AUTUMN PRESS - VACANT LOT

BORING TYPE: MONITORING WELL

PROJECT NAME: LSI-MIDDLE

PROJECT NUMBER: 149-01-03

START DATE: 6/23/99

COMPLETION DATE: 6/23/99

SHEET _1_ OF _1_

DRILLING CONTRACTOR: KVILHAUG DRILLING

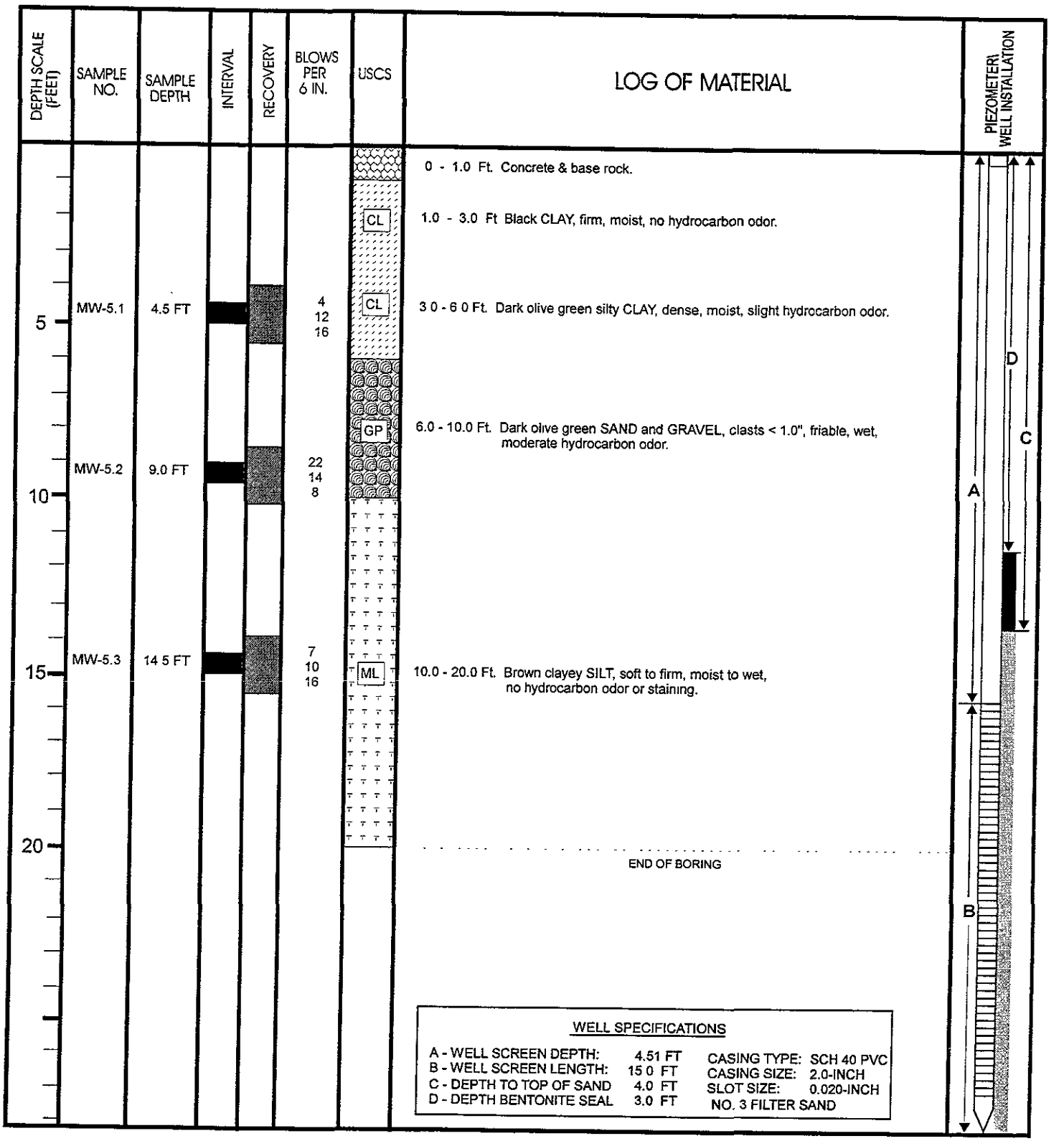
DRILLING METHOD: HOLLOW STEM AUGER

BOREHOLE DIAMETER: 6 INCHES

COMPLETION METHOD: WELL

BORING TOTAL DEPTH: 20 FEET

GROUNDWATER TOTAL DEPTH: ~9 FEET



WELL SPECIFICATIONS

A - WELL SCREEN DEPTH:	4.51 FT	CASING TYPE:	SCH 40 PVC
B - WELL SCREEN LENGTH:	15 0 FT	CASING SIZE:	2.0-INCH
C - DEPTH TO TOP OF SAND	4.0 FT	SLOT SIZE:	0.020-INCH
D - DEPTH BENTONITE SEAL	3.0 FT	NO. 3 FILTER SAND	

APPENDIX C

SURVEYOR'S REPORT

AHMAD MOGHADDAS
REGISTERED CIVIL ENGINEER
1631 BERKELEY WAY
BERKELEY, CA 94703

843-6580

6-30-99

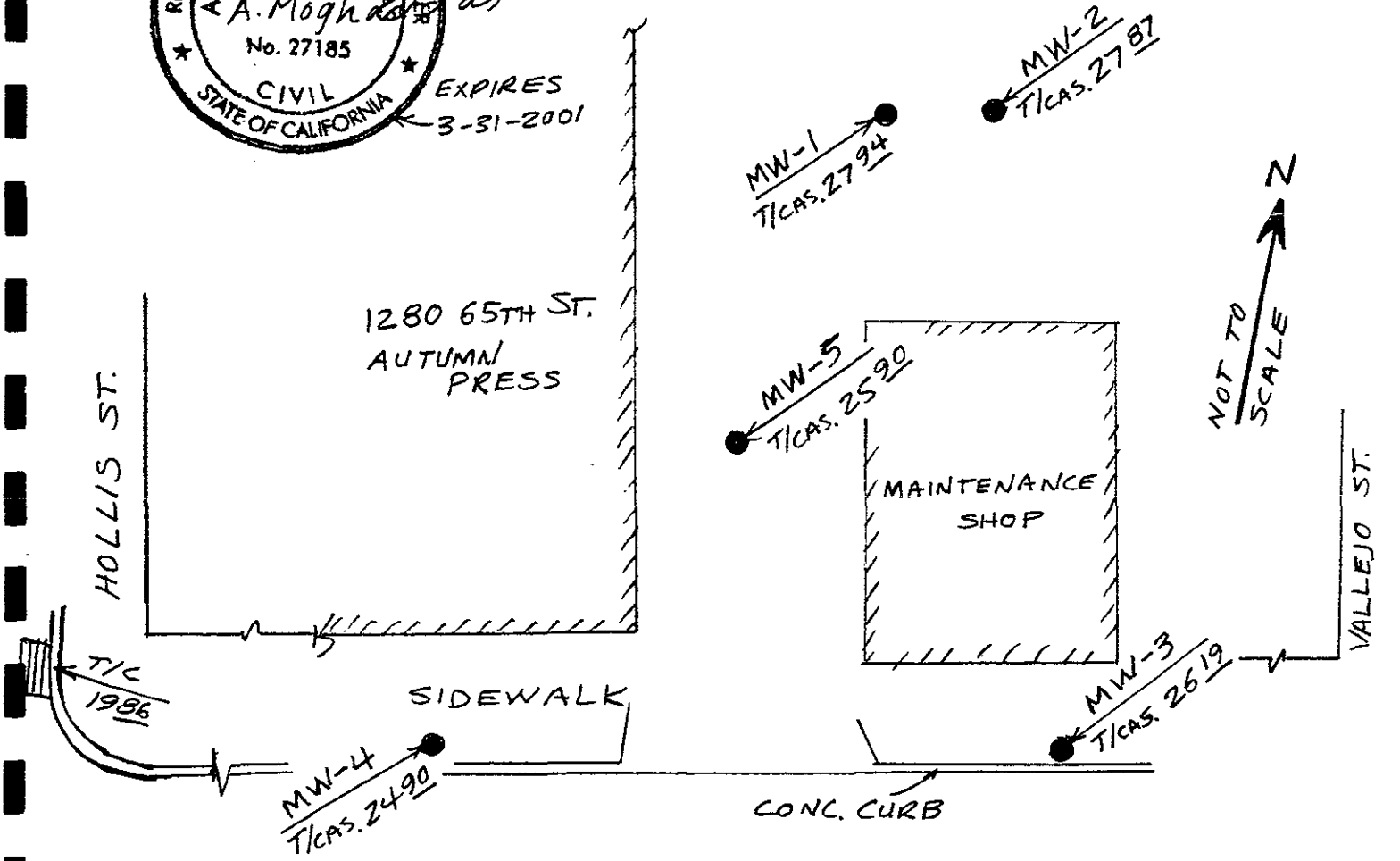
1275 & 1285 66TH ST., EMERYVILLE

MONITORING WELLS ON LIQUID SUGARS INC. SITE

BENCHMARK

BENCHMARK IS TOP OF CURB AT CATCH BASIN N.E. CORNER OF HOLLIS & 65TH STREETS AT EL. 19.86 AS SHOWN, IN THE CITY OF EMERYVILLE DATUM.

REGISTERED PROFESSIONAL ENGINEER
AHMAD A. MOGHADDAS
A. Moghaddas
No. 27185
CIVIL
STATE OF CALIFORNIA
EXPIRES 3-31-2001



65TH STREET

APPENDIX D

GROUNDWATER SAMPLING DATA SHEETS

GROUNDWATER SAMPLING RECORD		GRIBI Associates
Well No. MW-1 / West	Well Loc.	
Project Name LSI / Middle – Emeryville	Project No.	
Date 6/2/99 Time	TOC Elevation	GW Elevation
Depth to Water 8.33'	Well Depth	Well Diameter
Purge Water, 2": Wtr Column X 0.163 X 3 =	Purge Water, 4": Wtr Column X 0.653 X 3 =	
Purge/Sample Method	Lab Analyses	
Weather Conditions Clr Prtly Cldy 55°	Laboratory	

Time	Volume Purged	Temp.	Cond.	pH	Visual
1320	0	62.4	1.34	4.30	Murky Gray + sheen, HC ODOR (mod)
	1	62.7	1.18	4.51	" " " "
	2	62.5	1.20	4.23	" " " "
	4	62.4	1.24	4.24	" " " "
	6	62.2	1.36	4.36	" " " "
1345	9	62.3	1.45	4.51	" " " "

Remarks

GROUNDWATER SAMPLING RECORD		GRIBI Associates
Well No. MW-2 / East	Well Loc.	
Project Name LSI / Middle - Emeryville	Project No.	
Date 6/2/99 Time	TOC Elevation	GW Elevation
Depth to Water 8.03'	Well Depth	Well Diameter
Purge Water, 2": Wtr Column X 0.163 X 3 =	Purge Water, 4": Wtr Column X 0.653 X 3 =	
Purge/Sample Method	Lab Analyses	
Weather Conditions Clr Prtly Cldy 55°	Laboratory	

Time	Volume Purged	Temp.	Cond.	pH	Visual
1135	0	66.8	1.65	4.89	Clr - SL H2S ODOR
	2	62.1	1.62	4.63	" "
	4	59.8	1.59	4.56	Clr - Mrky SL ODOR
	6	59.7	1.27	4.29	" " MOD ODOR
	10	58.4	1.39	4.37	Mrky Gray MOD H2S ODOR
	15	60.3	1.58	4.62	" " "
1240	20	59.3	1.64		" " "

Remarks

- Lost Bailer in MW — No FP
- Sheen on Top of 15' and 20' Buckets

GROUNDWATER SAMPLING RECORD	GRIBI Associates
Well No. MW-1 (west)	Well Loc.
Project Name LSI - Middle	Project No.
Date 6/28/99 Time	TOC Elevation GW Elevation
Depth to Water 8.80	Well Depth Well Diameter
Purge Water, 2": Wtr Column X 0.163 X 3 =	Purge Water, 4": Wtr Column X 0.653 X 3 =
Purge/Sample Method	Lab Analyses
Weather Conditions	Laboratory

Time	Volume Purged	Temp.	Cond.	pH	Visual
	0	67.2	1.87	5.13	clr - MKy grey
	2	65.7	1.44	5.16	MOD HC O
	4	65.1	1.60	5.14	
	6	64.9	1.77	5.02	" " "
	9	6.5.6	2.17	4.98	" " SL HC ODOR

Remarks

Purged dry @ 9.0

GROUNDWATER SAMPLING RECORD	GRIBI Associates
Well No. M-2	Well Loc.
Project Name	Project No.
Date 6/20 Time	TOC Elevation GW Elevation
Depth to Water 8.44	Well Depth Well Diameter
Purge Water, 2": Wtr Column X 0.163 X 3 =	Purge Water, 4": Wtr Column X 0.653 X 3 =
Purge/Sample Method	Lab Analyses
Weather Conditions	Laboratory

Time	Volume Purged	Temp.	Cond.	pH	Visual
	0	66.8	1.72	4.82	clr – MOD O
	2	65.4	1.51	4.76	NO SHEEN
	4	64.9	1.32	—	
	8	65.1	1.37	4.60	
	12	65.1	1.60	4.54	
	16	65.6	1.77	4.56	clr – MOD O NO SHEEN

Remarks

Purged dry @ ≈ 12 gal

GROUNDWATER SAMPLING RECORD	GRIBI Associates
Well No. MW-3	Well Loc.
Project Name	Project No.
Date 6/28 Time	TOC Elevation GW Elevation
Depth to Water 7.35	Well Depth Well Diameter
Purge Water, 2": Wtr Column X 0.163 X 3 =	Purge Water, 4": Wtr Column X 0.653 X 3 =
Purge/Sample Method	Lab Analyses
Weather Conditions	Laboratory

Time	Volume Purged	Temp.	Cond.	pH	Visual
	0	69.1	1.58	5.90	- MDY BRN NO
	2	67.4	1.57	5.40	HC 0/S
	4	66.2	1.45	4.51	- MKY brn NO HC 0/S
	6	65.5	1.20	5.25	- cleaner " "

Remarks

used purge pump

slow rech. - purged dry @ ~ 2 gal
purged ~1 gal every 10 min
waited ~1 hr to sample - clear color

GROUNDWATER SAMPLING RECORD	GRIBI Associates
Well No. MW-4	Well Loc.
Project Name	Project No.
Date 6/28 Time	TOC Elevation GW Elevation
Depth to Water 6.43	Well Depth Well Diameter
Purge Water, 2": Wtr Column X 0.163 X 3 =	Purge Water, 4": Wtr Column X 0.653 X 3 =
Purge/Sample Method	Lab Analyses
Weather Conditions	Laboratory

Time	Volume Purged	Temp.	Cond.	pH	Visual
	0	66.6	2.61	5.05	Mvky Brn. No SS HC g
	2	66.7	2.47	5.26	NO HC Sh
	4	67.6	2.65	5.12	
	6	67.4	2.52	5.07	
	9	67.1	2.55	5.04	SL MKy brN NO
					HC 0/Sh

Remarks

Good recharge

GROUNDWATER SAMPLING RECORD	GRIBI Associates
Well No. MW-5	Well Loc.
Project Name	Project No.
Date 6/28 Time	TOC Elevation GW Elevation
Depth to Water 7.28	Well Depth Well Diameter
Purge Water, 2": Wtr Column X 0.163 X 3 =	Purge Water, 4": Wtr Column X 0.653 X 3 =
Purge/Sample Method	Lab Analyses
Weather Conditions	Laboratory

Time	Volume Purged	Temp.	Cond.	pH	Visual
	6	65.8	3.42	5.11	Clr-SL MKY brN
	7	66.7	3.[illegible]	[illegible]	"
	9	66.5	3.09	5.22	Clr – v sl + c
	6	65.9	3.04	5.22	odor & Sh
	9	65.7	3.20	5.22	" " "

Remarks

No FP

APPENDIX E

LABORATORY DATA REPORTS AND CHAIN OF CUSTODY RECORDS

Acculabs Inc.

Davis

1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20089
June 09, 1999

Jim Gribi
Gribi Associates
1350 Hayes Street, #C-14
Benicia, CA 94510

Subject : 7 Water and 20 Soil samples
Project Name : LSI - MIDDLE
Project Number : 149-01-03

Dear Mr. Gribi,

Chemical analysis on the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. USEPA protocols for sample storage and preservation were followed.

Acculabs - Davis is certified by the State of Arizona (AZ0583) and the State of California (# 2330). If you have any questions regarding procedures or results, please call me at 530-757-0920.

Sincerely,

Tom Kwoka

Tom Kwoka

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

June 7, 1999
Sample Log 20089

MTBE (Methyl-t-butyl ether) By EPA Method 8020/602

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99, 05/28/99
Received : 05/28/99
Matrix : Soil

SAMPLE	Date Analyzed	(MRL) mg/kg	Measured Value mg/kg
IB-1.1 (6.5')	06/08/99	(.050)	<.050
IB-1.2 (10.5')	06/05/99	(.050)	<.050
IB-2.1 (6.0')	06/05/99	(.050)	<.050
IB-2.2 (10.0')	06/05/99	(.050)	<.050
IB-3.2 (7.0')	06/05/99	(.050)	<.050
IB-3.3 (11.0')	06/05/99	(.25)	<.25
IB-4.1 (3.0')	06/08/99	(.050)	<.050
IB-4.2 (7.5')	06/08/99	(.050)	<.050
IB-4.3 (10.5')	06/08/99	(.050)	<.050
IB-5.1 (3.5')	06/08/99	(.050)	<.050
IB-5.2 (6.5')	06/08/99	(.25)	<.25
IB-5.3 (11.5')	06/08/99	(.050)	<.050
IB-6.2 (7.5')	06/08/99	(.050)	<.050
IB-6.3 (10.5')	06/08/99	(.050)	<.050
IB-7.1 (3.5')	06/08/99	(.050)	<.050
IB-7.3 (7.5')	06/08/99	(.050)	<.050

Approved By:

Tom Kwoka
Lab Director

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

June 7, 1999
Sample Log 20089

MTBE (Methyl-t-butyl ether) By EPA Method 8020/602

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99, 05/28/99
Received : 05/28/99
Matrix : Soil

SAMPLE	Date Analyzed	(MRL) mg/kg	Measured Value mg/kg
IB-7.4 (10.5')	06/08/99	(.10)	<.10

Approved By:

Tom Kwoka
Lab Director

Acculabs Inc.
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June 7, 1999
Sample Log 20089

MTBE (Methyl-t-butyl ether) By EPA Method 8020/602

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99, 05/28/99
Received : 05/28/99
Matrix : Water

SAMPLE	Date Analyzed	(MRL) ug/L	Measured Value ug/L
IB-1W	06/04/99	(5000)	<5000
IB-2W	06/04/99	(5.0)	<5.0
IB-3W	06/04/99	(5.0)	<5.0
IB-4W	06/04/99	(5.0)	<5.0
IB-5W	06/04/99	(10000)	<10000
IB-6W	06/04/99	(5.0)	<5.0
IB-7W	06/08/99	(250)	<250

Approved By:

Tom Kwoka
Lab Director

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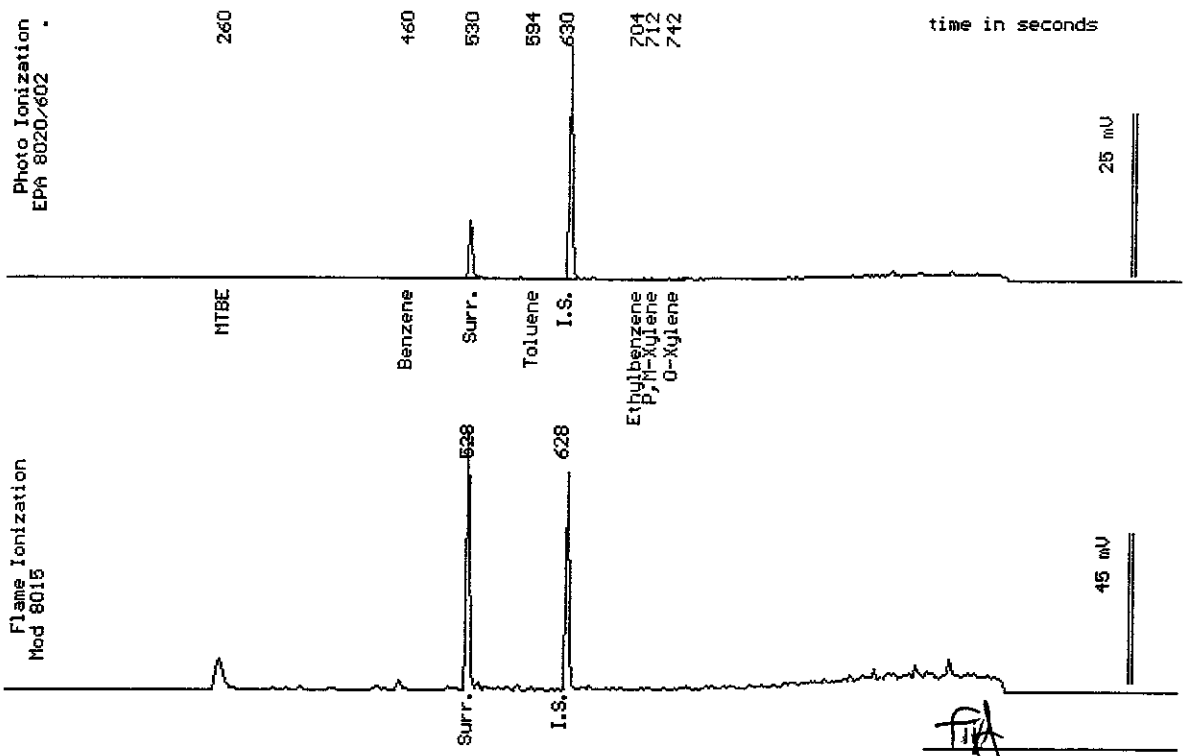
Sample Log 20089
20089-01

Sample: IB-1.1 (6.5')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 2181A
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		99 %



Date Analyzed: 06-08-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Podolsky
Senior Chemist

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

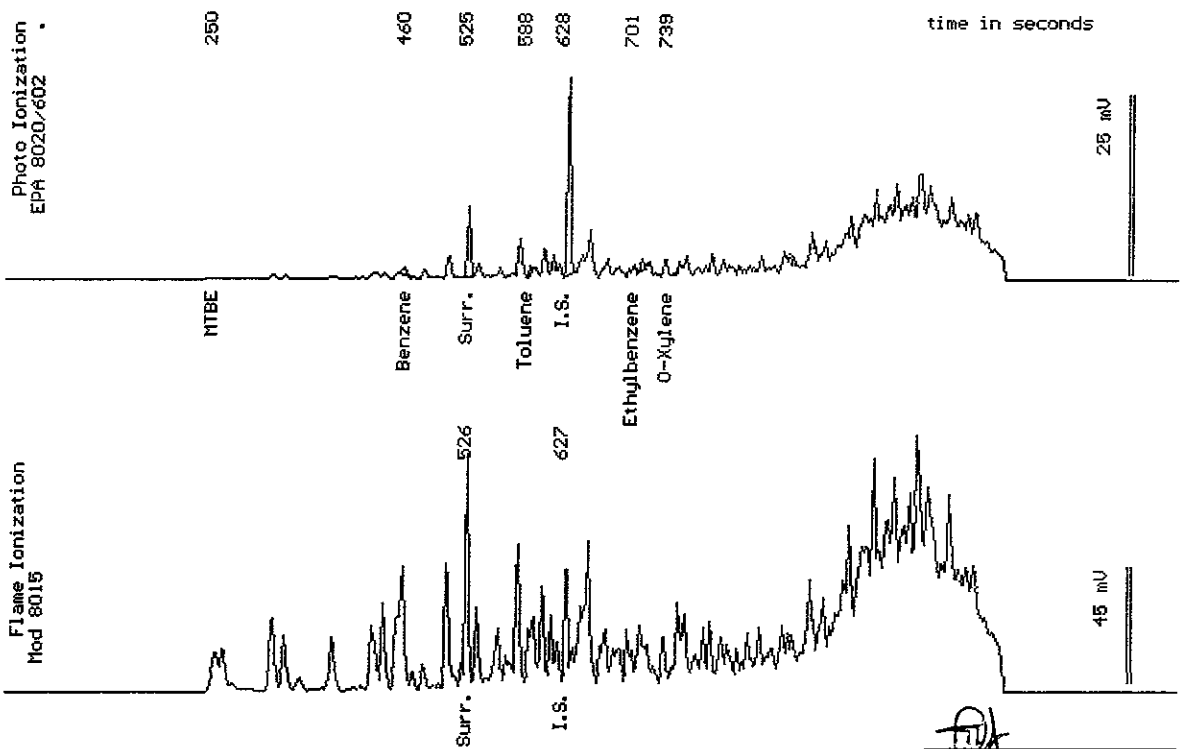
Sample Log 20089
20089-02

Sample: IB-1.2 (10.5')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 2180Z
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	.010
Toluene	(.0050)	.0088
Ethylbenzene	(.0050)	.0051
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	4.3 *
Surrogate Recovery		113 %

* Product is not typical gasoline.



Date Analyzed: 06-05-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Podolsky
Senior Chemist

Acculabs Inc.

Davis

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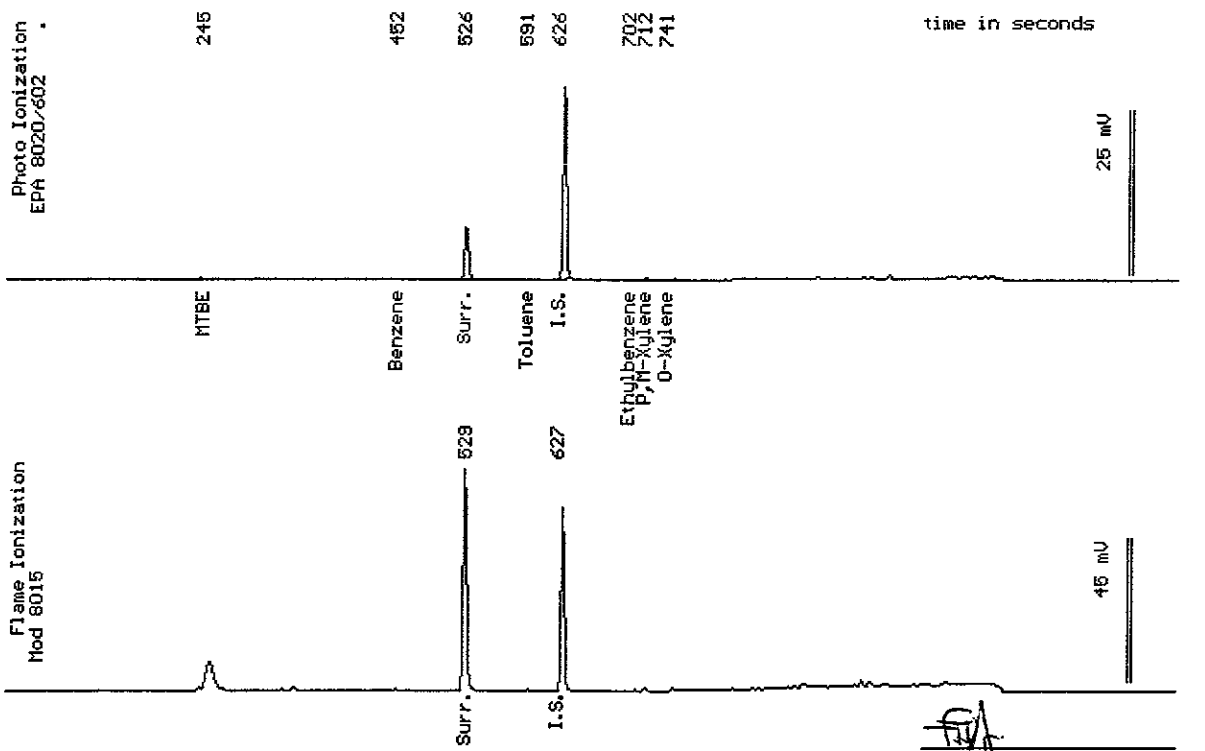
Sample Log 20089

20089-03

Sample: IB-2.1 (6.0')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 2180Y
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		102 %



Date Analyzed: 06-05-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Podolsky
Senior Chemist

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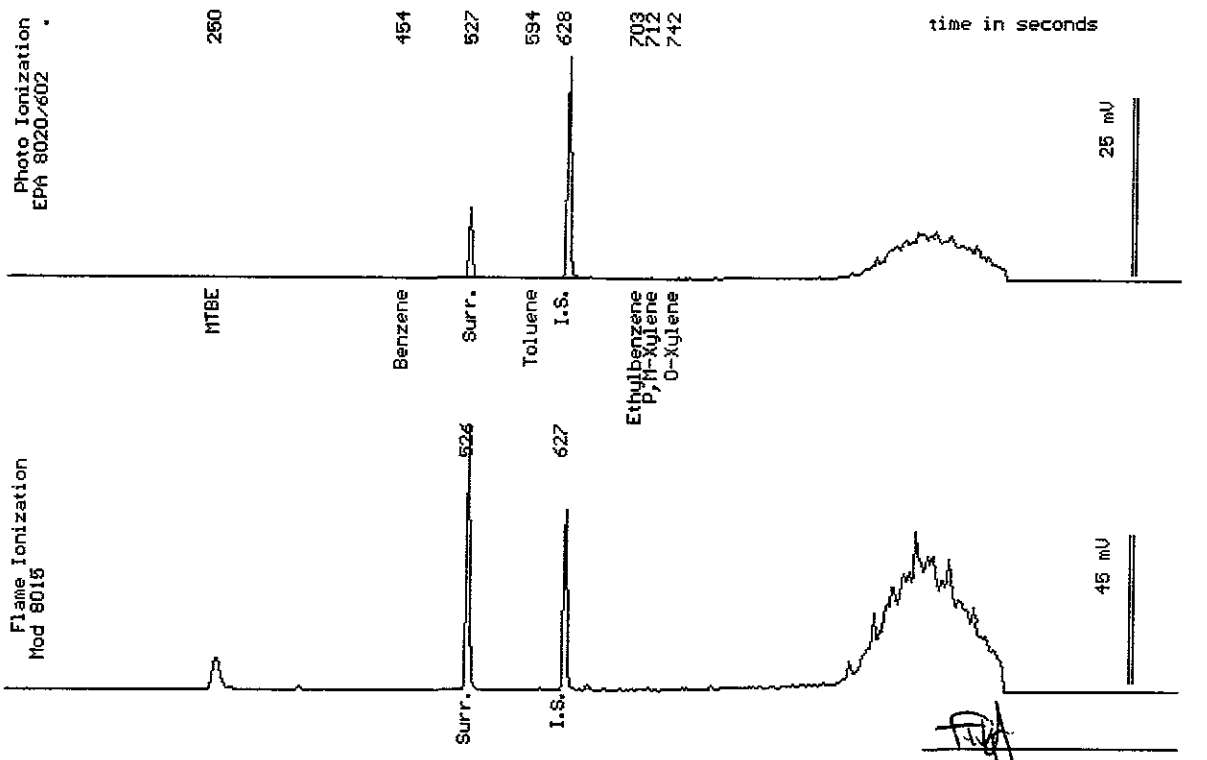
Sample Log 20089
20089-04

Sample: IB-2.2 (10.0')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 2180Z
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		104 %



Date Analyzed: 06-05-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Podolsky
Senior Chemist

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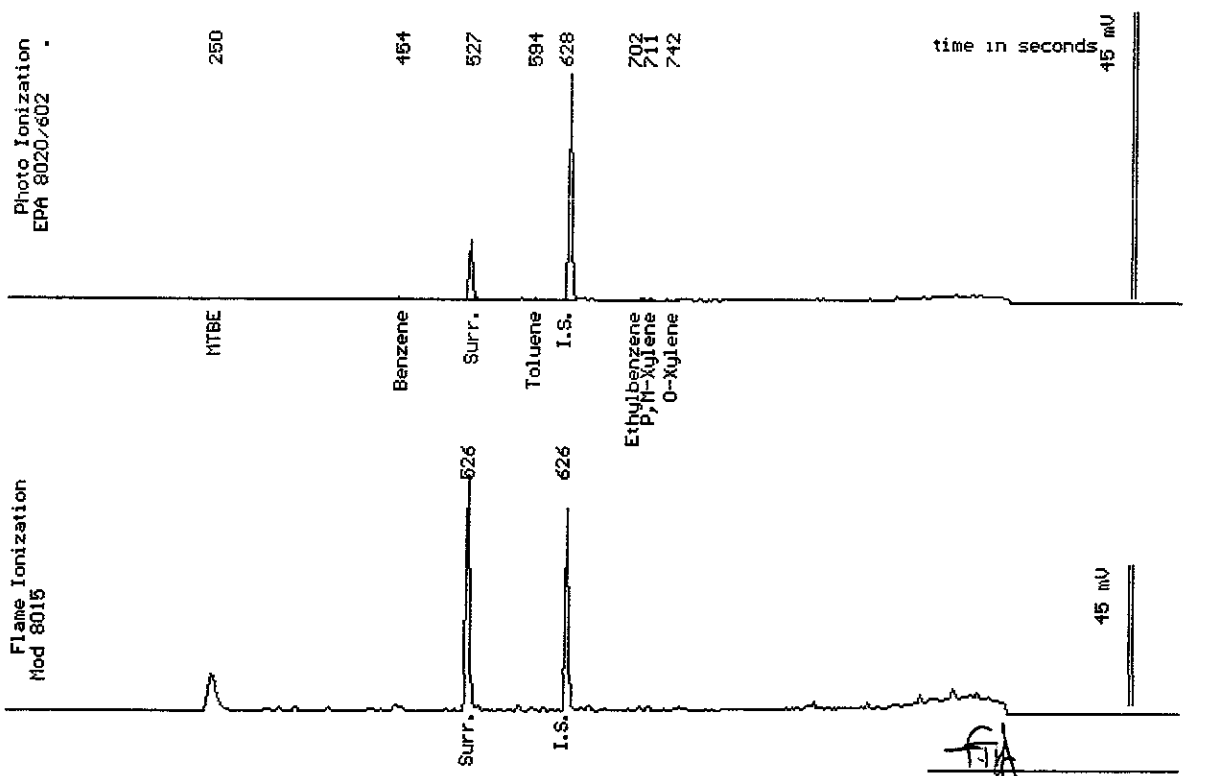
Sample Log 20089
20089-06

Sample: IB-3.2 (7.0')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 2180Z
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		105 %



Date Analyzed: 06-05-99
Column : 0.53mm X 60m Restek Rtx-1301

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Senior Chemist

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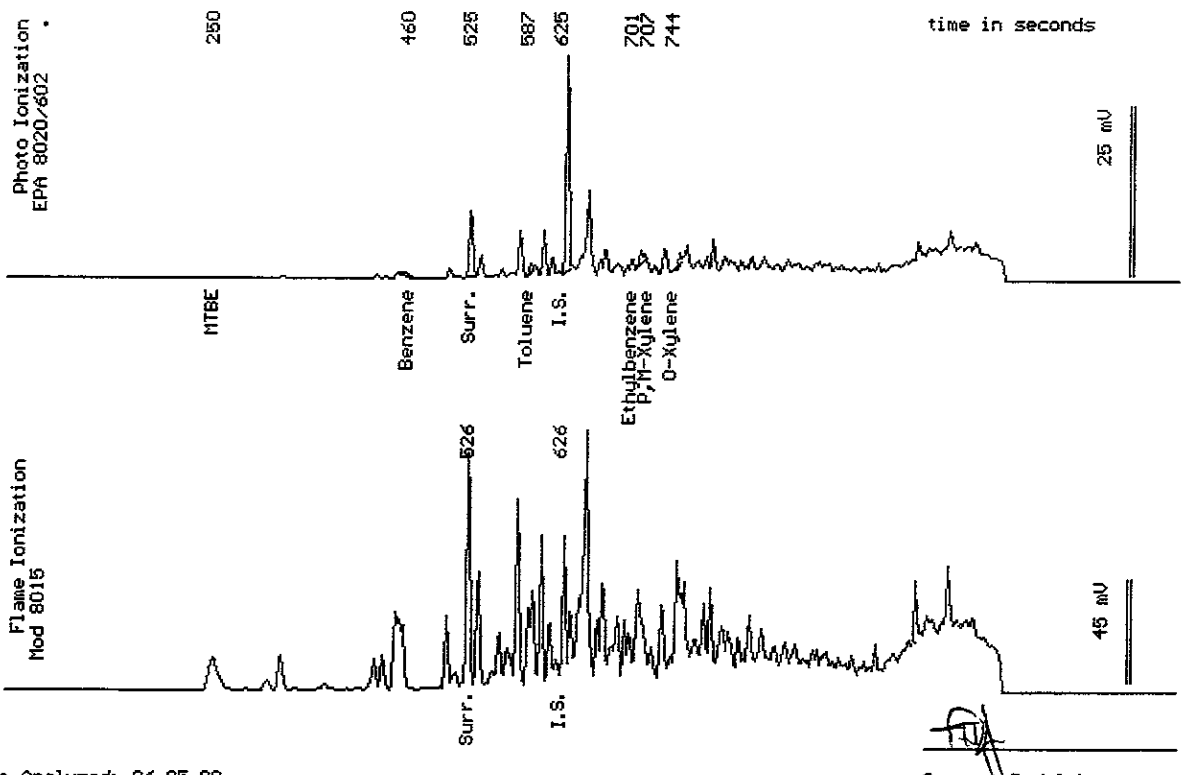
Sample Log 20089
20089-07

Sample: IB-3.3 (11.0')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:5 Run Log : 2180Z
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.025)	<.025
Toluene	(.025)	.051
Ethylbenzene	(.025)	.062
Total Xylenes	(.025)	.12
TPH as Gasoline	(5.0)	23
Surrogate Recovery		122 %



Date Analyzed: 06-05-99
Column : 0.53mm X 60m Restek Rtx-1301

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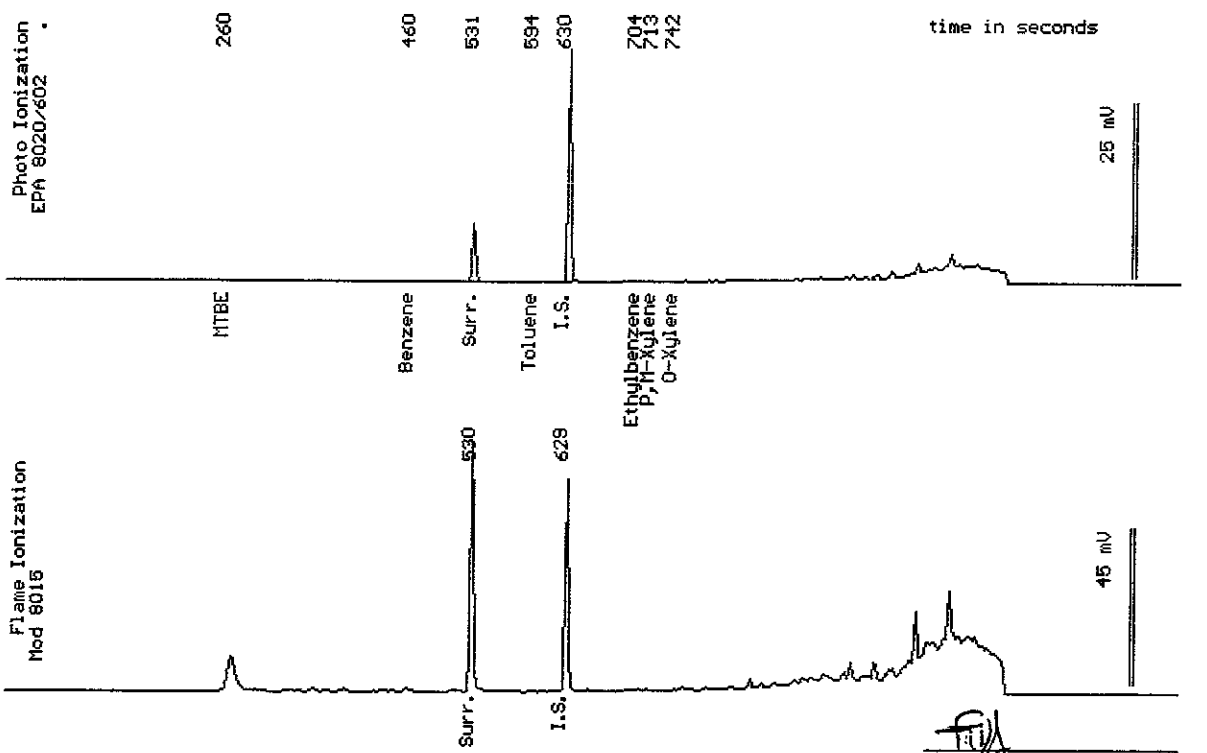
Sample Log 20089
20089-08

Sample: **IB-4.1 (3.0')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 2181A
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		100 %



Date Analyzed: 06-08-99
Column : 0.53mm X 60m Restek Rtx-1301

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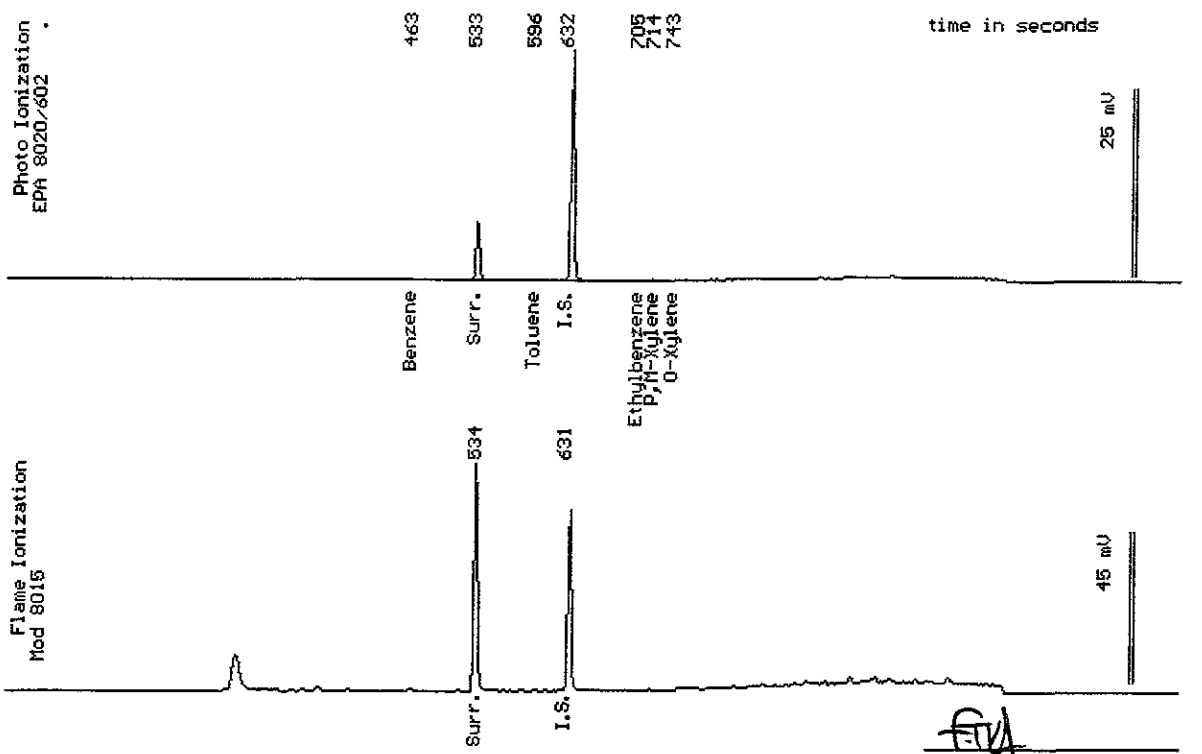
Sample Log 20089
20089-09

Sample: IB-4.2 (7.5')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 2181B
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		103 %



Date Analyzed: 06-08-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Podolsky
Senior Chemist

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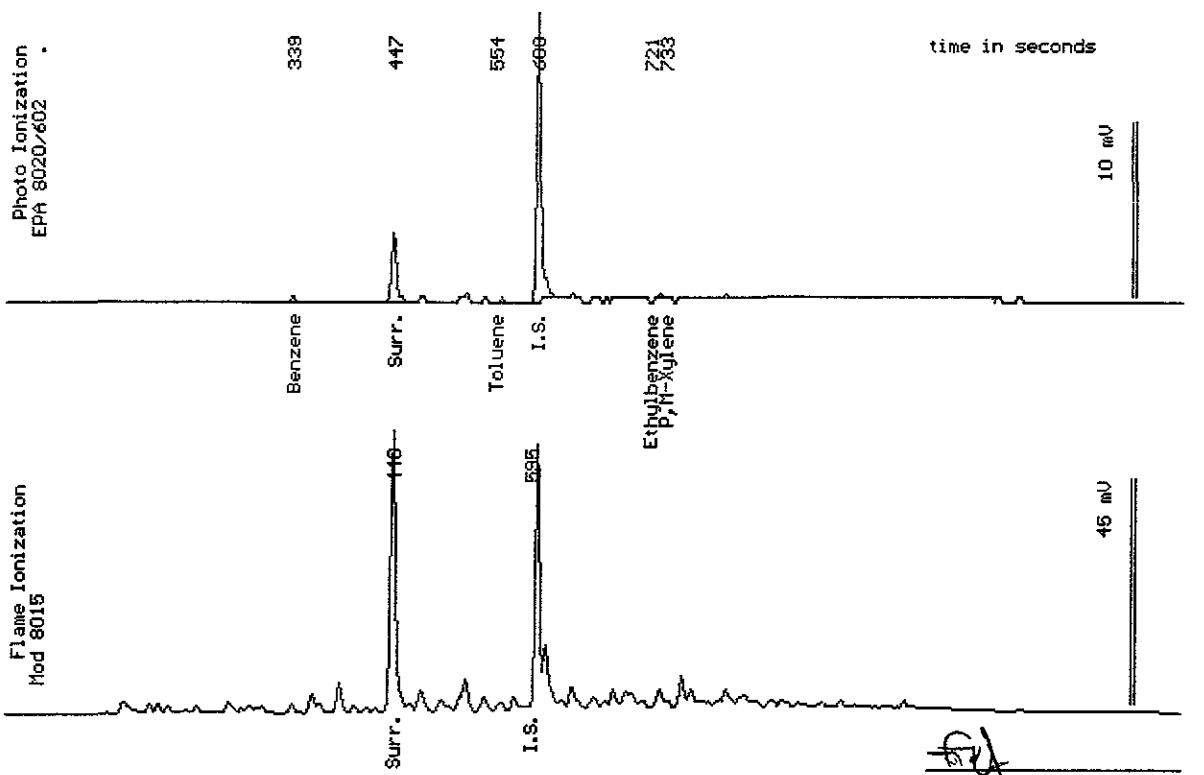
Sample Log 20089

20089-10

Sample: IB-4.3 (10.5')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 4185E
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		87 %



Date Analyzed: 06-08-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Steuart Podolsky
Senior Chemist

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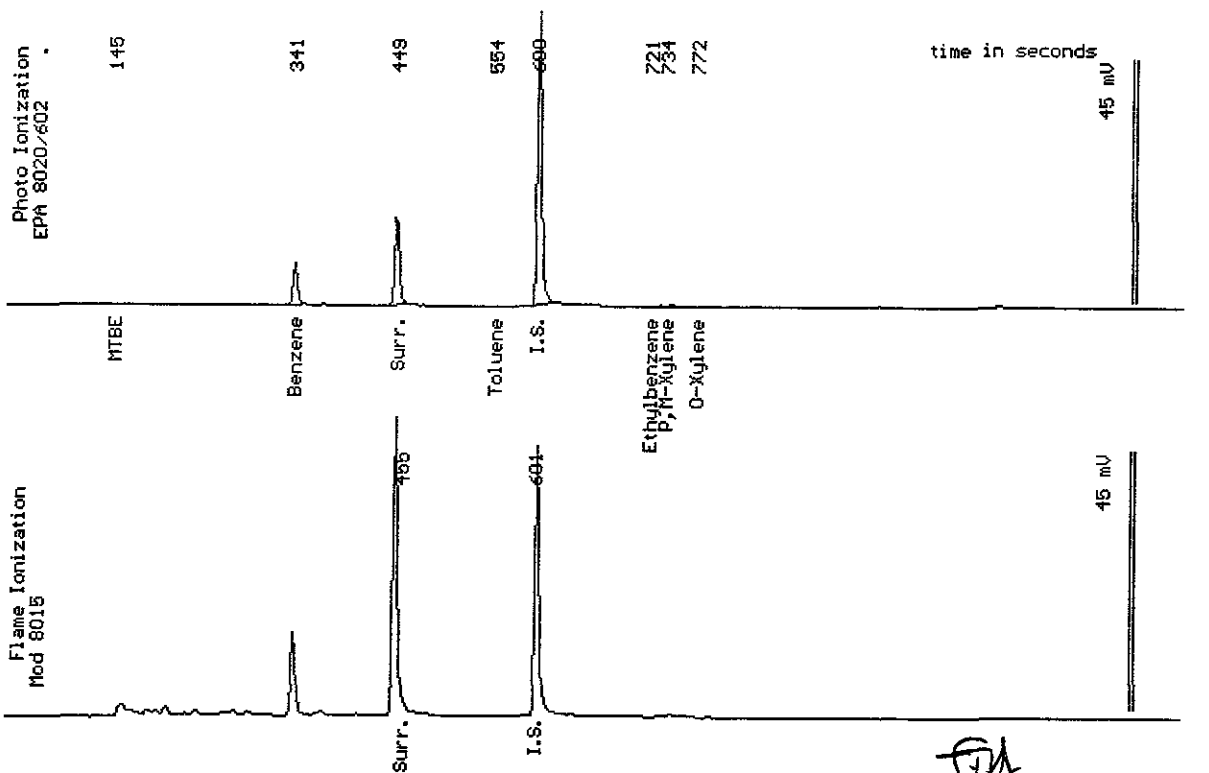
Sample Log 20089
20089-11

Sample: **IB-5.1 (3.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 4185F
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	.018
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		111 %



Date Analyzed: 06-08-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Stewart Podolsky
Senior Chemist

Acculabs Inc.

Davis

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Sample Log 20089

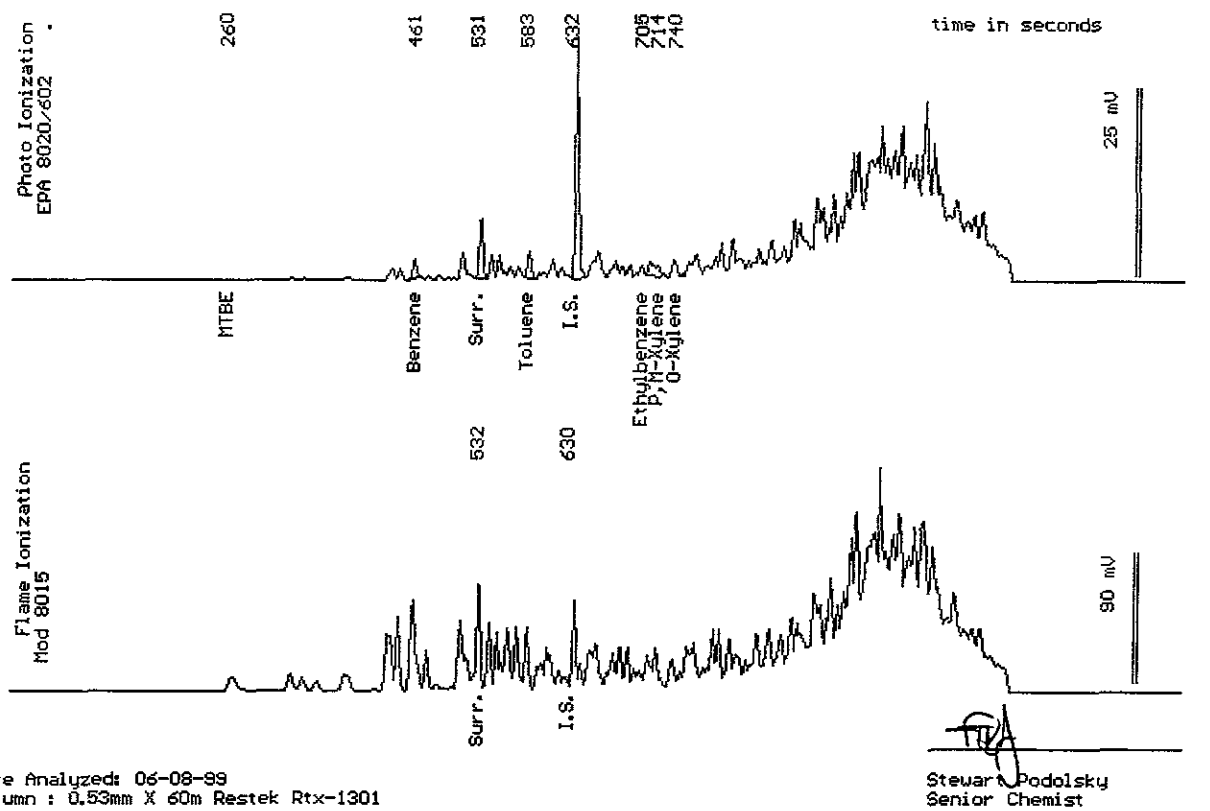
20089-12

Sample: IB-5.2 (6.5')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:5 Run Log : 2181A
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.025)	.16
Toluene	(.025)	.24
Ethylbenzene	(.025)	.096
Total Xylenes	(.025)	.11
TPH as Gasoline	(5.0)	74 *
Surrogate Recovery		106 %

* Product is not typical gasoline.



Date Analyzed: 06-08-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Podolsky
Senior Chemist

Acculabs Inc.
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1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

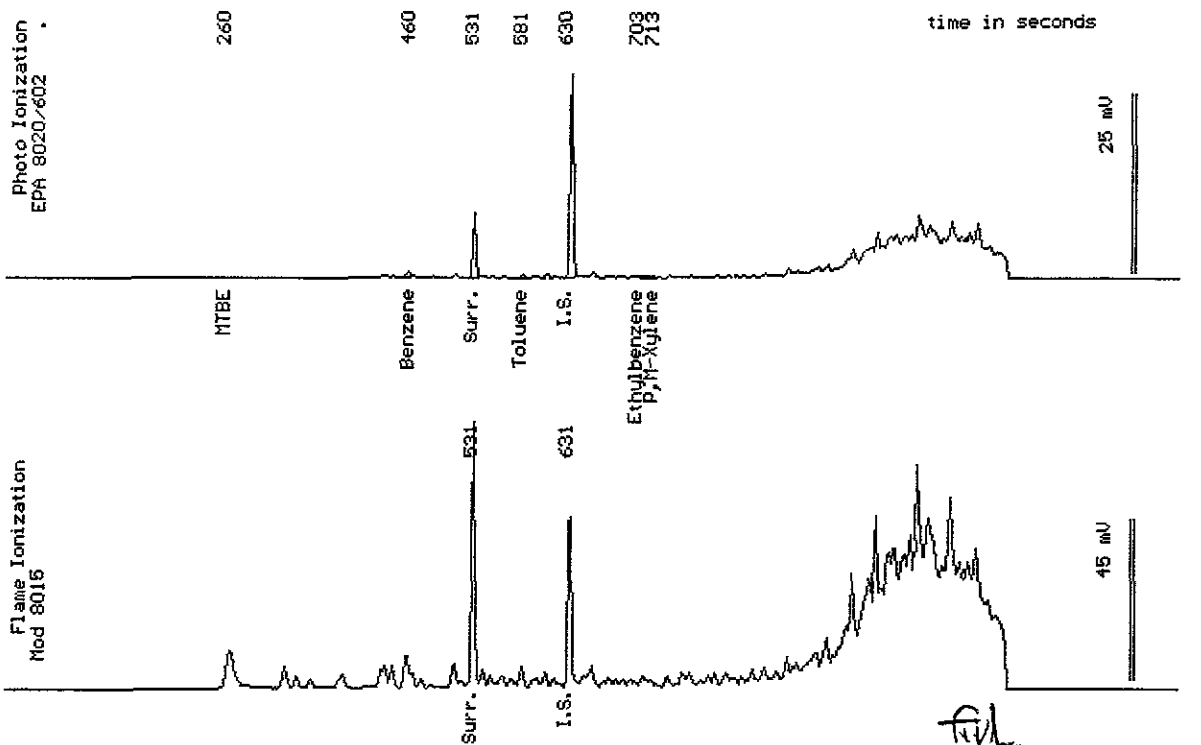
Sample Log 20089
20089-13

Sample: IB-5.3 (11.5')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 2181A
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	.0075
Toluene	(.0050)	.0063
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	3.5 *
Surrogate Recovery		103 %

* Product is not typical gasoline.



Date Analyzed: 06-08-99
Column : 0.53mm X 60m Restek Rtx-1301

Steuart Podolsky
Senior Chemist

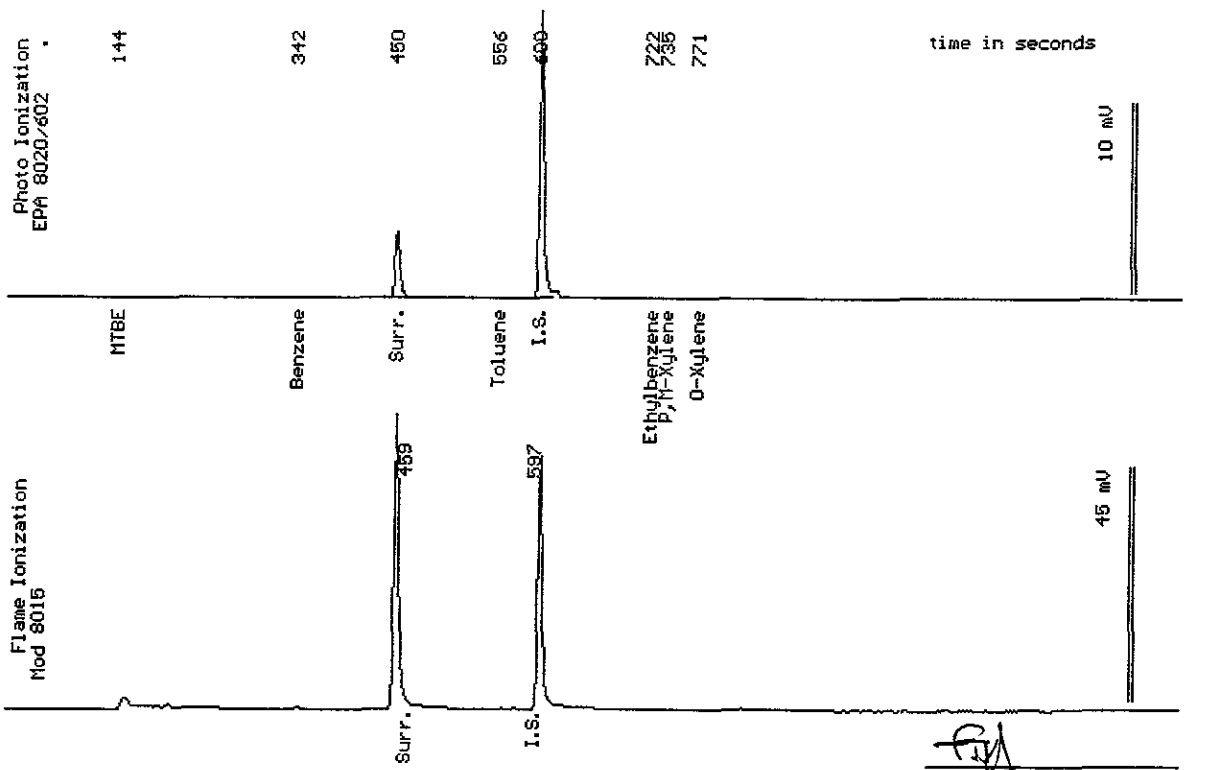
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20089
20089-15

Sample: IB-6.2 (7.5')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/28/99
Dilution : 1:1 Run Log : 4185E
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		85 %



Date Analyzed: 06-08-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Stewart Rodolsky
Senior Chemist

Acculabs Inc.

Davis

1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

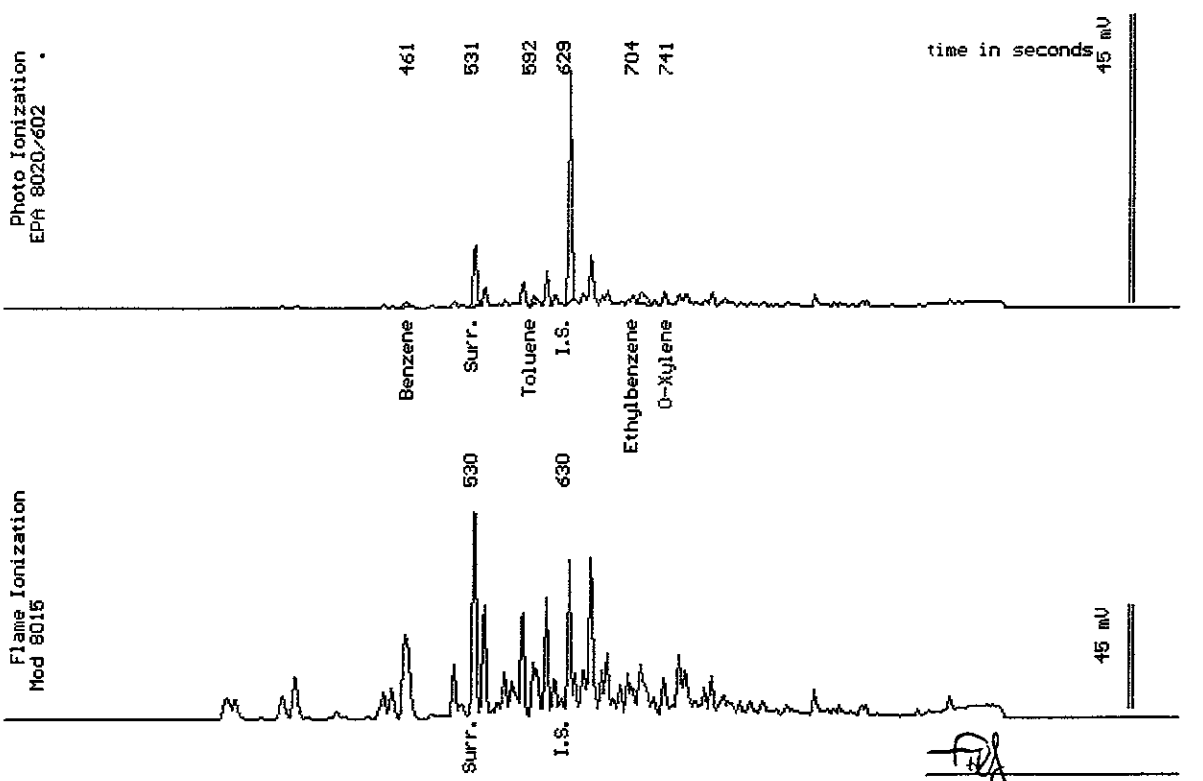
Sample Log 20089

20089-16

Sample: **IB-6.3 (10.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/28/99
Dilution : 1:1 Run Log : 2181A
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	.0063
Toluene	(.0050)	.0053
Ethylbenzene	(.0050)	.0078
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	1.5
Surrogate Recovery		119 %



Date Analyzed: 06-08-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Podolsky
Senior Chemist

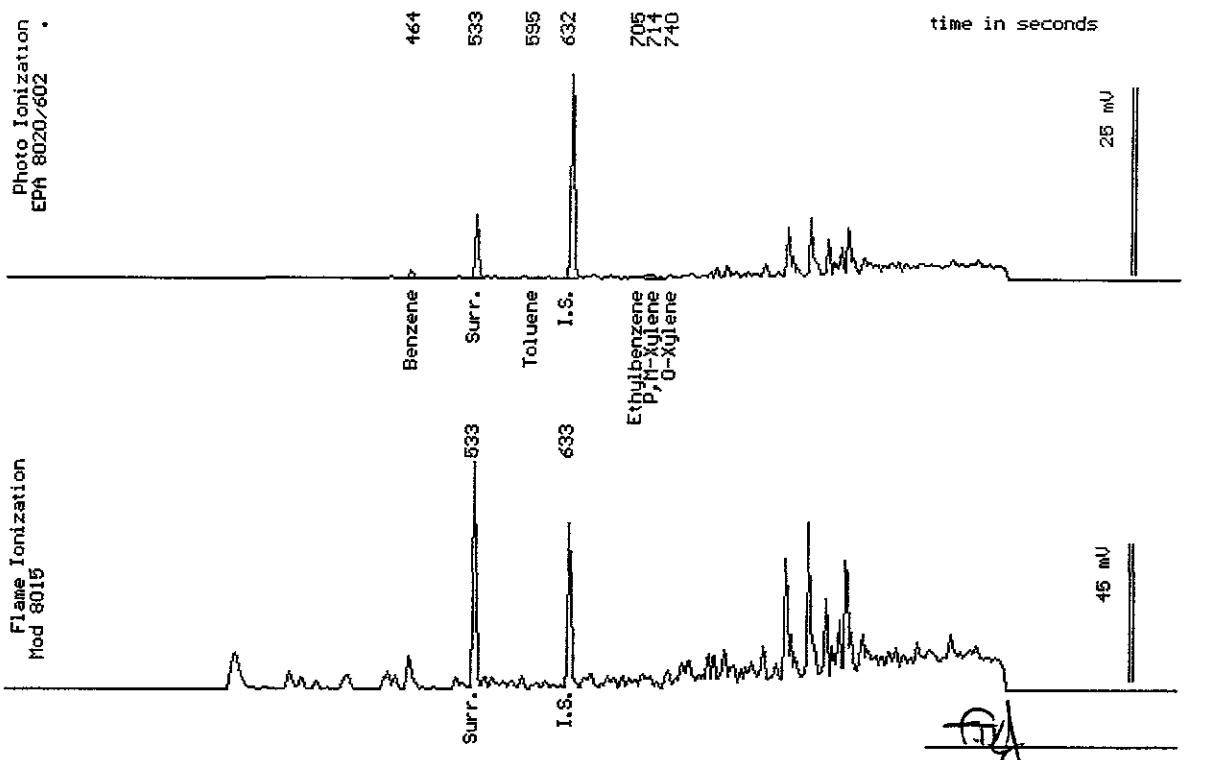
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20089
20089-17

Sample: IB-7.1 (3.5')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/28/99
Dilution : 1:1 Run Log : 2181B
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	.0067
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	1.3
Surrogate Recovery		103 %



Date Analyzed: 06-08-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Rodolsky
Senior Chemist

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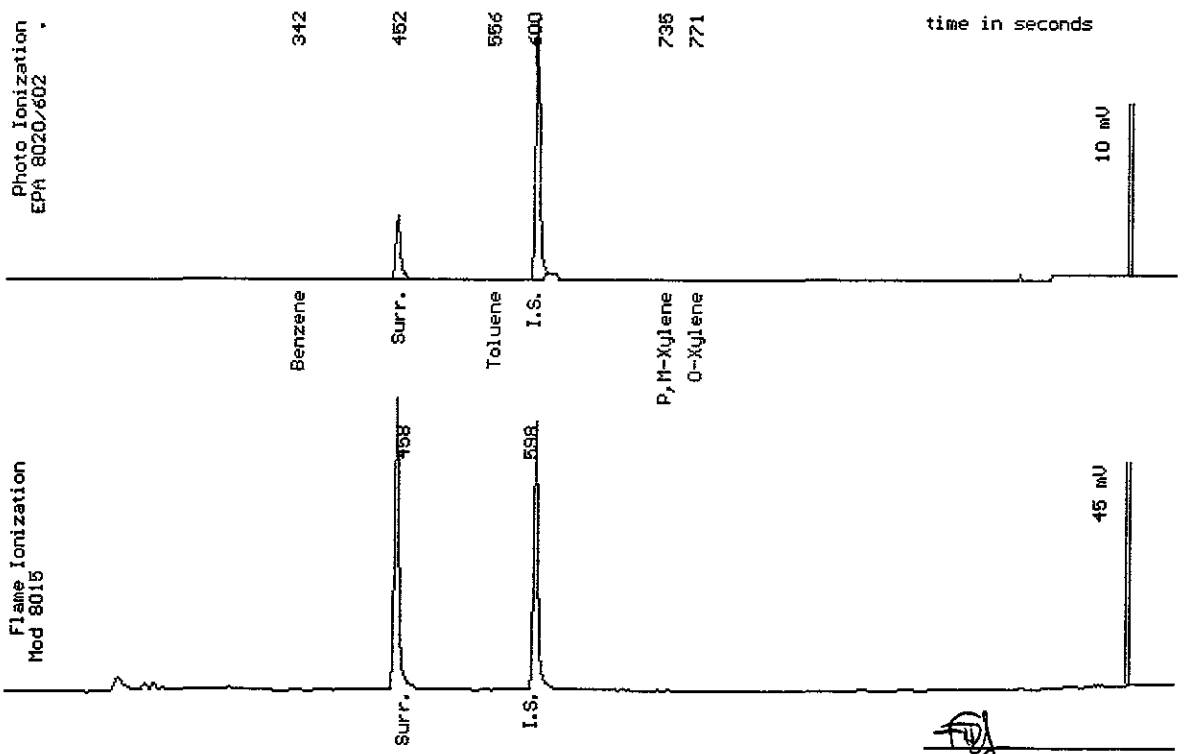
Sample Log 20089
20089-19

Sample: IB-7.3 (7.5')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/28/99
Dilution : 1:1 Run Log : 4185E
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		88 %



Date Analyzed: 06-08-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Stewart Podolsky
Senior Chemist

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

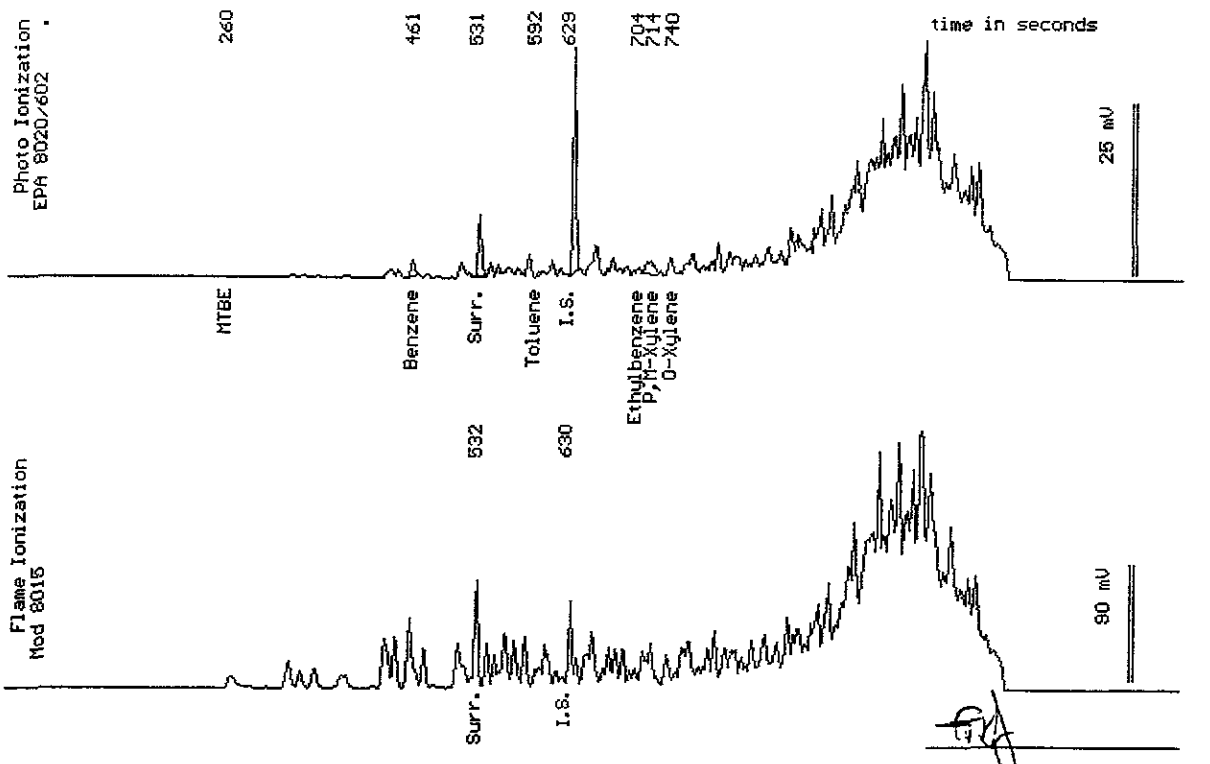
Sample Log 20089
20089-20

Sample: IB-7.4 (10.5')

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:2 Run Log : 2181A
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.010)	.055
Toluene	(.010)	.010
Ethylbenzene	(.010)	.047
Total Xylenes	(.010)	.046
TPH as Gasoline	(2.0)	32 *
Surrogate Recovery		113 %

* Product is not typical gasoline.



Date Analyzed: 06-08-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Podolsky
Senior Chemist

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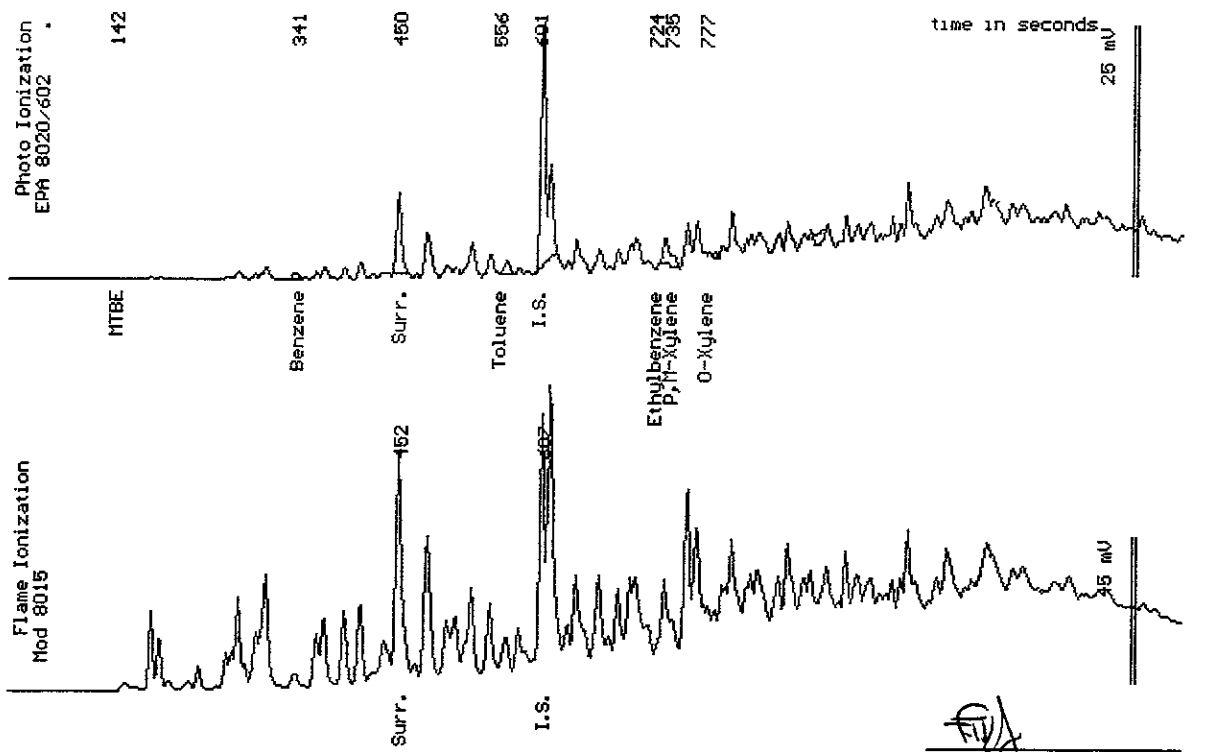
Sample Log 20089
20089-21

Sample: **IB-1W**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1000 Run Log : 4185A
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(500)	520
Toluene	(500)	1100
Ethylbenzene	(500)	2700
Total Xylenes	(500)	1400
TPH as Gasoline	(50000)	530000
Surrogate Recovery		85 %



Date Analyzed: 06-04-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Stewart Podolsky
Senior Chemist

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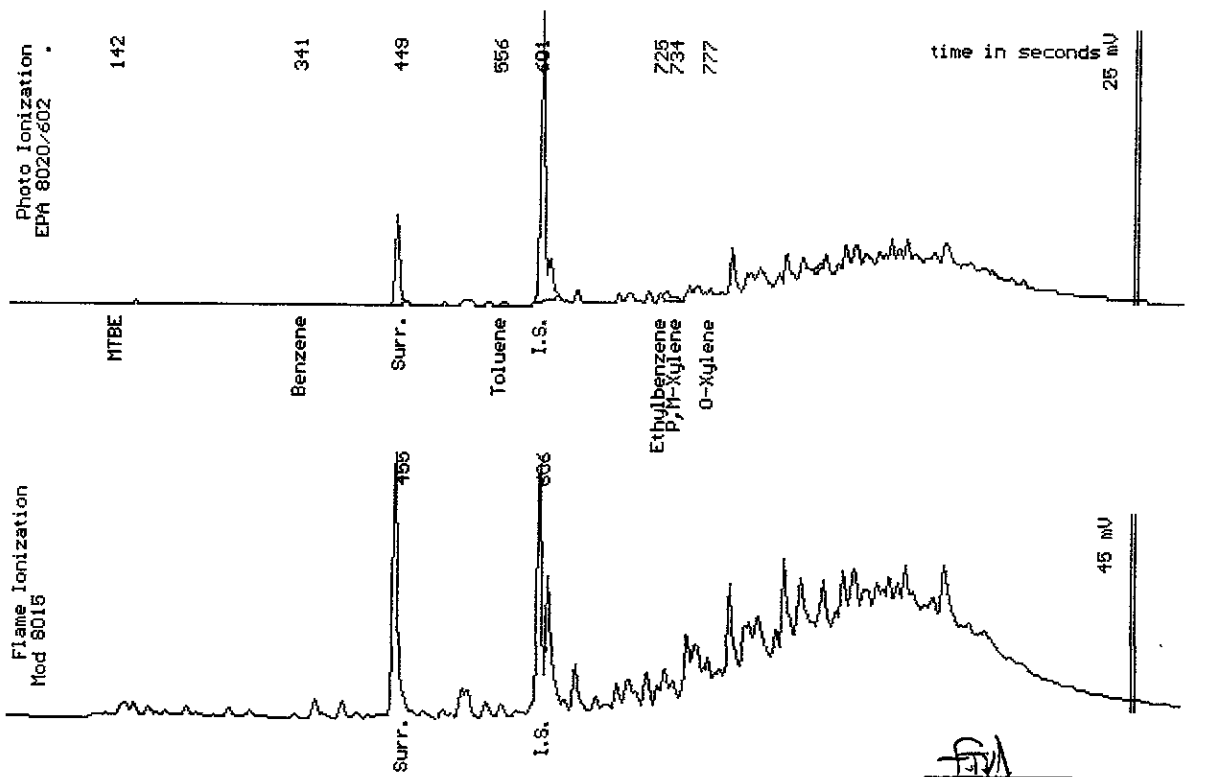
Sample Log 20089
20089-22

Sample: IB-2W

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 4185A
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	<.50
Toluene	(.50)	<.50
Ethylbenzene	(.50)	1.1
Total Xylenes	(.50)	.62
TPH as Gasoline	(50)	590 *
Surrogate Recovery		96 %

* Product is not typical gasoline.



Date Analyzed: 06-04-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Stewart Podolsky
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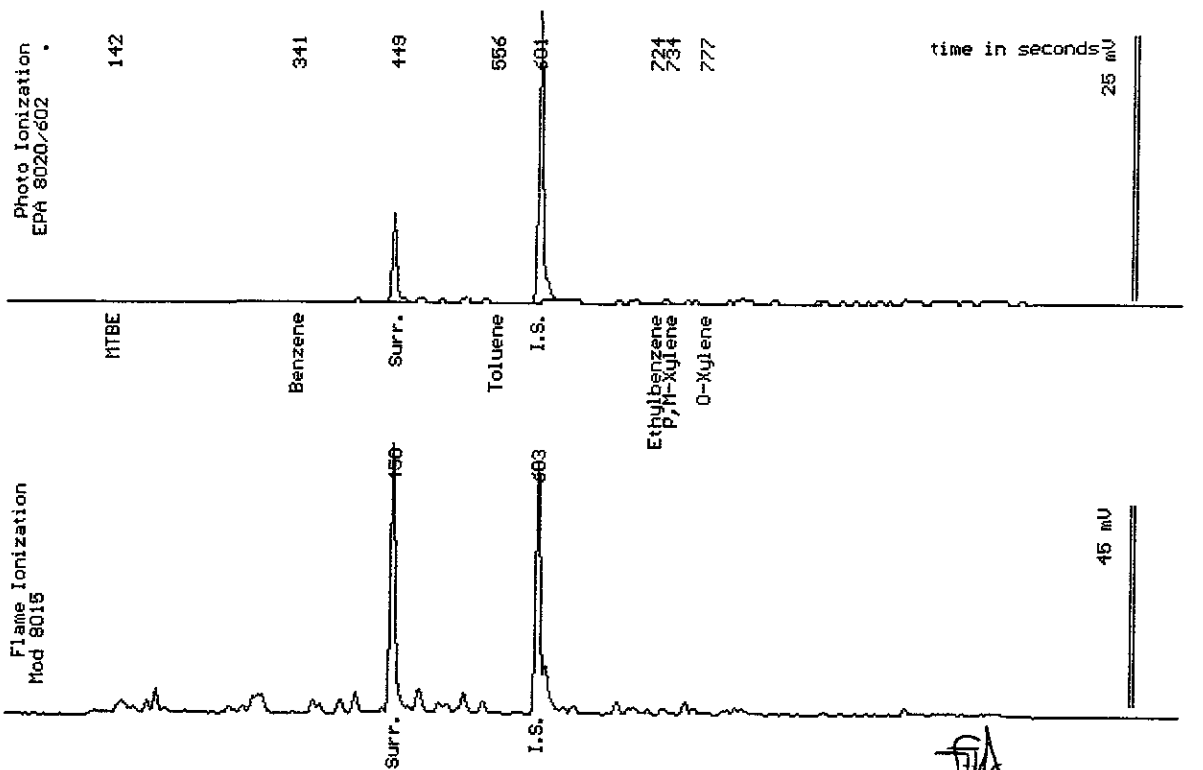
Sample Log 20089
20089-23

Sample: IB-3W

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 4185A
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	<.50
Toluene	(.50)	<.50
Ethylbenzene	(.50)	<.50
Total Xylenes	(.50)	<.50
TPH as Gasoline	(50)	<50
Surrogate Recovery		101 %



Date Analyzed: 06-04-99
Column : 0.53mm ID X 60m Restek Rtx-1701

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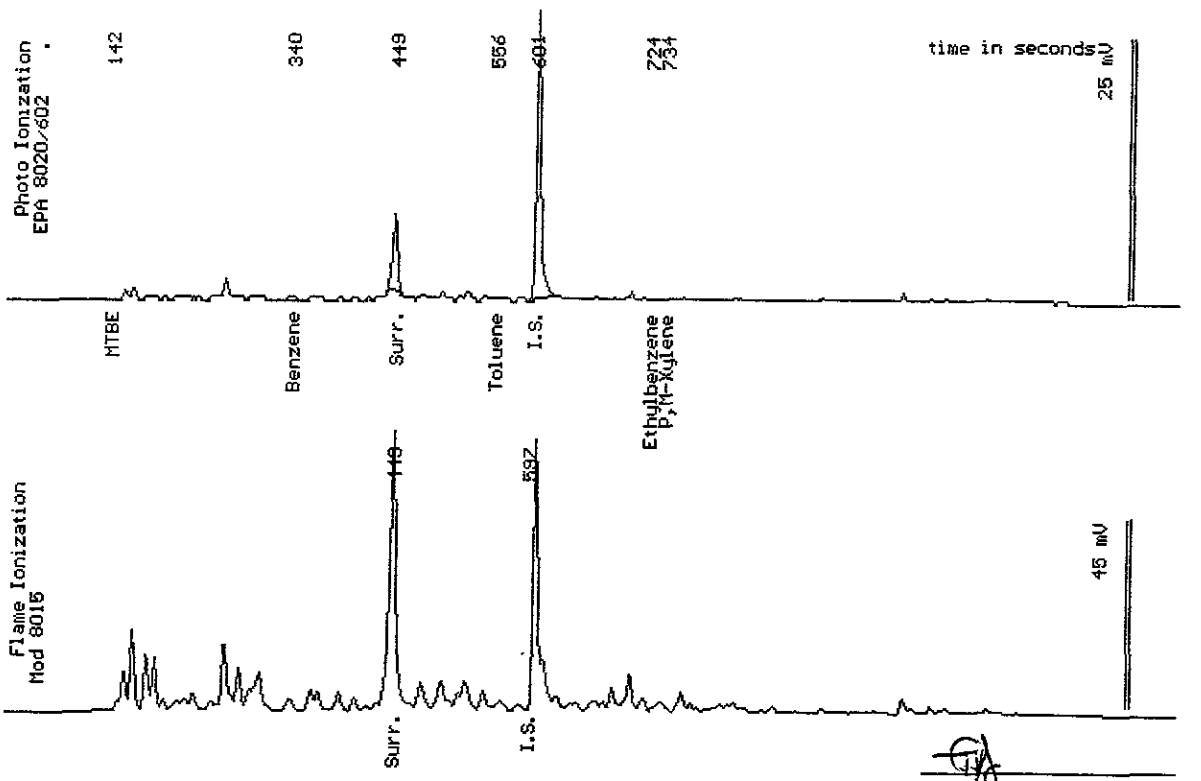
Sample Log 20089
20089-24

Sample: **IB-4W**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:1 Run Log : 4185A
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	<.50
Toluene	(.50)	<.50
Ethylbenzene	(.50)	<.50
Total Xylenes	(.50)	<.50
TPH as Gasoline	(50)	78
Surrogate Recovery		96 %



Date Analyzed: 06-04-99
Column : 0.53mm ID X 60m Restek Rtx-1701

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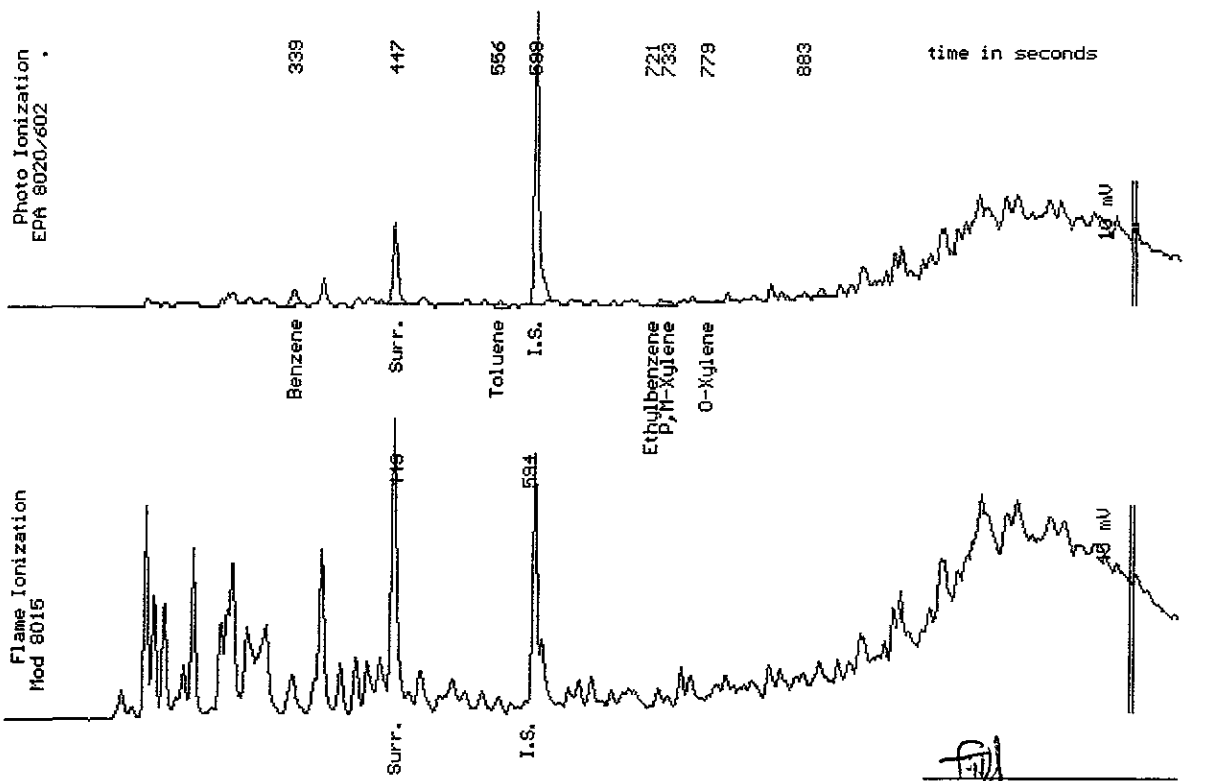
Sample Log 20089
20089-25

Sample: IB-5W

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Dilution : 1:2000 Run Log : 4185C
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(1000)	3700
Toluene	(1000)	<1000
Ethylbenzene	(1000)	1200
Total Xylenes	(1000)	1100
TPH as Gasoline	(100000)	1300000
Surrogate Recovery		107 %

* Product is not typical gasoline.



Date Analyzed: 06-04-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Steuart Podolsky
Senior Chemist

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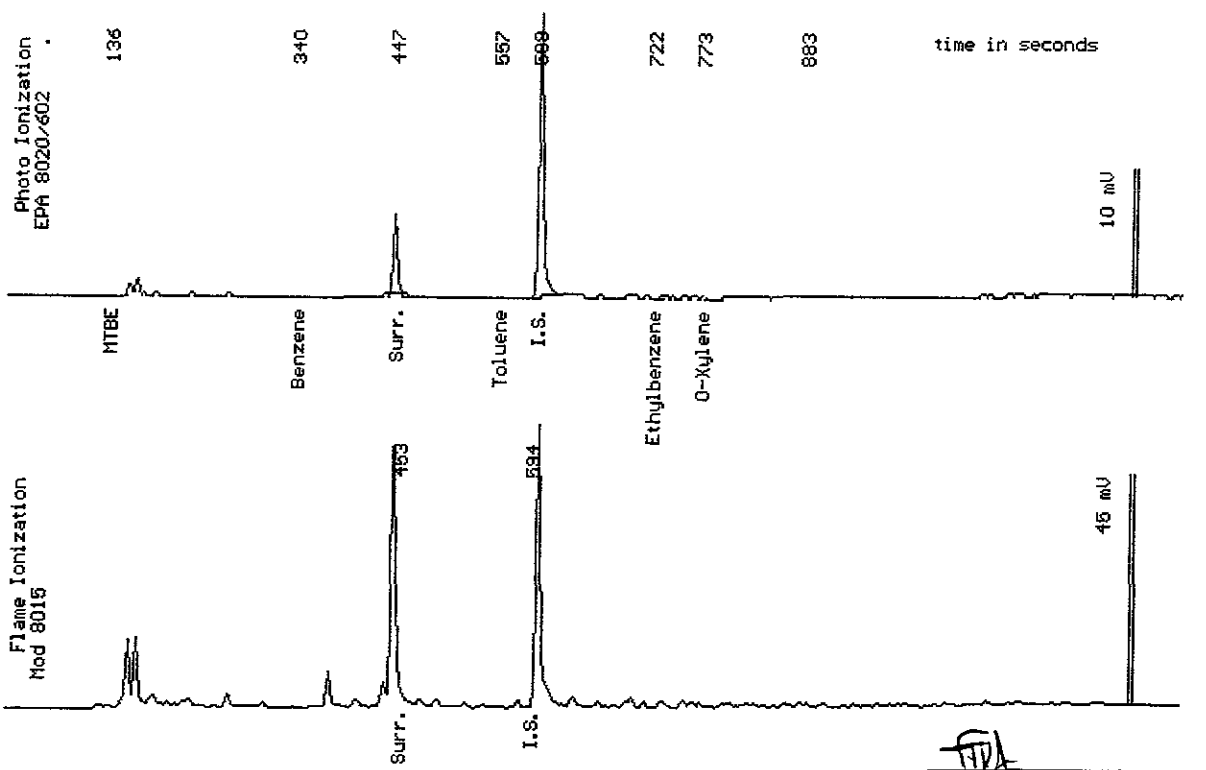
Sample Log 20089
20089-26

Sample: **IB-6W**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/28/99
Dilution : 1:1 Run Log : 4185C
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	<.50
Toluene	(.50)	<.50
Ethylbenzene	(.50)	<.50
Total Xylenes	(.50)	<.50
TPH as Gasoline	(50)	61
Surrogate Recovery		93 %



Date Analyzed: 06-04-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Steuart Podolsky
Senior Chemist

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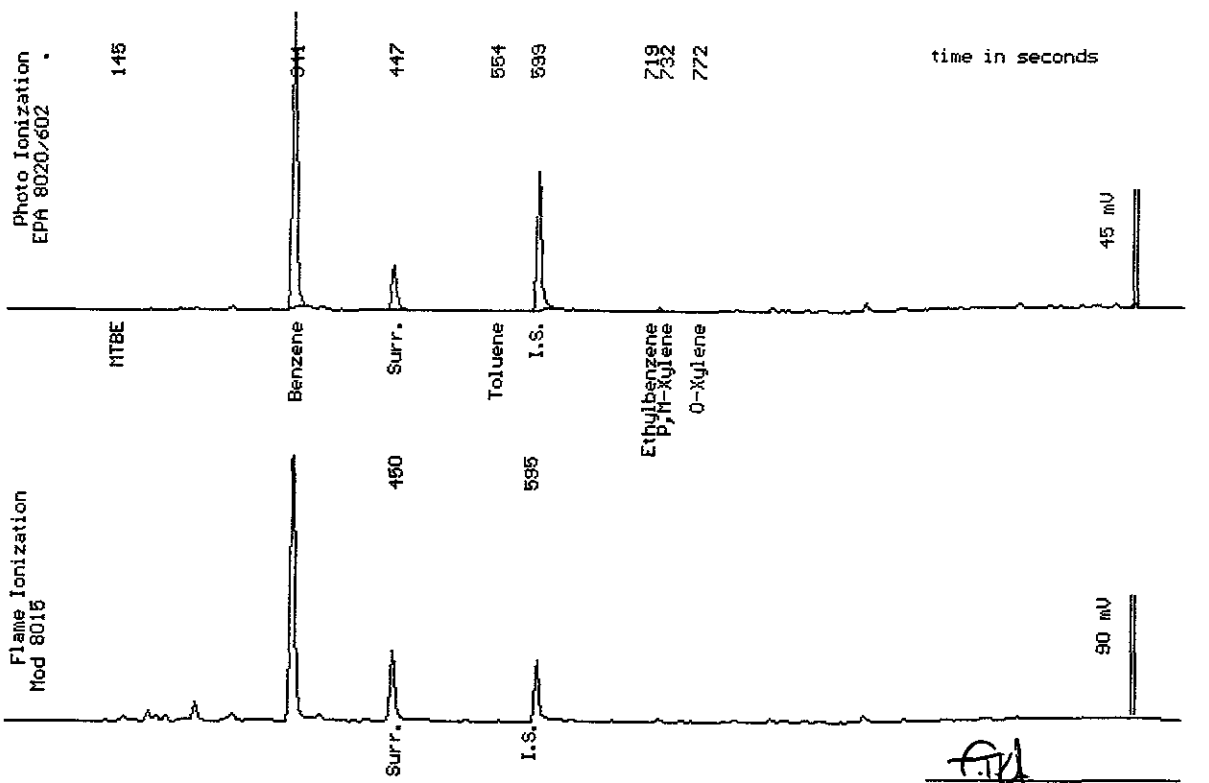
Sample Log 20089
20089-27

Sample: IB-7W

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/28/99
Dilution : 1:50 Run Log : 4185F
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(25)	2900
Toluene	(25)	<25
Ethylbenzene	(25)	26
Total Xylenes	(25)	<25
TPH as Gasoline	(2500)	6800
Surrogate Recovery		115 %



Date Analyzed: 06-08-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Steuart Podolsky
Senior Chemist

Acculabs Inc.

June 7, 1999
Sample Log 20089

QC Report for EPA 8020 & Modified EPA 8015
Run Log : 2180Z
From : LSI - MIDDLE (Proj. # 149-01-03)
Sample(s) Received : 05/28/99

Parameter	Matrix Spike % Recovery	Matrix Spike Duplicate % Recovery	RPD *
Benzene	92	95	3
Ethylbenzene	96	101	5
TPH as Gasoline	100	102	2

* RPD = Relative Percent Difference

Parameter	Laboratory Control Sample % Recovery
Benzene	94
Ethylbenzene	101
Gasoline	105

Parameter	Method Blank
Benzene	<0.005 mg/Kg
Toluene	<0.005 mg/Kg
Ethylbenzene	<0.005 mg/Kg
Total Xylenes	<0.005 mg/Kg
TPH as Gasoline	<1.0 mg/kg

Tom Kwoka
Lab Director

Acculabs Inc.

June 7, 1999
Sample Log 20089

QC Report for EPA 602 & Modified EPA 8015
Run Log : 4185A
From : LSI - MIDDLE (Proj. # 149-01-03)
Sample(s) Received : 05/28/99

Parameter	Matrix Spike % Recovery	Matrix Spike Duplicate % Recovery	RPD *
Benzene	113	112	1
Ethylbenzene	110	109	1
TPH as Gasoline	119	123	3

* RPD = Relative Percent Difference

Parameter	Laboratory Control Sample % Recovery
Benzene	108
Ethylbenzene	106
Gasoline	120

Parameter	Method Blank
Benzene	<0.50 ug/L
Toluene	<0.50 ug/L
Ethylbenzene	<0.50 ug/L
Total Xylenes	<0.50 ug/L
TPH as Gasoline	<50 ug/L

Tom Kwoka
Lab Director

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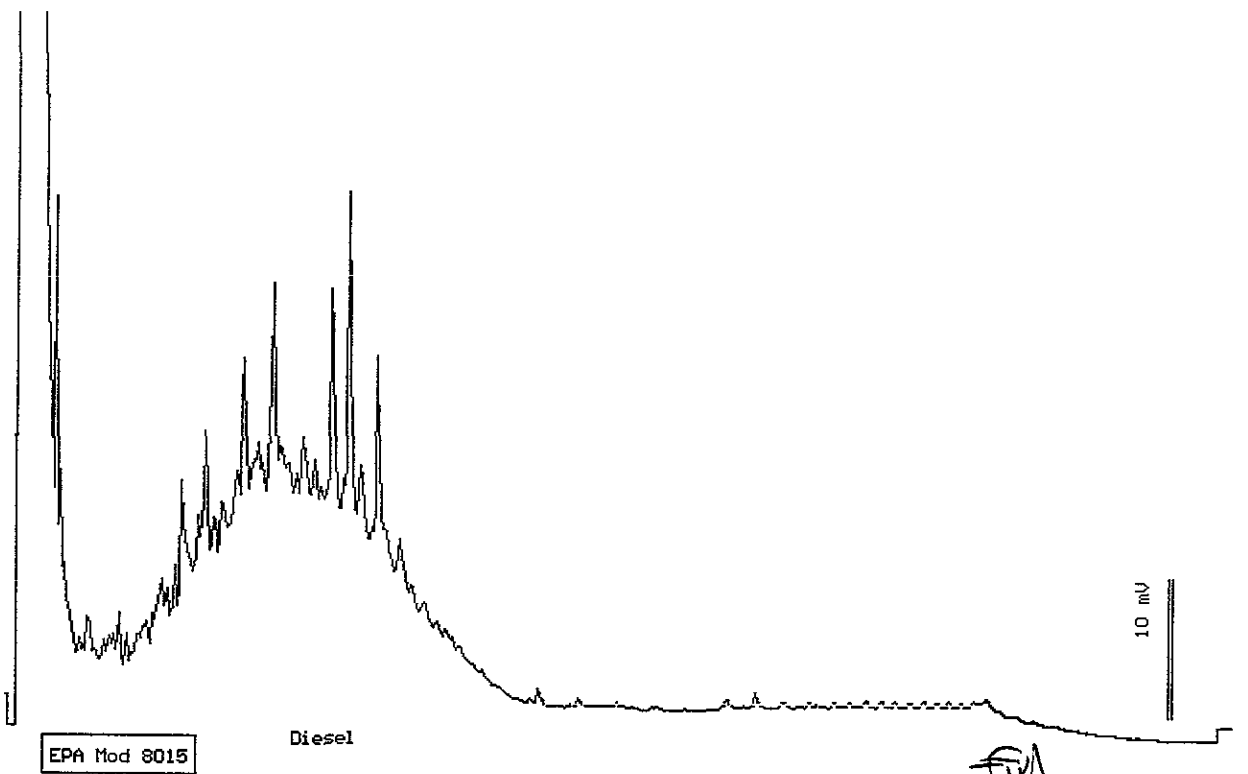
Sample Log 20089
20089-01

Sample: **IB-1.1 (6.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:1 Run Log : 7438H
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	19
TPH as Motor Oil	(10)	<10



Date: 06-03-99 Time: 15:35:49
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

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Senior Chemist

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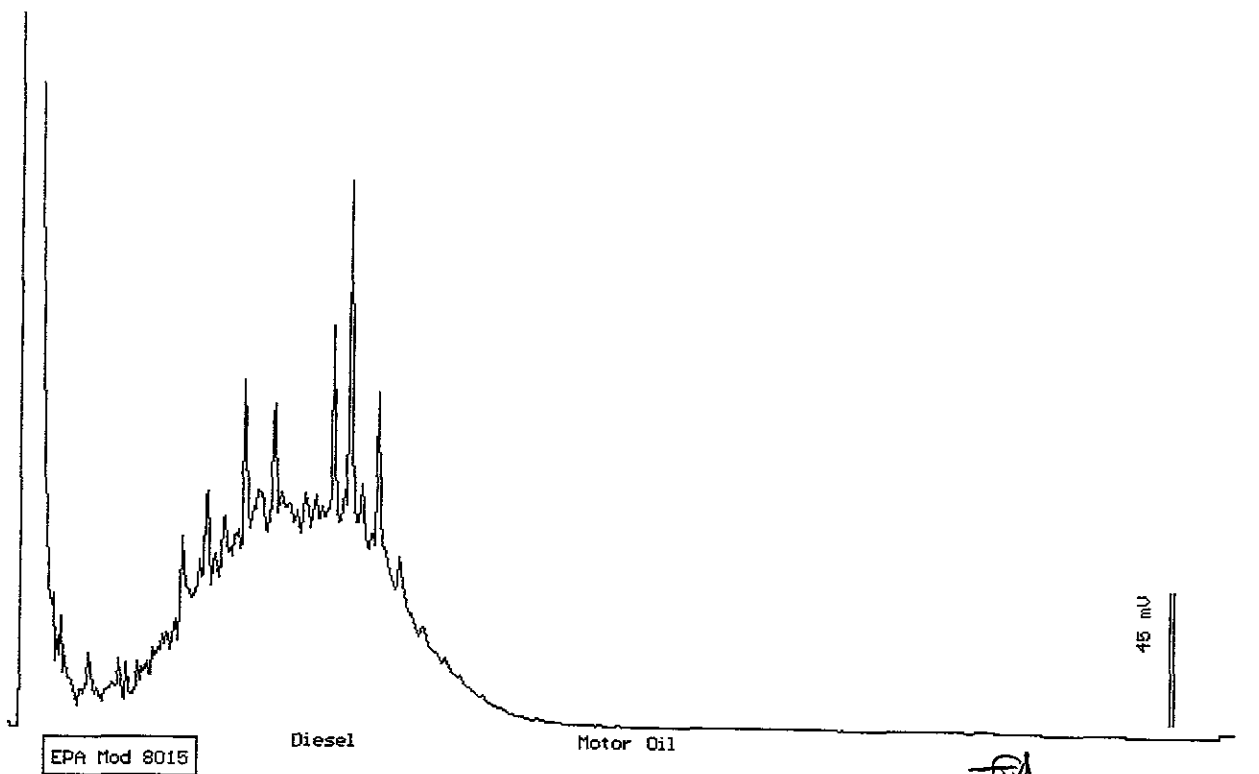
Sample Log 20089

20089-02

Sample: **IB-1.2 (10.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:5 Run Log : 7438J
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(5.0)	440
TPH as Motor Oil	(10)	11



Date: 06-04-99 Time: 15:08:39
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

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Senior Chemist

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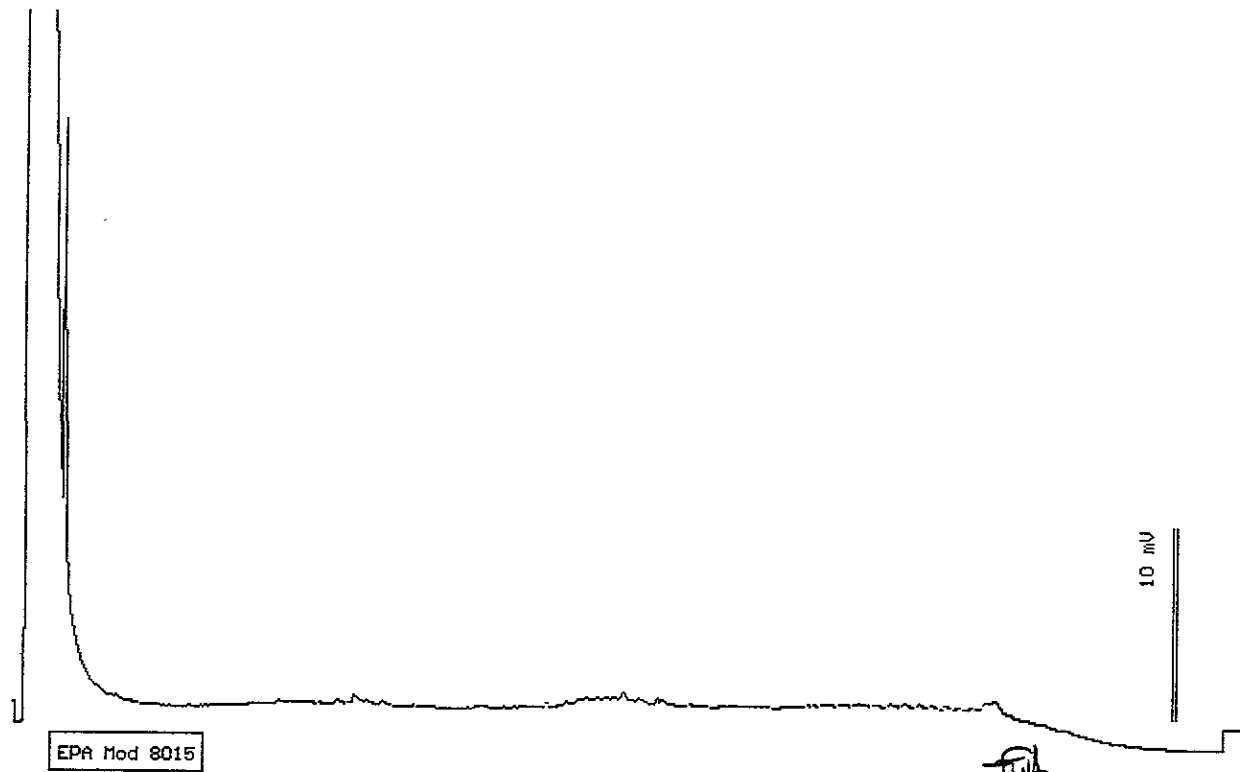
Sample Log 20089
20089-03

Sample: **IB-2.1 (6.0')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:1 Run Log : 7438H
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	<1.0
TPH as Motor Oil	(10)	<10



Date: 06-03-99 Time: 16:43:57
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

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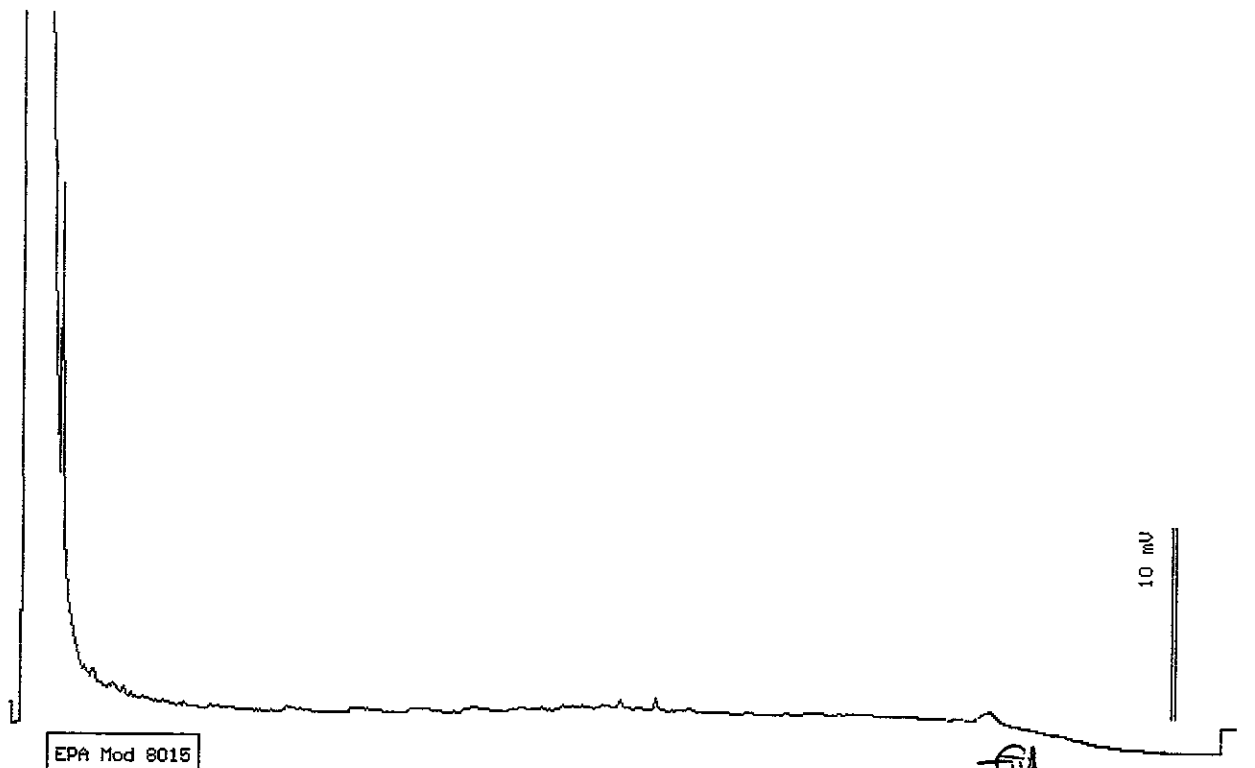
Sample Log 20089
20089-04

Sample: **IB-2.2 (10.0')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:1 Run Log : 7438H
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	<1.0
TPH as Motor Oil	(10)	<10



Date: 06-03-99 Time: 17:18:12
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
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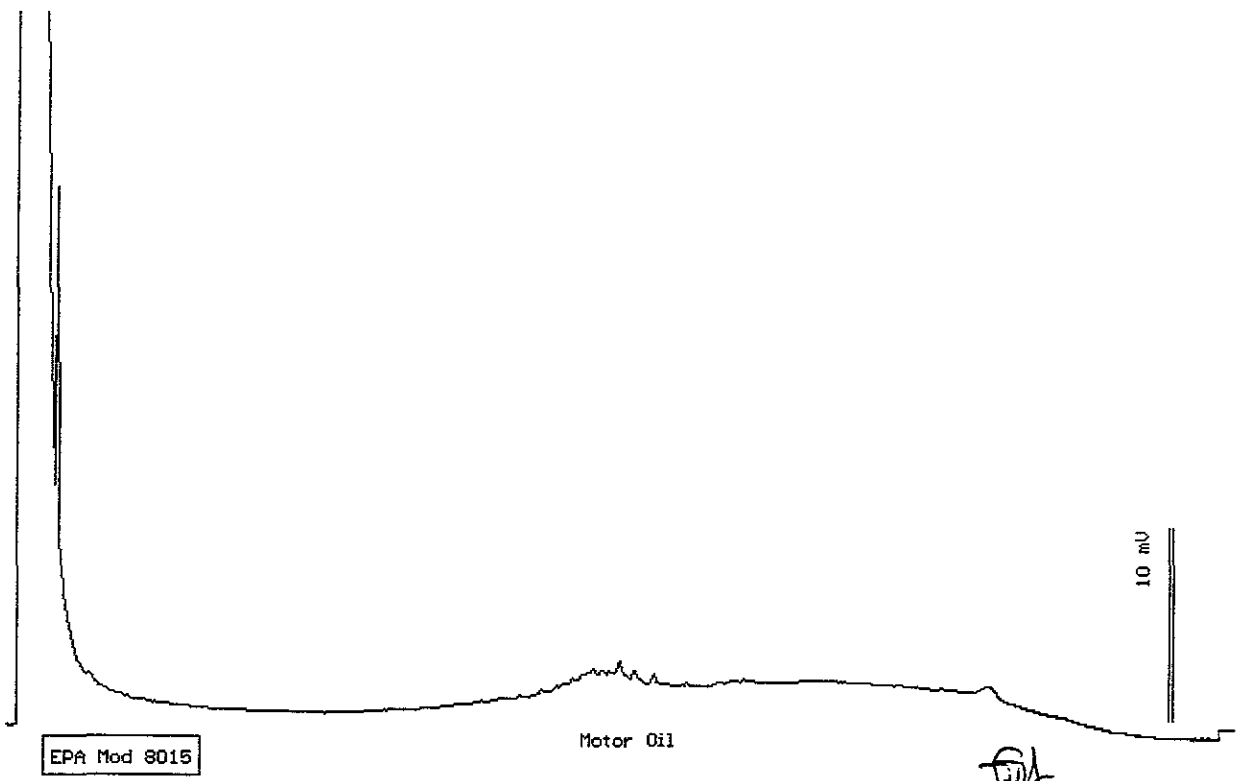
Sample Log 20089
20089-06

Sample: **IB-3.2 (7.0')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:1 Run Log : 7438H
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	<1.0
TPH as Motor Oil	(10)	<10



Date: 06-03-99 Time: 18:26:51
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

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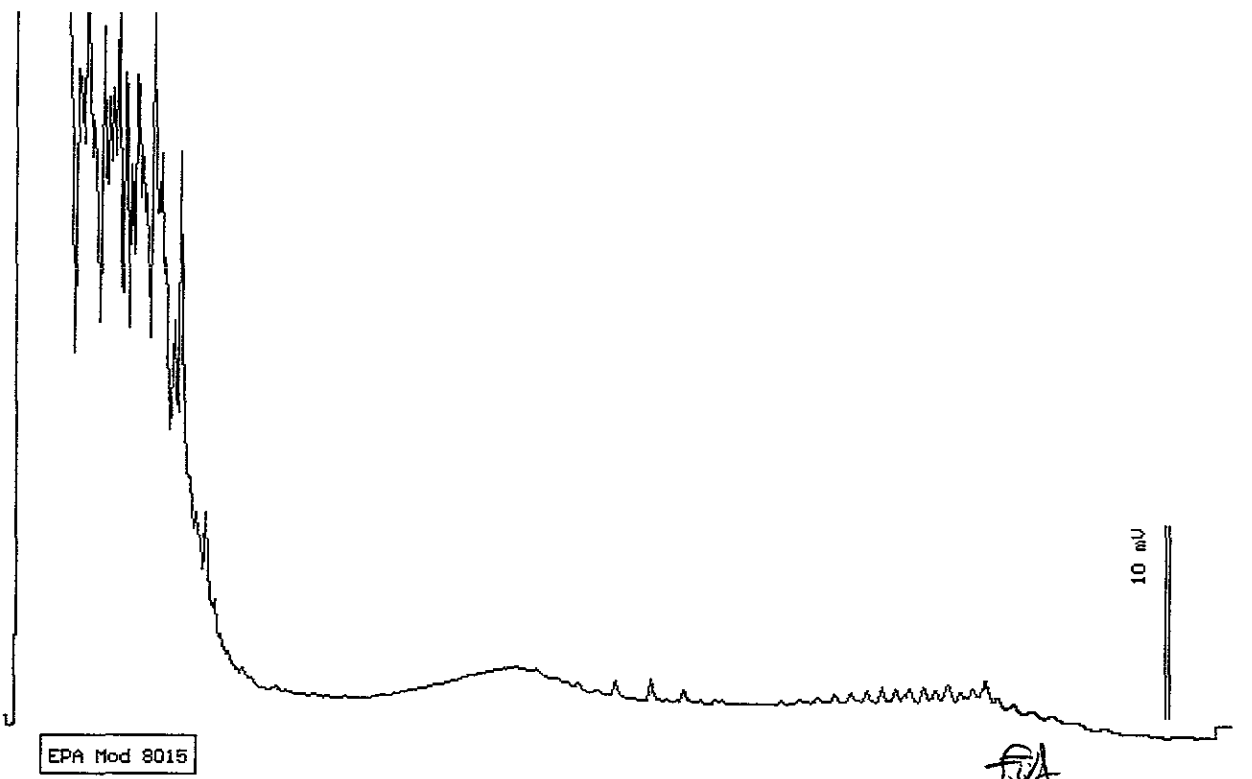
Sample Log 20089
20089-07

Sample: **IB-3.3 (11.0')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:1 Run Log : 7438H
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(2.0)	<2.0 *
TPH as Motor Oil	(10)	<10

* Increased reporting limit due to gasoline range interference.



Date: 06-03-99 Time: 19:01:06
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

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Senior Chemist

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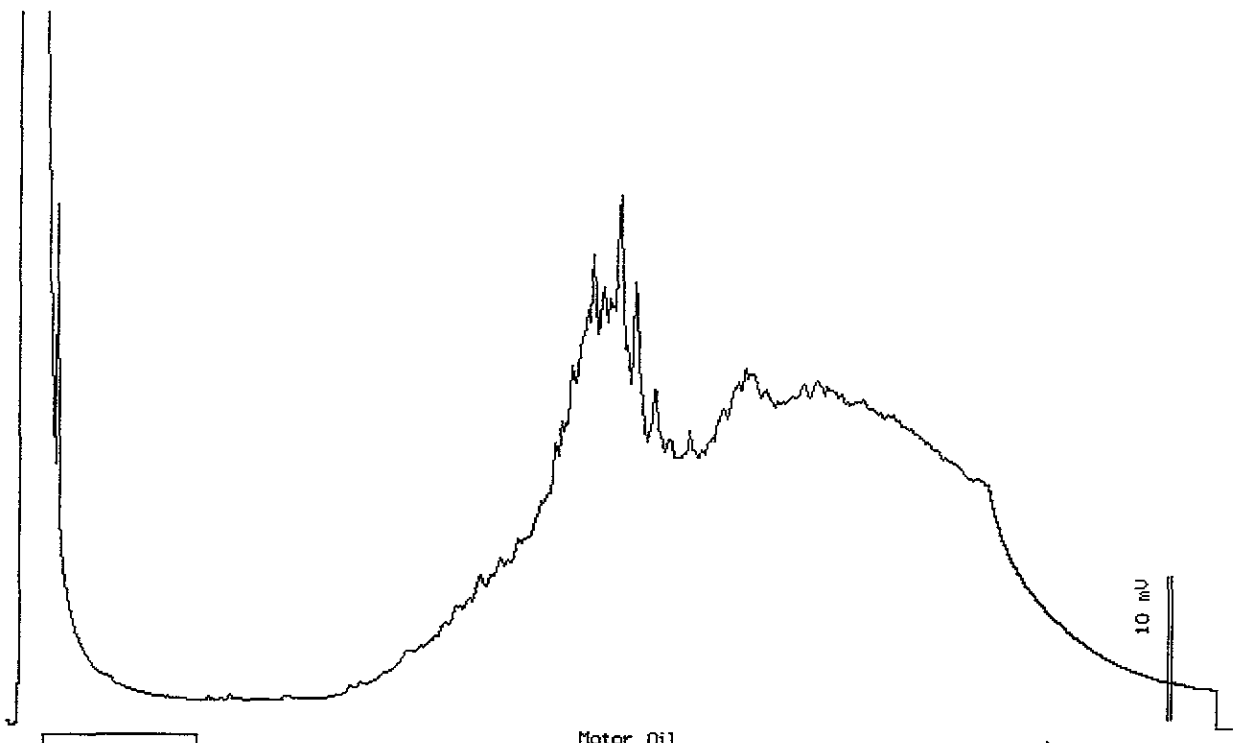
Sample Log 20089
20089-08

Sample: **IB-4.1 (3.0')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:1 Run Log : 7438K
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(3.0)	<3.0 *
TPH as Motor Oil	(10)	34

* Increased reporting limit due to oil range interference.



EPA Mod 8015

Date: 06-07-99 Time: 10:56:10
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

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Senior Chemist

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Sample Log 20089
20089-09

Sample: **IB-4.2 (7.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:1 Run Log : 7438H
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(2.0)	<2.0 *
TPH as Motor Oil	(10)	<10

* Increased reporting limit due to gasoline range interference.

Date: 06-03-99 Time: 20:09:41
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

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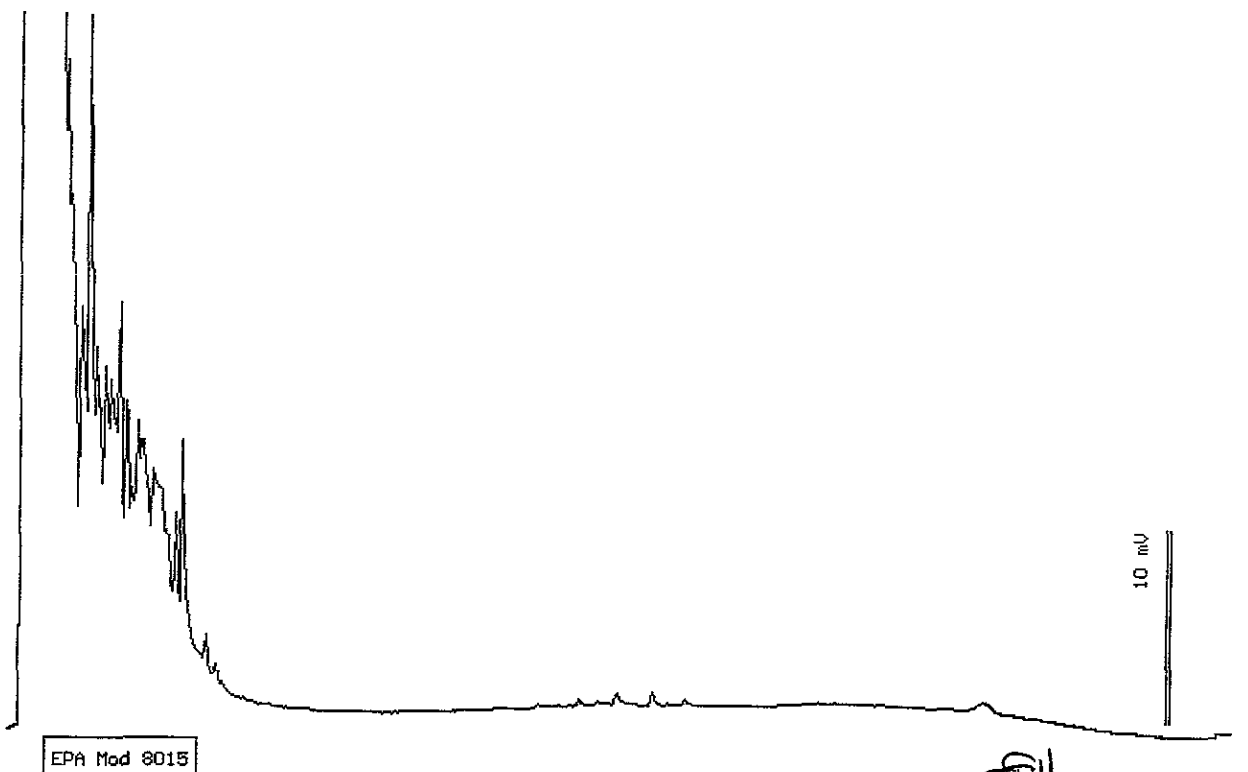
Sample Log 20089
20089-10

Sample: **IB-4.3 (10.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:1 Run Log : 7438H
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(2.0)	<2.0 *
TPH as Motor Oil	(10)	<10

* Increased reporting limit due to gasoline range interference.



Date: 06-03-99 Time: 21:52:31
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

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Senior Chemist

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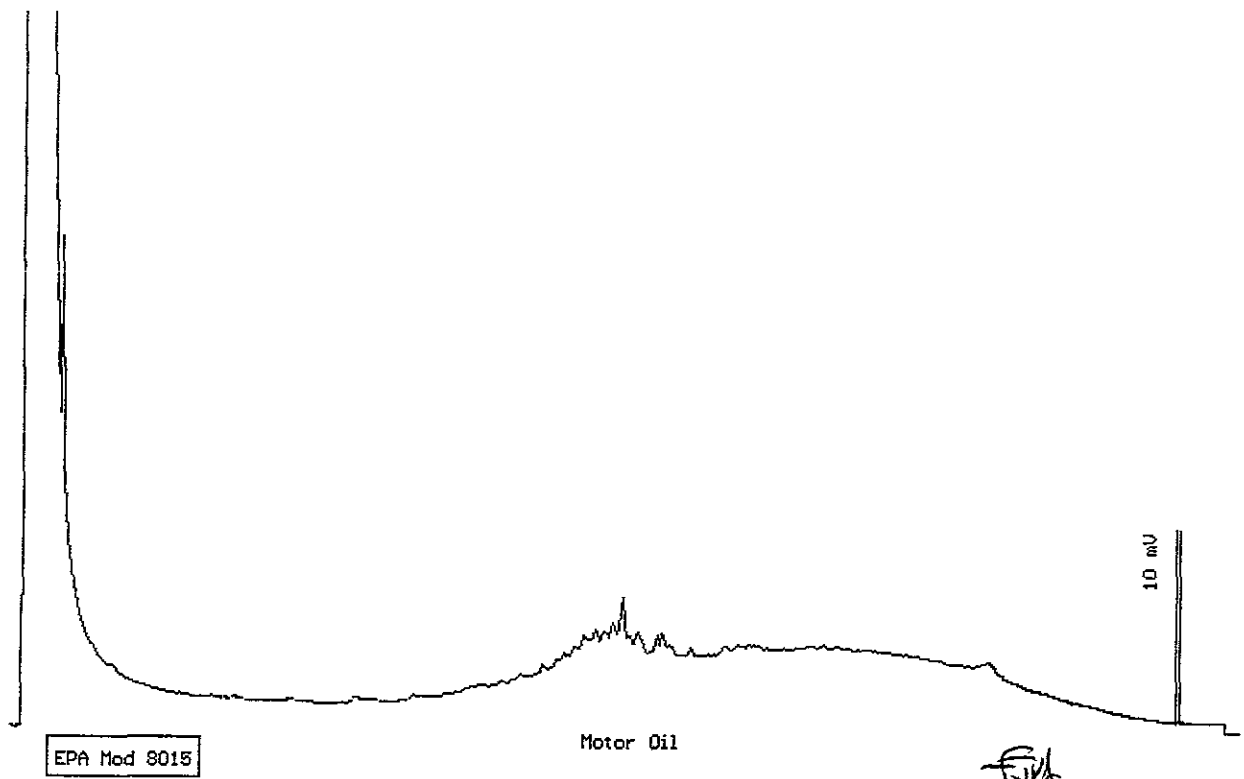
Sample Log 20089
20089-11

Sample: **IB-5.1 (3.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:1 Run Log : 7438H
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	<1.0
TPH as Motor Oil	(10)	<10



Date: 06-03-99 Time: 22:26:37
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

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Senior Chemist

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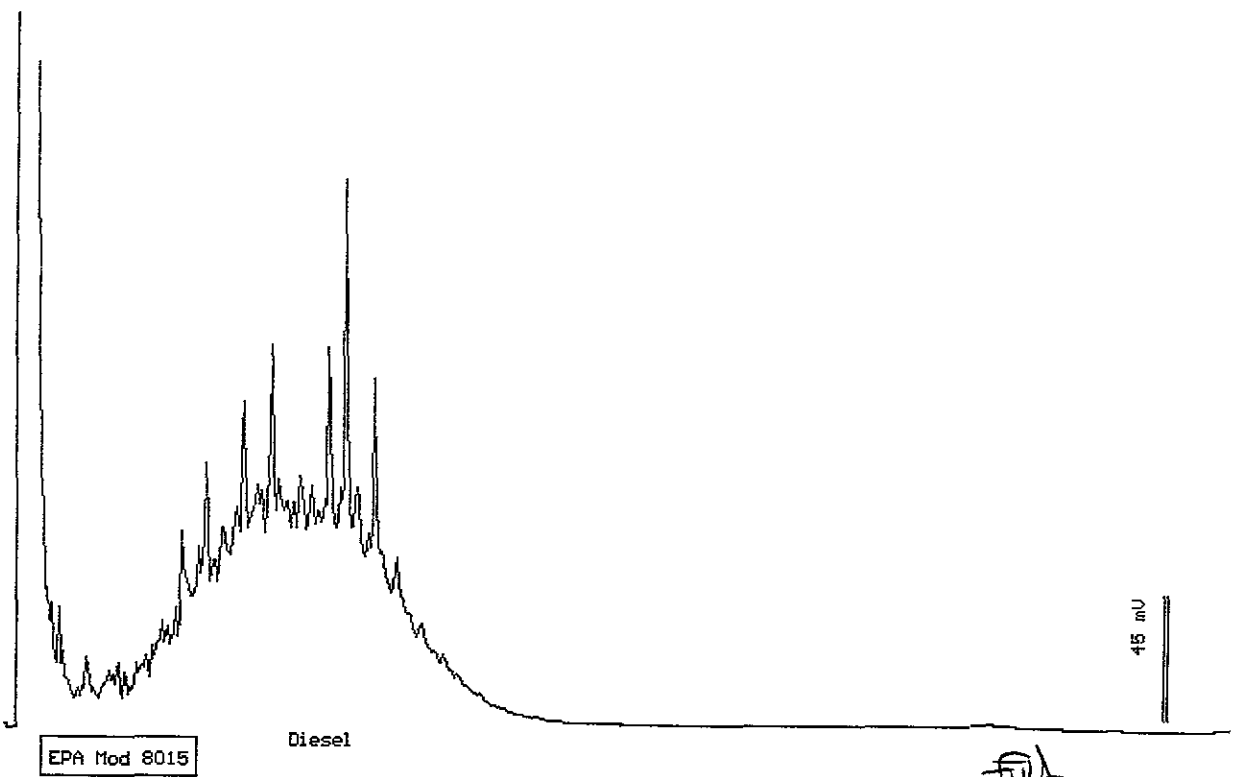
Sample Log 20089
20089-12

Sample: **IB-5.2 (6.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:10 Run Log : 7438J
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(10)	910
TPH as Motor Oil	(20)	<20



Date: 06-04-99 Time: 16:18:08
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

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Senior Chemist

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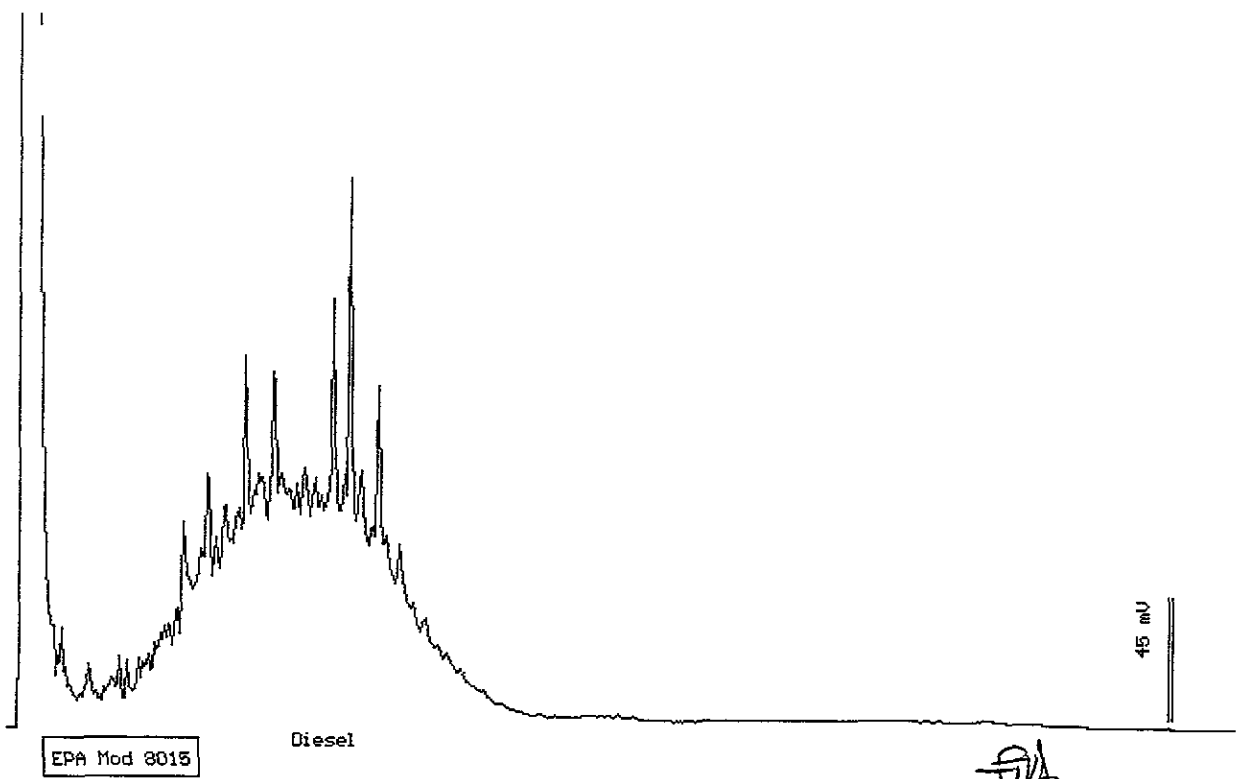
Sample Log 20089
20089-13

Sample: **IB-5.3 (11.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:5 Run Log : 7438J
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(5.0)	490
TPH as Motor Oil	(10)	<10



Date: 06-04-99 Time: 18:00:36
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

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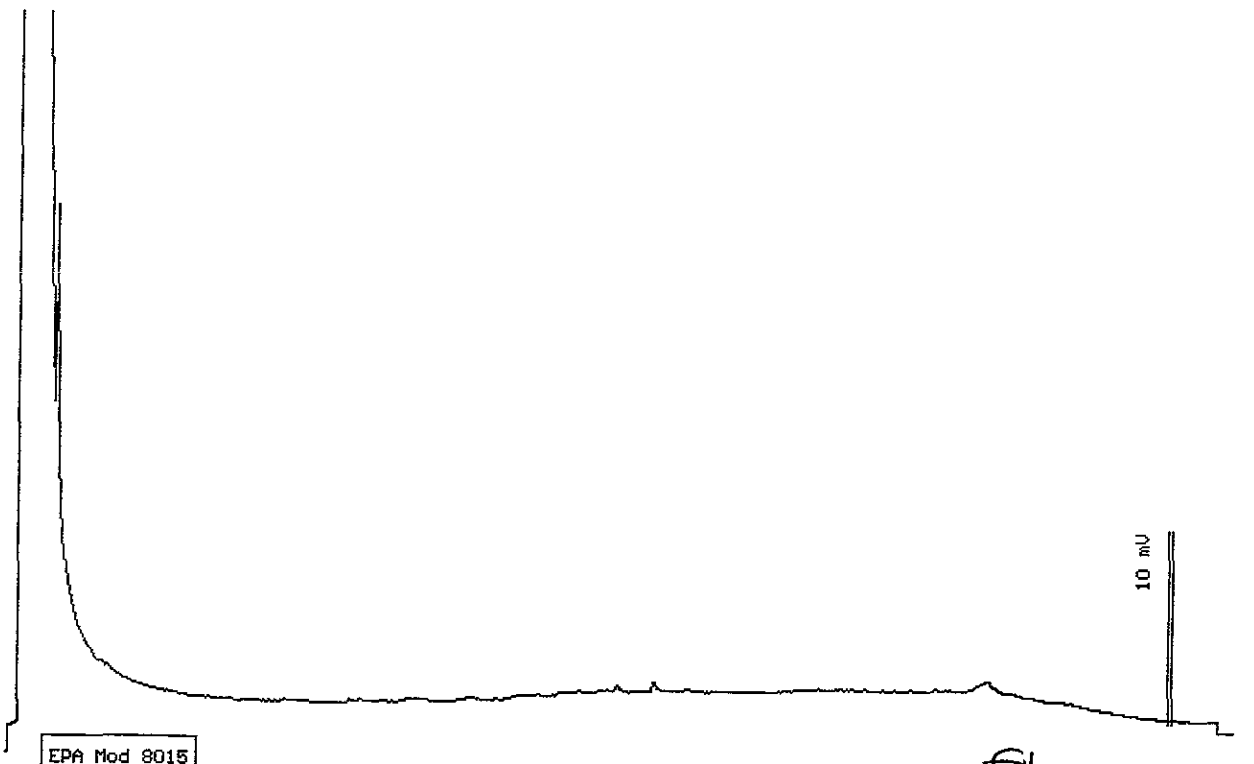
Sample Log 20089

20089-15

Sample: **IB-6.2 (7.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/28/99
Extracted: 06/03/99 QC Batch : DS990601
Dilution : 1:1 Run Log : 7438H
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	<1.0
TPH as Motor Oil	(10)	<10



Date: 06-04-99 Time: 00:08:28
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

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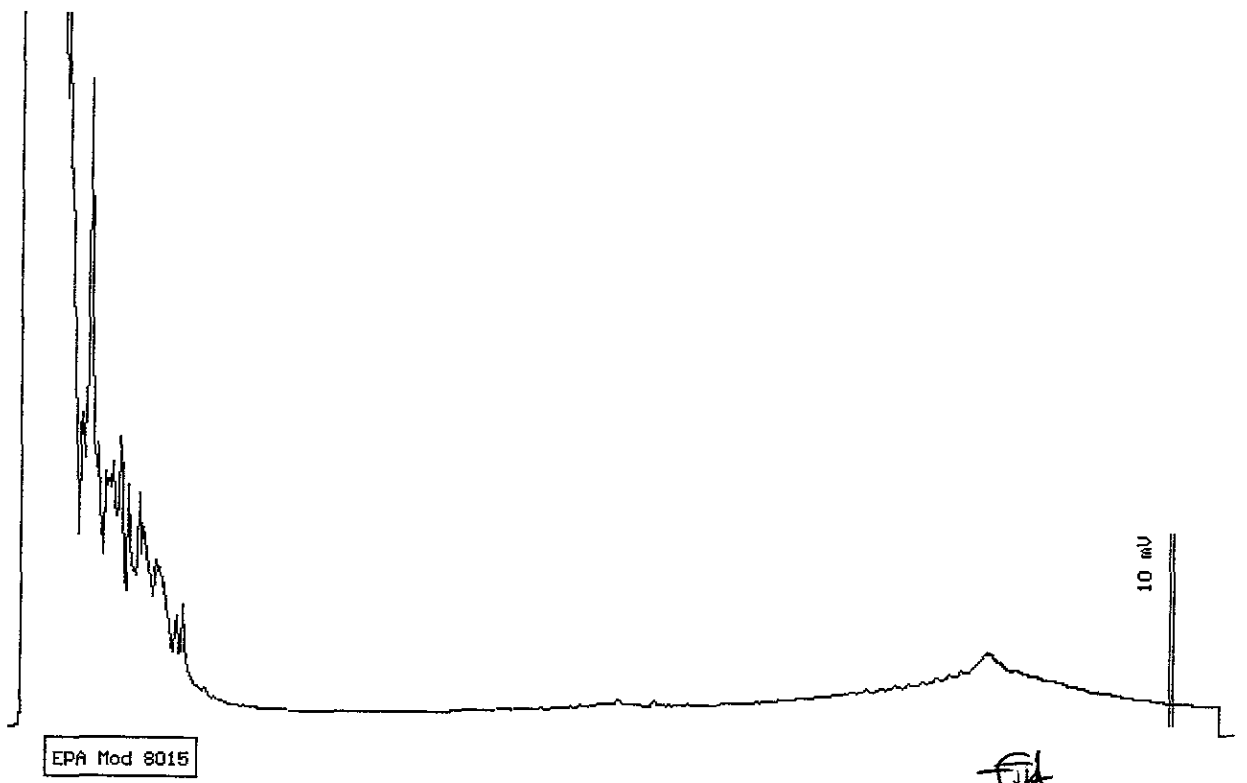
Sample Log 20089
20089-16

Sample: **IB-6.3 (10.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/28/99
Extracted: 06/04/99 QC Batch : DS990602
Dilution : 1:1 Run Log : 7439A
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	<1.0
TPH as Motor Oil	(10)	<10



EPA Mod 8015

Date: 06-07-99 Time: 11:48:39
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc.
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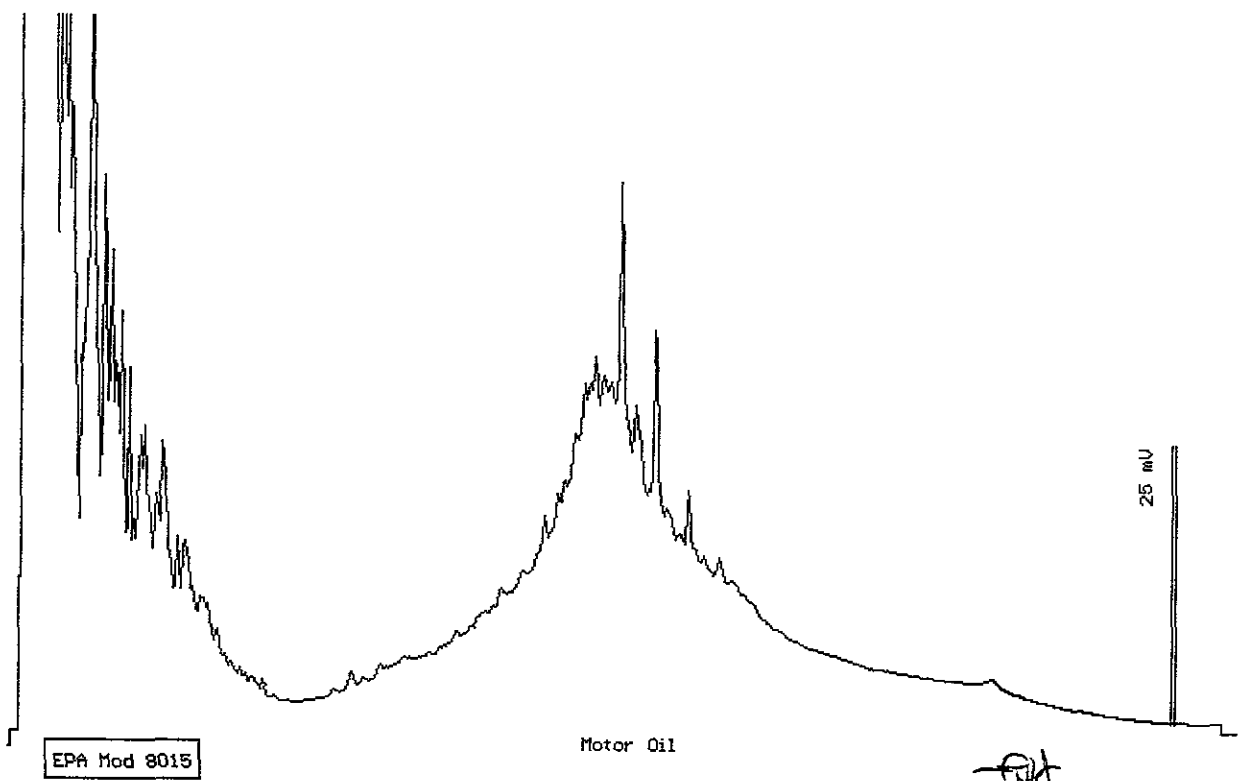
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20089
20089-17

Sample: **IB-7.1 (3.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/28/99
Extracted: 06/04/99 QC Batch : DS990602
Dilution : 1:1 Run Log : 7439A
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	<1.0
TPH as Motor Oil	(10)	22



Date: 06-07-99 Time: 12:22:51
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

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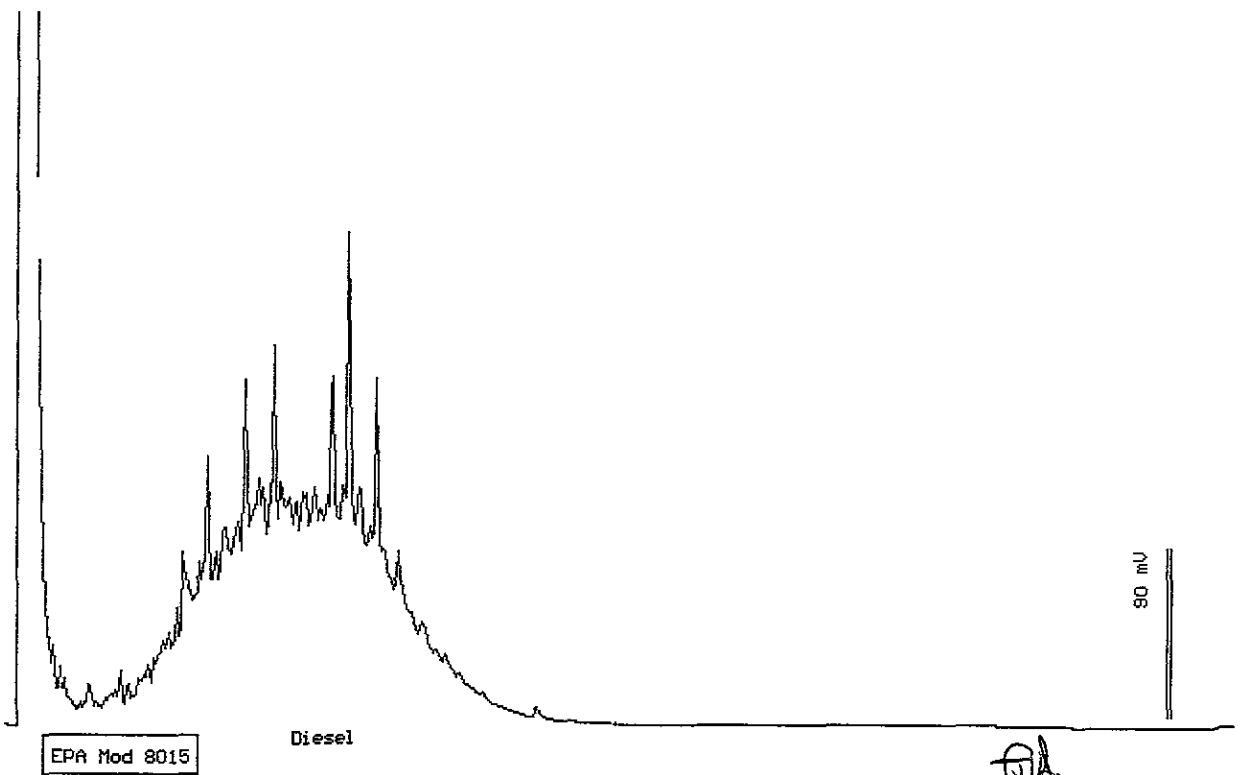
Sample Log 20089
20089-19

Sample: **IB-7.3 (7.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/28/99
Extracted: 06/04/99 QC Batch : DS990602
Dilution : 1:10 Run Log : 7438J
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(10)	1300
TPH as Motor Oil	(20)	<20



Date: 06-04-99 Time: 13:59:53
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc.

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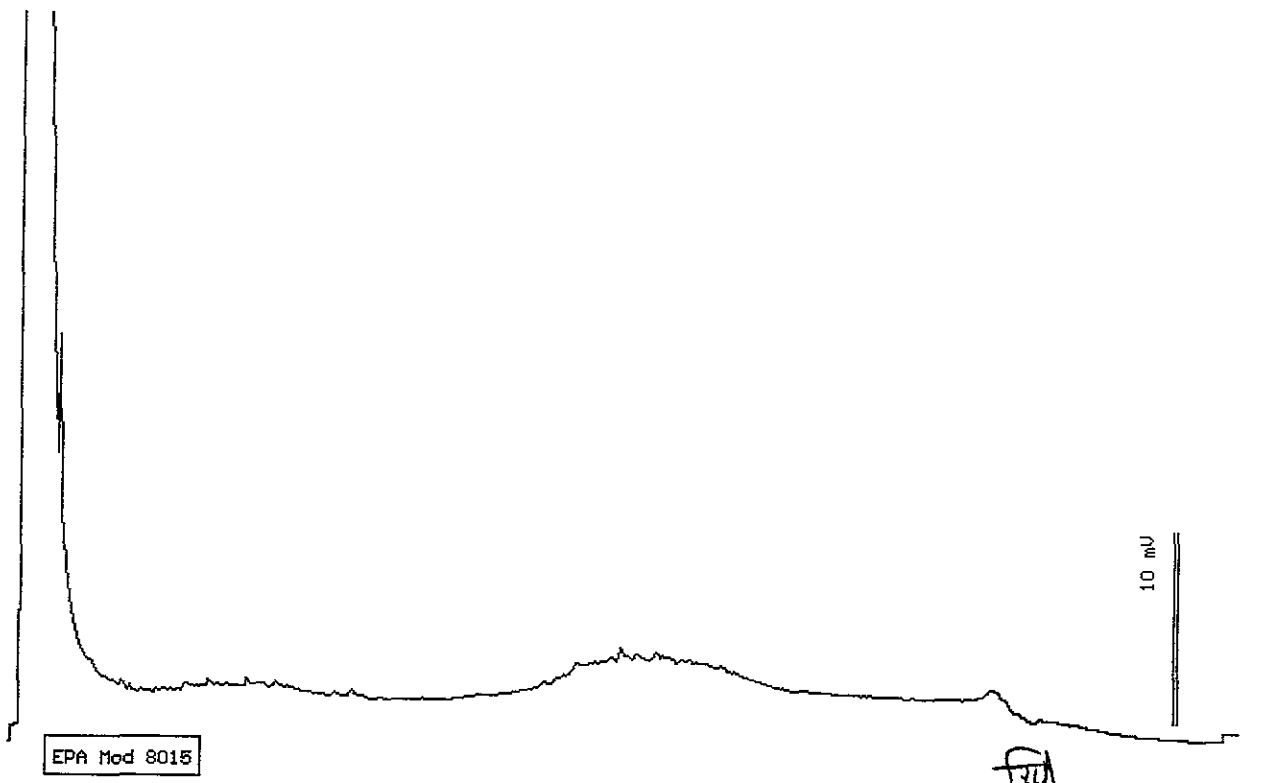
Sample Log 20089

20089-20

Sample: **IB-7.4 (10.5')**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/04/99 QC Batch : DS990602
Dilution : 1:1 Run Log : 7439A
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	<1.0
TPH as Motor Oil	(10)	<10



Date: 06-07-99 Time: 12:57:21
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc.
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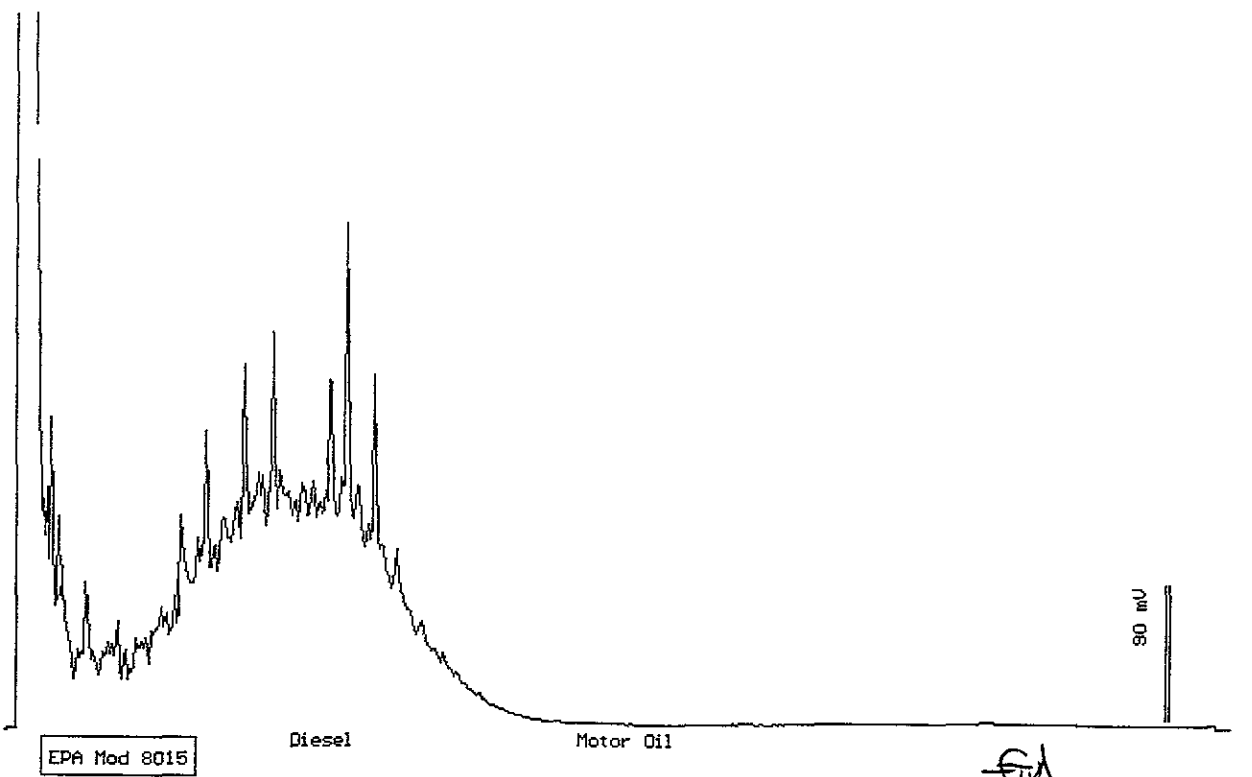
Sample Log 20089
20089-21

Sample: **IB-1W**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/04/99 QC Batch : DW990601
Dilution : 1:61 Run Log : 7438J
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(3100)	580000
TPH as Motor Oil	(6100)	22000



Date: 06-04-99 Time: 19:09:50
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc.
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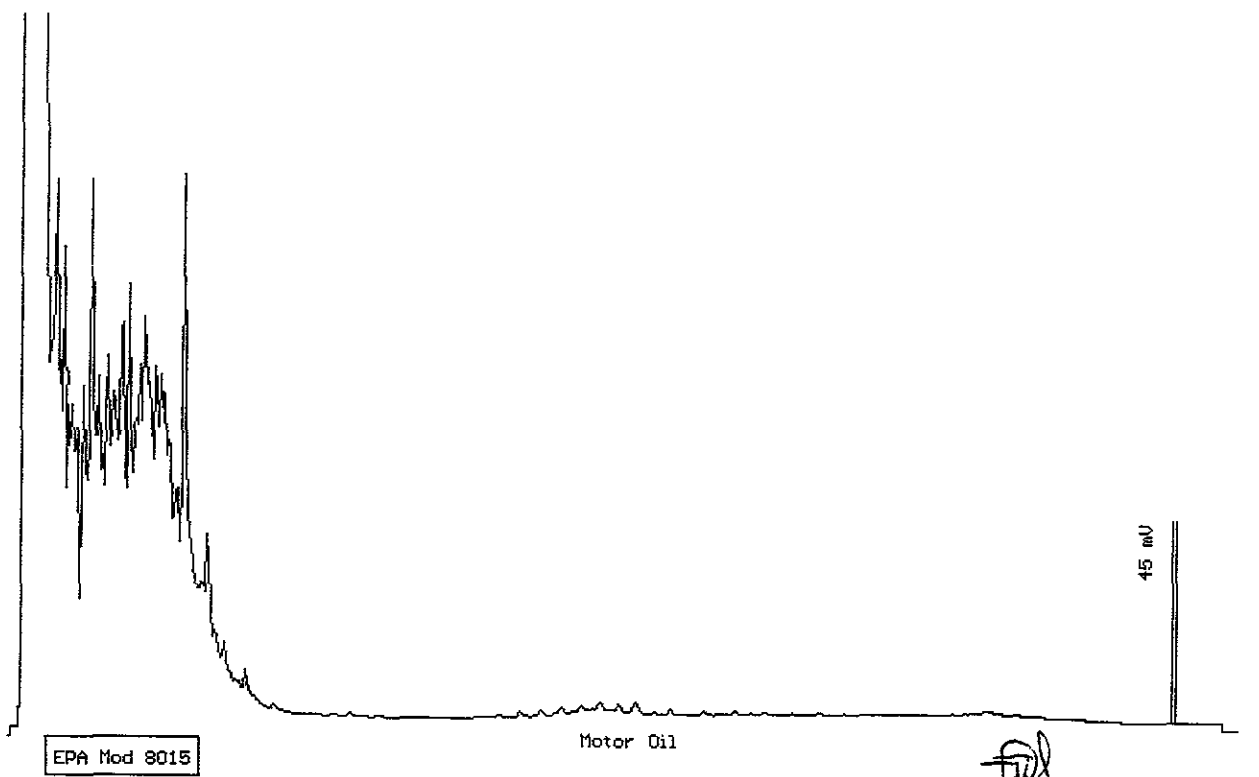
Sample Log 20089
20089-22

Sample: **IB-2W**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/04/99 QC Batch : DW990601
Dilution : 1:1 Run Log : 7438J
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(100)	<100 *
TPH as Motor Oil	(100)	<100

* Increased reporting limit due to gasoline range interference.



Date: 06-04-99 Time: 19:44:09
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc.

Davis

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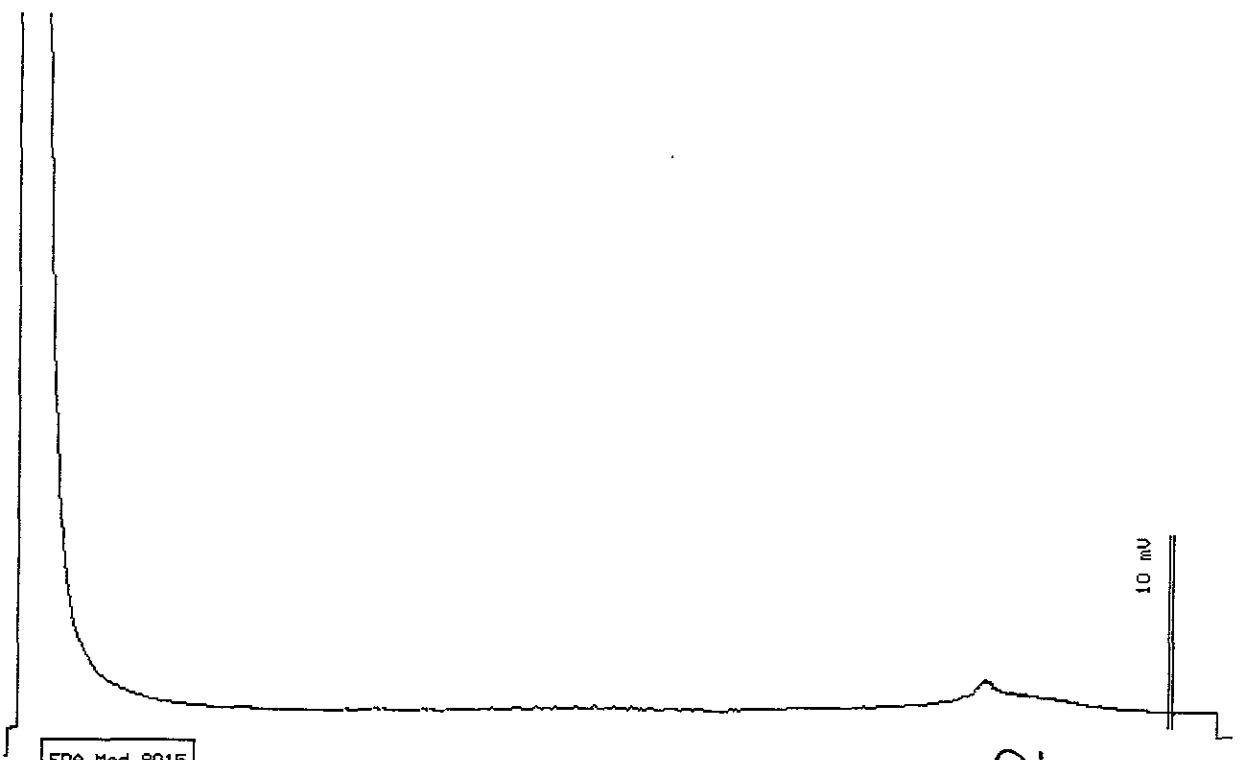
Sample Log 20089

20089-23

Sample: **IB-3W**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/08/99 QC Batch : DW990602
Dilution : 1:2 Run Log : 7439D
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(100)	<100
TPH as Motor Oil	(200)	<200



EPA Mod 8015

Date: 06-09-99 Time: 04:49:04
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc.
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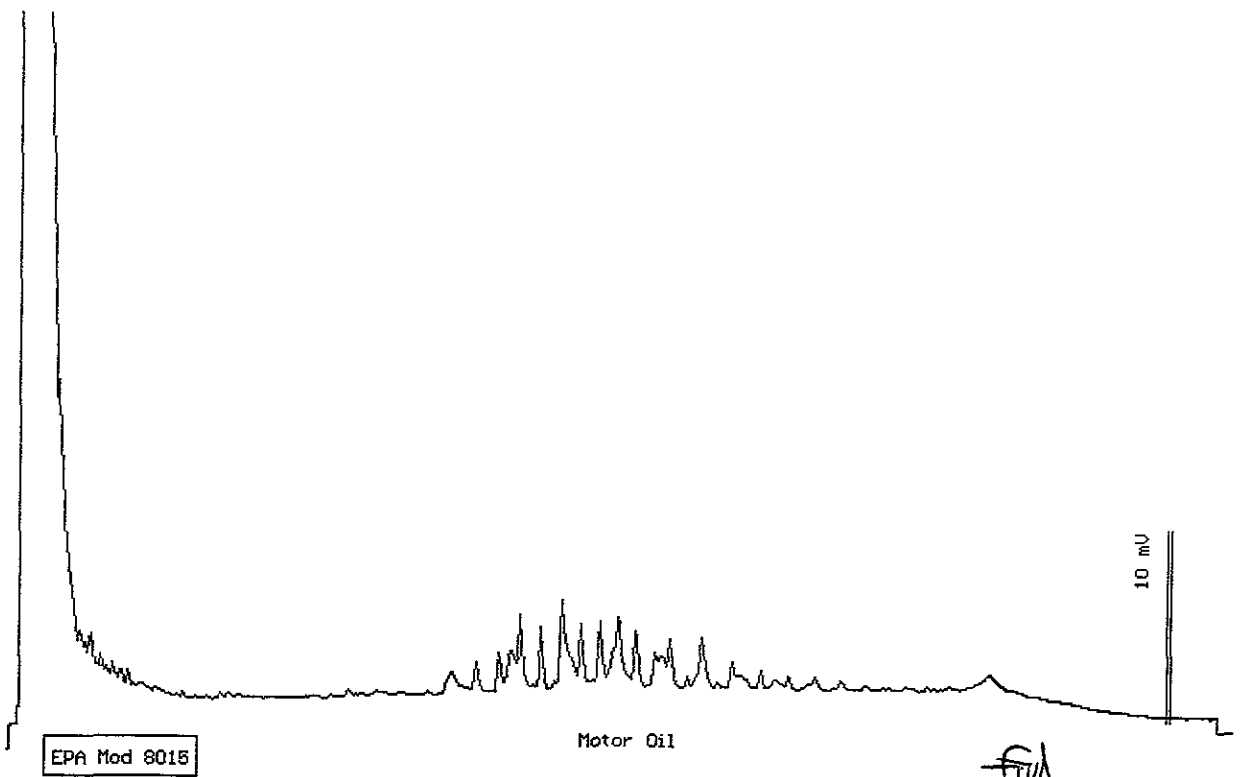
Sample Log 20089
20089-24

Sample: **IB-4W**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/04/99 QC Batch : DW990601
Dilution : 1:1 Run Log : 7438J
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(50)	<50
TPH as Motor Oil	(100)	<100



Date: 06-04-99 Time: 20:52:36
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc.
Davis
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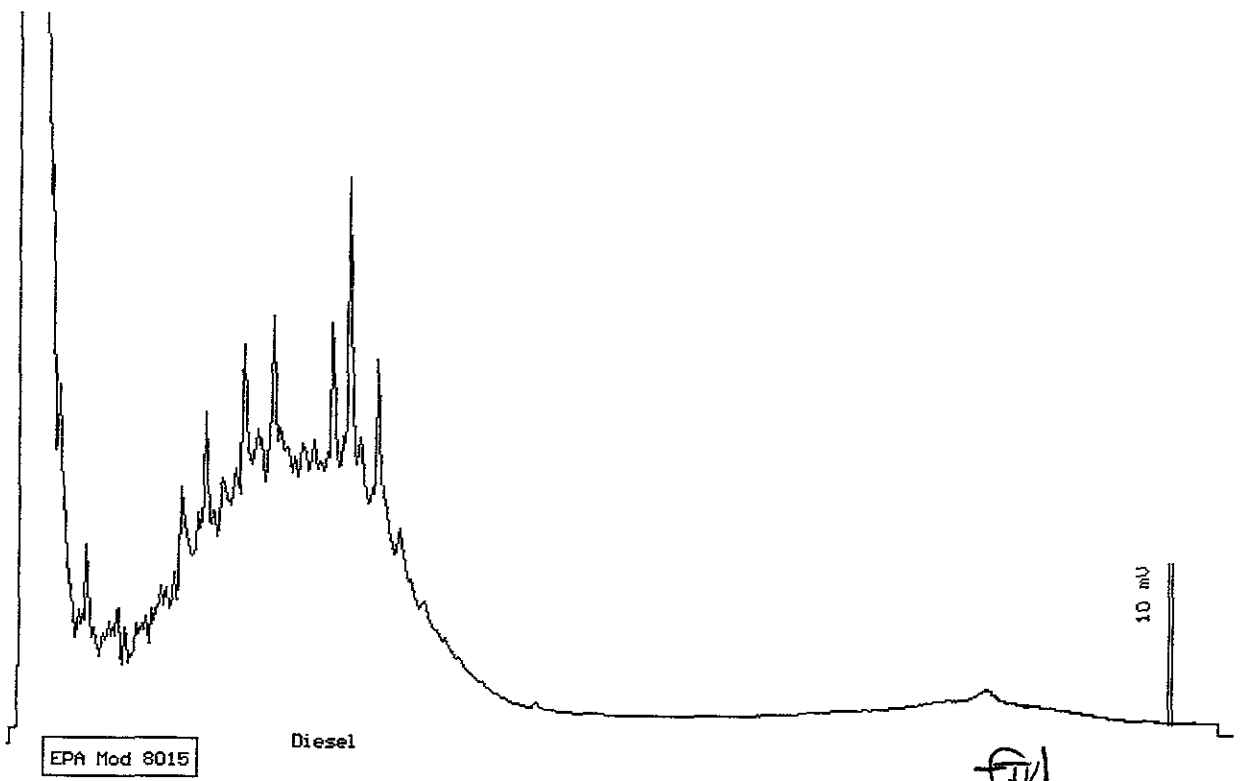
Sample Log 20089
20089-25

Sample: **IB-5W**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/27/99
Extracted: 06/04/99 QC Batch : DW990601
Dilution : 1:233 Run Log : 7439D
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(12000)	230000
TPH as Motor Oil	(23000)	<23000



Date: 06-09-99 Time: 08:08:25
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc.

Davis

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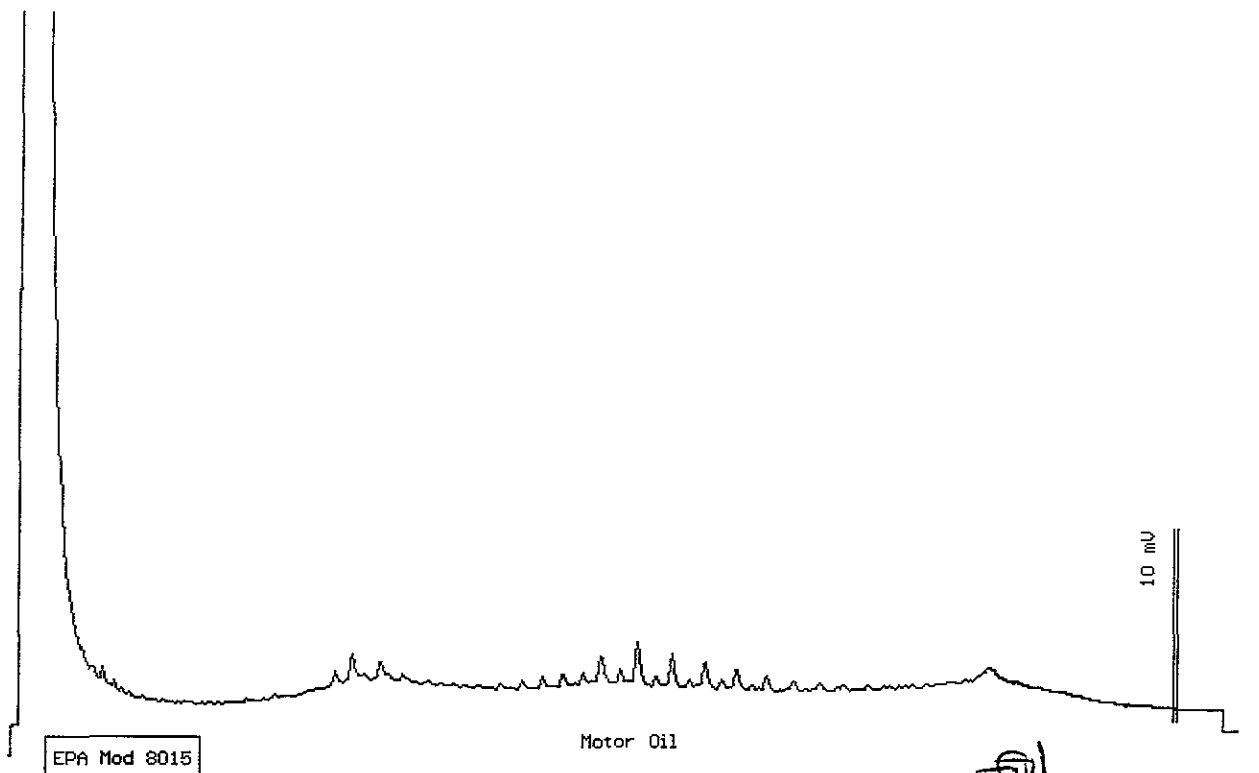
Sample Log 20089

20089-26

Sample: **IB-6W**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/28/99
Extracted: 06/04/99 QC Batch : DW990601
Dilution : 1:1 Run Log : 7438J
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(50)	<50
TPH as Motor Oil	(100)	<100



Date: 06-04-99 Time: 22:01:39
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Rodolsky
Senior Chemist

Acculabs Inc.

Davis

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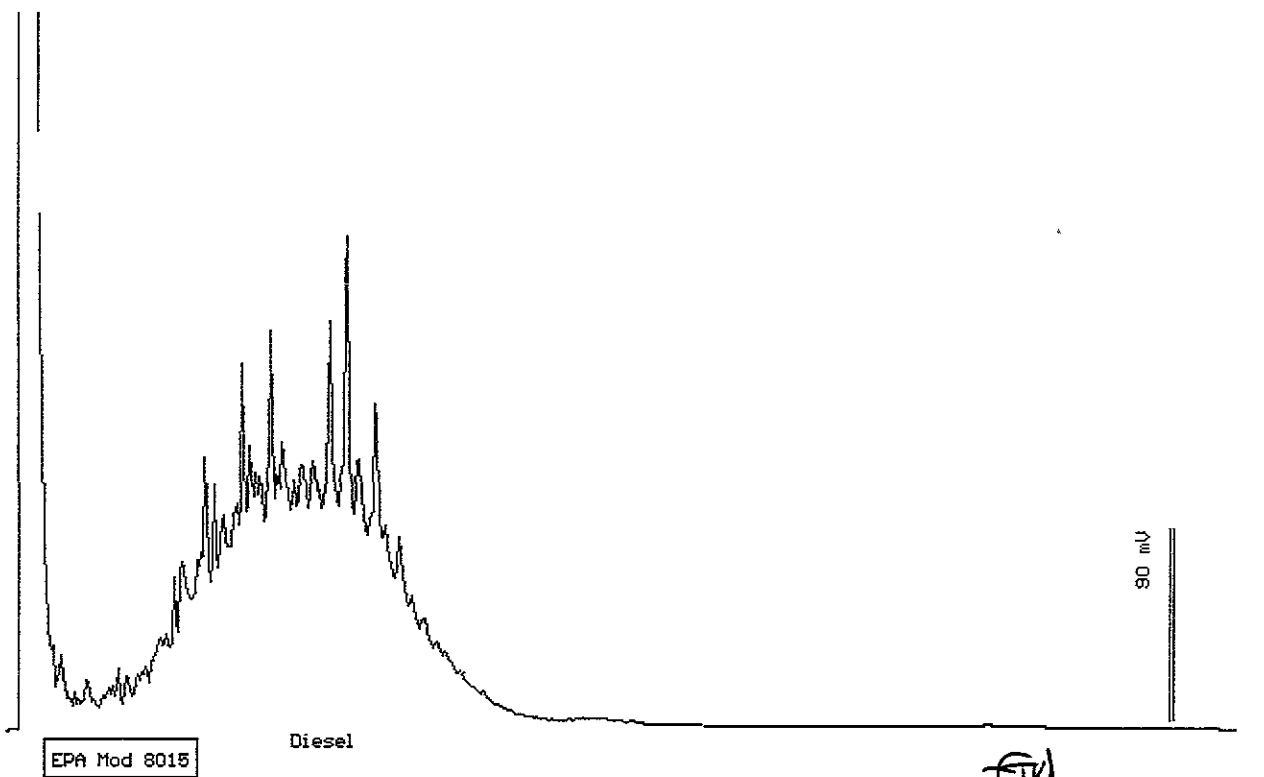
Sample Log 20089

20089-27

Sample: **IB-7W**

From : LSI - MIDDLE (Proj. # 149-01-03)
Sampled : 05/28/99
Extracted: 06/04/99 QC Batch : DW990601
Dilution : 1:49 Run Log : 7439D
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(2500)	310000
TPH as Motor Oil	(4900)	<4900



Date: 06-09-99 Time: 08:42:11
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Sodolsky
Senior Chemist

Acculabs Inc. June 4, 1999

QC Report
TPH Diesel by 8015 Mod

QC Batch: DS990601 Matrix: Soil

Spike and Spike Duplicate Results

Parameter	Matrix Spike (%Rec)	Matrix Spike Dup. (%Rec)	RPD %
TPH as Diesel	*	*	

* Sample chosen for spiking was too contaminated for acceptable recoveries. See LCS data.

Laboratory Control Spike

Parameter	Laboratory Control Spike (%Rec)
TPH as Diesel	105

Method Blank

Parameter	MDL(mg/Kg)	Measured Value(mg/Kg)
TPH as Diesel	(1.0)	<1.0
TPH as Motor Oil	(2.0)	<2.0

Tom Kwoka
Lab Director

Acculabs Inc. June 7, 1999

QC Report
TPH Diesel by 8015 Mod

QC Batch: DS990602 Matrix: Soil

Spike and Spike Duplicate Results

Parameter	Matrix Spike (%Rec)	Matrix Spike Dup. (%Rec)	RPD %
TPH as Diesel	*	*	

* Sample chosen for spiking was too contaminated for acceptable recoveries. See LCS data.

Laboratory Control Spike

Parameter	Laboratory Control Spike (%Rec)
TPH as Diesel	100

Method Blank

Parameter	MDL(mg/Kg)	Measured Value(mg/Kg)
TPH as Diesel	(1.0)	<1.0
TPH as Motor Oil	(2.0)	<2.0

Tom Kwoka
Lab Director

Acculabs Inc.

June 7, 1999

QC Report
TPH Diesel by 8015 Mod

QC Batch DW990601

Matrix: Water

Spike and Spike Duplicate Results

Parameter	Matrix Spike (%Rec)	Matrix Spike Dup. (%Rec)	RPD %
TPH as Diesel	Not enough sample for spiking. See duplicate LCS Data.		

Laboratory Control Spike

Parameter	Laboratory Control Spike (%Rec)	Laboratory Control Spike Dup. (%Rec)	RPD %
TPH as Diesel	95	88	8

Method Blank

Parameter	MDL(ug/L)	Measured Value(ug/L)
TPH as Diesel	(50)	<50

Tom Kwoka
Lab Director

Acculabs Inc. June 9, 1999

QC Report
TPH Diesel by 8015 Mod

QC Batch DW990602 Matrix: Water

Spike and Spike Duplicate Results

Parameter	Matrix Spike (%Rec)	Matrix Spike Dup. (%Rec)	RPD %
TPH as Diesel	Not enough sample for spiking. See duplicate LCS Data.		

Laboratory Control Spike

Parameter	Laboratory Control Spike (%Rec)	Laboratory Control Spike Dup. (%Rec)	RPD %
TPH as Diesel	84	96	13

Method Blank

Parameter	MDL(ug/L)	Measured Value(ug/L)
TPH as Diesel	(50)	<50

Tom Kwoka
Lab Director

Acculabs Inc.

Davis

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EPA 8270C

Sample Log 20089
June 07, 1999

Sample Name : **IB-1.2 (10.5')**

Project Name : LSI - MIDDLE
Project Number : 149-01-03
Sample Date : 05/27/99
Date Extracted : 06/04/99
Extr. Method : EPA 3550
QC Batch : BS990603

Date Analyzed : 06/06/99
Date Received : 05/28/99
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 20089-02

Parameter	MRL	Measured Conc.	Units
N-Nitrosodimethylamine	0.67	<0.67	mg/Kg
Phenol	0.67	<0.67	mg/Kg
Aniline	0.67	<0.67	mg/Kg
bis(2-Chloroethyl)ether	0.67	<0.67	mg/Kg
2-Chlorophenol	0.67	<0.67	mg/Kg
1,3-Dichlorobenzene	0.67	<0.67	mg/Kg
1,4-Dichlorobenzene	0.67	<0.67	mg/Kg
Benzyl Alcohol	0.67	<0.67	mg/Kg
1,2-Dichlorobenzene	0.67	<0.67	mg/Kg
2-Methylphenol	0.67	<0.67	mg/Kg
bis(2-Chloroisopropyl)ether	0.67	<0.67	mg/Kg
4-Methylphenol	0.67	<0.67	mg/Kg
N-Nitroso-di-n-propylamine	0.67	<0.67	mg/Kg
Hexachloroethane	0.67	<0.67	mg/Kg
Nitrobenzene	0.67	<0.67	mg/Kg
Isophorone	0.67	<0.67	mg/Kg
2-Nitrophenol	0.67	<0.67	mg/Kg
2,4-Dimethylphenol	0.67	<0.67	mg/Kg
bis(2-Chloroethoxy)methane	0.67	<0.67	mg/Kg
2,4-Dichlorophenol	0.67	<0.67	mg/Kg
Benzoic Acid	0.67	<0.67	mg/Kg
1,2,4-Trichlorobenzene	0.67	<0.67	mg/Kg
Naphthalene	0.67	<0.67	mg/Kg
4-Chloroaniline	1.3	<1.3	mg/Kg
Hexachlorobutadiene	0.67	<0.67	mg/Kg
4-Chloro-3-methylphenol	1.3	<1.3	mg/Kg
2-Methylnaphthalene	0.67	<0.67	mg/Kg
Hexachlorocyclopentadiene	0.67	<0.67	mg/Kg
2,4,6-Trichlorophenol	0.67	<0.67	mg/Kg
2,4,5-Trichlorophenol	0.67	<0.67	mg/Kg
2-Chloronaphthalene	0.67	<0.67	mg/Kg
2-Nitroaniline	3.3	<3.3	mg/Kg
Dimethylphthalate	0.67	<0.67	mg/Kg

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

Davis

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EPA 8270C

Sample Log 20089
June 07, 1999

Sample Name : **IB-1.2 (10.5')**

Project Name : LSI - MIDDLE
Project Number : 149-01-03
Sample Date : 05/27/99
Date Extracted : 06/04/99
Extr. Method : EPA 3550
QC Batch : BS990603

Date Analyzed : 06/06/99
Date Received : 05/28/99
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 20089-02

Parameter	MRL	Measured Conc.	Units
2,6-Dinitrotoluene	0.67	<0.67	mg/Kg
Acenaphthylene	0.67	<0.67	mg/Kg
3-Nitroaniline	3.3	<3.3	mg/Kg
Acenaphthene	0.67	<0.67	mg/Kg
2,4-Dinitrophenol	3.3	<3.3	mg/Kg
4-Nitrophenol	3.3	<3.3	mg/Kg
Dibenzofuran	0.67	<0.67	mg/Kg
2,4-Dinitrotoluene	0.67	<0.67	mg/Kg
Diethylphthalate	0.67	<0.67	mg/Kg
4-Chlorophenyl-phenylether	0.67	<0.67	mg/Kg
Fluorene	0.67	<0.67	mg/Kg
4-Nitroaniline	3.3	<3.3	mg/Kg
4,6-Dinitro-2-methylphenol	3.3	<3.3	mg/Kg
N-Nitrosodiphenylamine	0.67	<0.67	mg/Kg
Azobenzene	0.67	<0.67	mg/Kg
4-bromophenyl Phenyl Ether	0.67	<0.67	mg/Kg
Hexachlorobenzene	0.67	<0.67	mg/Kg
Pentachlorophenol	3.3	<3.3	mg/Kg
Phenanthrene	0.67	<0.67	mg/Kg
Anthracene	0.67	<0.67	mg/Kg
Di-n-butylphthalate	0.67	<0.67	mg/Kg
Fluoranthene	0.67	<0.67	mg/Kg
Benzidine	1.3	<1.3	mg/Kg
Pyrene	0.67	<0.67	mg/Kg
Butylbenzylphthalate	0.67	<0.67	mg/Kg
Benzo(a)anthracene	0.67	<0.67	mg/Kg
3-3'-Dichlorobenzidine	1.3	<1.3	mg/Kg
Chrysene	0.67	<0.67	mg/Kg
bis(2-Ethylhexyl)phthalate	0.67	<0.67	mg/Kg
Di-n-octylphthalate	0.67	<0.67	mg/Kg
Benzo(b)fluoranthene	0.67	<0.67	mg/Kg
Benzo(k)fluoranthene	0.67	<0.67	mg/Kg
Benzo(a)pyrene	0.67	<0.67	mg/Kg

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

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EPA 8270C

Sample Log 20089
June 07, 1999

Sample Name : **IB-1.2 (10.5')**

Project Name	: LSI - MIDDLE
Project Number	: 149-01-03
Sample Date	: 05/27/99
Date Extracted	: 06/04/99
Extr. Method	: EPA 3550
QC Batch	: BS990603

Date Analyzed	: 06/06/99
Date Received	: 05/28/99
Dilution	: 1:1
Sample Matrix	: Soil
Lab Number	: 20089-02

Parameter	MRL	Measured Conc.	Units
Indeno(1,2,3-c,d)pyrene	0.67	<0.67	mg/Kg
Dibenzo(a,h)anthracene	0.67	<0.67	mg/Kg
Benzo(g,h,i)perylene	0.67	<0.67	mg/Kg
2-Fluorophenol		77	% Recovery
Phenol-d5		80	% Recovery
Nitrobenzene-d5		84	% Recovery
2-Fluorobiphenyl		82	% Recovery
2,4,6-Tribromophenol		73	% Recovery
Terphenyl-d14		76	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

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EPA 8270C

Sample Log 20089
June 07, 1999

Sample Name : **IB-4.3 (10.5')**

Project Name : LSI - MIDDLE
Project Number : 149-01-03
Sample Date : 05/27/99
Date Extracted : 06/04/99
Extr. Method : EPA 3550
QC Batch : BS990603

Date Analyzed : 06/06/99
Date Received : 05/28/99
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 20089-10

Parameter	MRL	Measured Conc.	Units
N-Nitrosodimethylamine	0.67	<0.67	mg/Kg
Phenol	0.67	<0.67	mg/Kg
Aniline	0.67	<0.67	mg/Kg
bis(2-Chloroethyl)ether	0.67	<0.67	mg/Kg
2-Chlorophenol	0.67	<0.67	mg/Kg
1,3-Dichlorobenzene	0.67	<0.67	mg/Kg
1,4-Dichlorobenzene	0.67	<0.67	mg/Kg
Benzyl Alcohol	0.67	<0.67	mg/Kg
1,2-Dichlorobenzene	0.67	<0.67	mg/Kg
2-Methylphenol	0.67	<0.67	mg/Kg
bis(2-Chloroisopropyl)ether	0.67	<0.67	mg/Kg
4-Methylphenol	0.67	<0.67	mg/Kg
N-Nitroso-di-n-propylamine	0.67	<0.67	mg/Kg
Hexachloroethane	0.67	<0.67	mg/Kg
Nitrobenzene	0.67	<0.67	mg/Kg
Isophorone	0.67	<0.67	mg/Kg
2-Nitrophenol	0.67	<0.67	mg/Kg
2,4-Dimethylphenol	0.67	<0.67	mg/Kg
bis(2-Chloroethoxy)methane	0.67	<0.67	mg/Kg
2,4-Dichlorophenol	0.67	<0.67	mg/Kg
Benzoic Acid	0.67	<0.67	mg/Kg
1,2,4-Trichlorobenzene	0.67	<0.67	mg/Kg
Naphthalene	0.67	<0.67	mg/Kg
4-Chloroaniline	1.3	<1.3	mg/Kg
Hexachlorobutadiene	0.67	<0.67	mg/Kg
4-Chloro-3-methylphenol	1.3	<1.3	mg/Kg
2-Methylnaphthalene	0.67	<0.67	mg/Kg
Hexachlorocyclopentadiene	0.67	<0.67	mg/Kg
2,4,6-Trichlorophenol	0.67	<0.67	mg/Kg
2,4,5-Trichlorophenol	0.67	<0.67	mg/Kg
2-Chloronaphthalene	0.67	<0.67	mg/Kg
2-Nitroaniline	3.3	<3.3	mg/Kg
Dimethylphthalate	0.67	<0.67	mg/Kg

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

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EPA 8270C

Sample Log 20089
June 07, 1999

Sample Name : **IB-4.3 (10.5')**

Project Name : LSI - MIDDLE
Project Number : 149-01-03
Sample Date : 05/27/99
Date Extracted : 06/04/99
Extr. Method : EPA 3550
QC Batch : BS990603

Date Analyzed : 06/06/99
Date Received : 05/28/99
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 20089-10

Parameter	MRL	Measured Conc.	Units
2,6-Dinitrotoluene	0.67	<0.67	mg/Kg
Acenaphthylene	0.67	<0.67	mg/Kg
3-Nitroaniline	3.3	<3.3	mg/Kg
Acenaphthene	0.67	<0.67	mg/Kg
2,4-Dinitrophenol	3.3	<3.3	mg/Kg
4-Nitrophenol	3.3	<3.3	mg/Kg
Dibenzofuran	0.67	<0.67	mg/Kg
2,4-Dinitrotoluene	0.67	<0.67	mg/Kg
Diethylphthalate	0.67	<0.67	mg/Kg
4-Chlorophenyl-phenylether	0.67	<0.67	mg/Kg
Fluorene	0.67	<0.67	mg/Kg
4-Nitroaniline	3.3	<3.3	mg/Kg
4,6-Dinitro-2-methylphenol	3.3	<3.3	mg/Kg
N-Nitrosodiphenylamine	0.67	<0.67	mg/Kg
Azobenzene	0.67	<0.67	mg/Kg
4-bromophenyl Phenyl Ether	0.67	<0.67	mg/Kg
Hexachlorobenzene	0.67	<0.67	mg/Kg
Pentachlorophenol	3.3	<3.3	mg/Kg
Phenanthrene	0.67	<0.67	mg/Kg
Anthracene	0.67	<0.67	mg/Kg
Di-n-butylphthalate	0.67	<0.67	mg/Kg
Fluoranthene	0.67	<0.67	mg/Kg
Benzidine	1.3	<1.3	mg/Kg
Pyrene	0.67	<0.67	mg/Kg
Butylbenzylphthalate	0.67	<0.67	mg/Kg
Benzo(a)anthracene	0.67	<0.67	mg/Kg
3-3'-Dichlorobenzidine	1.3	<1.3	mg/Kg
Chrysene	0.67	<0.67	mg/Kg
bis(2-Ethylhexyl)phthalate	0.67	<0.67	mg/Kg
Di-n-octylphthalate	0.67	<0.67	mg/Kg
Benzo(b)fluoranthene	0.67	<0.67	mg/Kg
Benzo(k)fluoranthene	0.67	<0.67	mg/Kg
Benzo(a)pyrene	0.67	<0.67	mg/Kg

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

EPA 8270C

Sample Log 20089
June 07, 1999

Sample Name : **IB-4.3 (10.5')**

Project Name : LSI - MIDDLE
Project Number : 149-01-03
Sample Date : 05/27/99
Date Extracted : 06/04/99
Extr. Method : EPA 3550
QC Batch : BS990603

Date Analyzed : 06/06/99
Date Received : 05/28/99
Dilution : 1:1
Sample Matrix : Soil
Lab Number : 20089-10

Parameter	MRL	Measured Conc.	Units
Indeno(1,2,3-c,d)pyrene	0.67	<0.67	mg/Kg
Dibenzo(a,h)anthracene	0.67	<0.67	mg/Kg
Benzo(g,h,i)perylene	0.67	<0.67	mg/Kg
2-Fluorophenol		83	% Recovery
Phenol-d5		88	% Recovery
Nitrobenzene-d5		86	% Recovery
2-Fluorobiphenyl		86	% Recovery
2,4,6-Tribromophenol		89	% Recovery
Terphenyl-d14		90	% Recovery

MRL = Method Reporting Limit
Conc. = Concentration
E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.

Davis

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EPA 8270C

Sample Log 20089
June 07, 1999

Sample Name : **IB-6W**

Project Name : LSI - MIDDLE
Project Number : 149-01-03
Sample Date : 05/28/99
Date Extracted : 06/03/99
Extr. Method : EPA 3510
QC Batch : BW990604

Date Analyzed : 06/04/99
Date Received : 05/28/99
Dilution : 1:1
Sample Matrix : Water
Lab Number : 20089-26

Parameter	MRL	Measured Conc.	Units
N-Nitrosodimethylamine	10	<10	ug/L
Phenol	10	<10	ug/L
Aniline	10	<10	ug/L
bis(2-Chloroethyl)ether	10	<10	ug/L
2-Chlorophenol	10	<10	ug/L
1,3-Dichlorobenzene	10	<10	ug/L
1,4-Dichlorobenzene	10	<10	ug/L
Benzyl Alcohol	20	<20	ug/L
1,2-Dichlorobenzene	10	<10	ug/L
2-Methylphenol	10	<10	ug/L
bis(2-Chloroisopropyl)ether	10	<10	ug/L
4-Methylphenol	10	<10	ug/L
N-Nitroso-di-n-propylamine	10	<10	ug/L
Hexachloroethane	10	<10	ug/L
Nitrobenzene	10	<10	ug/L
Isophorone	10	<10	ug/L
2-Nitrophenol	10	<10	ug/L
2,4-Dimethylphenol	10	<10	ug/L
bis(2-Chloroethoxy)methane	10	<10	ug/L
2,4-Dichlorophenol	10	<10	ug/L
Benzoic Acid	50	<50	ug/L
1,2,4-Trichlorobenzene	10	<10	ug/L
Naphthalene	10	<10	ug/L
4-Chloroaniline	20	<20	ug/L
Hexachlorobutadiene	10	<10	ug/L
4-Chloro-3-methylphenol	20	<20	ug/L
2-Methylnaphthalene	10	<10	ug/L
Hexachlorocyclopentadiene	10	<10	ug/L
2,4,6-Trichlorophenol	10	<10	ug/L
2,4,5-Trichlorophenol	10	<10	ug/L
2-Chloronaphthalene	10	<10	ug/L
2-Nitroaniline	50	<50	ug/L
Dimethylphthalate	10	<10	ug/L

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

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EPA 8270C

Sample Log 20089
June 07, 1999

Sample Name : **IB-6W**

Project Name : LSI - MIDDLE
Project Number : 149-01-03
Sample Date : 05/28/99
Date Extracted : 06/03/99
Extr. Method : EPA 3510
QC Batch : BW990604

Date Analyzed : 06/04/99
Date Received : 05/28/99
Dilution : 1:1
Sample Matrix : Water
Lab Number : 20089-26

Parameter	MRL	Measured Conc.	Units
2,6-Dinitrotoluene	10	<10	ug/L
Acenaphthylene	10	<10	ug/L
3-Nitroaniline	50	<50	ug/L
Acenaphthene	10	<10	ug/L
2,4-Dinitrophenol	50	<50	ug/L
4-Nitrophenol	50	<50	ug/L
Dibenzofuran	10	<10	ug/L
2,4-Dinitrotoluene	10	<10	ug/L
Diethylphthalate	10	<10	ug/L
4-Chlorophenyl-phenylether	10	<10	ug/L
Fluorene	10	<10	ug/L
4-Nitroaniline	50	<50	ug/L
4,6-Dinitro-2-methylphenol	50	<50	ug/L
N-Nitrosodiphenylamine	10	<10	ug/L
Azobenzene	10	<10	ug/L
4-bromophenyl Phenyl Ether	10	<10	ug/L
Hexachlorobenzene	10	<10	ug/L
Pentachlorophenol	50	<50	ug/L
Phenanthrene	10	<10	ug/L
Anthracene	10	<10	ug/L
Di-n-butylphthalate	10	<10	ug/L
Fluoranthene	10	<10	ug/L
Benzidine	20	<20	ug/L
Pyrene	10	<10	ug/L
Butylbenzylphthalate	10	<10	ug/L
Benzo(a)anthracene	10	<10	ug/L
3-3'-Dichlorobenzidine	20	<20	ug/L
Chrysene	10	<10	ug/L
bis(2-Ethylhexyl)phthalate	10	<10	ug/L
Di-n-octylphthalate	10	<10	ug/L
Benzo(b)fluoranthene	10	<10	ug/L
Benzo(k)fluoranthene	10	<10	ug/L
Benzo(a)pyrene	10	<10	ug/L

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kiroka

Acculabs Inc.
Davis
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EPA 8270C

Sample Log 20089
June 07, 1999

Sample Name : **IB-6W**

Project Name	: LSI - MIDDLE	Date Analyzed	: 06/04/99
Project Number	: 149-01-03	Date Received	: 05/28/99
Sample Date	: 05/28/99	Dilution	: 1:1
Date Extracted	: 06/03/99	Sample Matrix	: Water
Extr. Method	: EPA 3510	Lab Number	: 20089-26
QC Batch	: BW990604		

Parameter	MRL	Measured Conc.	Units
Indeno(1,2,3-c,d)pyrene	10	<10	ug/L
Dibenzo(a,h)anthracene	10	<10	ug/L
Benzo(g,h,i)perylene	10	<10	ug/L
2-Fluorophenol		46	% Recovery
Phenol-d5		32	% Recovery
Nitrobenzene-d5		83	% Recovery
2-Fluorobiphenyl		82	% Recovery
2,4,6-Tribromophenol		84	% Recovery
Terphenyl-d14		78	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc. - Davis

EPA 8270C QC Report

Matrix: Soil	Date Extracted: 6/4/99
QC Batch: BS990603	Date Analyzed: 6/6/99
QC Limits Set: 4/12/99	MS/MSD Sample ID: 19871-01

Parameter	Spike Conc mg/Kg	MS % Rec	MSD % Rec	RPD	LCS % Rec	Control Chart Limits Lower	Control Chart Limits Upper
Phenol	6.67	85	81	4.8	80	44	107
2-Chlorophenol	6.67	82	81	1.1	80	47	112
1,4-Dichlorobenzene	3.33	83	83	0.7	83	45	116
N-Nitroso-di-n-propylamine	3.33	92	87	5.4	77	41	116
1,2,4-Trichlorobenzene	3.33	88	92	5.1	91	51	121
4-Chloro-3-methylphenol	6.67	79	73	7.4	68	38	123
Acenaphthene	3.33	85	88	3.7	86	50	126
4-Nitrophenol	6.67	80	100	23.0	80	13	127
2,4-Dinitrotoluene	3.33	63	67	6.6	75	27	125
Pentachlorophenol	6.67	99	108	8.1	101	41	132
Pyrene	3.33	60	66	8.7	55	32	125

Surrogate Compounds	Control Chart Limits Lower	Control Chart Limits Upper
2-Fluorophenol	47	128
Phenol-d5	53	127
Nitrobenzene-d5	53	137
2-Fluorobiphenyl	54	138
2,4,6-Tribromophenol	36	142
Terphenyl-d14	51	135

Tom Kwoka
Laboratory Director

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Acculabs Inc. - Davis

EPA 8270C QC Report

Matrix: Water	Date Extracted: 6/3/99
QC Batch: BW990604	Date Analyzed: 6/4/99
QC Limits Set: 4/12/99	

Parameter	Spike Conc ug/L	LCS % Rec	LCSD % Rec	RPD	Control Chart Limits Lower	Control Chart Limits Upper
Phenol	200	33	32	3.5	15	42
2-Chlorophenol	200	75	77	1.7	54	93
1,4-Dichlorobenzene	100	80	79	0.8	45	94
N-Nitroso-di-n-propylamine	100	88	90	1.9	40	112
1,2,4-Trichlorobenzene	100	87	86	1.8	50	104
4-Chloro-3-methylphenol	200	86	94	8.1	43	113
Acenaphthene	100	90	91	0.7	61	107
4-Nitrophenol	200	32	33	2.9	2	49
2,4-Dinitrotoluene	100	76	78	2.6	32	114
Pentachlorophenol	200	98	99	0.4	39	130
Pyrene	100	71	72	1.1	41	115

Surrogate Compounds	Control Chart Limits Lower	Control Chart Limits Upper
2-Fluorophenol	28	66
Phenol-d5	15	47
Nitrobenzene-d5	51	131
2-Fluorobiphenyl	51	134
2,4,6-Tribromophenol	43	130
Terphenyl-d14	41	136

Tom Kwoka
Laboratory Director

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Entech Analytical Labs, Inc.

CA ELAP# I-2346

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Acculabs Inc.
1046 Olive Drive, Suite 2
Davis, CA 95616
Attn: Troy Turpen

Date: 6/7/99
Date Received: 6/2/99
Project: 149-01-03
PO #: 20089
Sampled By: Client

Certified Analytical Report

Soil Sample Analysis: (All results in mg/kg)

Sample ID	20089-02/IB-1.2(10.5')			20089-10/IB-4.3(10.5')							
Sample Date	5/27/99			5/27/99							
Sample Time											
Lab #	G12349			G12350							
	Result	DF	DLR	Result	DF	DLR				PQL	Method
Extraction	TTLC			TTLC							3050
6010 Analysis Date	6/4/99			6/3/99							
Lead	**ND**	1.0	5.0	**16**	1.0	5.0				5.0	6010

DF=Dilution Factor ND= None Detected above DLR PQL=Practical Quantitation Limit DLR=Detection Reporting Limit

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #I-2346)

Michelle L. Anderson, Lab Director

Entech Analytical Labs, Inc.

CA ELAP# I-2346

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Acculabs, Inc.
1046 Olive Drive, Suite 2
Davis, CA 95616
Attn: Troy Turpen

Date: 6/7/99
Date Received: 6/2/99
Project: 149-01-03
PO #: 20089
Sampled By: Client

Certified Analytical Report

Water Sample Analysis: (All results in mg/Liter)

Sample ID	20089-26/IB-6W										
Sample Date	5/28/99										
Sample Time											
Lab #	G12351										
	Result	DF	DLR							PQL	Method
239.1 Analysis Date	6/4/99										
Lead	**0.005**	1.0	0.002							0.002	239.1

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #I-2346)

Michelle L. Anderson, Lab Director

DF=Dilution Factor
PQL= Practical Quantitation Limit
ND=None Detected above DLR
DLR=Detection Reporting Limit

Environmental Analysis Since 1983

Acculabs Inc.

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[ ] 2020 W. Lone Cactus Dr. Phoenix AZ 85027 602-780-4800 Fax 780-7695
[ ] 4663 Table Mountain Dr. Golden CO 80403 303-277-9514 Fax 277-9512
[ ] 992 Spice Islands Dr. Sparks NV 89431 702-355-0202 Fax 355-0817
[ ] 1046 Olive Drive #2 Davis CA 95616 530-757-0920 Fax 753-6091

Lab Number: 20089
Report Due Date:

Client	Gribi Associates			PUBLIC WATER SUPPLY INFORMATION	
Address	1350 Hayes Street, Ste C-14			System Name	
City, State & Zip	Benicia, CA 94510			PWS No.	Report to State/EPA Y N
Contact	Jim Gribi			POE No.	DWR No.
Phone	707/748-7743	Project Name	LSI-MIDDLE	Collection Point	
Fax	707/748-7763	Project Number	149-01-03	Collector's Name	
P.O. Number		Fax Results (Y) N	Page 1 of 3	Location (City)	

SAMPLE TYPE CODES

DW = drinking water TB = travel blank
WW = waste water SD = solid
MW = monitoring well SO = soil
HW = hazardous waste SL = sludge

Compliance Monitoring Y N

TURNAROUND TIME REQUESTED

(Standard)
RUSH
Special

Lab Director Approval

CLIENT'S SAMPLE ID/LOCATION	Date	Time	Sample Type	Containers	TPH-G/BTEX/MTBE	TPH-D/MO	SVOC	TOTAL LEAD	HOLD	Spl. No.
IB-1.1 (6.5')	5/27/99		S		X	X				01
IB-1.2 (10.5')	5/27/99		S		X	X	X	X		02
IB-2.1 (6.0')	5/27/99		S		X	X				03
IB-2.2 (10.0')	5/27/99		S		X	X				04
IB-3.1 (3.5')	5/27/99		S						X	05
IB-3.2 (7.0')	5/27/99		S		X	X				06
IB-3.3 (11.0')	5/27/99		S		X	X				07
IB-4.1 (3.0')	5/27/99		S		X	X				08
IB-4.2 (7.5')	5/27/99		S		X	X				09
IB-4.3 (10.5')	5/27/99		S		X	X	X	X		10
IB-5.1 (3.5')	5/27/99		S		X	X				11

SAMPLE RECEIPT			Date	Time	Samples Relinquished By	Samples Received By
Received Cold	Y	N	5/28	1635		
Custody Seals	Y	N	5/28/99	1740		
Seals Intact	Y	N				
No. of Containers						

Acculabs' terms are: Net 40 (Payment must be received by the date shown on the invoice or any discount is void)

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Acculabs Inc.

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[ ] 710 E. Evans Blvd. Tucson AZ 85713 520-884-5811 Fax 884-5812
[ ] 2020 W. Lone Cactus Dr. Phoenix AZ 85027 602-780-4800 Fax 780-7695
[ ] 4663 Table Mountain Dr. Golden CO 80403 303-277-9514 Fax 277-9512
[ ] 992 Spice Islands Dr. Sparks NV 89431 702-355-0202 Fax 355-0817
[ ] 1046 Olive Drive #2 Davis CA 95616 530-757-0920 Fax 753-6091

Lab Number: 20089
Report Due Date:

Client	Gribi Associates			PUBLIC WATER SUPPLY INFORMATION	
Address	1350 Hayes Street, Ste C-14			System Name	
City, State & Zip	Benicia, CA 94510			PWS No.	Report to State/EPA Y N
Contact	Jim Gribi			POE No.	DWR No.
Phone	707/748-7743	Project Name	LSI-MIDDLE	Collection Point	
Fax	707/748-7763	Project Number	149-01-03	Collector's Name	
P.O. Number		Fax Results	(Y) N	Page 2 of 3	Location (City)

SAMPLE TYPE CODES

DW = drinking water; WW = waste water; MW = monitoring well; HW = hazardous waste; TB = travel blank; SD = solid; SO = soil; SL = sludge

Compliance Monitoring Y N

TURNAROUND TIME REQUESTED

(Standard) RUSH Special

Lab Director Approval

CLIENT'S SAMPLE ID/LOCATION	Date	Time	Sample Type	Containers	Analyses Requested: TPH-G/BTEX/MTBE	TPH-D/MO	SVOC	TOTAL LEAD	HOLD	Spl. No.
IB-5.2 (6.5')	5/27/99		S		X	X				12
IB-5.3 (11.5')	5/27/99		S		X	X				13
IB-6.1 (3.5')	5/28/99		S						X	14
IB-6.2 (7.5')	5/28/99		S		X	X				15
IB-6.3 (10.5')	5/28/99		S		X	X				16
IB-7.1 (3.5')	5/28/99		S		X	X				17
IB-7.2 (5.0')	5/28/99		S						X	18
IB-7.3 (7.5')	5/28/99		S		X	X				19
IB-7.4 (10.5')	5/27/99		S		X	X				20
IB-1W	5/27/99		W		X	X				21
IB-2W	5/27/99		W		X	X				22

SAMPLE RECEIPT	Date	Time	Samples Relinquished By	Samples Received By
Received Cold Y N	5/28	1635		
Custody Seals Y N	5/28/99	1740		
Seals Intact Y N				
No. of Containers				

Acculabs' terms are: Net 40 (Payment must be received by the date shown on the invoice or any discount is void)

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[ ] 4663 Table Mountain Dr. Golden CO 80403 303-277-9514 Fax 277-9512
[ ] 992 Spice Islands Dr. Sparks NV 89431 702-355-0202 Fax 355-0817
[ ] 1046 Olive Drive #2 Davis CA 95616 530-757-0920 Fax 753-6091

Lab Number: 20089

Report Due Date:

Client	Gribi Associates			PUBLIC WATER SUPPLY INFORMATION	
Address	1350 Hayes Street, Ste C-14			System Name	
City, State & Zip	Benicia, CA 94510			PWS No.	Report to State/EPA Y N
Contact	Jim Gribi			POE No.	DWR No.
Phone	707/748-7743	Project Name	LSI-MIDDLE	Collection Point	
Fax	707/748-7763	Project Number	149-01-03	Collector's Name	
P.O. Number		Fax Results	(Y) N	Page 3 of 3	Location (City)

SAMPLE TYPE CODES

DW = drinking water; WW = waste water; MW = monitoring well; HW = hazardous waste; TB = travel blank; SD = solid; SO = soil; SL = sludge

Compliance Monitoring Y N

TURNAROUND TIME REQUESTED

(Standard) RUSH Special

Lab Director Approval

CLIENT'S SAMPLE ID/LOCATION	Date	Time	Sample Type	Containers	Analyses Requested: TPH-G/BTEX/MTBE	TPH-D/MO	SVOC	TOTAL LEAD	HOLD	Spl. No.
IB-3W	5/27/99		W		X	X				23
IB-4W	5/27/99		W		X	X				24
IB-5W	5/27/99		W		X	X				25
IB-6W	5/28/99		W		X	X	X	X		26
IB-7W	5/28/99		W		X	X				27

SAMPLE RECEIPT			Date	Time	Samples Relinquished By	Samples Received By
Received Cold	Y	N	5/28	1655		
Custody Seals	Y	N	5/28/99	1740		
Seals Intact	Y	N				
No. of Containers						

Acculabs' terms are: Net 40 (Payment must be received by the date shown on the invoice or any discount is void)

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Acculabs Inc.
1046 Olive Drive, Suite 2
Davis, CA 95616
Attn: Troy Turpen

Date: 6/7/99
Date Received: 6/2/99
Project: 149-01-03
PO #: 20089
Sampled By: Client

Certified Analytical Report

Soil Sample Analysis: (All results in mg/kg)

Sample ID	20089-02/IB-1.2(10.5')			20089-10/IB-4.3(10.5')							
Sample Date	5/27/99			5/27/99							
Sample Time											
Lab #	G12349			G12350							
	Result	DF	DLR	Result	DF	DLR				PQL	Method
Extraction	TTLC			TTLC							3050
6010 Analysis Date	6/4/99			6/3/99							
Lead	**ND**	1.0	5.0	**16**	1.0	5.0				5.0	6010

DF=Dilution Factor ND= None Detected above DLR PQL=Practical Quantitation Limit DLR=Detection Reporting Limit

Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #I-2346)

Michelle L. Anderson, Lab Director

Entech Analytical Labs, Inc.

CA ELAP# I-2346

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Acculabs, Inc.
1046 Olive Drive, Suite 2
Davis, CA 95616
Attn: Troy Turpen

Date: 6/7/99
Date Received: 6/2/99
Project: 149-01-03
PO #: 20089
Sampled By: Client

Certified Analytical Report

Water Sample Analysis: (All results in mg/Liter)

Sample ID	20089-26/IB-6W										
Sample Date	5/28/99										
Sample Time											
Lab #	G12351										
	Result	DF	DLR							PQL	Method
239.1 Analysis Date	6/4/99										
Lead	**0.005**	1.0	0.002							0.002	239.1

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #I-2346)

Michelle L. Anderson, Lab Director

DF=Dilution Factor
PQL= Practical Quantitation Limit
ND=None Detected above DLR
DLR=Detection Reporting Limit

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

525 Del Rey Avenue, Suite E
Sunnyvale. CA 94086

QUALITY CONTROL RESULTS SUMMARY

METHOD: ICP

QC Batch #: SM990602
Matrix: Solid
Units: mg/kg

Date Analyzed: 06/03/99
Extraction Method: EPA 3050
Spiked Sample: Blank Spike

PARAMETER	Method #	MB mg/kg	SA mg/kg	SR mg/kg	SP mg/kg	SP %R	SPD mg/Kg	SPD %R	RPD	QC LIMITS RPD	QC LIMITS %R
Antimony	6010	<1.0	50.	na	na	na	na	na	na	25.0	69-102
Arsenic	6010	<1.0	50.	0.0	41.	**81**	41.	**83**	1.8	25.0	64-106
Barium	6010	<1.0	50.	na	na	na	na	na	na	25.0	76-113
Beryllium	6010	<1.0	50.	na	na	na	na	na	na	25.0	70-110
Cadmium	6010	<1.0	50.	0.0	42.	**83**	43.	**85**	2.6	25.0	69-100
Chromium	6010	<1.0	50.	0.0	46.	**92**	48.	**96**	4.8	25.0	68-111
Cobalt	6010	<1.0	50.	na	na	na	na	na	na	25.0	67-111
Copper	6010	<1.0	50.	0.0	45.	**91**	47.	**93**	2.8	25.0	74-109
Lead	6010	<1.0	50.	0.0	42.	**85**	44.	**88**	3.1	25.0	64-113
Molybdenum	6010	<1.0	50.	na	na	na	na	na	na	25.0	69-113
Nickel	6010	<1.0	50.	0.0	50.	**100**	52.	**104**	3.8	25.0	72-112
Selenium	6010	<1.0	50.	na	na	na	na	na	na	25.0	66-104
Silver	6010	<1.0	50.	na	na	na	na	na	na	25.0	70-112
Thallium	6010	<1.0	50.	na	na	na	na	na	na	25.0	69-107
Vanadium	6010	<1.0	50.	na	na	na	na	na	na	25.0	69-115
Zinc	6010	<1.0	50.	0.0	44.	**88**	46.	**92**	4.1	25.0	68-104

Note: LCS and LCSD results reported for the following Parameters:
All

Definition of Terms:

na: Not Analyzed in QC batch
MB: Method Blank
SA: Spike Added
SR: Sample Result
SP: Spike Result
SP (%R): Spike % Recovery
SPD: Spike Duplicate Result
SPD (%R): Spike Duplicate % Recovery

Entech Analytical Labs, Inc.

525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

QUALITY CONTROL RESULTS SUMMARY

METHOD: Graphite Furnace Atomic Absorption
Laboratory Control Spikes

QC Batch #: WM990604
Matrix: Water
Units: mg/L

Date Analyzed: 06/04/99
Date Prepared: 06/04/99
Quality Control Sample: Blank Spike

PARAMETER	Method #	MB mg/L	SA mg/L	SR mg/L	SP mg/L	**SP %R**	SPD mg/L	**SPD % R**	RPD	QC LIMITS %R	RPD
Antimony	204.2	na	na	na	na	na	na	na	na	75- 125	25
Arsenic	206.2	na	na	na	na	na	na	na	na	75- 125	25
Barium	208.2	na	na	na	na	na	na	na	na	75- 125	25
Beryllium	210.2	na	na	na	na	na	na	na	na	75- 125	25
Cadmium	213.2	na	na	na	na	na	na	na	na	75- 125	25
Chromium	218.2	na	na	na	na	na	na	na	na	75- 125	25
Cobalt	219.2	na	na	na	na	na	na	na	na	75- 125	25
Copper	220.2	na	na	na	na	na	na	na	na	75- 125	25
Lead	239.2	<0.002	0.50	ND	0.54	**109**	0.60	**120**	9.8	75- 125	25
Molybdenum	246.2	na	na	na	na	na	na	na	na	75- 125	25
Nickel	249.2	na	na	na	na	na	na	na	na	75- 125	25
Selenium	270.2	na	na	na	na	na	na	na	na	75- 125	25
Silver	272.2	na	na	na	na	na	na	na	na	75- 125	25
Thallium	279.2	na	na	na	na	na	na	na	na	75- 125	25
Vanadium	286.2	na	na	na	na	na	na	na	na	75- 125	25
Zinc	289.2	na	na	na	na	na	na	na	na	75- 125	25

Definition of Terms:

- na: Not Analyzed in QC batch
- MB: Method Blank
- SA: Spike Added
- SR: Sample Result
- RPD: Relative Percent Difference (between duplicate analyses)
- SP: Matrix Spike Result
- SP (%R): Matrix Spike % Recovery
- SPD: Matrix Spike Duplicate Result
- SPD (%R): Matrix Spike Duplicate % Recovery

Acculabs Inc.

Davis

1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20109
June 07, 1999

Jim Gribi
Gribi Associates
1350 Hayes Street, #C-14
Benicia, CA 94510

Subject : 2 Water samples
Project Name : LSI - Middle
Project Number : 149-01-02

Dear Mr. Gribi,

Chemical analysis on the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. USEPA protocols for sample storage and preservation were followed.

Acculabs - Davis is certified by the State of Arizona (AZ0583) and the State of California (# 2330). If you have any questions regarding procedures or results, please call me at 530-757-0920.

Sincerely,

Tom Kwoka

Tom Kwoka

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20109

MTBE (Methyl-t-butyl ether) By EPA Method 8020/602

From : LSI - Middle (Proj. # 149-01-02)
Sampled : 06/02/99
Received : 06/03/99
Matrix : Water

SAMPLE	Date Analyzed	(MRL) ug/L	Measured Value ug/L
MW-1	06/07/99	(5.0)	<5.0
MW-2	06/07/99	(5.0)	<5.0

Approved By:

Tom Kwoka
Lab Director

Acculabs Inc.

Davis

1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

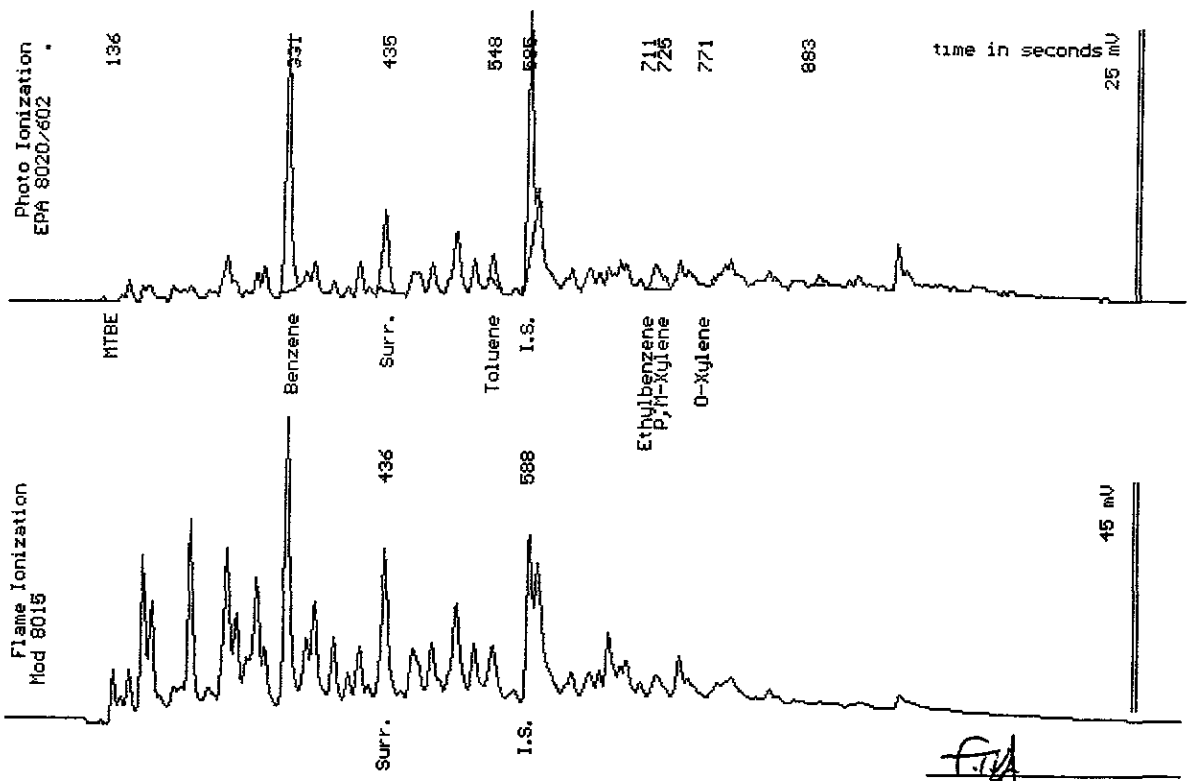
Sample Log 20109

20109-01

Sample: **MW-1**

From : LSI - Middle (Proj. # 149-01-02)
Sampled : 06/02/99
Dilution : 1:1 Run Log : 4185D
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	29
Toluene	(.50)	4.0
Ethylbenzene	(.50)	5.8
Total Xylenes	(.50)	1.5
TPH as Gasoline	(50)	340
Surrogate Recovery		136 %



Date Analyzed: 06-07-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Stewart Podolsky
Senior Chemist

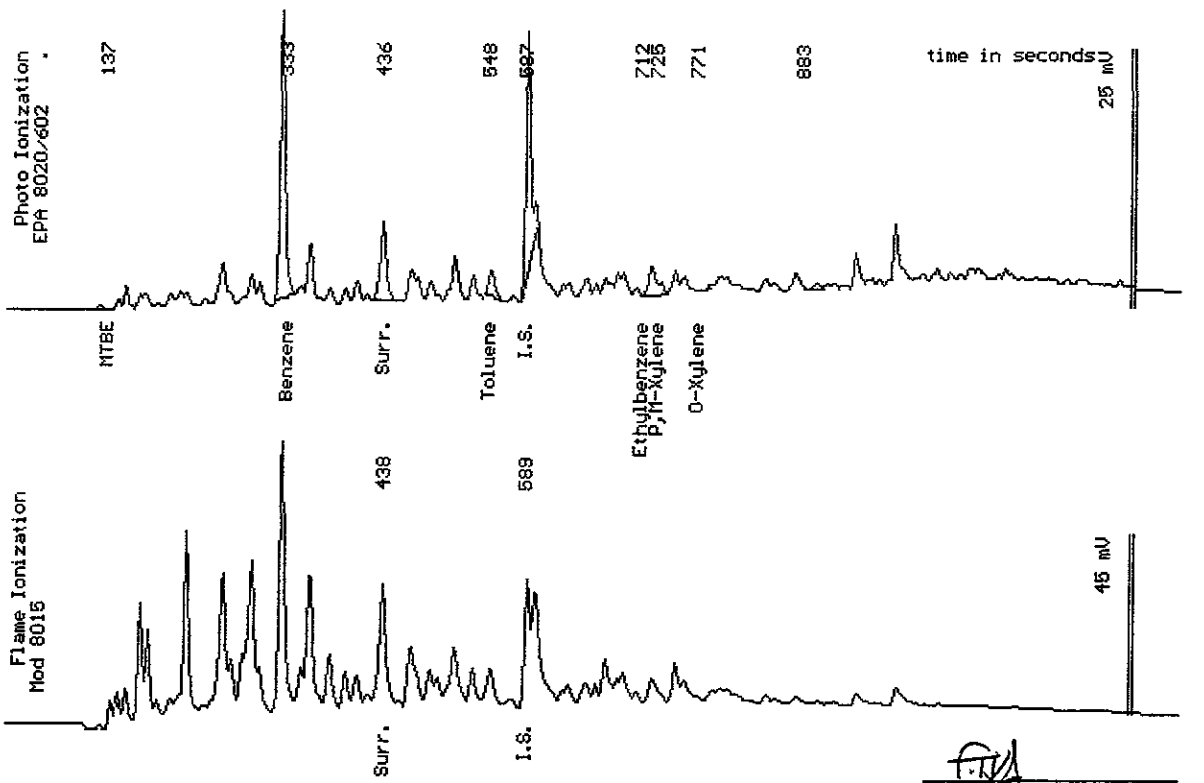
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20109
20109-02

Sample: **MW-2**

From : LSI - Middle (Proj. # 149-01-02)
Sampled : 06/02/99
Dilution : 1:1 Run Log : 4185D
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	32
Toluene	(.50)	4.0
Ethylbenzene	(.50)	5.9
Total Xylenes	(.50)	1.6
TPH as Gasoline	(50)	480
Surrogate Recovery		132 %



Date Analyzed: 06-07-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Stewart Podolsky
Senior Chemist

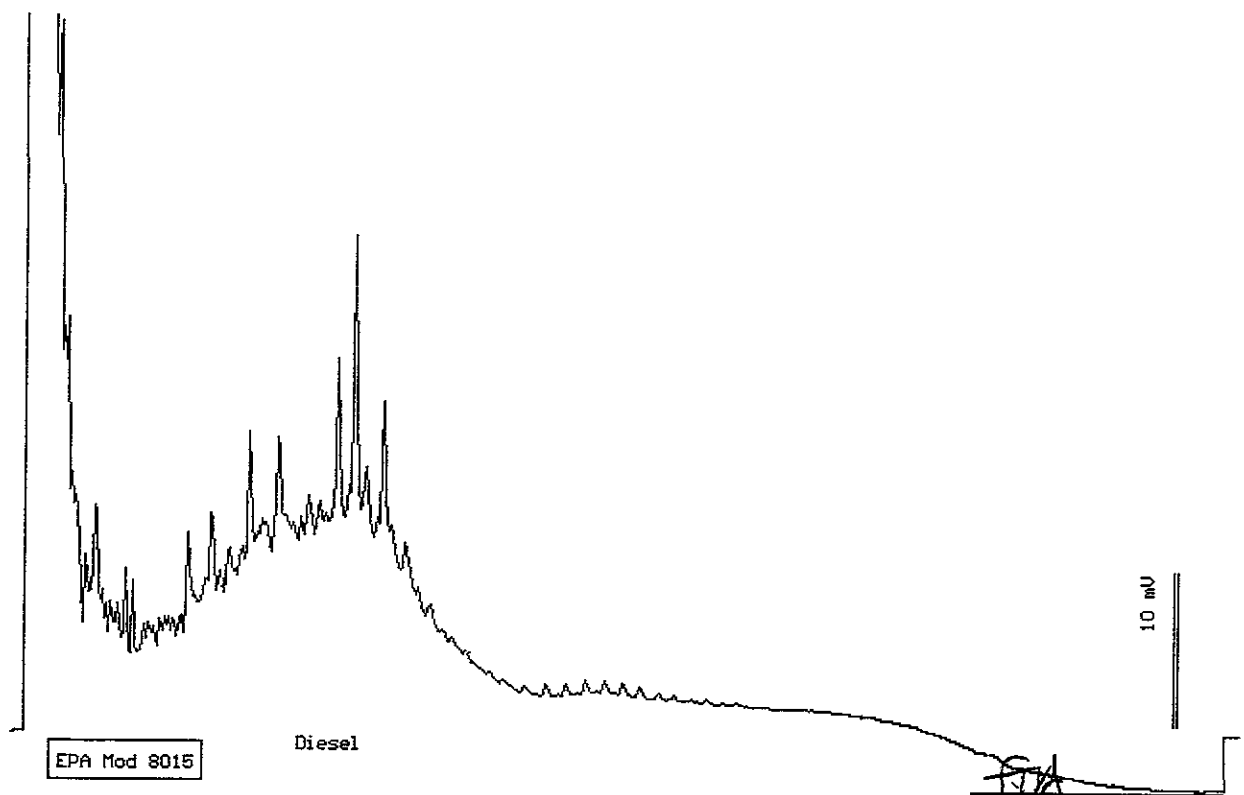
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20109
20109-01

Sample: **MW-1**

From : LSI - Middle (Proj. # 149-01-02)
Sampled : 06/02/99
Extracted: 06/07/99 QC Batch : DW990601
Dilution : 1:1 Run Log : 7439A
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(50)	770
TPH as Motor Oil	(100)	<100



Date: 06-07-99 Time: 14:51:51
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc.

Davis

1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

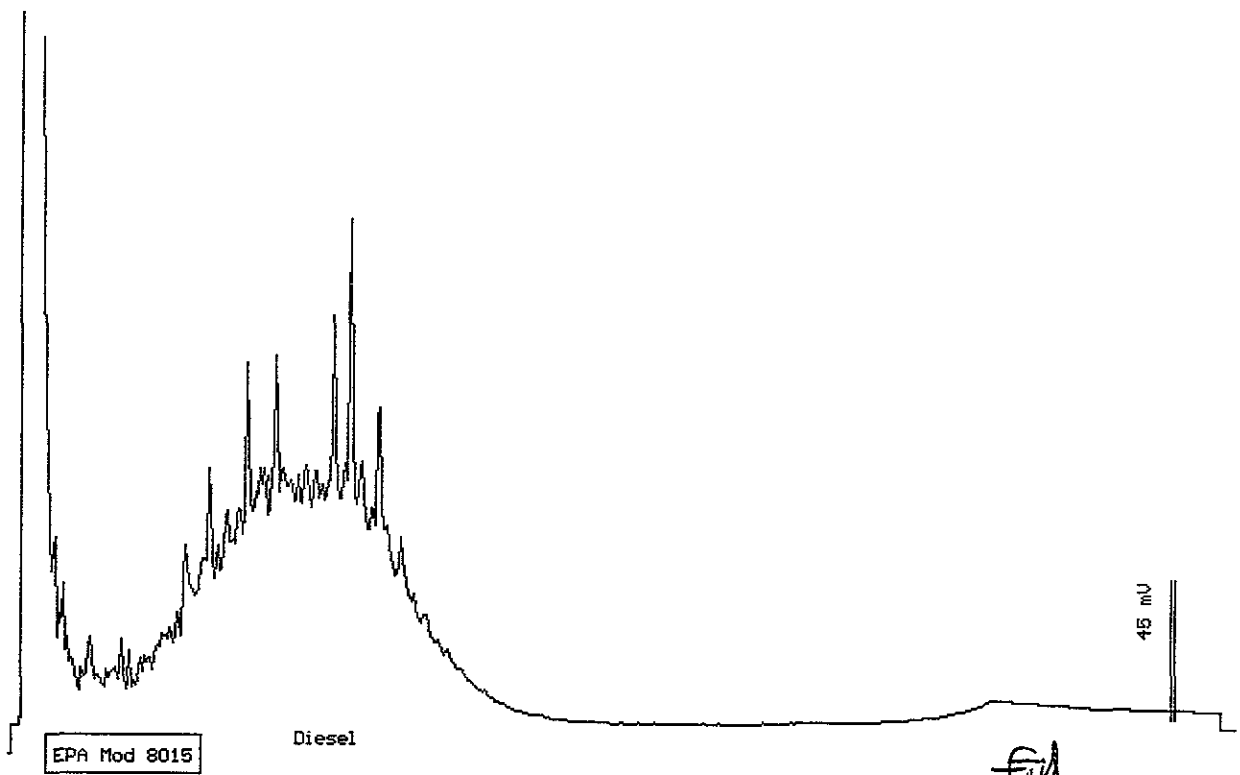
Sample Log 20109

20109-02

Sample: **MW-2**

From : LSI - Middle (Proj. # 149-01-02)
Sampled : 06/02/99
Extracted: 06/07/99 QC Batch : DW990601
Dilution : 1:5 Run Log : 7439C
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(250)	21000
TPH as Motor Oil	(500)	<500



Date: 06-08-99 Time: 10:55:01
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc. June 7, 1999

QC Report
TPH Diesel by 8015 Mod

QC Batch DW990601 Matrix: Water

Spike and Spike Duplicate Results

Parameter	Matrix Spike (%Rec)	Matrix Spike Dup. (%Rec)	RPD %
TPH as Diesel	Not enough sample for spiking. See duplicate LCS Data.		

Laboratory Control Spike

Parameter	Laboratory Control Spike (%Rec)	Laboratory Control Spike Dup. (%Rec)	RPD %
TPH as Diesel	95	88	8

Method Blank

Parameter	MDL(ug/L)	Measured Value(ug/L)
TPH as Diesel	(50)	<50

Tom Kwoka
Lab Director

Acculabs Inc.

Davis

1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

EPA 8270C

Sample Log 20109
June 07, 1999

Sample Name : **MW-2**

Project Name : LSI - Middle
Project Number : 149-01-02
Sample Date : 06/02/99
Date Extracted : 06/04/99
Extr. Method : EPA 3510
QC Batch : BW990605

Date Analyzed : 06/06/99
Date Received : 06/03/99
Dilution : 1:1
Sample Matrix : Water
Lab Number : 20109-02

Parameter	MRL	Measured Conc.	Units
N-Nitrosodimethylamine	10	<10	ug/L
Phenol	10	<10	ug/L
Aniline	10	<10	ug/L
bis(2-Chloroethyl)ether	10	<10	ug/L
2-Chlorophenol	10	<10	ug/L
1,3-Dichlorobenzene	10	<10	ug/L
1,4-Dichlorobenzene	10	<10	ug/L
Benzyl Alcohol	20	<20	ug/L
1,2-Dichlorobenzene	10	<10	ug/L
2-Methylphenol	10	<10	ug/L
bis(2-Chloroisopropyl)ether	10	<10	ug/L
4-Methylphenol	10	<10	ug/L
N-Nitroso-di-n-propylamine	10	<10	ug/L
Hexachloroethane	10	<10	ug/L
Nitrobenzene	10	<10	ug/L
Isophorone	10	<10	ug/L
2-Nitrophenol	10	<10	ug/L
2,4-Dimethylphenol	10	<10	ug/L
bis(2-Chloroethoxy)methane	10	<10	ug/L
2,4-Dichlorophenol	10	<10	ug/L
Benzoic Acid	50	<50	ug/L
1,2,4-Trichlorobenzene	10	<10	ug/L
Naphthalene	10	<10	ug/L
4-Chloroaniline	20	<20	ug/L
Hexachlorobutadiene	10	<10	ug/L
4-Chloro-3-methylphenol	20	<20	ug/L
2-Methylnaphthalene	10	<10	ug/L
Hexachlorocyclopentadiene	10	<10	ug/L
2,4,6-Trichlorophenol	10	<10	ug/L
2,4,5-Trichlorophenol	10	<10	ug/L
2-Chloronaphthalene	10	<10	ug/L
2-Nitroaniline	50	<50	ug/L
Dimethylphthalate	10	<10	ug/L

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

EPA 8270C

Sample Log 20109
June 07, 1999

Sample Name : **MW-2**

Project Name : LSI - Middle
Project Number : 149-01-02
Sample Date : 06/02/99
Date Extracted : 06/04/99
Extr. Method : EPA 3510
QC Batch : BW990605

Date Analyzed : 06/06/99
Date Received : 06/03/99
Dilution : 1:1
Sample Matrix : Water
Lab Number : 20109-02

Parameter	MRL	Measured Conc.	Units
2,6-Dinitrotoluene	10	<10	ug/L
Acenaphthylene	10	<10	ug/L
3-Nitroaniline	50	<50	ug/L
Acenaphthene	10	<10	ug/L
2,4-Dinitrophenol	50	<50	ug/L
4-Nitrophenol	50	<50	ug/L
Dibenzofuran	10	<10	ug/L
2,4-Dinitrotoluene	10	<10	ug/L
Diethylphthalate	10	<10	ug/L
4-Chlorophenyl-phenylether	10	<10	ug/L
Fluorene	10	<10	ug/L
4-Nitroaniline	50	<50	ug/L
4,6-Dinitro-2-methylphenol	50	<50	ug/L
N-Nitrosodiphenylamine	10	<10	ug/L
Azobenzene	10	<10	ug/L
4-bromophenyl Phenyl Ether	10	<10	ug/L
Hexachlorobenzene	10	<10	ug/L
Pentachlorophenol	50	<50	ug/L
Phenanthrene	10	<10	ug/L
Anthracene	10	<10	ug/L
Di-n-butylphthalate	10	<10	ug/L
Fluoranthene	10	<10	ug/L
Benzidine	20	<20	ug/L
Pyrene	10	<10	ug/L
Butylbenzylphthalate	10	<10	ug/L
Benzo(a)anthracene	10	<10	ug/L
3-3'-Dichlorobenzidine	20	<20	ug/L
Chrysene	10	<10	ug/L
bis(2-Ethylhexyl)phthalate	10	<10	ug/L
Di-n-octylphthalate	10	<10	ug/L
Benzo(b)fluoranthene	10	<10	ug/L
Benzo(k)fluoranthene	10	<10	ug/L
Benzo(a)pyrene	10	<10	ug/L

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

EPA 8270C

Sample Log 20109
June 07, 1999

Sample Name : **MW-2**

Project Name : LSI - Middle
Project Number : 149-01-02
Sample Date : 06/02/99
Date Extracted : 06/04/99
Extr. Method : EPA 3510
QC Batch : BW990605

Date Analyzed : 06/06/99
Date Received : 06/03/99
Dilution : 1:1
Sample Matrix : Water
Lab Number : 20109-02

Parameter	MRL	Measured Conc.	Units
Indeno(1,2,3-c,d)pyrene	10	<10	ug/L
Dibenzo(a,h)anthracene	10	<10	ug/L
Benzo(g,h,i)perylene	10	<10	ug/L
2-Fluorophenol		40	% Recovery
Phenol-d5		30	% Recovery
Nitrobenzene-d5		78	% Recovery
2-Fluorobiphenyl		83	% Recovery
2,4,6-Tribromophenol		82	% Recovery
Terphenyl-d14		75	% Recovery

MRL = Method Reporting Limit

Conc. = Concentration

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc. - Davis

EPA 8270C QC Report

Matrix: Water	Date Extracted: 6/4/99
QC Batch: BW990605	Date Analyzed: 6/6/99
QC Limits Set: 4/12/99	

Parameter	Spike Conc ug/L	LCS % Rec	LCSD % Rec	RPD	Control Chart Limits Lower	Control Chart Limits Upper
Phenol	200	30	24	25.0	15	42
2-Chlorophenol	200	63	56	12.6	54	93
1,4-Dichlorobenzene	100	64	58	9.3	45	94
N-Nitroso-di-n-propylamine	100	79	69	13.0	40	112
1,2,4-Trichlorobenzene	100	71	66	7.7	50	104
4-Chloro-3-methylphenol	200	63	60	6.4	43	113
Acenaphthene	100	80	72	11.1	61	107
4-Nitrophenol	200	32	28	13.1	2	49
2,4-Dinitrotoluene	100	69	71	2.6	32	114
Pentachlorophenol	200	105	107	2.0	39	130
Pyrene	100	55	62	12.0	41	115

Surrogate Compounds	Control Chart Limits Lower	Control Chart Limits Upper
2-Fluorophenol	28	66
Phenol-d5	15	47
Nitrobenzene-d5	51	131
2-Fluorobiphenyl	51	134
2,4,6-Tribromophenol	43	130
Terphenyl-d14	41	136

Tom Kwoka
Laboratory Director

C:\EXCEL\QC\BW990605.XLS

Entech Analytical Labs, Inc.

CA ELAP# I-2346

525 Del Rey Avenue, Suite E • Sunnyvale, CA 94086 • (408) 735-1550 • Fax (408) 735-1554

Acculabs, Inc.
1046 Olive Drive, Suite 2
Davis, CA 95616
Attn: Troy Turpen

Date: 6/7/99
Date Received: 6/3/99
Project: LSI-Middle
PO #: 20109
Sampled By: Client

Certified Analytical Report

Water Sample Analysis: (All results in mg/Liter)

Sample ID	20109-02/MW-2										
Sample Date	6/2/99										
Sample Time											
Lab #	G12537										
	Result	DF	DLR							PQL	Method
239.1 Analysis Date	6/4/99										
Lead	**0.008**	1.0	0.002							0.002	239.1

· Analysis performed by Entech Analytical Labs, Inc. (CA ELAP #I-2346)

Michelle L. Anderson, Lab Director

DF=Dilution Factor
PQL= Practical Quantitation Limit

ND=None Detected above DLR
DLR=Detection Reporting Limit

Environmental Analysis Since 1983

Entech Analytical Labs, Inc.

525 Del Rey Avenue, Suite E
Sunnyvale, CA 94086

QUALITY CONTROL RESULTS SUMMARY

METHOD: Graphite Furnace Atomic Absorption
Laboratory Control Spikes

QC Batch #: WM990604
Matrix: Water
Units: mg/L

Date Analyzed: 06/04/99
Date Prepared: 06/04/99
Quality Control Sample: Blank Spike

PARAMETER	Method #	MB mg/L	SA mg/L	SR mg/L	SP mg/L	**SP %R**	SPD mg/L	**SPD % R**	RPD	QC LIMITS %R	RPD
Antimony	204.2	na	na	na	na	na	na	na	na	75- 125	25
Arsenic	206.2	na	na	na	na	na	na	na	na	75- 125	25
Barium	208.2	na	na	na	na	na	na	na	na	75- 125	25
Beryllium	210.2	na	na	na	na	na	na	na	na	75- 125	25
Cadmium	213.2	na	na	na	na	na	na	na	na	75- 125	25
Chromium	218.2	na	na	na	na	na	na	na	na	75- 125	25
Cobalt	219.2	na	na	na	na	na	na	na	na	75- 125	25
Copper	220.2	na	na	na	na	na	na	na	na	75- 125	25
Lead	239.2	<0.002	0.50	ND	0.54	**109**	0.60	**120**	9.8	75- 125	25
Molybdenum	246.2	na	na	na	na	na	na	na	na	75- 125	25
Nickel	249.2	na	na	na	na	na	na	na	na	75- 125	25
Selenium	270.2	na	na	na	na	na	na	na	na	75- 125	25
Silver	272.2	na	na	na	na	na	na	na	na	75- 125	25
Thallium	279.2	na	na	na	na	na	na	na	na	75- 125	25
Vanadium	286.2	na	na	na	na	na	na	na	na	75- 125	25
Zinc	289.2	na	na	na	na	na	na	na	na	75- 125	25

Definition of Terms:

- na: Not Analyzed in QC batch
- MB: Method Blank
- SA: Spike Added
- SR: Sample Result
- RPD: Relative Percent Difference (between duplicate analyses)
- SP: Matrix Spike Result
- SP (%R): Matrix Spike % Recovery
- SPD: Matrix Spike Duplicate Result
- SPD (%R): Matrix Spike Duplicate % Recovery

Acculabs - Davis/Sacramento

Subcontracted Tests Form

RUSH

Laboratory Name Entech

Mail Results and Invoices To 1046 Olive Drive, Suite 2, Davis, CA 95616

Fax Results To 530-753-6091

Call 530-757-0920 with questions

Use this number as a Purchase Order No.: **20109**

Project Name : LSI - Middle
Project Number : 149-01-02
Project Manager: Troy Turpen

Number	Name	Mx.	Date Sampled	Tests
20109-02	MW-2	WA	06/02/99	GFAA-Pb, GT12537

Location:

No. of Containers: 1

RUSH.

Remarks:

Relinquished by:	Received by:	Date	Time
Troy D. Turpen	via Fed Ex	6-3-99	1700

Due Date/Time : 6-7-99 / 1700

Subcontract Lab Reference # :

Fax this form to 530-753-6091 when reference number has been assigned to samples and written in space above.

Please fax results prior to mailing.

Acculabs Inc.

[ ] 1725 W. 17th. St. Tempe AZ 85281 602-967-1310 Fax 967-1019
[ ] 4455 S. Park Ave. Tucson AZ 85714 520-807-3801 Fax 807-3803
[ ] 2020 W. Lone Cactus Dr. Phoenix AZ 85027 602-780-4800 Fax 780-7695
[ ] 2029 N. 4th. St. Flagstaff AZ 86004 520-774-7643 Fax 774-7648
[ ] 1046 Olive Drive Davis CA 95616 530-757-0920 Fax 753-6091
[ ] 75 Suttle St. Durango CO 81301 970-247-4220 Fax 247-4227
[ ] 4663 Table Mountain Dr. Golden CO 80403 303-277-9514 Fax 277-9512
[ ] 992 Spice Islands Dr. Sparks NV 89431 702-355-0202 Fax 355-0817

Lab Number 20109
Report Due Date: 6-7-99

Client Gribi Assoc.
Address
City, State & Zip
Contact
Phone
Fax
P O. Number

Project Name LSI-Middle
Project Number 149-01-02
Fax Results (Y) N
Page of

PUBLIC WATER SUPPLY INFORMATION
System | Report to: State Y N
PWS No. | Report to. EPA Y N
POE No. | DWR No.
Collection Point
Collector's Name
Location (City)

SAMPLE TYPE CODES
DW = drinking water TB = travel blank
WW = waste water SD = solid
MW = monitoring well SO = soil
HW = hazardous waste SL = sludge

Compliance Monitoring Y N

TURNAROUND TIME REQUESTED
Standard
(RUSH) 6/7/99
Special

Lab Manager Approval

CLIENT'S SAMPLE ID/LOCATION	Date	Time	Sample Type	Containers	Analyses Requested: TPH-G/BTEX/MTBE	TPH-D/MO	SVOC's	Total Lead	Spl. No.
MW-1	6/2			6	X	X			01
MW-2	6/2			8	X	X	X	X	02

Instructions/Comments/Special Requirements:

SAMPLE RECEIPT	Date	Time	Samples Relinquished By	Samples Received By
Received Cold Y N	6/3	0905	Stanton Gribi	Joyce Gribi
Custody Seals Y N				
Seals Intact Y N				
No. of Containers				

Acculabs' terms are: Net 40 (Payment must be received by the date shown on the invoice or any discount is void)

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20237
July 04, 1999

Jim Gribi
Gribi Associates
1350 Hayes Street, #C-14
Benicia, CA 94510

Subject : 9 Soil Samples
Project Name : LSI-Middle
Project Number : 149-01-03

Dear Mr. Gribi,

Chemical analysis on the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. USEPA protocols for sample storage and preservation were followed.

Acculabs - Davis is certified by the State of Arizona (AZ0583) and the State of California (# 2330). If you have any questions regarding procedures or results, please call me at 530-757-0920.

Sincerely,

Tom Kwoka

Tom Kwoka

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20237

MTBE (Methyl-t-butyl ether) By EPA Method 8020/602

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/23/99
Received : 06/25/99
Matrix : Soil

SAMPLE	Date Analyzed	(MRL) mg/kg	Measured Value mg/kg
MW-3.1 (4.5')	06/30/99	(.050)	<.050
MW-3.2 (9.5')	06/30/99	(.050)	<.050
MW-4.1 (4.5')	07/01/99	(.050)	<.050
MW-4.2 (8.5')	07/01/99	(.050)	<.050
MW-5.2 (9.0')	07/01/99	(.15)	<.15

Approved By:

Tom Kwoka
Lab Director

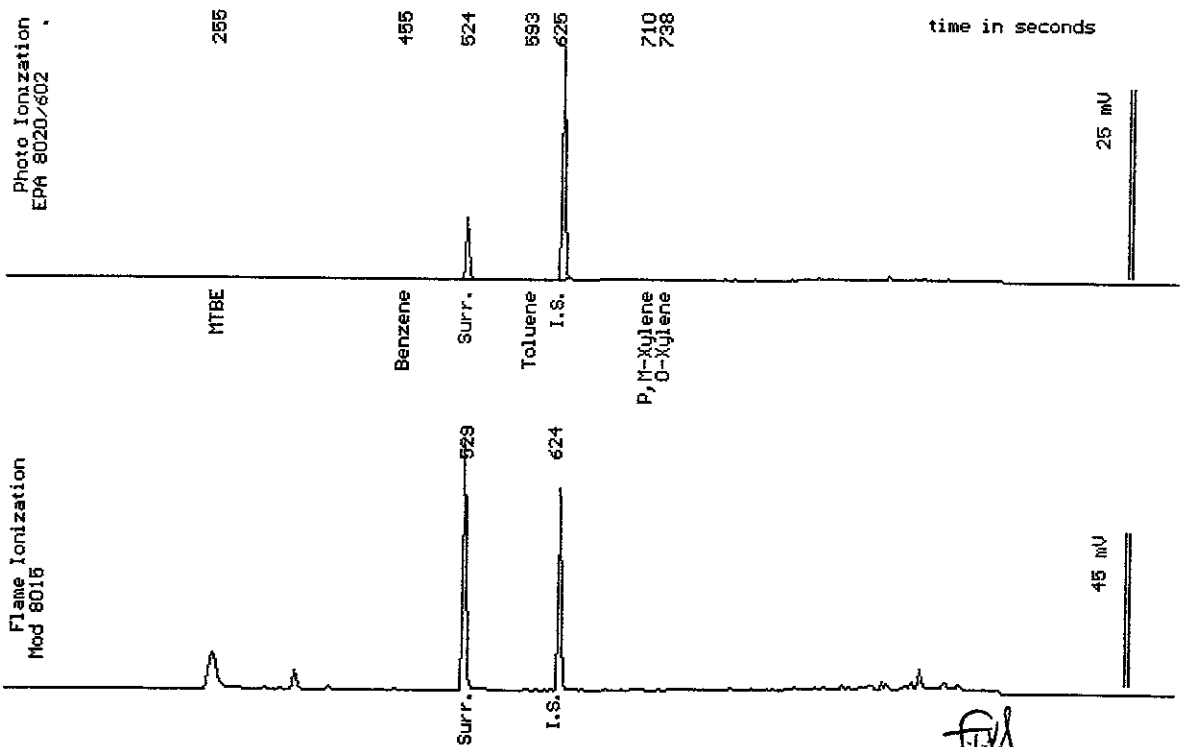
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20237
20237-01

Sample: **MW-3.1 (4.5')**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/23/99
Dilution : 1:1 Run Log : 2181W
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		106 %



Date Analyzed: 06-30-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Podolsky
Senior Chemist

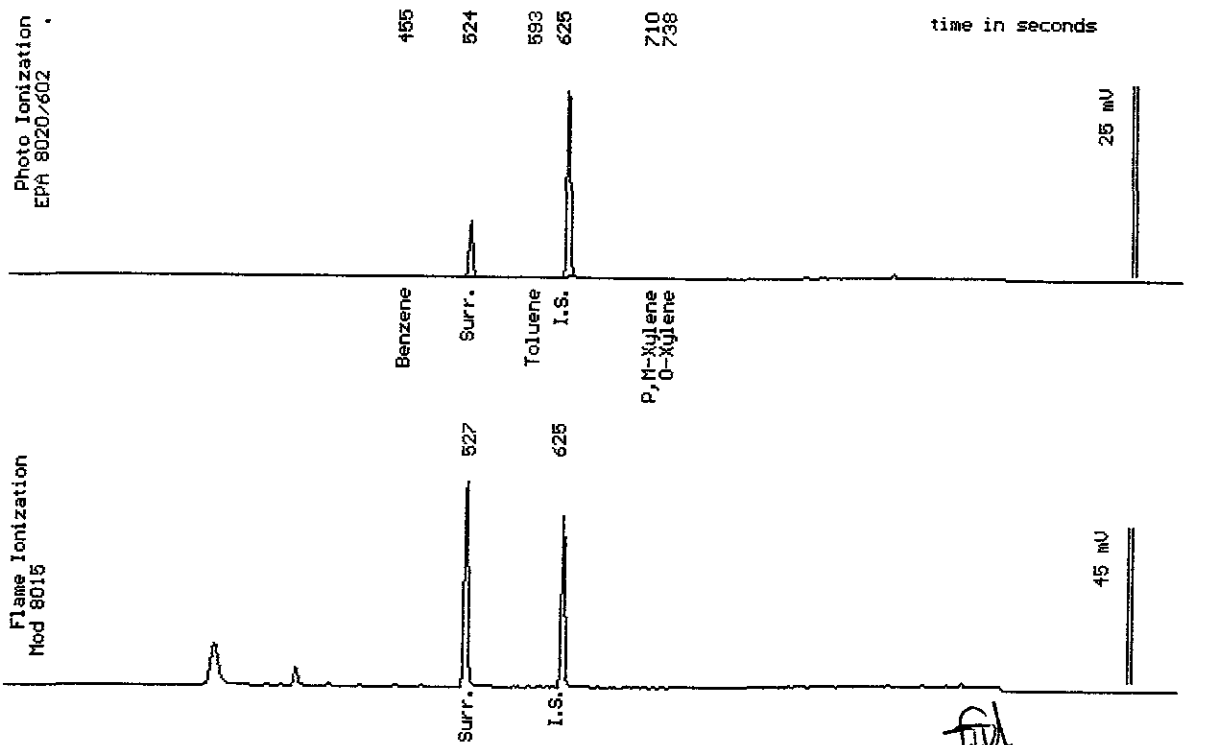
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20237
20237-02

Sample: **MW-3.2 (9.5')**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/23/99
Dilution : 1:1 Run Log : 2181W
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		105 %



Date Analyzed: 06-30-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Podolsky
Senior Chemist

Acculabs Inc.
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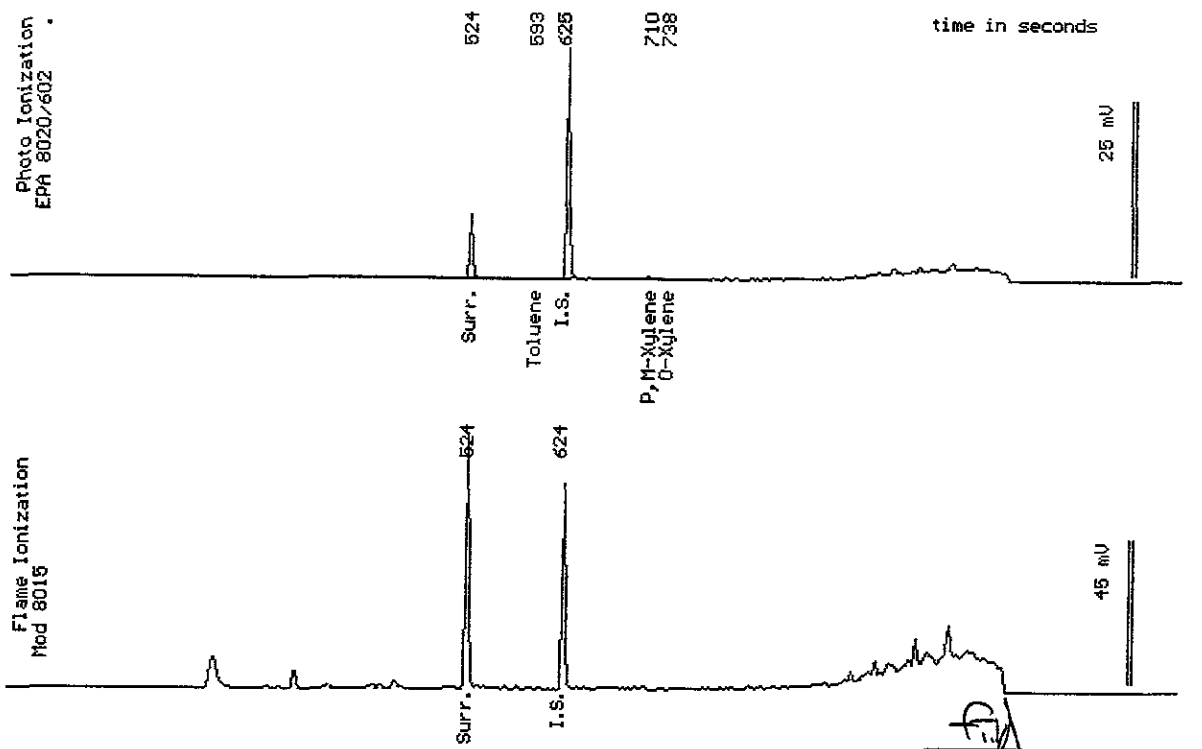
Sample Log 20237
20237-04

Sample: **MW-4.1 (4.5')**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/23/99
Dilution : 1:1 Run Log : 2181W
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		100 %



Date Analyzed: 07-01-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Podolsky
Senior Chemist

Acculabs Inc.
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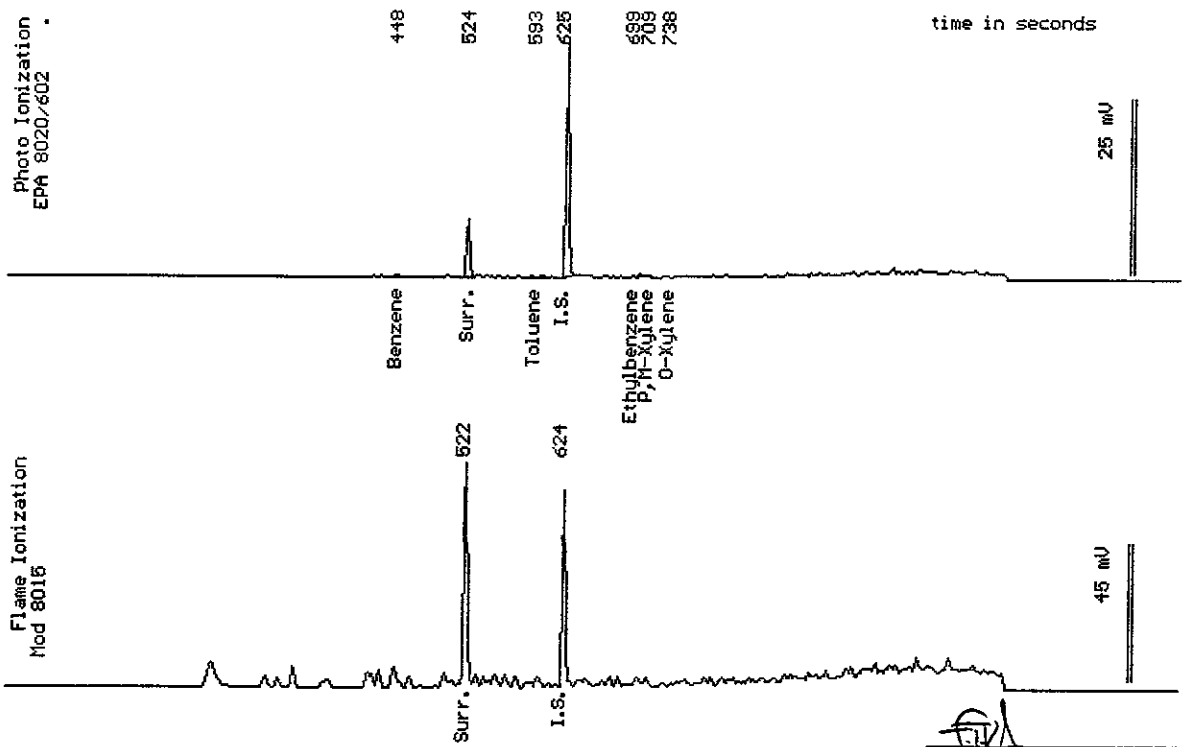
Sample Log 20237
20237-05

Sample: **MW-4.2 (8.5')**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/23/99
Dilution : 1:1 Run Log : 2181W
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.0050)	<.0050
Toluene	(.0050)	<.0050
Ethylbenzene	(.0050)	<.0050
Total Xylenes	(.0050)	<.0050
TPH as Gasoline	(1.0)	<1.0
Surrogate Recovery		98 %



Date Analyzed: 07-01-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewart Podolsky
Senior Chemist

Acculabs Inc.
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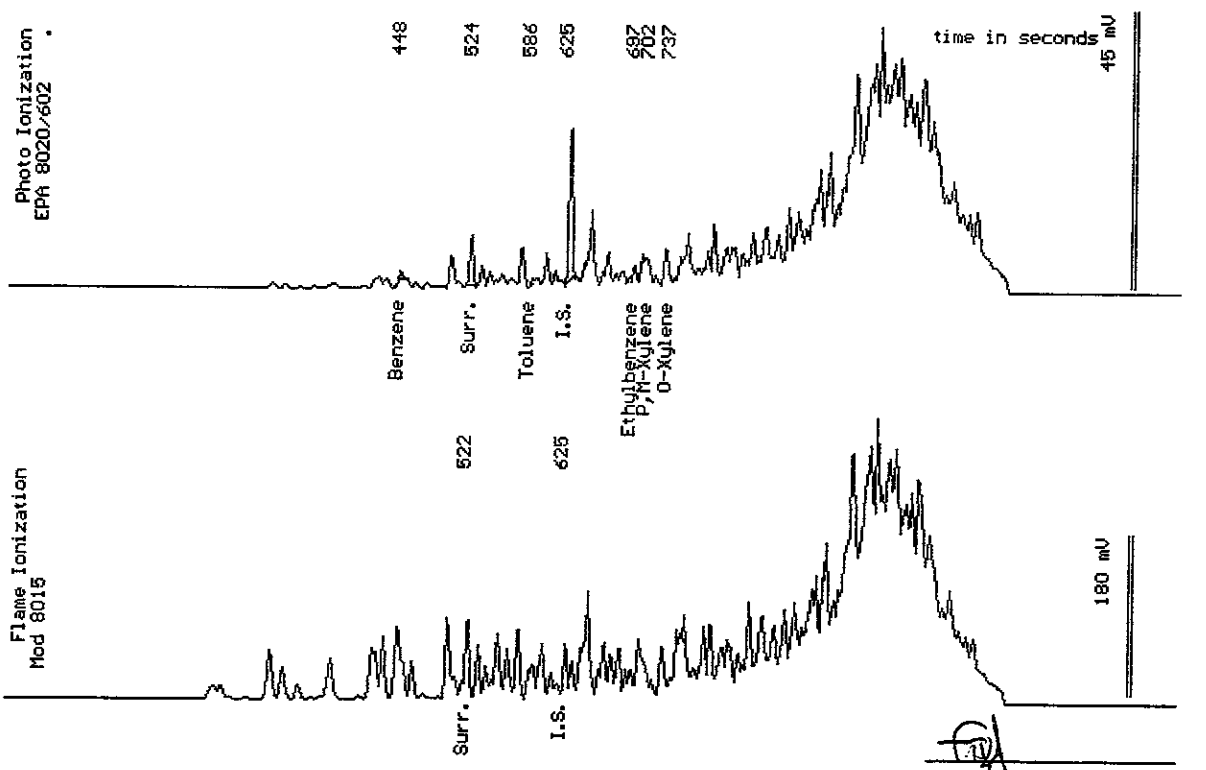
Sample Log 20237
20237-08

Sample: **MW-5.2 (9.0')**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/23/99
Dilution : 1:3 Run Log : 2181W
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
Benzene	(.015)	.032
Toluene	(.015)	.028
Ethylbenzene	(.015)	<.015
Total Xylenes	(.015)	.026
TPH as Gasoline	(3.0)	25
Surrogate Recovery		116 %



Date Analyzed: 07-01-99
Column : 0.53mm X 60m Restek Rtx-1301

Stewar Podolsky
Senior Chemist

Acculabs Inc.

July 1, 1999
Sample Log 20237

QC Report for EPA 8020 & Modified EPA 8015
Run Log : 2181W
From : LSI-Middle (Proj. # 149-01-03)
Sample(s) Received : 06/25/99

Parameter	Matrix Spike % Recovery	Matrix Spike Duplicate % Recovery	RPD *
Benzene	103	101	2
Ethylbenzene	110	107	3
TPH as Gasoline	114	115	1

* RPD = Relative Percent Difference

Parameter	Laboratory Control Sample % Recovery
Benzene	90
Ethylbenzene	97
Gasoline	101

Parameter	Method Blank
Benzene	<0.005 mg/Kg
Toluene	<0.005 mg/Kg
Ethylbenzene	<0.005 mg/Kg
Total Xylenes	<0.005 mg/Kg
TPH as Gasoline	<1.0 mg/kg

Tom Kwoka
Lab Director

Acculabs Inc.

Davis

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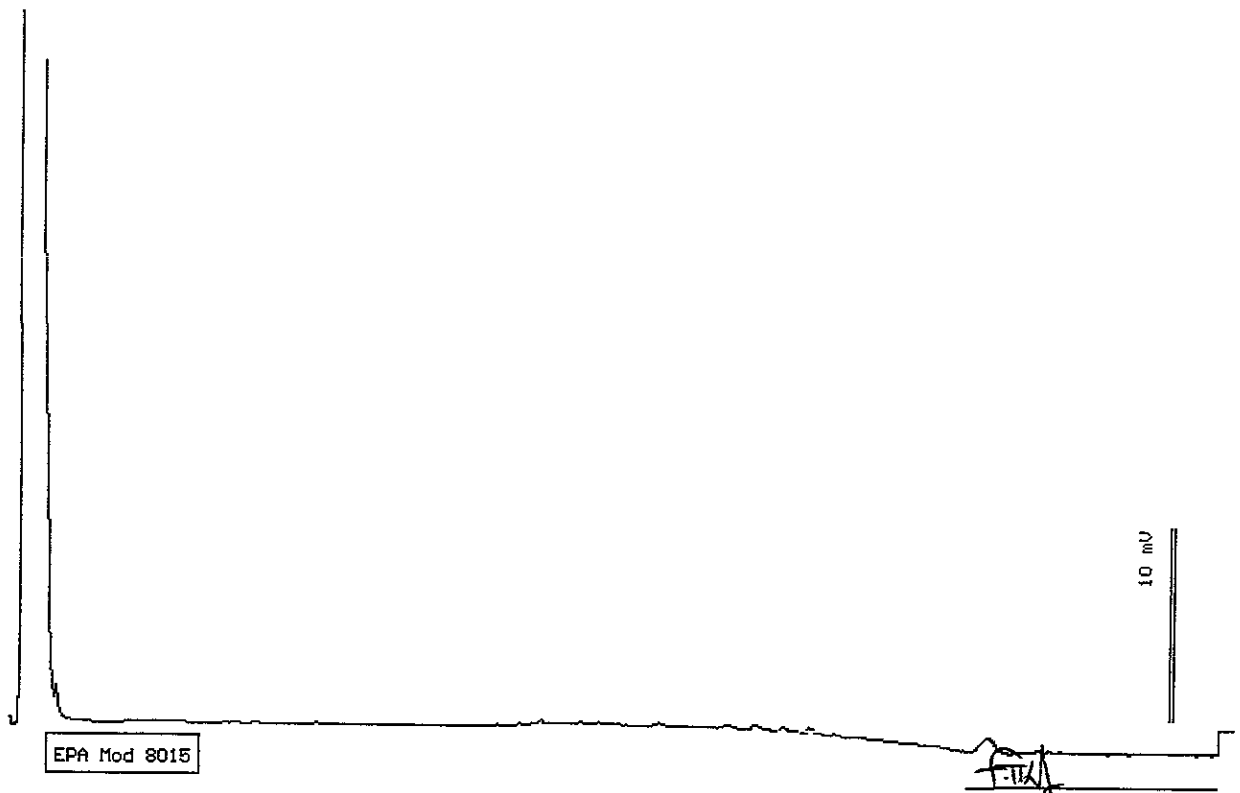
Sample Log 20237

20237-01

Sample: **MW-3.1 (4.5')**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/23/99
Extracted: 07/02/99 QC Batch : DS990613
Dilution : 1:1 Run Log : 7443B
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	<1.0
TPH as Motor Oil	(10)	<10



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Stewart Podolsky
Senior Chemist

Acculabs Inc.
Davis
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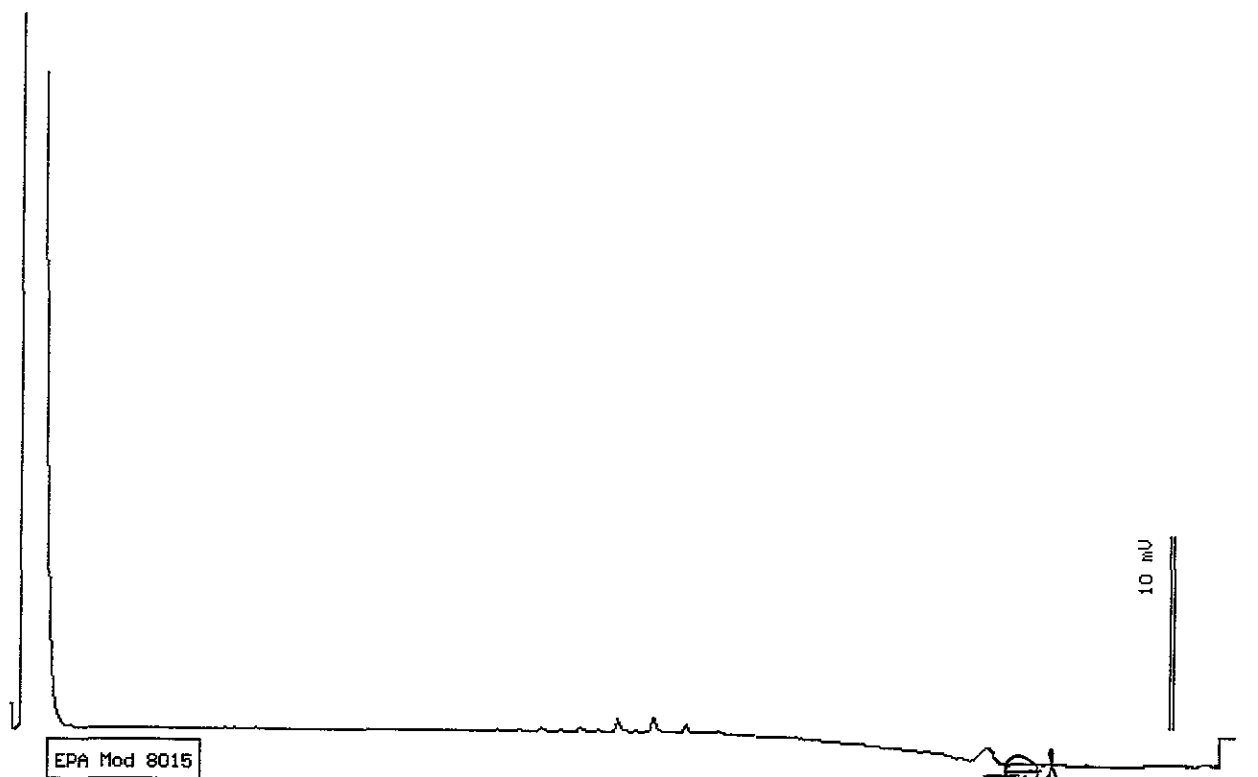
Sample Log 20237
20237-02

Sample: **MW-3.2 (9.5')**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/23/99
Extracted: 07/02/99
Dilution : 1:1
Matrix : Soil

QC Batch : DS990613
Run Log : 7443B

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	<1.0
TPH as Motor Oil	(10)	<10



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Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

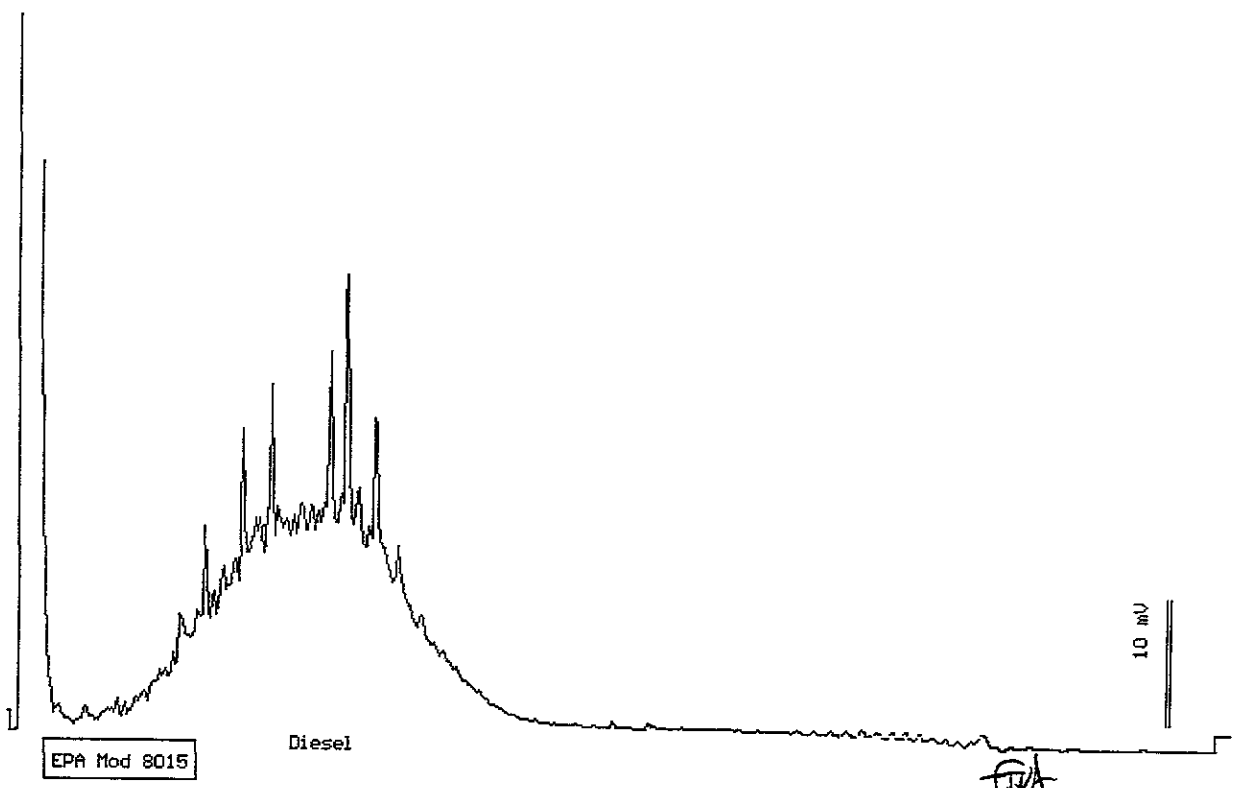
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20237
20237-04

Sample: **MW-4.1 (4.5')**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/23/99
Extracted: 07/02/99 QC Batch : DS990613
Dilution : 1:1 Run Log : 7443B
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	20
TPH as Motor Oil	(10)	<10



Date: 07-02-99 Time: 13:57:46
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Stewart Podolsky
Senior Chemist

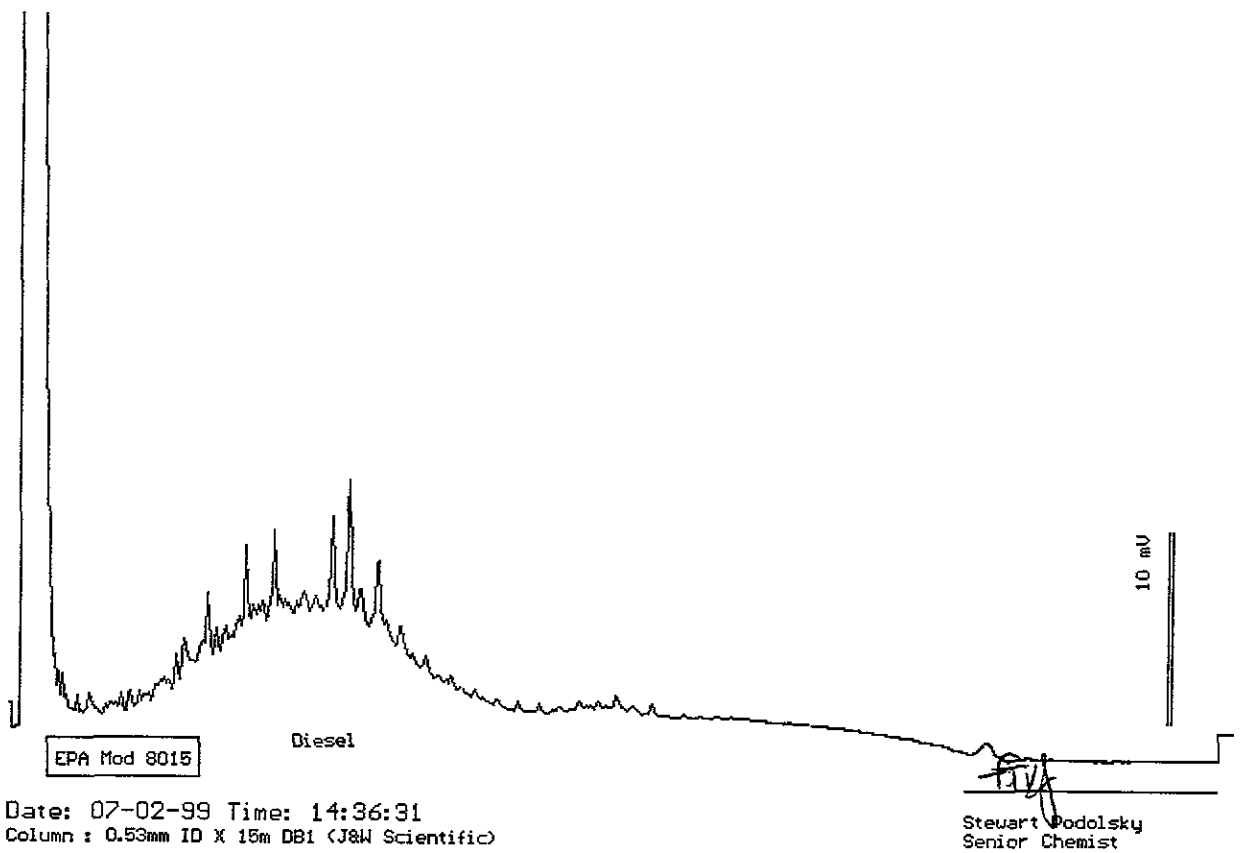
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20237
20237-05

Sample: **MW-4.2 (8.5')**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/23/99
Extracted: 07/02/99 QC Batch : DS990613
Dilution : 1:1 Run Log : 7443C
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	6.9
TPH as Motor Oil	(10)	<10



Acculabs Inc.

Davis

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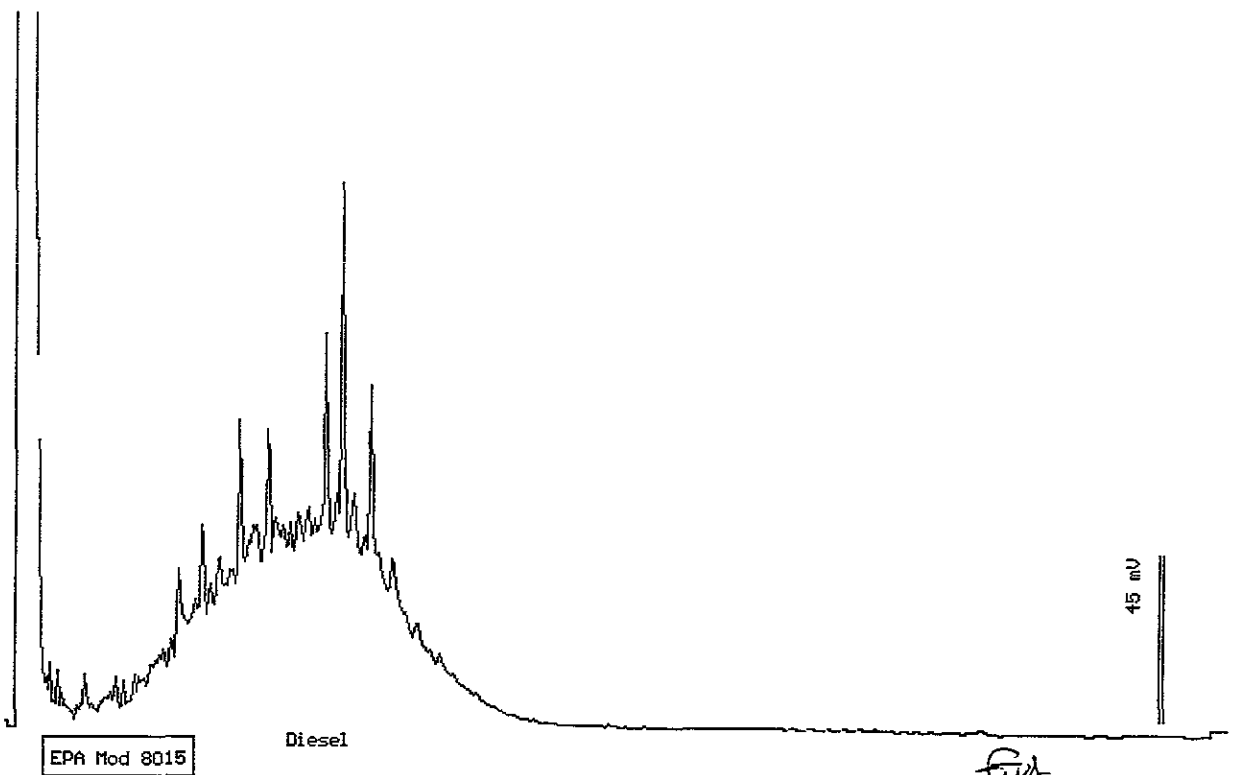
Sample Log 20237

20237-08

Sample: **MW-5.2 (9.0')**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/23/99
Extracted: 07/02/99 QC Batch : DS990613
Dilution : 1:1 Run Log : 7443C
Matrix : Soil

Parameter	(MRL) mg/kg	Measured Value mg/kg
TPH as Diesel	(1.0)	63
TPH as Motor Oil	(10)	<10



Date: 07-02-99 Time: 15:14:57
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc.

[ ] 3902 E. University Dr. Phoenix AZ 85034 602-437-0979 Fax 437-0826
[ ] 710 E. Evans Blvd. Tucson AZ 85713 520-884-5811 Fax 884-5812
[ ] 2020 W. Lone Cactus Dr. Phoenix AZ 85027 602-780-4800 Fax 780-7695
[ ] 4663 Table Mountain Dr. Golden CO 80403 303-277-9514 Fax 277-9512
[ ] 992 Spice Islands Dr. Sparks NV 89431 702-355-0202 Fax 355-0817
[ ] 1046 Olive Drive #2 Davis CA 95616 530-757-0920 Fax 753-6091

Lab Number: 20237

Report Due Date:

Client	Gribi Associates			PUBLIC WATER SUPPLY INFORMATION	
Address	1350 Hayes Street, Ste C-14			System Name	
City, State & Zip	Benicia, CA 94510			PWS No.	Report to State/EPA Y N
Contact	Jim Gribi			POE No.	DWR No.
Phone	707/748-7743	Project Name	LSI-MIDDLE	Collection Point	
Fax	707/748-7763	Project Number	149-01-03	Collector's Name	
P.O. Number		Fax Results (Y) N	Page 1 of 1	Location (City)	

SAMPLE TYPE CODES

DW = drinking water; WW = waste water; MW = monitoring well; HW = hazardous waste; TB = travel blank; SD = solid; SO = soil; SL = sludge

Compliance Monitoring Y N

TURNAROUND TIME REQUESTED

(Standard) RUSH Special

Lab Director Approval

CLIENT'S SAMPLE ID/LOCATION	Date	Time	Sample type	Containers	Analyses Requested: TPH-G/BTEX/MTBE	TPH-D/MO										HOLD	Spl. No.
MW-3.1 (4.5')	6/23/99		SO		X	X											01
MW-3.2 (9.5')	6/23/99		SO		X	X											02
MW-3.3 (14.5')	6/23/99		SO													X	03
MW-4.1 (4.5')	6/23/99		SO		X	X											04
MW-4.2 (8.5')	6/23/99		SO		X	X											05
MW-4.3 (14.5')	6/23/99		SO													X	06
MW-5.1 (4.5')	6/23/99		SO													X	07
MW-5.2 (9.0')	6/23/99		SO		X	X											08
MW-5.3 (14.5')	6/23/99		SO													X	09

SAMPLE RECEIPT			Date	Time	Samples Relinquished By	Samples Received By
Received Cold	Y	N	6/24/99	1335		
Custody Seals	Y	N	6/24/99	1440		
Seals Intact	Y	N				
No. of Containers						

Acculabs' terms are: Net 40 (Payment must be received by the date shown on the invoice or any discount is void)

c:\excel\forms\chain.xls

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20245
June 30, 1999

Jim Gribi
Gribi Associates
1350 Hayes Street, #C-14
Benicia, CA 94510

Subject : 5 Water Samples
Project Name : LSI-Middle
Project Number : 149-01-03

Dear Mr. Gribi,

Chemical analysis on the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. USEPA protocols for sample storage and preservation were followed.

Acculabs - Davis is certified by the State of Arizona (AZ0583) and the State of California (# 2330). If you have any questions regarding procedures or results, please call me at 530-757-0920.

Sincerely,

Tom Kwoka

Tom Kwoka

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20245

MTBE (Methyl-t-butyl ether) By EPA Method 8020/602

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/28/99
Received : 06/28/99
Matrix : Water

SAMPLE	Date Analyzed	(MRL) ug/L	Measured Value ug/L
MW-1	06/30/99	(5.0)	<5.0
MW-2	06/30/99	(5.0)	<5.0
MW-3	06/30/99	(5.0)	<5.0
MW-4	06/30/99	(5.0)	<5.0
MW-5	06/30/99	(5.0)	12

Approved By:

Tom Kwoka
Lab Director

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

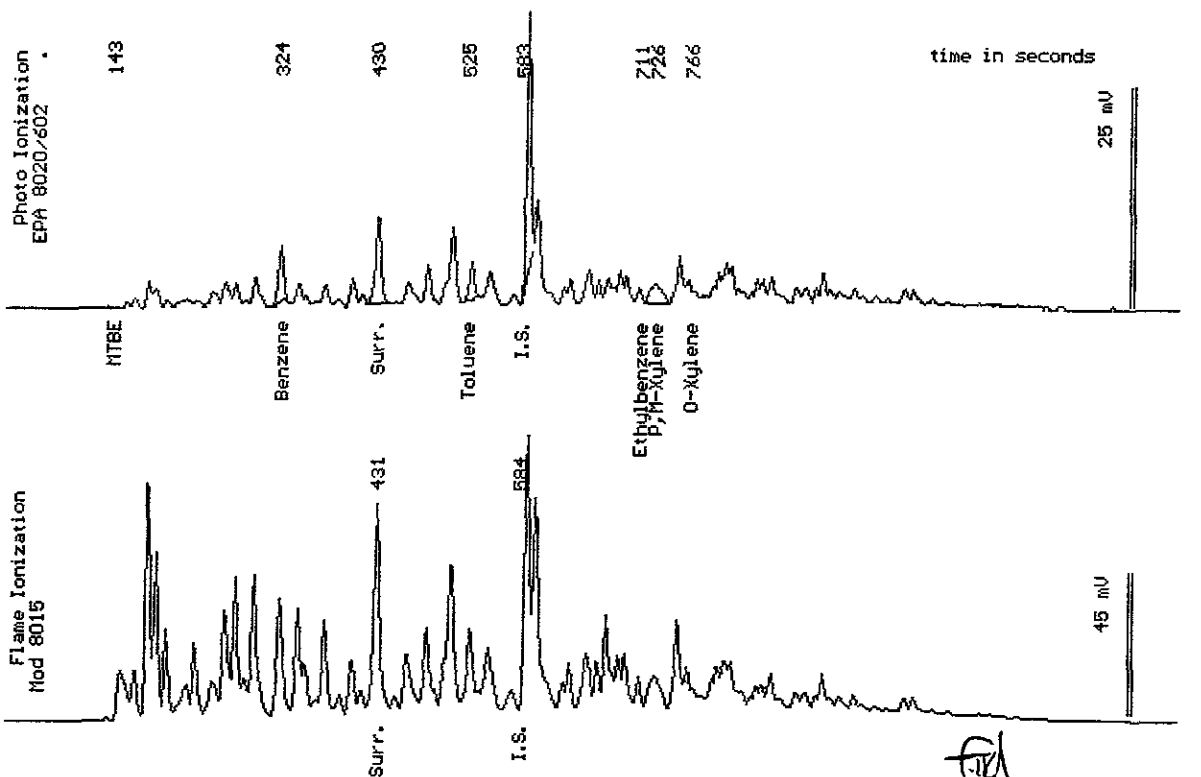
Sample Log 20245
20245-01

Sample: **MW-1**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/28/99
Dilution : 1:1 Run Log : 4186B
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	7.3
Toluene	(.50)	4.9
Ethylbenzene	(.50)	2.6
Total Xylenes	(.50)	2.2
TPH as Gasoline	(50)	460
Surrogate Recovery		177 * %

* Surrogate is high due to matrix interference.



Date Analyzed: 06-30-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Stewart Podolsky
Senior Chemist

Acculabs Inc.
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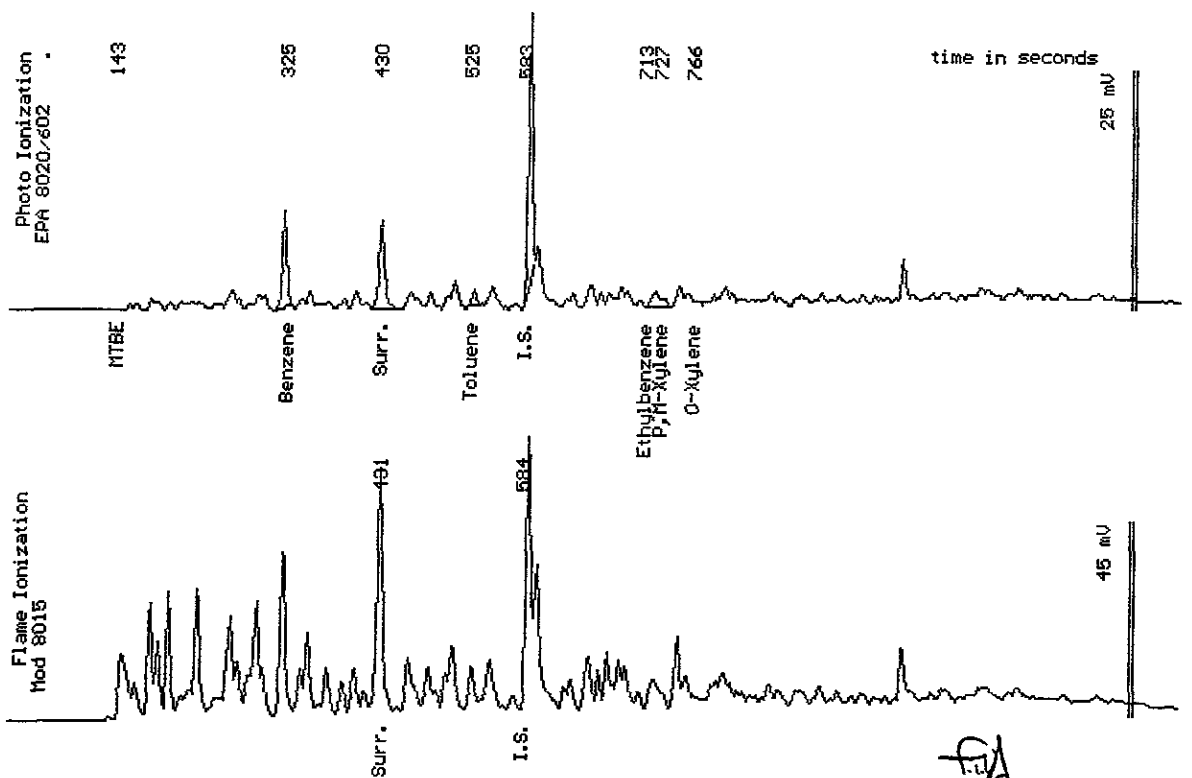
Sample Log 20245
20245-02

Sample: **MW-2**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/28/99
Dilution : 1:1 Run Log : 4186B
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	10
Toluene	(.50)	2.0
Ethylbenzene	(.50)	3.3
Total Xylenes	(.50)	.77
TPH as Gasoline	(50)	380
Surrogate Recovery		148 * %

* Surrogate is high due to matrix interference.



Date Analyzed: 06-30-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Stewart Podolsky
Senior Chemist

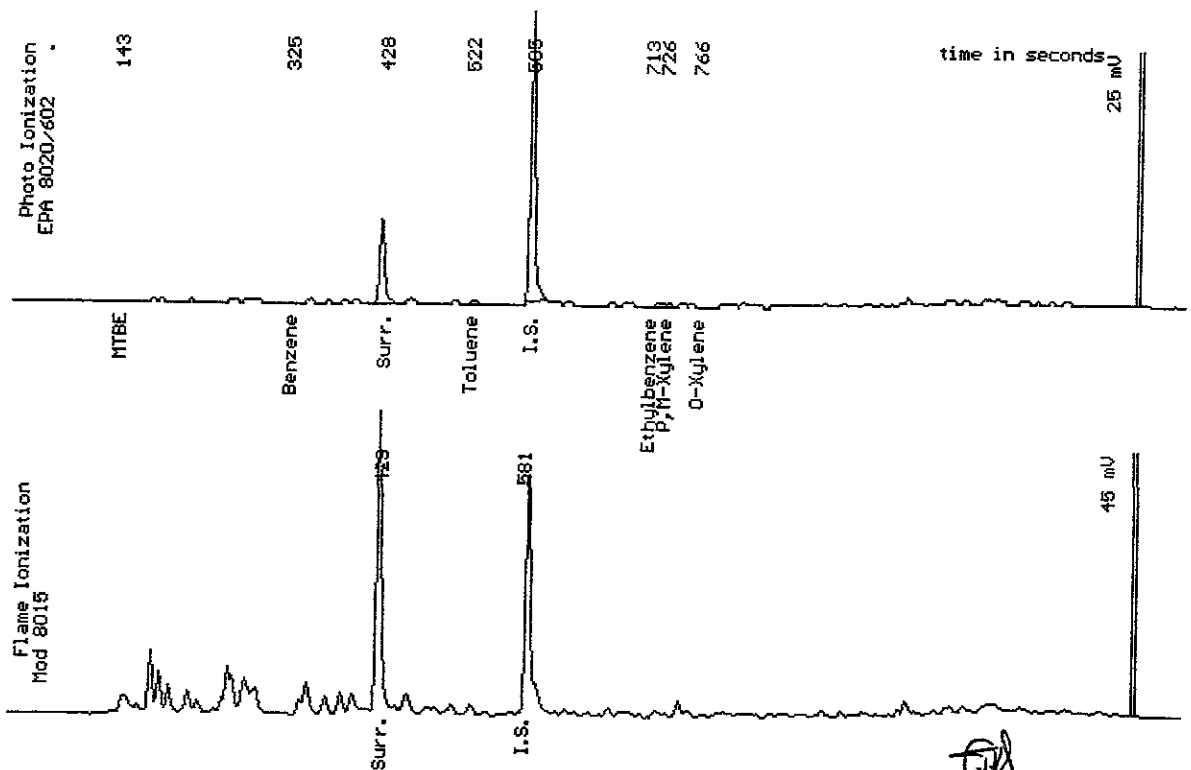
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20245
20245-03

Sample: **MW-3**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/28/99
Dilution : 1:1 Run Log : 4186B
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	<.50
Toluene	(.50)	<.50
Ethylbenzene	(.50)	<.50
Total Xylenes	(.50)	<.50
TPH as Gasoline	(50)	66
Surrogate Recovery		112 %



Date Analyzed: 06-30-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Stewart Podolsky
Senior Chemist

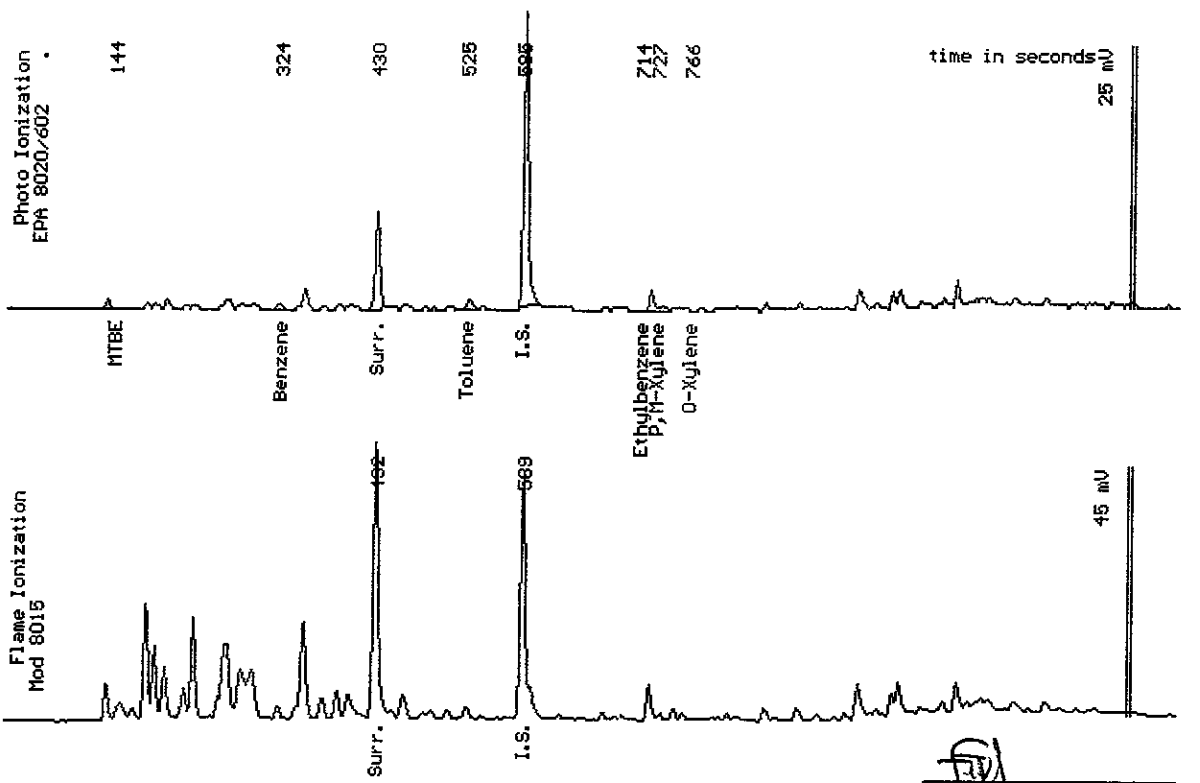
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20245
20245-04

Sample: **MW-4**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/28/99
Dilution : 1:1 Run Log : 4186B
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	.52
Toluene	(.50)	1.1
Ethylbenzene	(.50)	2.2
Total Xylenes	(.50)	<.50
TPH as Gasoline	(50)	110
Surrogate Recovery		111 %



Date Analyzed: 06-30-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Steven Podolsky
Senior Chemist

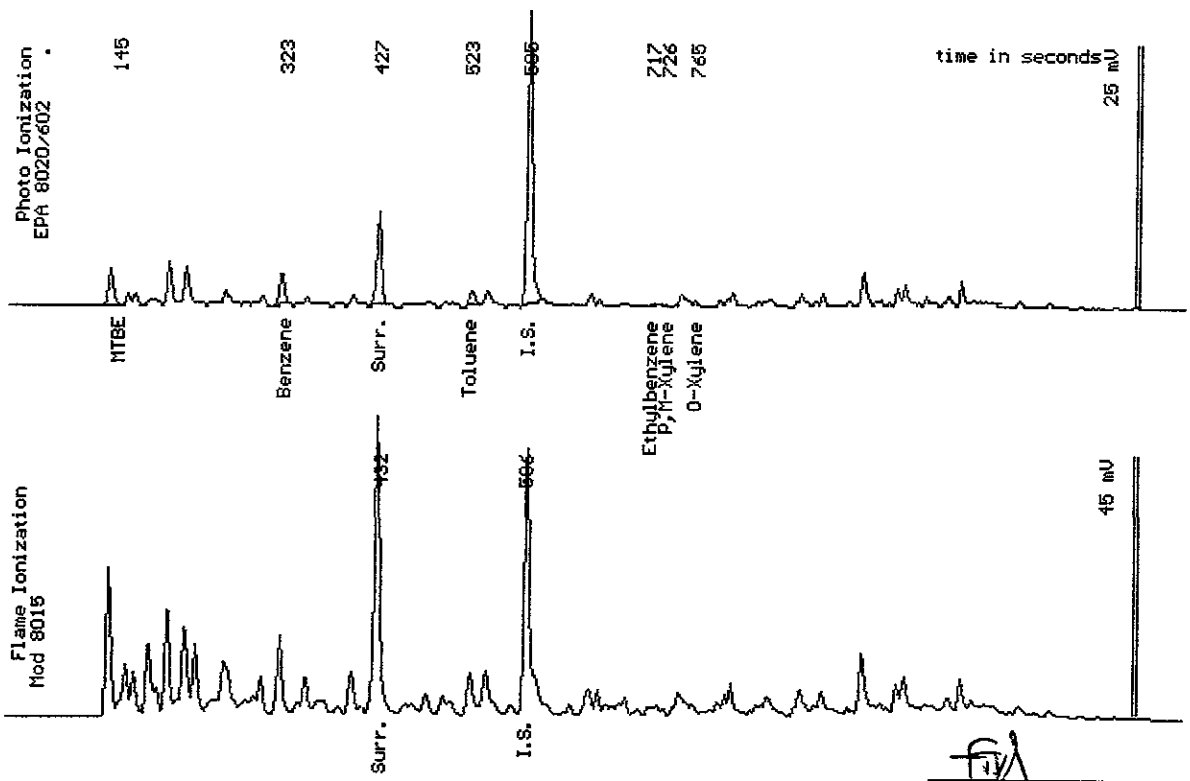
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20245
20245-05

Sample: **MW-5**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/28/99
Dilution : 1:1 Run Log : 4186B
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
Benzene	(.50)	3.0
Toluene	(.50)	1.7
Ethylbenzene	(.50)	<.50
Total Xylenes	(.50)	<.50
TPH as Gasoline	(50)	140
Surrogate Recovery		115 %



Date Analyzed: 06-30-99
Column : 0.53mm ID X 60m Restek Rtx-1701

Stewart Rodolsky
Senior Chemist

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

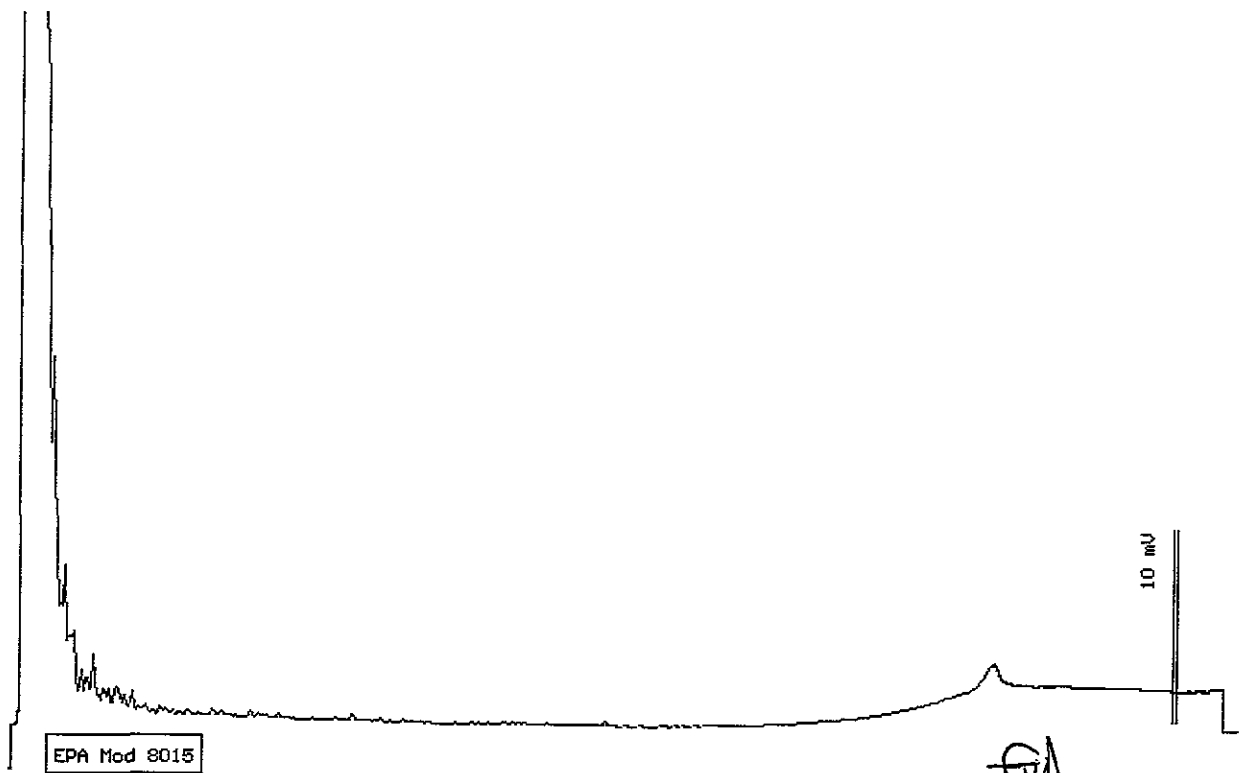
Sample Log 20245
20245-01

Sample: **MW-1**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/28/99
Extracted: 06/29/99
Dilution : 1:1
Matrix : Water

QC Batch : DW990607
Run Log : 7442F

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(50)	<50
TPH as Motor Oil	(100)	<100



Date: 06-30-99 Time: 06:01:09
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Steuart Podolsky
Senior Chemist

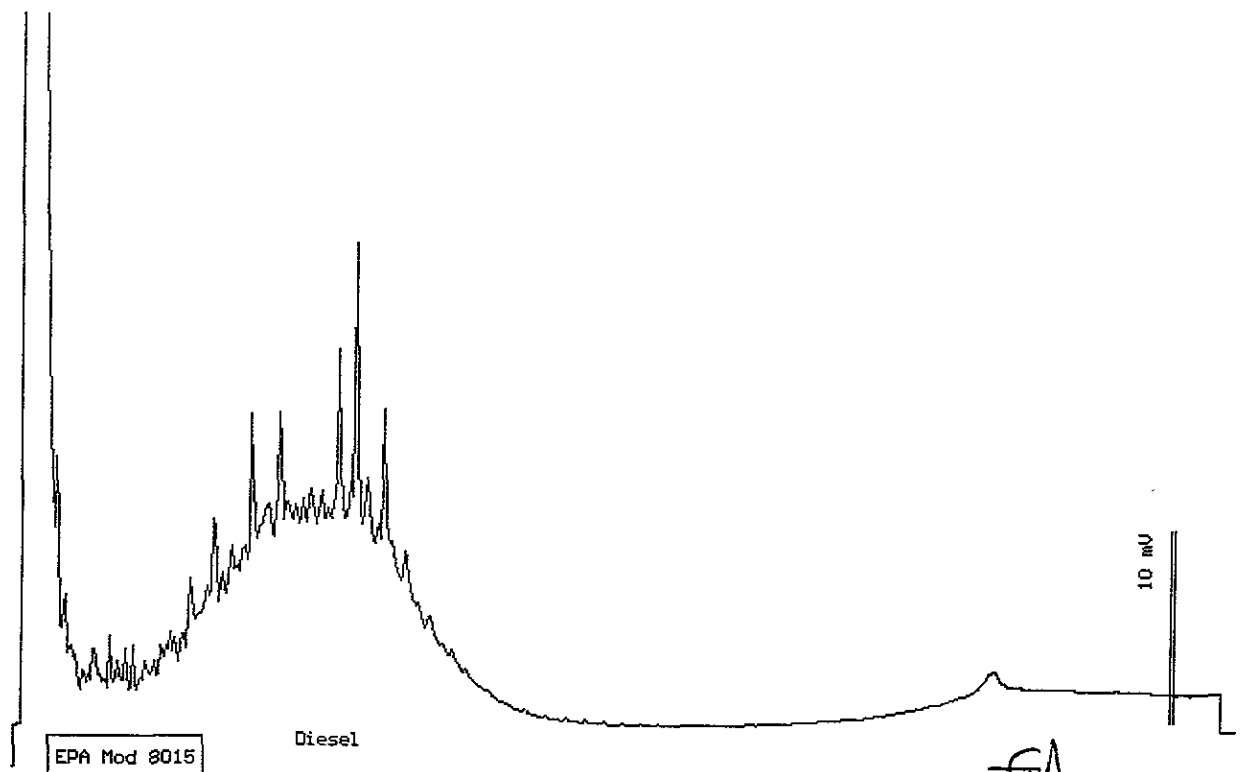
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20245
20245-02

Sample: **MW-2**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/28/99
Extracted: 06/29/99 QC Batch : DW990607
Dilution : 1:1 Run Log : 7442F
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(50)	650
TPH as Motor Oil	(100)	<100



Date: 06-30-99 Time: 06:35:58
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

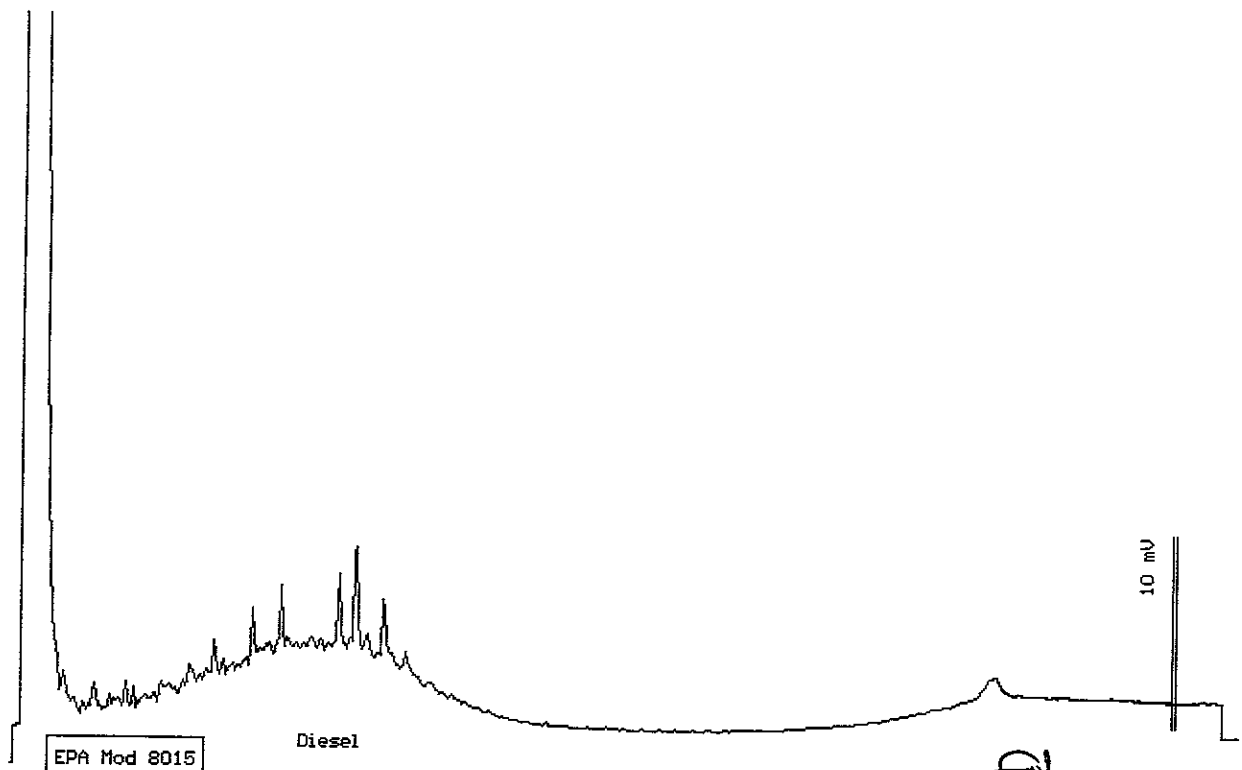
Sample Log 20245
20245-03

Sample: **MW-3**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/28/99
Extracted: 06/29/99
Dilution : 1:1
Matrix : Water

QC Batch : DW990607
Run Log : 7442F

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(50)	300
TPH as Motor Oil	(100)	<100



Date: 06-30-99 Time: 07:10:41
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

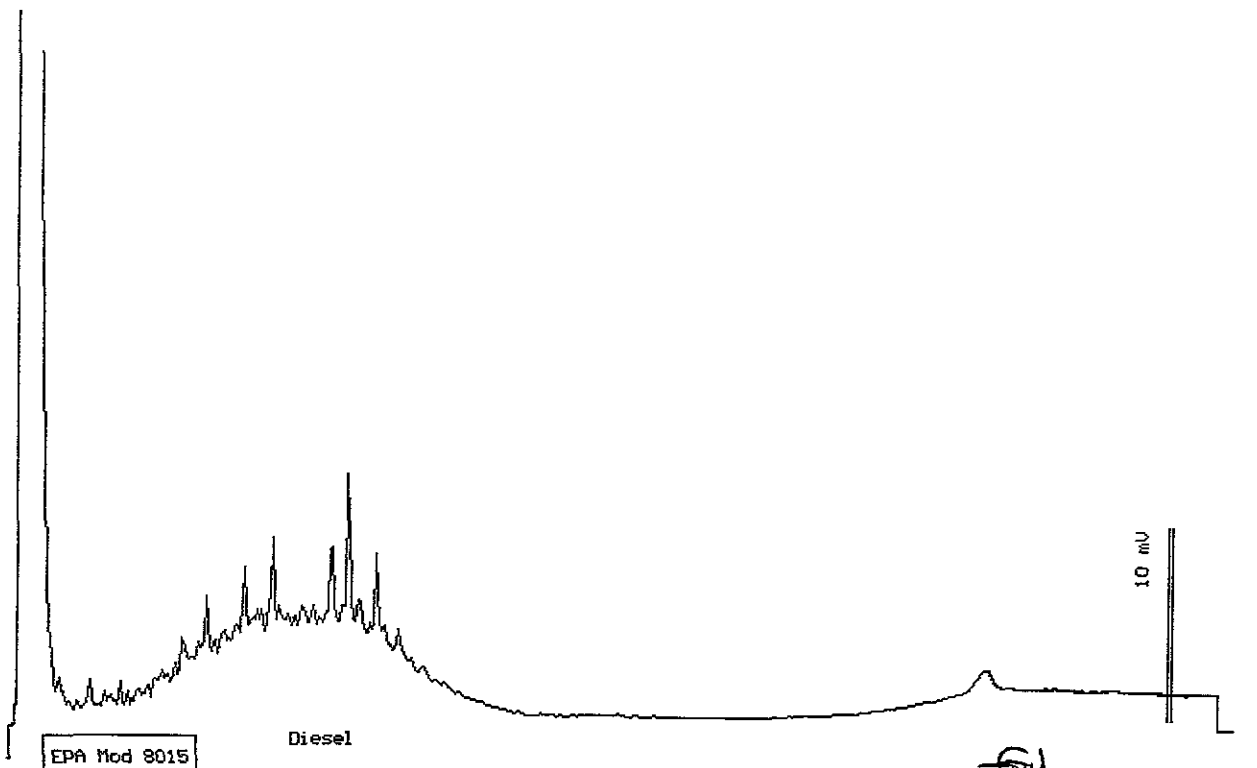
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20245
20245-04

Sample: **MW-4**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/28/99
Extracted: 06/29/99 QC Batch : DW990607
Dilution : 1:1 Run Log : 7442F
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(50)	320
TPH as Motor Oil	(100)	<100



Date: 06-30-99 Time: 07:45:38
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

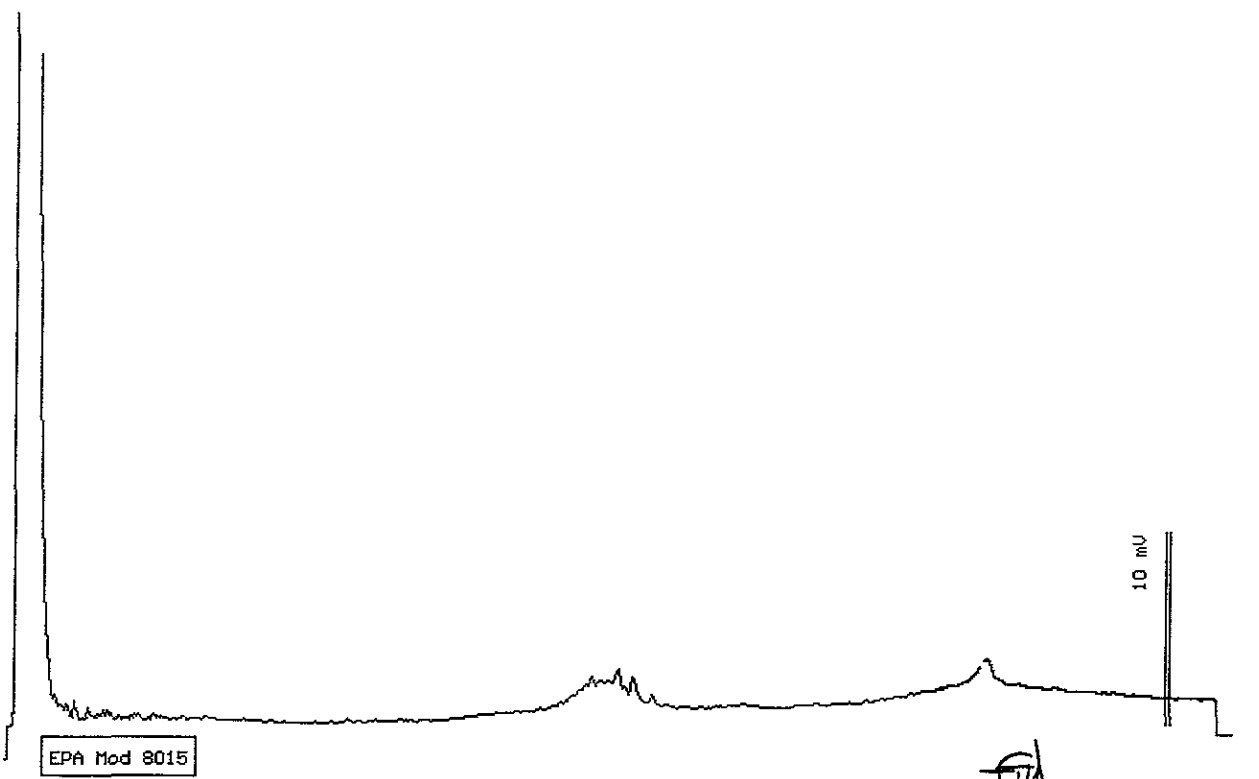
Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20245
20245-05

Sample: **MW-5**

From : LSI-Middle (Proj. # 149-01-03)
Sampled : 06/28/99
Extracted: 06/29/99 QC Batch : DW990607
Dilution : 1:1 Run Log : 7442F
Matrix : Water

Parameter	(MRL) ug/L	Measured Value ug/L
TPH as Diesel	(50)	<50
TPH as Motor Oil	(100)	<100



Date: 06-30-99 Time: 08:20:55
Column : 0.53mm ID X 15m DB1 (J&W Scientific)

Stewart Podolsky
Senior Chemist

Acculabs Inc. June 30, 1999

QC Report
TPH Diesel by 8015 Mod

QC Batch DW990607 Matrix: Water

Spike and Spike Duplicate Results

Parameter	Matrix Spike (%Rec)	Matrix Spike Dup. (%Rec)	RPD %
TPH as Diesel	Not enough sample for spiking. See duplicate LCS Data.		

Laboratory Control Spike

Parameter	Laboratory Control Spike (%Rec)	Laboratory Control Spike Dup. (%Rec)	RPD %
TPH as Diesel	95	105	10

Method Blank

Parameter	MDL(ug/L)	Measured Value(ug/L)
TPH as Diesel	(50)	<50

Tom Kwoka
Lab Director

Acculabs Inc.

[ ] 3902 E. University Dr. Phoenix AZ 85034 602-437-0979 Fax 437-0826
[ ] 710 E. Evans Blvd. Tucson AZ 85713 520-884-5811 Fax 884-5812
[ ] 2020 W. Lone Cactus Dr. Phoenix AZ 85027 602-780-4800 Fax 780-7695
[ ] 4663 Table Mountain Dr. Golden CO 80403 303-277-9514 Fax 277-9512
[ ] 992 Spice Islands Dr. Sparks NV 89431 702-355-0202 Fax 355-0817
[ ] 1046 Olive Drive #2 Davis CA 95616 530-757-0920 Fax 753-6091

Lab Number: 20245
Report Due Date:

Client	Gribi Associates			PUBLIC WATER SUPPLY INFORMATION	
Address	1350 Hayes Street, Ste C-14			System Name	
City, State & Zip	Benicia, CA 94510			PWS No.	Report to State/EPA Y N
Contact	Jim Gribi			POE No.	DWR No.
Phone	707/748-7743	Project Name	LSI-MIDDLE	Collection Point	
Fax	707/748-7763	Project Number	149-01-03	Collector's Name	
P.O. Number		Fax Results (Y) N	Page 1 of 1	Location (City)	

SAMPLE TYPE CODES

DW = drinking water; WW = waste water; MW = monitoring well; HW = hazardous waste; TB = travel blank; SD = solid; SO = soil; SL = sludge

Compliance Monitoring Y N

TURNAROUND TIME REQUESTED

Standard; (RUSH); Special

Lab Director Approval

CLIENT'S SAMPLE ID/LOCATION	Date	Time	Sample Type	Containers	Analyses Requested: TPH-G/BTEX/MTBE	TPH-D/MO	HOLD	Spl. No.
MW-1	6/28/99		MW	5	X	X		01
MW-2	6/28/99		MW	5	X	X		02
MW-3	6/28/99		MW	5	X	X		03
MW-4	6/28/99		MW	5	X	X		04
MW-5	6/28/99		MW	5	X	X		05

SAMPLE RECEIPT			Date	Time	Samples Relinquished By	Samples Received By
Received Cold	Y	N	6/28/99	1430	Stanton Stanford	Stu Woodall
Custody Seals	Y	N				
Seals Intact	Y	N				
No. of Containers						

Acculabs' terms are: Net 40 (Payment must be received by the date shown on the invoice or any discount is void)

c:\excel\forms\chain.xls

Acculabs Inc.
Davis
1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

Sample Log 20282
July 09, 1999

Jim Gribi
Gribi Associates
1350 Hayes Street, #C-14
Benicia, CA 94510

Subject : 1 Water Sample
Project Name : LSI-Middle
Project Number : 149-01-03

Dear Mr. Gribi,

Chemical analysis on the samples referenced above has been completed. Summaries of the data are contained on the following pages. Sample(s) were received under documented chain-of-custody. USEPA protocols for sample storage and preservation were followed.

Acculabs - Davis is certified by the State of Arizona (AZ0583) and the State of California (# 2330). If you have any questions regarding procedures or results, please call me at 530-757-0920.

Sincerely,

Tom Kwoka

Tom Kwoka

Acculabs Inc.

Davis

1046 Olive Drive, Davis CA 95616 ▪ 530-757-0920 ▪ Fax 753-6091

MTBE By EPA 8260B

Sample Log 20282
July 09, 1999

Sample Name : **MW-5**

Project Name : LSI-Middle
Project Number : 149-01-03
Sample Date : 06/28/99
Date Analyzed : 07/08/99

Date Received : 06/28/99
Dilution : 1:1
Sample Matrix : Water
Lab Number : 20282-01

Parameter	MRL	Measured Conc.	Units
Methyl-tert-butyl ether	**5.0**	**24**	ug/L
Dibromofluoromethane (surr)		97	% Recovery

MRL = Method Reporting Limit Conc. = Concentration

B = Analyte was detected in Method Blank.

E = Concentration exceeded calibration range.

Approved By : Tom Kwoka

Acculabs Inc. - Davis

EPA 8260B QC Report

Matrix: Water	Date Analyzed: 7/8/99
QC Batch: VW990708	QC Limits Set: 4/12/99

	Spike Conc ug/L	LCS % Rec	LCSD % Rec	RPD	Control Chart Limits Lower	Control Chart Limits Upper
thene	50	95	89	6.4	26	134
	50	103	100	2.5	85	127
ne	50	101	97	3.2	66	114
	50	119	113	5.5	58	131
e	50	100	99	1.4	87	112

	Control Chart Limits Lower	Control Chart Limits Upper
pound		
omethane	76	132
	64	123
obenzene	43	115

Tom Kwolka
Laboratory Director

C:\EXCEL\QC\VW990708.XLS

Acculabs Inc.

[ ] 3902 E. University Dr. Phoenix AZ 85034 602-437-0979 Fax 437-0826
[ ] 710 E. Evans Blvd. Tucson AZ 85713 520-884-5811 Fax 884-5812
[ ] 2020 W. Lone Cactus Dr. Phoenix AZ 85027 602-780-4800 Fax 780-7695
[ ] 4663 Table Mountain Dr. Golden CO 80403 303-277-9514 Fax 277-9512
[ ] 992 Spice Islands Dr. Sparks NV 89431 702-355-0202 Fax 355-0817
[ ] 1046 Olive Drive #2 Davis CA 95616 530-757-0920 Fax 753-6091

Lab Number: 20245
Report Due Date:
20282

Client	Gribi Associates			PUBLIC WATER SUPPLY INFORMATION	
Address	1350 Hayes Street, Ste C-14			System Name	
City, State & Zip	Benicia, CA 94510			PWS No.	Report to State/EPA Y N
Contact	Jim Gribi			POE No.	DWR No.
Phone	707/748-7743	Project Name	LSI-MIDDLE	Collection Point	
Fax	707/748-7763	Project Number	149-01-03	Collector's Name	
P.O. Number		Fax Results (Y) N	Page 1 of 1	Location (City)	

SAMPLE TYPE CODES

DW = drinking water; WW = waste water; MW = monitoring well; HW = hazardous waste; TB = travel blank; SD = solid; SO = soil; SL = sludge

Compliance Monitoring: Y N

TURNAROUND TIME REQUESTED

Standard; (RUSH); Special

Lab Director Approval

CLIENT'S SAMPLE ID/LOCATION	Date	Time	Sample Type	Containers	Analyses Requested: TPH-G/BTEX/MTBE	TPH-D/MO	HOLD	Spl. No.
MW-1	6/28/99		MW	5	X	X		01
MW-2	6/28/99		MW	5	X	X		02
MW-3	6/28/99		MW	5	X	X		03
MW-4	6/28/99		MW	5	X	X		04
MW-5	6/28/99		MW	5	X	X		05

01

SAMPLE RECEIPT			Date	Time	Samples Relinquished By	Samples Received By
Received Cold	Y	N	6/28/99	1430	Stanton Stanford	SW Woodall
Custody Seals	Y	N				
Seals Intact	Y	N				
No. of Containers						

Acculabs' terms are: Net 40 (Payment must be received by the date shown on the invoice or any discount is void)

APPENDIX F

RBCA MODEL INPUT TABLES

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: LSI Middle Site, Northwest Area | Site Identification: LSI-M-Northwest Area | Software: GSI RBCA Spreadsheet
Site Location: 1275 66th Street | Date Completed: 7/21/99 | Version 1.0.1
Completed By: James E. Gribi

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined.

Exposure Parameter	Definition (Units)	Residential Adult	Residential (1-6yrs)	Residential (1-16 yrs)	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
t	Averaging time for vapor flux (yr)	30			25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF.Derm	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (L/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil Ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
IRa.in	Inhalation rate indoor (m^3/day)	15			20	
IRa.out	Inhalation rate outdoor (m^3/day)	20			20	10
SA	Skin surface area (dermal) (cm^2)	5.8E+03		2.0E+03	5.8E+03	5 8E+03
SAadj	Adjusted dermal area (cm^2-yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil Ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)?	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways		Residential	Commercial/Industrial Chronic	Commercial/Industrial Constrctn
Outdoor Air Pathways:				
SS.v	Volatiles and Particulates from Surface Soils	FALSE	FALSE	FALSE
S.v	Volatilization from Subsurface Soils	FALSE	FALSE	
GW.v	Volatilization from Groundwater	FALSE	FALSE	
Indoor Air Pathways:				
S.b	Vapors from Subsurface Soils	FALSE	TRUE	
GW.b	Vapors from Groundwater	FALSE	TRUE	
Soil Pathways:				
SS d	Direct Ingestion and Dermal Contact	FALSE	FALSE	FALSE
Groundwater Pathways:				
GW.i	Groundwater Ingestion	FALSE	FALSE	
S.l	Leaching to Groundwater from all Soils	FALSE	FALSE	

Matrix of Receptor Distance and Location On- or Off-Site		Residential Distance	Residential On-Site	Commercial/Industrial Distance	Commercial/Industrial On-Site
GW	Groundwater receptor (cm)		FALSE		FALSE
S	Inhalation receptor (cm)		FALSE		FALSE

Matrix of Target Risks		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	***1.0E-05***	1.0E-04
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1 0E+00	1.0E+00
Opt	Calculation Option (1, 2, or 3)	3	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential	Constrctn
A	Contaminated soil area (cm^2)	***2.1E+05***	***2.1E+05***
W	Length of affect soil parallel to wind (cm)	***4.6E+02***	***4.6E+02***
W.gw	Length of affect. soil parallel to groundwater (cm	***4.6E+02***	
Ualr	Ambient air velocity in mixing zone (cm/s)	2.3E+02	
delta	Air mixing zone height (cm)	2.0E+02	
Lss	Thickness of affected surface soils (cm)	1.0E+02	
Pe	Particulate areal emission rate (g/cm^2/s)	6.9E-14	

Groundwater	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	2.5E+03
Ugw.tr	Groundwater seepage velocity (cm/yr)	6.6E+03
Ks	Saturated hydraulic conductivity(cm/s)	
grad	Groundwater gradient (cm/cm)	
Sw	Width of groundwater source zone (cm)	
Sd	Depth of groundwater source zone (cm)	
phi.eff	Effective porosity in water-bearing unit	3.8E-01
foc.sat	Fraction organic carbon in water-bearing unit	1.0E-03
BIO?	Is bioattenuation considered?	FALSE
BC	Biodegradation Capacity (mg/L)	

Soil	Definition (Units)	Value	capillary	vadose	foundation
hc	Capillary zone thickness (cm)	5.0E+00			
hv	Vadose zone thickness (cm)	***4.0E+02***			
rho	Soil density (g/cm^3)	1.7			
foc	Fraction of organic carbon in vadose zone	0.01			
phi	Soil porosity in vadose zone	0.38			
Lgw	Depth to groundwater (cm)	***4.0E+02***			
Ls	Depth to top of affected subsurface soil (cm)	***1.2E+02***			
Lsubs	Thickness of affected subsurface soils (cm)	***2.8E+02***			
pH	Soil/groundwater pH	6.5			
phi.w	Volumetric water content		0.342	0.12	0.12
phi.a	Volumetric air content		0 038	0.26	0.26

Building	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	***1.1E+04***	***1.1E+04***
ER	Building air exchange rate (s^-1)	1.4E-04	2.3E-04
Lcrk	Foundation crack thickness (cm)	1.5E+01	
eta	Foundation crack fraction	0.01	

Transport Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersivity (cm)		
ay	Transverse dispersivity (cm)		
az	Vertical dispersivity (cm)		
Vapor			
dcy	Transverse dispersion coefficient (cm)		
dcz	Vertical dispersion coefficient (cm)		

REPRESENTATIVE COC CONCENTRATIONS IN SOURCE MEDIA

(Complete the following table)

CONSTITUENT	Representative COC Concentration in Groundwater		in Surface Soil		in Subsurface Soil	
	value (mg/L)	note	value (mg/kg)	note	value (mg/kg)	note
Benzene	3.1E-1	max			3.3E+1	max
Ethylbenzene	2.2E-1	max			9.4E+1	max
Toluene	1.3E-2	max			5.0E-1	max
Xylene (mixed isomers)	1.7E-1	max			1.6E+2	max

Site Name: LSI Middle Site, Northwest Area
Site Location: 1275 66th Street

Completed By: James E. Gribi
Date Completed: 7/21/1999

RBCA CHEMICAL DATABASE

Physical Property Data

CAS Number	Constituent	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(l/kg)	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3/mol)	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
71-43-2	Benzene	A	78.1	5	9.30E-02	A	1.10E-05	A	1.58	A	5.29E-03	2.20E-01	A	9.52E+01	4	1.75E+03	A			
100-41-4	Ethylbenzene	A	106.2	5	7.60E-02	A	8.50E-06	A	1.98	A	7.69E-03	3.20E-01	A	1.00E+01	4	1.52E+02	5			
108-88-3	Toluene	A	92.4	5	8.50E-02	A	9.40E-06	A	2.13	A	6.25E-03	2.60E-01	A	3.00E+01	4	5.15E+02	29			
1330-20-7	Xylene (mixed isomers)	A	106.2	5	7.20E-02	A	8.50E-06	A	2.38	A	6.97E-03	2.90E-01	A	7.00E+00	4	1.98E+02	5			

Site Name: LSI Middle Site, Northwest Area Site Location: 1275 66th Street Completed By: James E. Gribi Date Completed: 7/21/1999

Software version: 1.0.1

RBCA CHEMICAL DATABASE — Toxicity Data

CAS Number	Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Inhalation RfD_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Inhalation SF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
71-43-2	Benzene	-		1.70E-03	R	1.00E-01	A	1.00E-01	A	A	TRUE
100-41-4	Ethylbenzene	1.00E-01	A	2.86E-01	A	-		-		D	FALSE
108-88-3	Toluene	2.00E-01	A,R	1.14E-01	A,R	-		-		D	FALSE
1330-20-7	Xylene (mixed isomers)	2.00E+00	A,R	2.00E+00	A	-		-		D	FALSE

Site Name: LSI Middle Site, Northwest ASite Location: 1275 66th Street Completed By: James E. Gribi Date Completed: 7/21/1999

Software version: 1.0.1

RBCA CHEMICAL DATABASE

Miscellaneous Chemical Data

CAS Number	Constituent	Maximum Contaminant Level MCL (mg/L)	reference	Permissible Exposure Limit PEL/TLV (mg/m3)	ref	Relative Absorption Factors Oral	Dermal	Detection Limits Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days) Saturated	Unsaturated	ref
71-43-2	Benzene	5.00E-03	52 FR 25690	3.20E+00	OSHA	1	0.5	0.002	C	0.005	S	720	720	H
100-41-4	Ethylbenzene	7.00E-01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	1	0.5	0.002	C	0.005	S	228	228	H
108-88-3	Toluene	1.00E+00	56 FR 3526 (30 Jan 91)	1.47E+02	ACGIH	1	0.5	0.002	C	0.005	S	28	28	H
1330-20-7	Xylene (mixed isomers)	1.00E+01	56 FR 3526 (30 Jan 91)	4.34E+02	ACGIH	1	0.5	0.005	C	0.005	S	360	360	H

Site Name: LSI Middle Site, Northwest ASite Location: 1275 66th Street Completed By: James E. Gribi Date Completed: 7/21/1999

Software version: 1.0.1

APPENDIX G

RBCA MODEL BASELINE RISK TABLES

RBCA SITE ASSESSMENT

Tier 2 Worksheet 8.3

Site Name: LSI Middle Site, Northwest Area
Site Location: 1275 66th Street

Completed By: James E. Gribi
Date Completed: 7/21/1999

TIER 2 BASELINE RISK SUMMARY TABLE

EXPOSURE PATHWAY	BASELINE CARCINOGENIC RISK: Individual COC Risk – Maximum Value	Individual COC Risk – Target Risk	Cumulative COC Risk – Total Value	Cumulative COC Risk – Target Risk	Risk Limit(s) Exceeded?	BASELINE TOXIC EFFECTS: Hazard Quotient – Maximum Value	Hazard Quotient – Applicable Limit	Hazard Index – Total Value	Hazard Index – Applicable Limit	Toxicity Limit(s) Exceeded?
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	NC	1.0E-5	NC	1.0E-4	■	NC	1.0E+0	NC	1.0E+0	■
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	5.7E-5	1.0E-5	5.7E-5	1.0E-4	■	9.4E-1	1.0E+0	9.5E-1	1.0E+0	□
SOIL EXPOSURE PATHWAYS										
Complete:	NC	1.0E-5	NC	1.0E-4	■	NC	1.0E+0	NC	1.0E+0	■
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	NC	1.0E-5	NC	1.0E-4	■	NC	1.0E+0	NC	1.0E+0	■
CRITICAL EXPOSURE PATHWAY (Select Maximum Values From Complete Pathways)										
	5.7E-5	1.0E-5	5.7E-5	1.0E-4	■	9.4E-1	1.0E+0	9.5E-1	1.0E+0	□

Site Name: LSI Middle Site, Northwest Area | Site Location: 1275 66th Street | Completed By: James E. Gribi | Date Completed: 7/21/1999 | 4 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

SUBSURFACE SOILS:
VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium: Subsurface Soil Conc. (mg/kg)	2) NAF Value (m^3/kg) Receptor: On-Site Commercial		3) Exposure Medium: Indoor Air, POE Conc (mg/m^3) (1) / (2): On-Site Commercial		4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day): On-Site Commercial		5) Average Daily Intake Rate (mg/kg-day) (3) X (4): On-Site Commercial	
Benzene	3.3E+1		4.1E+3		8.1E-3		7.0E-2		5.6E-4
Ethylbenzene	9.4E+1		4.1E+3		2.3E-2		2.0E-1		4.5E-3
Toluene	5.0E-1		4.1E+3		1.2E-4		2.0E-1		2.4E-5
Xylene (mixed isomers)	1.6E+2		6.2E+3		2.6E-2		2.0E-1		5.0E-3

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequency (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: LSI Middle Site, Northwest Area | Site Location: 1275 66th Street | Completed By: James E. Gribi | Date Completed: 7/21/1999 | 5 OF 9

TIER 2 EXPOSURE CONCENTRATION AND INTAKE CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAY IS ACTIVE)

GROUNDWATER:
VAPOR INTRUSION TO BUILDINGS

Constituents of Concern	Exposure Concentration 1) Source Medium: Groundwater Conc. (mg/L)	2) NAF Value (m^3/L) Receptor: On-Site Commercial	3) Exposure Medium: Indoor Air, POE Conc (mg/m^3) (1) / (2): On-Site Commercial	4) Exposure Multiplier (IRxEFxED)/(BWxAT) (m^3/kg-day): On-Site Commercial	5) Average Daily Intake Rate (mg/kg-day) (3) X (4): On-Site Commercial	TOTAL PATHWAY INTAKE (mg/kg-day) (Sum intake values from subsurface & groundwater routes.): On-Site Commercial
Benzene	3.1E-1	5.6E+3	5.6E-5	7.0E-2	3.9E-6	5.7E-4
Ethylbenzene	2.2E-1	5.1E+3	4.3E-5	2.0E-1	8.5E-6	4.5E-3
Toluene	1.3E-2	5.4E+3	2.4E-6	2.0E-1	4.7E-7	2.4E-5
Xylene (mixed isomers)	1.7E-1	5.8E+3	2.9E-5	2.0E-1	5.8E-6	5.0E-3

NOTE:
ABS = Dermal absorption factor (dim)
AF = Adherance factor (mg/cm^2)
AT = Averaging time (days)
BW = Body weight (kg)
CF = Units conversion factor
ED = Exposure duration (yrs)
EF = Exposure frequencey (days/yr)
ET = Exposure time (hrs/day)
IR = Inhalation rate (m^3/day)
POE = Point of exposure
SA = Skin exposure area (cm^2/day)

Site Name: LSI Middle Site, Northwest Area Site Location: 1275 66th Street Completed By: James E. Gribi Date Completed: 7/21/1999

TIER 2 PATHWAY RISK CALCULATION

INDOOR AIR EXPOSURE PATHWAYS ■ (CHECKED IF PATHWAYS ARE ACTIVE)

Constituents of Concern	(1) EPA Carcinogenic Classification	CARCINOGENIC RISK: (2) Total Carcinogenic Intake Rate (mg/kg/day) On-Site	Commercial	(3) Inhalation Slope Factor (mg/kg-day)^-1	(4) Individual COC Risk (2) x (3) On-Site	Commercial	TOXIC EFFECTS: (5) Total Toxicant Intake Rate (mg/kg/day) On-Site	Commercial	(6) Inhalation Reference Dose (mg/kg-day)	(7) Individual COC Hazard Quotient (5) / (6) On-Site	Commercial
Benzene	A		5.7E-4	1.0E-1		5.7E-5		1.6E-3	1.7E-3		9.4E-1
Ethylbenzene	D							4.5E-3	2.9E-1		1.6E-2
Toluene	D							2.4E-5	1.1E-1		2.1E-4
Xylene (mixed isomers)	D							5.0E-3	2.0E+0		2.5E-3

Total Pathway Carcinogenic Risk = 0.0E+0 | 5.7E-5

Total Pathway Hazard Index = 0.0E+0 | 9.5E-1