WESTERN GEO-ENGINEERS
CALIF CONTRACTOR # 513857 A CORPORATION
REGISTERED GEOLOGISTS

1386 EAST BEAMER STREET
WOODLAND, CA 95776-6003
FAX (916) 662-0273
(916) 668-5300

ENVIRONMENTAL PROTECTION
96 DEC 13 PM 2:53

December 10, 1996

Mr. John Rutherford
Desert Petroleum Inc.
P.O. Box 1601
Oxnard, California 93032
(805) 644-6784
FAX (805) 654-0720

RE: **Workplan to delineate the lateral extent of free product discovered in groundwater monitor well RS-1, September 18, 1996** at Former Desert Petroleum Station #796, 2844 Mountain Boulevard, Oakland, California, 94602.

Dear Mr. Rutherford:

As you requested Western Geo-Engineers (WEGE) has prepared the following workplan to rapidly delineate the on-site extent of free product associated with RS-1.

INTRODUCTION

Free gasoline range product was discovered during the quarterly monitoring/sampling of this site which occurred on September 18, 1996. As an interim remediation measure, Western Geo-Engineers, commenced with weekly purging of the well and associated wells RS-2 and RS-3 on October 1, 1996. The weekly purging continued for two months and removed a calculated 30.4 gallons of gasoline, see Table 1. **This weekly purging was discontinued on December 3, 1996 when it became apparent that the free product found in RS-1 was not decreasing.** The need to define the lateral extent of the free product is needed to develop a cost benefit remediation strategy for removal of the free product from beneath the site, see Appendix A-Field Notes and Venting Chromatograms.

LOCATION

The site is an operating ARCO service station that retails regular unleaded, super unleaded gasoline and diesel and is also an operating garage performing automobile maintenance. The site is located East of Highway 13 at 2844 Mountain Blvd., Oakland, California, west of Joaquin Miller Park, see Figures 1 and 2.

GROUNDWATER QUALITY

WEGE obtained groundwater samples from monitor wells RS-2, RS-3, RS-4 on September 19, 1996. No water sample was obtained from RS-1, free phase product was discovered in this well, see Figure 3.

INTERIM PRODUCT RECOVERY

Commencing on October 1, 1996, weekly purging and venting of RS-1 was being used for removal of free phase product and interim migration control. RS-2 and RS-3 were also purged of water and vented for approximately 15 minutes each visit. As of December 3, 1996 a calculated 30.4 gallons of gasoline range hydrocarbons had been removed by free product bailing of RS-1, groundwater purging and venting of RS-1, RS-2 and RS-3, see Table 1 and Appendix A.

SOIL PROBE SURVEY (SPS) (RAPID SITE CHARACTERIZATION)

METHODS AND PROCEDURES

Figure 3 represents the estimated extent of groundwater tainted with gasoline range hydrocarbons as interpreted from the results of samples obtained during the September, 1996 quarterly monitoring round.

WEGE's **Soil Probe Survey (SPS) is** a cost effective **Rapid Site Characterization method for de**termining the lateral and vertical extent of soil and shallow groundwater contamination resulting from the discharge of gasoline or diesel fuels. The general location of the proposed SPS test holes is shown in Figure 3. Actual test hole placement will be guided by the results of the **on-site laboratory** analysis and will be determined by the laboratory director as the SPS progresses. Prior to any site activity, **permission will be obtained from the individual land owners and their tenants.** Also, all permits and permission will be obtained from the City of Oakland, Alameda County Zone 7 and County Health. this is all onsite. One site.

At least 48 hours prior to the placement of the Soil Probe Survey test holes, Underground Service Alert will be contacted so that the location of underground utilities at and near the areas to be probed can be delineated.

QUALITY ASSURANCE/ QUALITY CONTROL.

EQUIPMENT

LABORATORY EQUIPMENT

Western Geo-Engineer's mobile laboratory is equipped with a Shimadzu dual column, research grade, Flame Ionizing Detector (FID) chromatograph. The laboratory also employs a Photovac 10S50 Photo Ionizing Detector (PID) chromatograph and a Baseline FID total volatile organic analyzer. Other primary analytical instruments include a Hach DR2000 Spectrophotometer and an Ultraviolet (UV) light box for observing hydrocarbon fluorescence.

Secondary analytical tools include precision balances, 20X dissecting microscopes, liquid test kits (resistivity, pH, chloride, nitrate, dissolved oxygen, sulfate, ferrous iron, calcium, H_2S) soil or core test kits (lithology, sieve analysis), and one or more handheld vapor or oxygen/vapor detectors.

The mobile laboratory also includes a computer and printer, a refrigerator for sample storage, a ventilated hood box, a temperature controlled electric pan or hot plate to equilibrate soil and water for headspace analysis, health and safety reference material, personal safety equipment, DOT approved traffic warning signs and vests, traffic cones, fire extinguishers, survey equipment for preliminary site surface surveys, and a stabilized 6.5 KW electric generator. Air temperature and relative humidity metering equipment, a barometer, and a wind speed indicator are also carried in the laboratory when weather conditions could alter the results of vapor surveys. But it's not state Certified!

DRILLING EQUIPMENT

The primary drilling equipment is a Hilti electric hammer which is used to drive graduated diameters (one inch to 1/2 inch) and lengths (4 - 20 ft.) of solid drill steel rod to the desired sampling depths. Several types of threaded tubular steel rod are used for extending SPS test holes below depths of 20 feet. Surface holes through blacktop or concrete are first drilled with a Hilti rotary drill bit. Several types and sizes of surface casing can be installed to prevent surface caving of unconsolidated materials. The retrieval of the drilling rods is accomplished with a portable gasoline powered hydraulic ram puller.

Secondary drilling equipment includes a set of graduated diameter hand augers to enlarge SPS test holes or drill additional holes for the collection of certified soil samples.

SAMPLING EQUIPMENT

SOIL:

The primary soil sampling equipment used during the SPS is a graduated set of WEGE designed sampling rods equipped with an inner retractable plunger and threaded, replaceable 1/2 inch X 1 inch brass sample sleeves. The 1/2 inch diameter sampling rods are available in 5 foot to 20 foot lengths. A flexible version of the sampling rod is capable of collecting discrete "undisturbed" soil samples from depths from 20 to 30 feet.

WATER:

One quarter inch diameter polyethylene tubing is used to collect groundwater samples from the SPS test holes. Water is

drawn through the tubing with a vacuum produced by either a 60 CC disposable syringe or larger handpowered vacuum pump. The water is collected either directly in a pre-cleaned and weighed 40 CC VOA vial via a water drop out trap or transferred from the disposable 60 CC syringe to the 40 CC VOA vial. Deeper water is similarly drawn into a miniature ball seat bailer.

VAPOR:

One quarter inch diameter polyethylene tubing is used to collect vapor samples from the SPS test holes. Ambient air in the tubing is displaced with a disposable 60 cc syringe. A 1 cc disposable syringe is used to collect the vapor sample from the polyethylene tubing.

METHODS AND PROCEDURES

DRILLING AND SAMPLING OF TEST HOLES

The SPS test holes are created by driving the graduated steel rods to the desired sampling depth with an electric hammer. The test hole locations and sampling depths are either determined prior to the start of the SPS or by the laboratory director during the course of the SPS as the analytical results from the previous test holes are recorded. After the desired sampling depth has been reached, the solid or tubular drill steel is removed from the ground with the hydraulic puller and the desired samples are collected.

SOIL:

Relatively undisturbed soil plugs are collected from the base of the test hole with the WEGE designed sampling rod. The inner plunger of the sampling rod is placed in the closed position while the rod is guided down the test hole. This prevents the inadvertent collection of soil from other portions of the test hole. When the sampling rod has been installed at the base of the test hole the inner plunger is withdrawn to the open position and the sampling rod is pressed into the base of the test hole with hand power. The sample rod is removed from the hole and the 2 to 5 gram soil plug that has been collected in the brass sleeve is ejected into a pre-cleaned and pre-weighed 40 ml VOA vial by closing the inner plunger of the sampling rod. In most cases the soil plug does not come into contact with the gloves or hands of the sampling technician. The VOA vial is immediately capped, labeled with location and depth, and delivered to the on-site mobile laboratory.

Only a limited log of the materials encountered during the SPS is possible to produce, and only special conditions or events are recorded.

drawback

GROUNDWATER:

Groundwater is collected from the SPS test holes with the aid of disposable one quarter inch diameter polyethylene tubing connected to a 60 CC syringe. The tubing is worked down the test hole until it reaches the surface of the groundwater. Depth to groundwater is determined by trial evacuations of air with the syringe until vacuum resistance is noted when the tubing encounters the top of the water. The depth to water is recorded from one foot markings on the poly tubing. A water sample is then collected from just below the top of water by creating a vacuum with the 60 CC syringe. Approximately 20 CC of water are decanted from the tubing and/or disposable syringe into a 40 CC VOA vial. In some cases the VOA vial is placed in line with the vacuum syringe via extra tubing and rubber stopper as a water dropout container and the water sample is collected directly. The VOA vial is immediately capped, labeled with location and depth, and delivered to the on-site mobile laboratory.

SOIL VAPOR:

One quarter inch diameter polyethylene tubing is used to collect vapor samples from the SPS test holes. The tubing is inserted into the test hole until it is located just off bottom. A disposable 60 cc syringe is used to evacuate at least 110% of the air volume from the tubing, and thereby replacing it with a vapor sample from the base of the test hole. Once the tubing has been evacuated, a disposable one cc syringe is used to collect the vapor sample by inserting the needle of the syringe into the flexible tubing that connects the 60 cc syringe to the polyethylene tubing and extracting one cc of vapor sample from the polyethylene tubing. The vapor sample is then injected directly into the appropriate analyzer.

DECONTAMINATION OF DRILLING AND SAMPLING EQUIPMENT

The drive rods and small diameter soil samplers are flame sterilized with a propane torch. If site conditions makes flame sterilization unsafe, then the equipment is cleaned with a solution of TSP. The small brass sample sleeves are cleaned, then boiled prior to reuse.

The sample bottles, polyethylene tubing, and syringes are used once and then discarded.

The hand auger equipment is cleaned between each hole with TSP, and the resulting waste water is containerized.

MOBILE LABORATORY ANALYSIS OF SPS SAMPLES

ANALYSIS FOR TOTAL FUEL HYDROCARBONS:

The VOA vials containing the soil and groundwater samples are reweighed and the net sample weight is recorded. The vials are

placed in a water bath at 180°F and maintained at that temperature for at least 15 minutes prior to analysis. A 0.2 CC vapor sample is then collected from the headspace of the vial with a disposable syringe and injected into the sample port of the dual column chromatograph, with special valving to separate the hydrocarbon compounds into two distinct chromatograms (<C10 and >C10). The resulting chromatograms are compared with chromatograms produced from standards of known concentration to determine the hydrocarbon vapor concentration. The standards consist of three different concentrations: low, medium and high. The actual concentration varies according to compound or compound mixture. The hydrocarbon vapor concentration determined from the soil sample is adjusted for the net sample weight to determine the hydrocarbon concentration in the soil sample. Chromatograms from the headspace of the water samples are compared with chromatograms of standard samples of similar volume and known concentrations to directly determine the analyte concentrations in the water sample.

Vapor samples, i.e. vapor samples from the Soil Vapor phase of the SPS, are reduced to 0.2 cc and injected directly into the chromatograph without preheating.

The calibration verification samples are run daily, both for TPHg and for the individual compounds of interest.

Three point calibrations are run monthly or when the verification samples indicate that there is too much variation from the current calibration.

ANALYSIS FOR HYDROCARBONS > C+20:

In order to detect heavier hydrocarbons (> C^{+20}), indicating the presence of motor oil, gear oil, grease, transmission fluids, etc., the SPS soil plug is first prepared by injecting 3 CC of pentane with a syringe into the capped 40 ml VOA vial that contains the soil sample. The soil plug and pentane mixture are shaken for 30 seconds and then allowed to stand for 30 minutes to one hour. The soil and pentane mixture is then inspected in a light-tight glove box under white light and UV light for hydrocarbon fluorescence. The color and strength of the pentane "cut" and cut fluorescence are noted for each sample. If known oil and grease range contaminants are present in the soil, standards of known concentration are prepared from similar petroleum products that have been dissolved in a 3 CC pentane solution. The standards are then observed under UV light for color and strength of cut fluorescence and these relative values are compared with observations made on the soil samples to determine the concentrations of the oil and grease range hydrocarbons in the samples.

COLLECTION OF SOIL AND WATER SAMPLES FOR CERTIFIED ANALYSIS

DRILLING AND COLLECTION OF SOIL SAMPLES

In order to confirm the results of the SPS, soil and water samples may be collected from hand augered soil borings for certified laboratory analysis.

Normally, soil borings are drilled with a three inch diameter hand auger. If other size holes are needed, 4.5 and 7.5 inch diameter augers are available.

Soil samples are collected by hand driving a slide hammer sampling device containing one 2" x 6" brass sleeve into the bottom of the augered hole. If the volume of sample recovery from the hand driven sampling device is inadequate, the soil sample is collected directly from the bucket of the auger at specified intervals. The soil samples are collected from the auger bucket in 2 inch X 6 inch brass sleeves.

Small portions of the soil samples (1-4 grams) that are collected from the hand auger bucket are placed in pre-weighed 40 ml VOA vials for analysis in the WEGE mobile laboratory for comparison with the certified laboratory results.

The geologist maintains a log of the materials encountered while augering the soil borings.

PRESERVATION OF SOIL SAMPLES

After field screening, the sample sleeve ends are sealed with aluminum foil and further protected with plastic caps. The samples are labeled with ID#, location, depth, date, time, sampler's initials, and analyses to be performed. The samples are placed in an ice chest at 4°C and delivered with accompanying chain of custody documentation to a certified laboratory for analysis.

COLLECTION OF WATER SAMPLES FOR CERTIFIED ANALYSIS

In order to collect water samples for certified laboratory analysis, machine slotted two inch diameter PVC casing is placed in the augered boreholes upon completion to create temporary groundwater monitoring wells.

The water in the well casings of the temporary wells is then depleted with a disposable polyethylene bailer. The water level in a temporary well is allowed to return to its initial elevation prior to sampling. Water samples are collected with a disposable polyethylene bailer and decanted with no headspace into two 40 ml VOA vials containing 0.5 ml HCL as a preservative. A water sample is also decanted into a sealed 250 cc glass container for dissolved oxygen measurements. The water samples are labeled and preserved as described above for the soil samples.

ADDITIONAL SPS PROCEDURES AND ANALYSES

ANALYSIS OF WATER SAMPLES FOR DISSOLVED OXYGEN CONCENTRATIONS

Water samples collected from temporary wells during a SPS are analyzed within 5 minutes of collection time for concentrations of dissolved oxygen in the WEGE mobile laboratory using a Hach Spectrophotometer Model 2000. In addition to dissolved oxygen, further natural attenuation can be documented using the Hach Spectrophotometer for quantifying: Nitrate (NO_3), Sulfate (SO_4^{-2}) and Ferrous Iron (Fe^{+2}). Details of the HACH methods and procedures for a particular analyte are included in a supplemental appendix.

SLUG TESTS

Once the groundwater elevation has stabilized in the temporary well it is possible to perform a slug test in order to determine Hydraulic Conductivity (K).

To perform a slug test, either a pressure transducer is placed in the well or resistivity probe and a stop watch are used to measure the groundwater depth over time. A bailer of water is extracted from the water column and periodic measurements of depth to water are recorded along with elapsed time since extraction until the water level had returned to its initial elevation. The measurements are either done automatically by the pressure transducer or by hand with the resistivity probe and stop watch.

TIME FRAME

December 12, 1996	Quarterly groundwater sampling.
January 6, 1997	SPS rapid site characterization, free product delineation.
January 20, 1997	Report of findings and evaluation for cost beneficial remedial action for free product removal and if appropriate Risk Based Corrective Action, Tier 2.

HEALTH AND SAFETY

This site is being treated as a class D site, normal common sense is to be used.

RINSEATES, PURGED GROUNDWATER AND SOIL STORAGE/TREATMENT.

All rinseates and purged water produced from the groundwater sampling is transferred into 55 gallon DOT H17 drums for later removal by Evergreen Services to be recycled. If soil is produced from the SPS, this soil will be placed into a 55 gallon DOT H17 drum for later disposal.

LIMITATIONS

The information presented in this report is based on the following:

1. The observations and data collected by field personnel.
2. The results of laboratory analyses performed by a state certified analytical laboratory.
3. Our understanding of the regulations of Alameda County, the City of Oakland and the State of California.
4. References reviewed for this report.

Changes in groundwater conditions can occur due to variations in rainfall, temperature, local and regional water use, and local construction practices. In addition, variations in the soil and groundwater conditions could exist beyond the points explored in this investigation.

State Certified Laboratory analytical results are included in this report. This laboratory follows EPA and State of California approved procedures; however, WEGE is not responsible for errors in these laboratory results.

The services performed by Western Geo-Engineers, a corporation under California Registered Geologist #3037 and/or Contractors License #513857, have been conducted in a manner consistent with the level of care and skill ordinarily exercised by members of our profession currently practicing under similar conditions in the State of California, the City of Oakland and Alameda County. Our work and/or supervision of remediation and/or abatement operations, active or preliminary at this site is no way meant to imply that we are owners or operators of this site. Please note that the known contamination of soil and/or groundwater must be reported to the appropriate agencies in a timely manner. No other warranty expressed or implied, is made.

Sincerely yours,

George L. Converse
Project Manager/Geologist-WEGE

Jack E. Napper
Calif. Reg. Geologist

cc: Ms. Jennifer Eberly, Alameda County Health

TABLE 1
VENTING/PURGING RS-1, RS-2 & RS-3
FORMER DESERT PETROLEUM STATION #796
2844 MOUNTAIN BLVD.
OAKLAND, CALIFORNIA

DATE		TIME	DEPTH TO WATER (FEET)	VACUUM (FEET WATER)	FLOW (CFM)	TPH GASOLINE (mg/L)	CO2 (PERCENT)	CALCULATED POUNDS AS GASOLINE	ACCUMULATIVE POUNDS AS GASOLINE 0	CALCULATED POUNDS AS CARBON	ACCUMULATIVE POUNDS AS CARBON	GALLONS WATER PURGED	TOTAL GALLONS PURGED	TOTAL FLOATING PRODUCT THICKNESS ft.	DISSOLVED TPHg* IN WATER	GALLONS GASOLINE PURGED	ACCUM. GALLONS PURGED	TOTAL ACCUMULAT GALLONS O GASOLINE RECOVERED
10/01/96	RS-1 *	14.75	9.4	18.75	29.3													
		15		20.15	32.8	166.32	3	4.812	4.81	0.47	0.47	30	30	0.52	75	0.02	0.02	0.8
	RS-2 *	15.25	7.64	18.75	27.4													
		15.5		19.69	32.8	134.59	3.5	3.775	8.59	0.53	0.99	30	60	0	6.3	0.00	0.02	1.4
	RS-3 *	15.5	7.1	18.28	38.8													
		15.75		17.72	38.8	150.3	6	5.432	14.02	1.17	2.16	25	85	0	1	0.00	0.02	2.3
	RS-1 *	15.75		19.69	32.8													
		16		19.69	32.8	173.65	4	5.304	19.32	0.66	2.82	25	110	0	75	0.03	0.05	3.1
10/08/96	RS-1	12.5	8.94	18.75	29.3													
		12.75	12.15	20.15	32.8	136.08	2.9	3.937	23.26	0.45	3.27	40	150	0	75	0.04	0.10	3.8
	RS-2	13.25	7.8	18.75	27.4													
		13.75	19.8	19.69	32.8	141.44	3.7	7.935	31.20	1.12	4.39	30	180	0	6.3	0.00	0.10	5.1
	RS-3	14	7.2	18.28	38.8													
		14.5	8.32	17.72	38.8	116.5	3.1	8.421	39.62	1.21	5.59	25	205	0	1	0.00	0.10	6.4
	RS-1	14.75	10.7	19.69	32.8													
		15	19.24	19.69	32.8	112.38	3	3.433	43.05	0.49	6.09	30	235	0	75	0.07	0.17	7.1
10/15/96	RS-1	13.5	9	20.62	32.8													
		14	13.24	20.15	32.8	179.04	4.5	10.938	53.99	1.48	7.56	35	270	0	75	0.08	0.24	8.9
	RS-2	14.25	7.8	21.09	32.8													
		14.75	19	18.47	38.8	136.13	4	9.078	63.07	1.44	9.00	35	305	0	6.3	0.01	0.25	10.3

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OAKLAND, CALIFORNIA

DATE		TIME	DEPTH TO WATER FEET	VACUUM FEET WATER	FLOW CFM	TPH GASOLINE mg/L	CO2 PERCENT	CALCULATED POUNDS AS GASOLINE	ACCUMULATIVE POUNDS AS GASOLINE 0	CALCULATED POUNDS AS CARBON	ACCUMULATIVE POUNDS AS CARBON	GALLONS WATER PURGED	TOTAL GALLONS PURGED	TOTAL FLOATING PRODUCT THICKNESS	DISSOLVED TPHg* IN WATER	GALLONS GASOLINE PURGED	ACCUM. GALLONS PURGED	TOTAL ACCUMULAT GALLONS O GASOLINE RECOVERED
	RS-3	14.75	7.25	22.50	41.5													
		15.25	8.92	17.34	44.0	103.1	3.5	8.209	71.28	1.50	10.50	25	330	0	1	0.00	0.25	11.7
	RS-1	15.5	11.32	20.15	32.8													
		15.75	19.2	20.15	32.8	80.7	2.5	2.465	73.74	0.41	10.91	25	355	0	75	0.10	0.35	12.2
10/21/96	RS-1	14.25	8.05	19.69	35.9													
		14.75	13.35	20.15	32.8	128.69	3.5	8.237	81.98	1.21	12.11	25	380	0	75	0.11	0.46	13.6
	RS-2	15	7.82	7.50	46.4													
		15.25	13.42	18.75	41.5	117.98	3	4.828	86.81	0.66	12.77	20	400	0	6.3	0.01	0.47	14.4
	RS-3	15.75	7.3	17.34	46.4													
		16	8.6	17.34	44.0	106.36	3	4.477	91.28	0.68	13.45	25	425	0	1	0.00	0.47	15.1
	RS-1	16.75	7.3	19.97	32.8													
		17	8.6	19.97	32.8	11.7	0.5	0.357	91.64	0.08	13.53	25	450	0	75	0.13	0.60	15.3
10/29/96	RS-1	13.5	8.05	19.69	35.9													
		14	13.35	20.15	32.8	192.99	4	12.353	103.99	1.38	14.91	35	485	0.17	75	0.14	0.74	17.4
	RS-2	14.5	7.82	7.50	46.4													
		15	13.42	18.75	41.5	105.37	3	8.623	112.62	1.32	16.23	25	510	0	6.3	0.01	0.75	18.8
	RS-3	15	7.3	17.34	46.4													
		15.5	8.6	17.34	44.0	66.74	2.5	5.618	118.24	1.13	17.36	25	535	0	1	0.00	0.76	19.7
	RS-1	15.75	7.3	19.97	32.8													

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		16	8.6	19.97	32.8	130.36	3	3.982	122.22	0.49	17.86	25	560	0.063	75	0.16	0.92	20.5
11/05/96	RS-1	13.5	8.05	19.69	35.9													
		13.75	13.35	20.15	32.8	151.79	3	4.858	127.08	0.52	18.37	30	590	0.021	75	0.17	1.08	21.4
	RS-2	14	7.82	7.50	46.4													
		14.25	13.42	18.75	41.5	100.47	3	4.111	131.19	0.66	19.03	25	615	0	6.3	0.01	1.10	22.1
	RS-3	14.5	7.3	17.34	46.4													
		14.75	8.6	17.34	44.0	94.63	2.8	3.983	135.17	0.63	19.67	30	645	0	1	0.00	1.10	22.7
	RS-1	15	7.3	19.97	32.8													
		15.25	8.6	19.97	32.8	67.06	2	2.048	137.22	0.33	20.00	20	665	0.025	75	0.19	1.29	23.2
11/12/96	RS-1	13.5	8.05	20.62	32.8													
		13.75	13.35	20.15	35.9	85.42	1.5	2.734	139.95	0.26	20.25	25	690	0.42	75	0.21	1.50	23.9
	RS-2	14	7.82	20.62	35.9													
		14.25	13.42	17.34	44.0	99.28	3	3.695	143.65	0.60	20.85	25	715	0	6.3	0.02	1.51	24.5
	RS-3	14.5	7.3	17.34	35.9													
		14.75	8.6	17.81	38.8	130.21	3	4.532	148.18	0.56	21.42	26	741	0	1	0.00	1.52	25.2
	RS-1	15	7.3	21.09	38.8													
		15.25	8.6	20.53	38.8	108.46	2	3.920	152.10	0.39	21.80	18	759	0.21	75	0.22	1.74	26.1
11/19/96	RS-1	13.5	7.25	22.50	35.9													
		13.75	13.35	20.15	25.4	17.3	0.45	0.494	152.59	0.07	21.87	25	784	0.17	75	0.23	1.96	26.4

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DATE		TIME	DEPTH TO WATER FEET	VACUUM FEET WATER	FLOW CFM	TPH GASOLINE mg/L	CO2 PERCENT	CALCULATED POUNDS AS GASOLINE	ACCUMULATIVE POUNDS AS GASOLINE 0	CALCULATED POUNDS AS CARBON	ACCUMULATIVE POUNDS AS CARBON	GALLONS WATER PURGED	TOTAL GALLONS PURGED	TOTAL FLOATING PRODUCT THICKNESS	DISSOLVED TPHg* IN WATER	GALLONS GASOLINE PURGED	ACCUM. GALLONS PURGED	TOTAL ACCUMULAT GALLONS O GASOLINE RECOVERED
	RS-2	14	6.16	21.09	32.8													
		14.25	13.42	22.50	35.9	88.79	2.5	2.842	155.43	0.43	22.30	25	809	0	6.3	0.02	1.98	26.9
	RS-3	14.25	5.92	22.50	29.3													
		14.5	8.6	22.03	29.3	82.34	2.75	2.250	157.68	0.40	22.71	25	834	0	1	0.00	1.98	27.2
	RS-1	14.75	8.2	20.86	32.8													
		15	17.6	21.56	29.3	17.3	0.45	0.501	158.19	0.07	22.78	25	859	0.02	75	0.24	2.23	27.5
11/25/96	RS-1	10	6.72	22.97	27.4													
		10.25	12.84	22.97	27.4	14.82	0.5	0.379	158.56	0.07	22.85	34	893	0.75	75	0.27	2.50	27.9
	RS-2	10.5	5.7	21.00	32.8													
		10.75	17.64	19.22	35.9	99.85	2	3.196	161.76	0.34	23.19	25	918	0	6.3	0.02	2.52	28.4
	RS-3	11	5.72	22.31	25.4													
		11.25	6.2	21.70	27.4	26.83	0.8	0.660	162.42	0.11	23.29	25	943	0	1	0.00	2.52	28.5
	RS-1	11.5	9.06	20.62	25.4													
		11.75	15.3	21.09	27.4	31.13	0.5	0.766	163.19	0.07	23.36	27	970	0.08	75	0.28	2.80	28.9
12/03/96	RS-1	13.5	7.42	22.03	29.3													
		13.75	14.52	21.56	27.4	4.99	0.13	0.132	163.32	0.02	23.38	30	1000	0.5	75	0.29	3.10	29.2
	RS-2	14	5.84	20.81	32.8													
		14.25	17.4	18.75	38.8	104.81	2	3.495	166.81	0.36	23.74	25	1025	0	6.3	0.02	3.12	29.8
	RS-3	14.5	5.82	22.03	25.4													
		14.75	6.72	21.56	25.4	30.43	0.6	0.720	167.53	0.08	23.81	27	1052	0	1	0.00	3.12	29.9

TABLE 1
VENTING/PURGING RS-1, RS-2 & RS-3
FORMER DESERT PETROLEUM STATION #796
2844 MOUNTAIN BLVD.
OAKLAND, CALIFORNIA

DATE	TIME	DEPTH TO WATER FEET	VACUUM FEET WATER	FLOW CFM	TPH GASOLINE mg/L	CO2 PERCENT	CALCULATED POUNDS AS GASOLINE	ACCUMULATIVE POUNDS AS GASOLINE	CALCULATED POUNDS AS CARBON	ACCUMULATIVE POUNDS AS CARBON	GALLONS WATER PURGED	TOTAL GALLONS PURGED	TOTAL FLOATING PRODUCT THICKNESS	DISSOLVED TPHg* IN WATER	GALLONS GASOLINE PURGED	ACCUM. GALLONS PURGED	TOTAL ACCUMULAT GALLONS O GASOLINE RECOVERED
								0									
RS-1	15	9.58	21.47	29.3													
	15.25	16.26	21.37	29.3	32.93	0.75	0.900	168.43	0.11	23.92	25	1077	0.01	75	0.31	3.43	30.4

* CONCENTRATIONS INFERRED FROM 11/12/96 LAB
CFM CUBIC FEET PER MINUTE
Hg MERCURY
mg/L PARTS PER MILLION, MILLIGRAMS PER LITER
TPH TOTAL FUEL HYDROCARBONS