REMEDIATION SERVICE, INT'L.

P.O. BOX 1601, OXNARD, CALIFORNIA 93032
(805) 644-5892 • FAX (805) 654-0720

January 18, 1990

Ariu Levi
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621

RE: Desert Petroleum station #793
4035 Park Boulevard
Oakland, CA

Dear Mr. Levi:

My letter of January 12 contained a typographic error that needs to be corrected. The vapor extraction systems were started up on December 13, not on December 18 as stated in my earlier letter. It has also been brought to my attention that there were two glitches in the text of the report. It appears the computer repeated and deleted lines for some as yet unknown reason. Enclosed is a corrected copy; please dispose of the first report. I apologize for any inconvenience this may have caused you.

If you have any questions or concerns, please give me a call.

Sincerely,

Wendy J. Wittl
Senior Project Geologist

encl.

cc: Desert Petroleum, J. R.

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DUPLICATE(2)

? Slotting depths
depth at termination

January 12, 1990

Ariu Levi
Hazardous Materials Specialist
Alameda County Health Care Services Agency
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, California 94621

RE: Desert Petroleum station #793
4035 Park Boulevard
Oakland, CA

Dear Mr. Levi:

On behalf of Desert Petroleum, Remediation Service Int'l is submitting the Site Assessment and Remediation Report. The enclosed report covers all of the site assessment and remediation work completed as of January 12, 1990. Remediation efforts have been continuous since December 18, with two vapor extraction systems operating to reduce vapors concentrations in the sewer and on-site. A status report will be submitted on February 15, covering the systems operation in the months of December, 1989 and January, 1990.

If you have any questions or concerns, please give me a call.

Sincerely,

Wendy J. Wittl
Senior Project Geologist

encl.

cc: Desert Petroleum, J. R.

RO 429

DESERT PETROLEUM
4035 PARK AVE.
OAKLAND

Critical site assessment reports published between 1990 - 1995

(Keep these documents together in this folder)

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REMEDIATION SERVICE, INT'L.
P.O. BOX 1601, OXNARD, CALIFORNIA 93032
(805) 644-5892 • FAX (805) 654-0720

SITE ASSESSMENT AND REMEDIATION REPORT
for
DESERT PETROLEUM STATION NO. 793
4035 Park Boulevard
Oakland, California

Prepared for:
DESERT PETROLEUM, INC.
2060 Knoll Drive
Ventura, CA 93003

Prepared by:
RSI - REMEDIATION SERVICE, INT'L
P.O. Box 1601
Oxnard, CA 93032

January 5, 1990

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1.0 INTRODUCTION

Desert Petroleum's station no. 793 (branded Beacon) is located at 4035 Park Boulevard in the City of Oakland, Alameda County, California (Figures 1 and 2). It is a retail fuel station which has been leased to Mr. Jason Golpad who operates the station under the name of J & M's Beacon Service Station. On November 30, 1989, Desert Petroleum was notified by the Alameda County Health Department (ACHD) that gasoline was leaking into a sewer on Brighton Avenue (Figure 2), near the station. This report details the work that has been done to: determine the source of the gasoline leak, to stop the leakage of gasoline, to assess the extent of contamination due to leakage of gasoline and to remediate any contamination due to the leakage of gasoline.

2.0 SITE DESCRIPTION

The station is located at the intersection of Park Boulevard and Hampel Road in a predominantly residential neighborhood (Figure 2). It is on the flank of a hill which slopes approximately 10 degrees to the west. The ground surface of the station itself is fairly level due to grading and a deck which is located at the western corner of the station (Figure 3). Based on the U.S.G.S. topographical map of the area, the surface elevation of the station is approximately 240 feet above mean sea level (MSL). There is an approximate 12 foot drop from the surface of the deck, at the far western corner of the station, to the ground surface below. The area beneath the deck is enclosed, similar to a sub-basement, and access to the area beneath the deck can be

gained from the driveway which parallels the northwest property line of the station.

Improvements at the station consist of a building, two pump islands, a waste oil tank, and three underground fuel storage tanks (Figure 3). The underground fuel storage tanks consist of an 8,000 gallon tank for regular leaded gasoline, a 10,000 gallon tank for regular unleaded gasoline and an 8,000 gallon tank for super unleaded gasoline. The age of the tanks is unknown, but is thought to be approximately 20 years. They are steel and were relined approximately four years ago. When the tanks were relined, the associated piping was also replaced.

3.0 BACKGROUND

On Thursday, November 30, 1989, Mr. Ariu Levi of the Alameda County Health Department notified Desert Petroleum that gasoline was trickling into a sewer on Brighton Avenue through a crack in the bottom of the sewer manway. This was discovered due to a homeowner in the area reporting the smell of gasoline vapors. Desert Petroleum's area manager was sent to the site on November 30 to reconstruct and audit tank inventories and sales records. The audit indicated overages on all tanks.

On Friday, December 1, 1989, Mr. Jason Golpad, the site operator, was contacted by Desert Petroleum and advised to test the fuel tanks and associated lines using an approved testing company and system.

On Wednesday, December 6, 1989, the underground storage tanks were tested. The results of these tests were inconclusive. The tank tester advised that additional testing and time would be required for conclusive results. Desert Petroleum decided further testing was not appropriate and considered it important to have the tanks emptied immediately to prevent any possible further release of product.

On Thursday, December 7, 1989 all fuel was removed from the underground storage tanks. However, the retail fueling facility had already been closed on December 5. The supply lines were pressure tested by Walton Engineering. The regular leaded and super unleaded lines passed but the regular unleaded supply line failed. Further investigation on this date verified a 1/2 inch hole in the 2 inch unleaded supply line beneath the eastern pump island. Also on Thursday, December 7, 1989, an ultrasound investigation was conducted to determine the location of the sewer lines. Figures 3 and 4 show the sewer lines, onsite and offsite respectively. In addition, an onsite soil gas investigation was also conducted. The results of the soil gas investigation found the site to be basically clean. There was one hot spot associated with the pump islands and there was some contamination associated with the located sewer line in the western corner of the property.

On Friday, December 8, 1989, Desert Petroleum filed an Unauthorized Release Report (Appendix B). Drilling permits for site assessment were obtained from the Alameda County Flood

Control and Water Conservation District, Zone 7 (Appendix C). Underground Service Alert was notified and asked to locate lines on and near the site and around the sewer on Brighton Avenue (USA work order 334-954).

On Monday, December 11, 1989, drilling and soil sampling was initiated in order to assess possible contamination beneath the site and to provide wells for water sampling and remediation. This work is discussed in detail in section 4.0 of this report labeled SITE INVESTIGATION.

On Tuesday, December 12, 1989, an encroachment permit was secured from the City of Oakland for assessment work on Brighton Avenue (Appendix D).

On Wednesday, December 13, 1989, active remediation was initiated. This is discussed in detail in section 5.0 of this report labeled REMEDIATION.

4.0 SITE INVESTIGATION

4.1 Investigative Procedures

Under the supervision of an RSI geologist, five soil borings were drilled onsite (RS-1, RS-2, RS-3, RS-5 and RS-6, Figure 3) and one boring was drilled near the sewer on Brighton Avenue (RS-4, Figure 2) on December 11, 12 and 13, 1989. Three of the borings onsite were completed as groundwater monitoring/extraction wells (RS-1, RS-5 and RS-6) and one of the borings was completed as a vapor extraction well (RS-2). During drilling operations, soil samples were collected every 5 feet starting at 5 feet beneath

ground surface (bgs) down to the total depth of each boring. The soil samples were used for laboratory analysis, field testing and soil description. The boring logs, a description of drilling and soil sampling operations and a well construction diagram are included in Appendix E. Table 1 presents well construction specifics.

All drilling was done by:

Datum Exploration
4300 Evora Road
Pittsburg, CA 94565
License Number 480802

After the groundwater monitoring/extraction wells were completed, they were developed and a groundwater sample was collected following the procedures outlined in Appendix F. Both soil and groundwater samples were transported to a state certified laboratory for analysis of benzene, toluene, ethylbenzene and xylenes (BTEX) and/or total petroleum hydrocarbons (TPH) using EPA methods 8020 and 8015.

All samples were analyzed by:

Superior Analytical Laboratory, Inc.
1385 Fairfax Street, Suite D
San Francisco, CA 94124

Table 2 presents a summary of analytical results for soil samples and Table 3 gives a summary of analytical results for water

samples. The complete official results and chain of custody documents are included in Appendix G.

4.2 Findings - Soil

In general, the soils beneath the site, down to a depth of 40 feet, consist mainly of tan, brown or black clays, silty clays [redacted]. These clayey soils often contain small amounts of gravel at depths of approximately 10 feet or deeper, but are generally tight and fairly plastic in nature. Some sandier soils were also found such as in the samples taken at 20 and 30 feet below ground surface (bgs) from RS-1 and 15 feet bgs from RS-2, which consisted of clayey sand with some gravel. The samples taken at 25 and 30 feet bgs from RS-5 also consisted of clayey sand and the sample taken at 25 feet bgs in RS-6 consisted of silty sand. Bedrock was not encountered during drilling operations. For more detailed soil descriptions see the boring logs in Appendix E.

RS-1 was drilled east of the pump island where the leaking supply line was found (Figure 3). It was drilled to a total depth of 30 feet and completed as a groundwater monitoring/extraction well. Laboratory analysis of soil samples from this boring indicated that the sample from 5 feet bgs had a TPH concentration of 16 parts per million (ppm) and the sample from 10 feet bgs had a TPH concentration of 33 ppm. The samples from 15 and 20 feet bgs contained no detectable TPH levels. However, there was some toluene (0.008 ppm) detected in the sample from 20 feet bgs (Table 2). The sample from 25 feet bgs had a TPH level of 10

ppm and all BTEX compounds were found in concentrations of less than 1 ppm. The samples from 30 feet bgs contained some toluene (0.012 ppm) but no benzene, ethylbenzene, xylenes or TPH was detected.

RS-2 was drilled northwest of the underground tanks to a depth of 20 feet and completed as a vapor extraction well. Only the sample from 10 feet bgs contained detectable TPH concentrations (11 ppm). The sample from 20 feet bgs was also analyzed for BTEX and 0.017 ppm of toluene was detected.

RS-3 was drilled near the storm drain in the southern corner of the property to determine if gasoline may have migrated along underground lines in that direction. It was drilled to a depth of 10 feet and subsequently abandoned. No detectable concentrations of TPH were found in the samples from 5 and 10 feet bgs. Low levels of toluene (0.043 ppm) and xylenes (0.008 ppm) were detected in the sample from 5 feet bgs. Toluene was also detected in the sample from 10 feet bgs at a concentration of 0.20 ppm.

RS-4 was drilled just east of the sewer manhole on Brighton Avenue in an attempt to penetrate gasoline saturated soils. Nothing but fairly clean clay was penetrated and the boring was abandoned at a depth of 10 feet. The sample taken at 5 feet bgs had a TPH concentration of 50 ppm and BTEX concentrations ranging from 0.74 to 4.1 ppm (Table 2). The sample taken at 10 feet bgs

had a TPH concentration of 8 ppm and BTEX concentrations ranging from 0.17 to 0.94 ppm.

RS-5 was drilled near the western corner of the station, as close as possible to the sewer line. It was drilled to a depth of 40 feet and completed as a groundwater monitoring/extraction well. No detectable concentrations of TPH were found in the samples from 5, 10 and 15 feet bgs. The sample from 20 feet bgs had a TPH concentration of 530 ppm and BTEX concentrations ranging from 1.5 ppm up to 22 ppm. The sample from 25 feet bgs contained much lower concentrations of hydrocarbons with a TPH concentration of only 4 ppm and BTEX concentrations ranging from 0.058 to 0.7 ppm. However, the TPH level in the sample from 30 feet bgs was much higher with a concentration of 1,600 ppm. No detectable concentration of TPH was found in the sample from 35 feet bgs and only 1 ppm of TPH was found in the sample from 40 feet bgs. The sample from 40 feet bgs was also analyzed for BTEX and contained only minor concentrations ranging from 0.009 to 0.069 ppm.

RS-6 was drilled in the northwest portion of the station in the downhill direction from the underground storage tanks. It was drilled to a depth of 35 feet and completed as a groundwater monitoring/extraction well. None of the soil samples contained detectable TPH concentrations. The samples from 20, 25 and 35 feet bgs were also analyzed for BTEX. No BTEX compounds were detected in these three samples in concentrations greater than 0.017 ppm (Table 2).

Due to the profusion of underground lines near the sewer manway on Brighton Avenue, the area northeast of the manway was excavated with a backhoe instead of using a drilling rig. The excavation uncovered three different underground lines. The uppermost line was a storm drain line that transects Brighton Avenue just southeast of the sewer manway. The storm drain line was encountered at approximately 2.5 to 3 feet deep. Beneath the storm drain line, at a depth of approximately 5 feet, the sewer line which connects to the station runs into the northwest side of the manway. Gasoline appeared to be seeping from the backfill around this sewer line. Beneath the sewer line, at a depth of approximately 6 feet, is a water main which runs along the north side of Brighton Avenue. Native soil beneath the water main and around the sewer manway consists of tight clay.

Soil from the excavation on Brighton Avenue was stockpiled at the station. It was piled on, and covered with, plastic sheeting. Two grab samples were collected and analyzed from this spoils pile (samples SB-1 and SB-2, Table 2). SB-1 had a TPH concentration of 130 ppm and SB-2 had a TPH concentration of 370 ppm.

Prior to backfilling the excavation with pea gravel, an 8 foot section of perforated 4 inch PVC pipe was placed in the hole for use as an extraction well. This well is labeled as RS-7 on Figure 2.

4.3 Findings - Groundwater

Small amounts of groundwater were encountered beneath the station during drilling operations. Groundwater was first noticed in RS-1 at a depth of 20 feet after the boring had been drilled to 20 feet bgs on December 11, 1989 and left open overnight. A few inches had accumulated; more water accumulated in the boring as it was drilled on the following day to a total depth of 30 feet, where it was terminated in clayey sands. However, since none of the soil samples were saturated, it could not be determined from what depth the water was being produced. Depth to water measurements on December 14, 1989 indicated that the water table had stabilized in RS-1 at a depth of 24.25 feet (Table 4).

During drilling operations, water was first noticed in RS-5 at a depth of 35 feet. But, as in RS-1, none of the soil samples appeared to be saturated or capable of producing much water. However, RS-5 was the only well to produce even moderate amounts of [redacted]. Drilling was terminated at a depth of 40 feet in sandy clays. The measured depth to water in RS-5 on December 14, 1989 was 25.97 feet.

Wet, silty sands were encountered while drilling RS-6 between 20 and 25 feet bgs. These wet silty sands are underlain by damp clays, and the boring was terminated at a depth of 35 feet in silty clay. Very little water was produced while drilling. The measured depth to water in RS-6 on December 14, 1989, was 22.52 feet.

After the wells were completed, but before the traffic boxes were installed, they were allowed to stand overnight. On December 14, 1989, depth to water measurements were taken, the top of casing for all wells was surveyed, the wells were developed and water samples were collected.

The depth to water table measurements and top of casing survey were used to determine the water table elevation in each of the three groundwater monitoring extraction wells. The water table elevation in RS-1 was determined to be at 215.75 feet above MSL, in RS-5 it was 215.29 feet above MSL and in RS-6 it was 217.71 feet above MSL (Table 4). This information was used to construct and solve a three point problem. From this it was determined that on December 14, 1989 the groundwater gradient was towards the south and dropped approximately 4.5 feet per 100 feet (Figure 5).

All of the groundwater samples were found to contain elevated levels of hydrocarbons (Table 3). The sample from RS-1 had a TPH concentration of 19 ppm and BTEX concentrations ranging from 0.2 ppm up to 2.7 ppm. The sample from RS-5 contained 57 ppm of TPH and BTEX concentrations ranging from 0.67 ppm up to 4.3 ppm. The sample from RS-6 had a TPH concentration of 11 ppm and BTEX levels ranging from 0.16 ppm up to 1.7 ppm.

4.4 Conclusions

Soil contamination at this site appears to be fairly minimal. As expected there are indications of soil contamination near

hydrocarbons in the samples from 5 and 10 feet bgs in RS-1. The site survey also indicated that there is probably soil contamination along the sewer line on the western side of the station. Although the tight soils beneath the station appear to have inhibited hydrocarbon migration, some vertical migration of hydrocarbons is suspected due to the high concentrations of hydrocarbons in the soil samples collected at 20 and 30 feet bgs from RS-5 and the hydrocarbon concentrations in the groundwater samples. Even though the soil samples taken at 25 feet bgs from RS-1 and RS-6 contained only minor concentrations of hydrocarbons, the groundwater samples from these two wells indicate that soil contamination may exist just above the water table beneath a portion of the site.

Groundwater appears to exist in thin perched layers in the more porous soils beneath the site. The groundwater samples from all three wells were found to contain elevated levels of hydrocarbons. Although the extent of groundwater contamination has not been determined, only a small volume of water appears to be involved. The direction of groundwater flow is not in the expected direction of the topography, and additional work is necessary to confirm the gradient.

It has been determined that one source of product leakage has been from the unleaded supply line beneath the eastern pump island. Due to the nature of the soil underlying the station (mostly tight clayey soils), it is suspected that product from this leak has migrated mostly along the underground lines beneath

this leak has migrated mostly along the underground lines beneath the station. The trenches in which underground lines are placed are generally backfilled with sand. This sand is much more porous than the native soils beneath the station and thus provides a conduit for the migration of liquids.

It is postulated that product from the supply line leak migrated down the supply line trench to the point where it intersects the pump electric line trench (Figure 3). From there it appears to have migrated along the electric line trench, beneath the building, to a point near the bathrooms where the electric line trench is thought to intersect a sewer line trench. From there it is postulated that the product followed the sewer lines (Figure 3 and 4), within the trench backfill, across and off the property and down to the sewer manway on Brighton Avenue, where it was leaking into the sewer manway due to a crack in the base of the sewer.

If product has migrated in the above described manner, soil contamination would be expected along the underground lines from the station down to the sewer. This suspected contamination probably does not extend far from the lines due to the nature of the native soils. As evident from soil samples taken during drilling, groundwater conditions south of the sewer on Brighton Avenue are monitored by RS-7.

tanks and the lines were pressure tested. On December 11, 12 and 13 the extraction wells were installed as previously discussed.

On December 13, 1989 a backhoe was brought in to excavate along the sewer on Brighton. A vacuum truck was also brought in and put on standby. During the excavation a 6 inch water main was broken. The water department had incorrectly marked the location of this line. Water from the main flooded the excavation and product also began to seep in and float on the water. The vacuum truck was used to pump out this fluid until the water department could fix the leak. Each load was manifested and sent to H & H Shipyard for treatment and disposal. Copies of these Hazardous Waste Manifests are contained in Appendix J. Soil from the excavation was stockpiled at the station for future remediation or disposal. After the excavation was backfilled, and RS-7 was constructed, the vacuum truck was used to withdraw fluids from RS-7 for approximately one week. Fluid volumes had decreased significantly by this time. Approximately 7,200 gallons of the fuel/wastewater mixture were removed from the excavation and RS-7.

During the excavation work on Brighton and the subsequent repair work, RSI's portable vapor extraction unit was used to extract and treat vapors from the sewer manway and the excavation. Since the construction of RS-7, the portable unit has been used during daylight hours to withdraw and treat gasoline vapors from this well. RSI's S.A.V.E. system was installed on the site on December 13, 14 and 15. It was connected to wells RS-1, RS-2, RS-5 and RS-6. For the first week it was in operation 24 hours

a day for vapor extraction and treatment. Due to noise and vibration problems it is currently being used only during daylight hours. Work is currently in progress to enclose and soundproof the system so it can be returned to around the clock operation.

5.2 Remediation Equipment

RSI's S.A.V.E. System (shown in Appendix H) and the portable vapor extraction unit are being used to remediate gasoline contaminated soils at this site. The S.A.V.E. equipment will also be used to remediate contaminated water as soon as the necessary permits are obtained.

The S.A.V.E. System is a blending of three separate types of remediation which are more efficient than the three systems alone. These systems are as follows:

1. Vapor extraction from soil.
2. Spray aeration treatment of groundwater.
3. Thermal oxidation using an engine for combusting hydrocarbon-laden vapors and a catalytic converter to control emissions.

The soil vapor extraction system consists of a vacuum pump driven by an internal combustion engine. The engine powers a vacuum pump which is connected to one or more extraction wells. Placing a vacuum on the well, or wells, causes an air flow through the contaminated soil and into the well. The air flow causes the gasoline to be volatilized and entrained in the flow. The vapors

are drawn through the well and into the engine where they are burned as fuel. Generally a secondary fuel supply, either propane or natural gas, is necessary. The exhaust is then passed through a catalytic converter to insure complete combustion. Emissions from the engine, even when running on 100% gasoline vapors, meets the air quality standards for motor vehicle engines.

Groundwater contamination is remediated by use of a spray aerator. Spray aeration works on the same principle as an air stripper. In an air stripper, air is moved quickly over the surface of hydrocarbon laden water in order to volatilize the hydrocarbons. In spray aeration, hydrocarbon laden water is sprayed through the air inside a tank causing the hydrocarbons to volatilize. However, in the spray aerator there is no packing to foul or replace. To ensure sufficient hydrocarbon removal, the water is recirculated through a second set of spray nozzles. In this part of the system, water-hydrocarbon separation is enhanced by both vacuum and heat. By lowering the air pressure, the temperature at which hydrocarbons vaporize drops. Increasing the temperature further increases the potential for hydrocarbons to vaporize. The RSI spray aerator takes advantage of both of these principles by spraying heated water in a vacuum. The engine provides the energy source for heating the water as well as powering the vacuum pump and downhole water pumps.

As the water level rises in the spray aerator tank from influx of water from the wells, a float will trigger a discharge of

an equal amount of remediated water. The level of contaminant reduction can be determined by sampling water influent and effluent. The treated water will then be passed through activated charcoal for final polishing before discharge. At an assumed recovery rate of 5 gpm, there will be an average of 20 cycles through the system before discharge. An 85% - 99% reduction in contaminants per cycle is the normal achieved rate, resulting in final removal rates approaching 100%.

Hydrocarbons extracted from the water in the spray aerator are combined with the vapors drawn out of the wells. The combined vapors are fed directly to the intake of the engine where they are combined with a secondary fuel (either propane or natural gas) and then burned in the engine. The exhaust is passed through a catalytic converter to insure complete combustion. Exhaust discharge from the engine, even when running on 100% gasoline vapors, meets the air quality standards for motor vehicle engines.

Because the entire system is under vacuum until vapors enter the cylinders of the engine for combustion, any possible leaks of seals or connections are into the system, resulting in no loss of hydrocarbons to the atmosphere. Since the engine is the power source for all other equipment, all systems stop when the engine stops. In addition, to provide for safe and secure operation of this equipment, the following safety elements have been designed into the system:

1. The engine has automatic shutoff features which will shut the entire system down if the engine should overheat or engine oil pressure drops below normal range.
2. The vacuum type fuel pump is mechanically driven by the engine; this ensures that when the engine stops running no more fuel will be pumped.
3. The hoses connecting the extraction wells to the equipment will run underground, when possible, through conduit.
4. All equipment, including the fuel tank, will be enclosed in a fenced compound.

RSI's portable vapor extraction system works the same as the S.A.V.E. System except that it is trailer mounted.

6.0 SUGGESTIONS AND RECOMMENDATIONS

The following is a list of suggestions and recommendations for further work at this site to further assess and remediate contamination caused by the release of hydrocarbons.

1. Further tank testing to determine if the tanks are tight and replacement of the associated piping.
2. Remeasure and survey the existing wells to confirm the direction of groundwater flow.
3. Install shallow extraction wells into supply line trench backfill of underground lines onsite for connection to the S.A.V.E. equipment for vapor extraction. Part of this installation has already been completed.

Investigate the possible use of bionutrients which can then be injected into the trench backfill. The bionutrients will migrate along any transport paths and toward the sewer on Brighton Avenue. This will remediate, in situ, the soils along the sewer line and any other migration path.

4. Install slotted casing in spoils pile for onsite treatment by vapor extraction.

7.0 MONITORING

The time necessary to reduce gasoline concentrations in soil and groundwater to acceptable levels is site specific due to a number of complex variables. No estimation can be made as to the length of time it will take for remediation.

In order to track the progress of remediation, intake and exhaust vapor samples were taken as soon as possible after the system was put into operation. Until remediation is complete, additional samples will be collected. These vapor samples will consist of one sample from each well and a combined sample from the intake of the S.A.V.E. equipment. Exhaust samples will be taken as necessary to comply with the conditions of the emissions permit. The procedure for collecting vapor samples is discussed in Appendix I. The samples will be analyzed for TPH and BTEX by a state certified laboratory.

Groundwater samples from each well will be collected and analyzed for TPH and BTEX on a quarterly basis. Depth to water

measurements will also be taken on a quarterly basis. The amount of water withdrawn and the amount of water discharged will be monitored and recorded. Water discharge samples from the S.A.V.E. System will also be collected on a quarterly basis.

Other system operating parameters which will be monitored and recorded include: hours of operation, engine rpm, vacuum level and air flow. Analytical results of vapor samples, water samples and all other pertinent data will be included and discussed in Quarterly Monitoring reports.

8.0 SUMMARY

Desert Petroleum's station no. 793 is located at 4035 Park Boulevard in the City of Oakland, Alameda County, California. The station is leased to Mr. Jason Golpad. Gasoline from a leak in the unleaded supply line at the station has apparently migrated along underground service lines off the property, where it is leaking into the sewer system via a crack in the sewer manway. Tank and line tests were conducted to determine the source of the leak and the tanks were subsequently emptied.

Water flushing of, and vapor extraction from, the sewer system have been done to alleviate the buildup of gasoline vapors. Product was also recovered from the excavation and extraction well near the sewer manway on Brighton Avenue.

Six soil borings, five onsite and one near the sewer manway, were drilled and sampled to determine the probable extent of

where are these results?

soil contamination. A soil gas survey was also conducted. In general, soil contamination appears to be minimal.

Four groundwater monitoring/extraction wells and one vapor well were installed. Groundwater samples were collected and found to contain elevated levels of hydrocarbons. All wells onsite have been connected to RSI's S.A.V.E. remediation system for vapor extraction and treatment. Groundwater extraction and treatment will begin as soon as a discharge permit can be obtained. Vapor extraction and groundwater treatment is in progress via RS-7, near the sewer manway on Brighton Avenue, using RSI's portable vapor extraction unit.

Status?

A remediation method will be evaluated to determine if additional measures are needed to clean up soils along the underground lines between the station and the sewer manway.

Remediation efforts at this site will be closely monitored. Quarterly update reports will be submitted to update remediation and assessment activities.

Need to submit the monthly groundwater updates.

9.0 LIMITATIONS

The discussion and recommendation presented in this report are based on the following:

1. The professional performance of the personnel who conducted the investigations.

2. The observations of the field personnel.

3. The results of laboratory analyses performed by a state certified laboratory.

4. Any referenced documents.

5. Our understanding of the regulations of the State of California; also, if applicable, other local regulations.

The services performed by Remediation Service, Int'l 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.

Please note that 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.

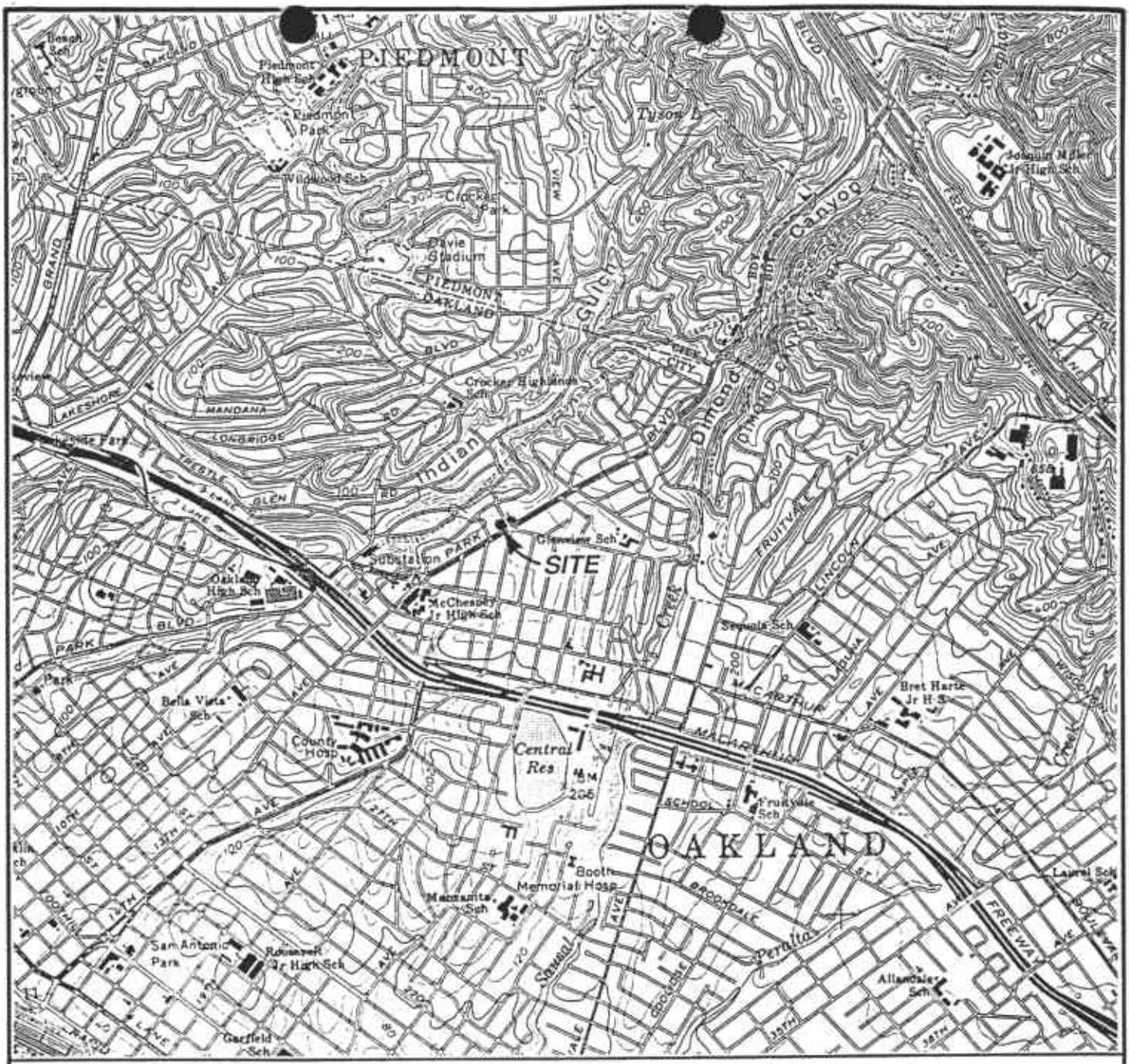
for Rick Jirsa

Rick Jirsa
Project Geologist

Brian Mossman
Staff Geologist

Robert C. Michael
Registered Geologist No. 3849

REGISTERED GEOLOGIST
ROBERT C. MICHAEL
No. 3849
STATE OF CALIFORNIA



A portion of the U.S.G.S. "Oakland East, California" 7 1/2' quadrangle

LOCATION MAP

DESERT PETROLEUM STATION NO. 793

OAKLAND, CALIFORNIA

Prepared for

DESERT PETROLEUM

VENTURA, CALIFORNIA

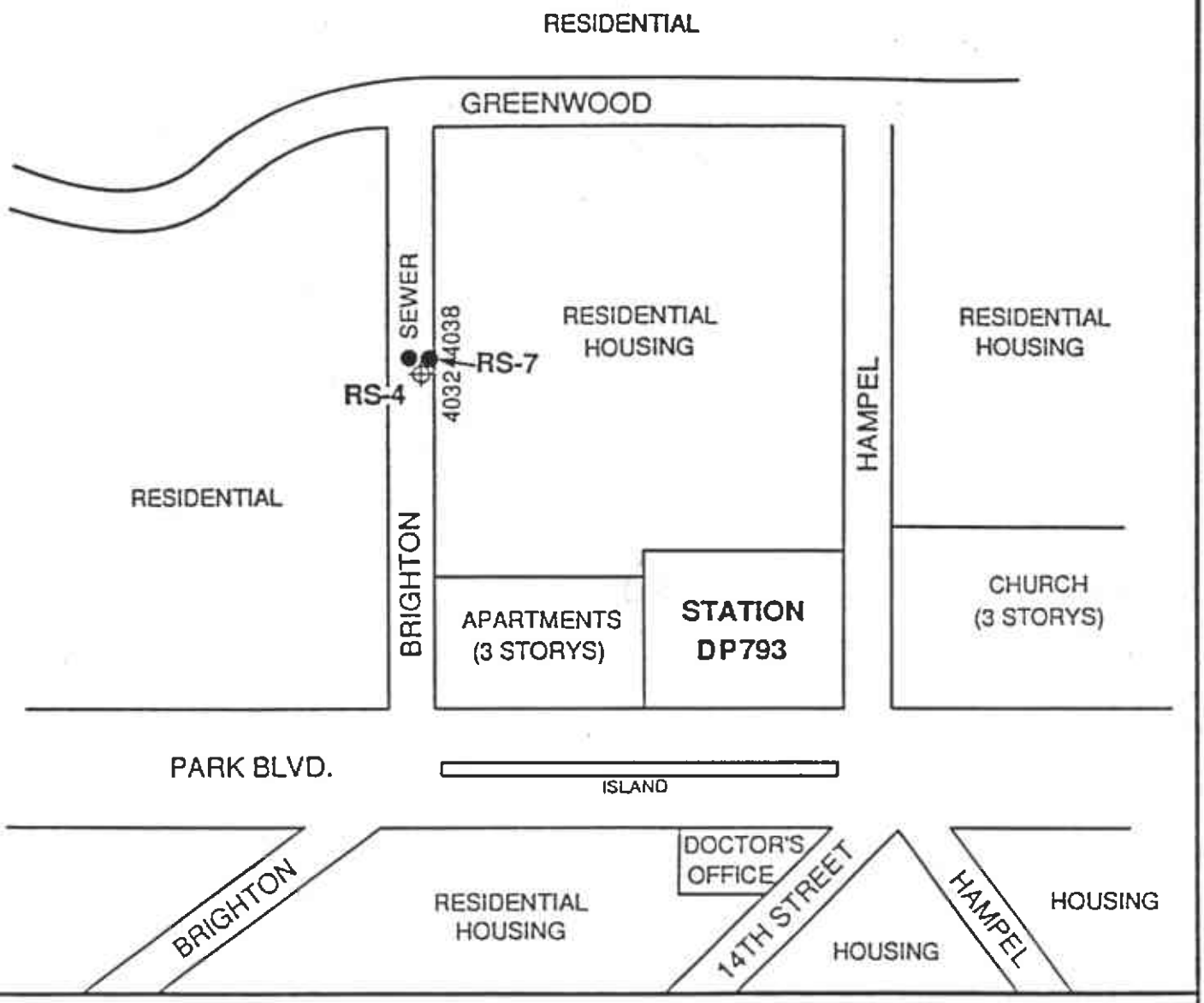
N

0 2000 4000

SCALE IN FEET

RCI

FIGURE 1



VICINITY MAP

DESERT PETROLEUM STATION NO. 793
OAKLAND, CALIFORNIA

Prepared for

DESERT PETROLEUM
VENTURA, CALIFORNIA

EXPLANATION

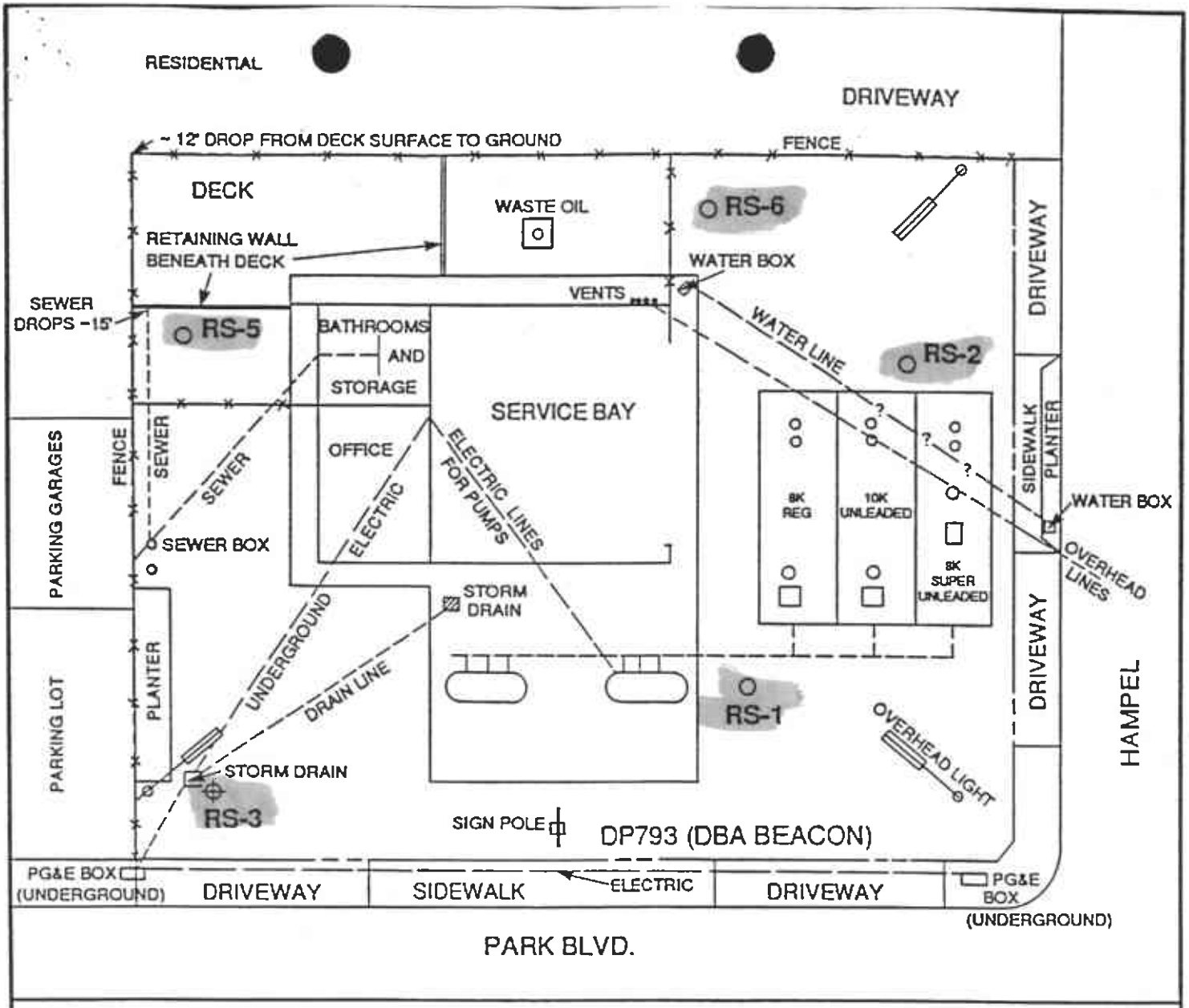
RS-4 ⊕ RSI Boring (12/12/89)

RS-7 ● Extraction Well (12-13-89)

0 100 200

SCALE IN FEET

FIGURE 2



PLOT PLAN
DESERT PETROLEUM STATION NO. 793
OAKLAND, CALIFORNIA
Prepared for
DESERT PETROLEUM
VENTURA, CALIFORNIA

EXPLANATION

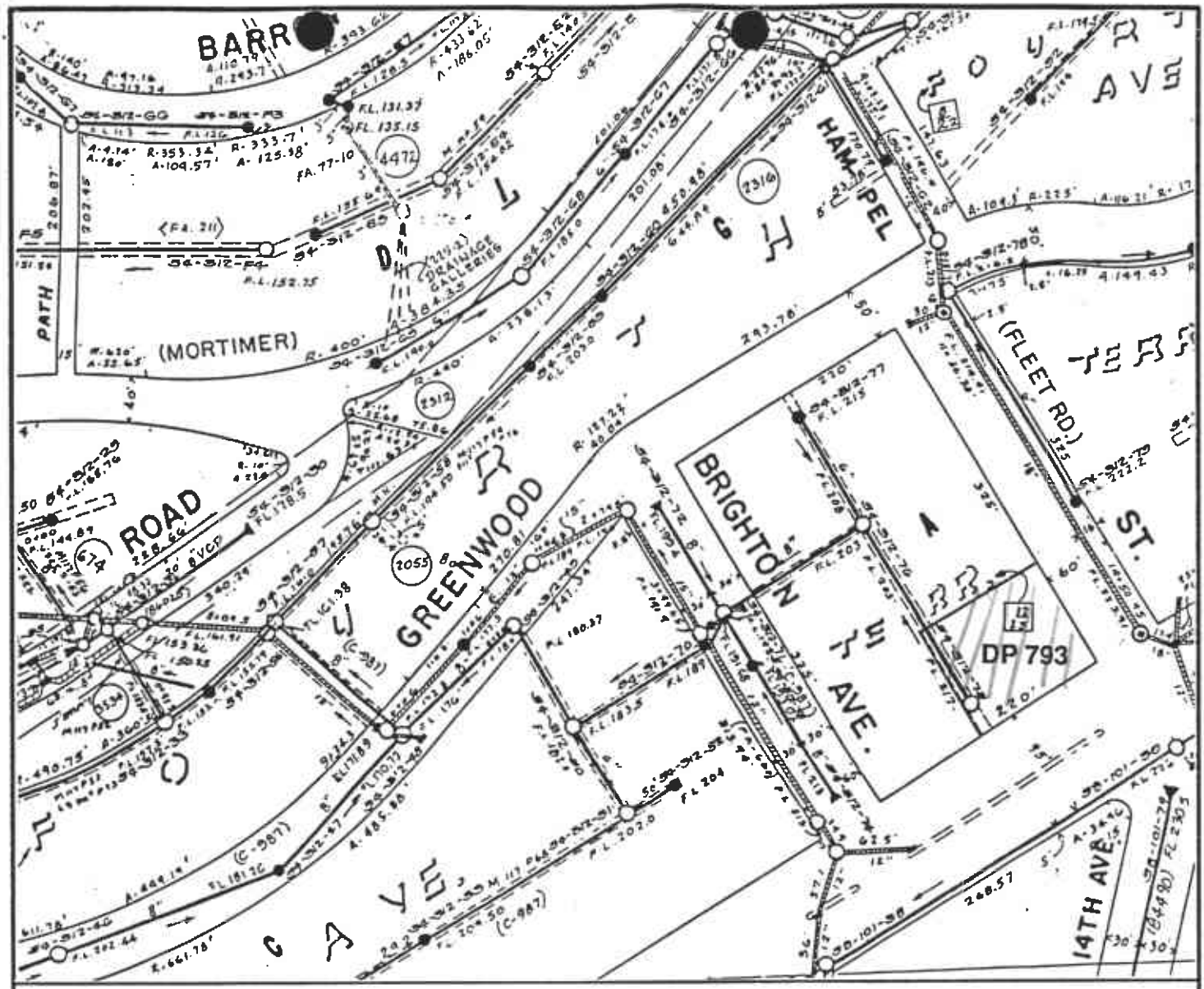
RS-4 ⊕ RSI Boring (12/89)

RS-6 ○ RSI Monitoring Well (12/89)

0 20 40

SCALE IN FEET

FIGURE 3



SEWER LINE MAP
DESERT PETROLEUM STATION NO. 793
OAKLAND, CALIFORNIA

Prepared for

DESERT PETROLEUM
VENTURA, CALIFORNIA

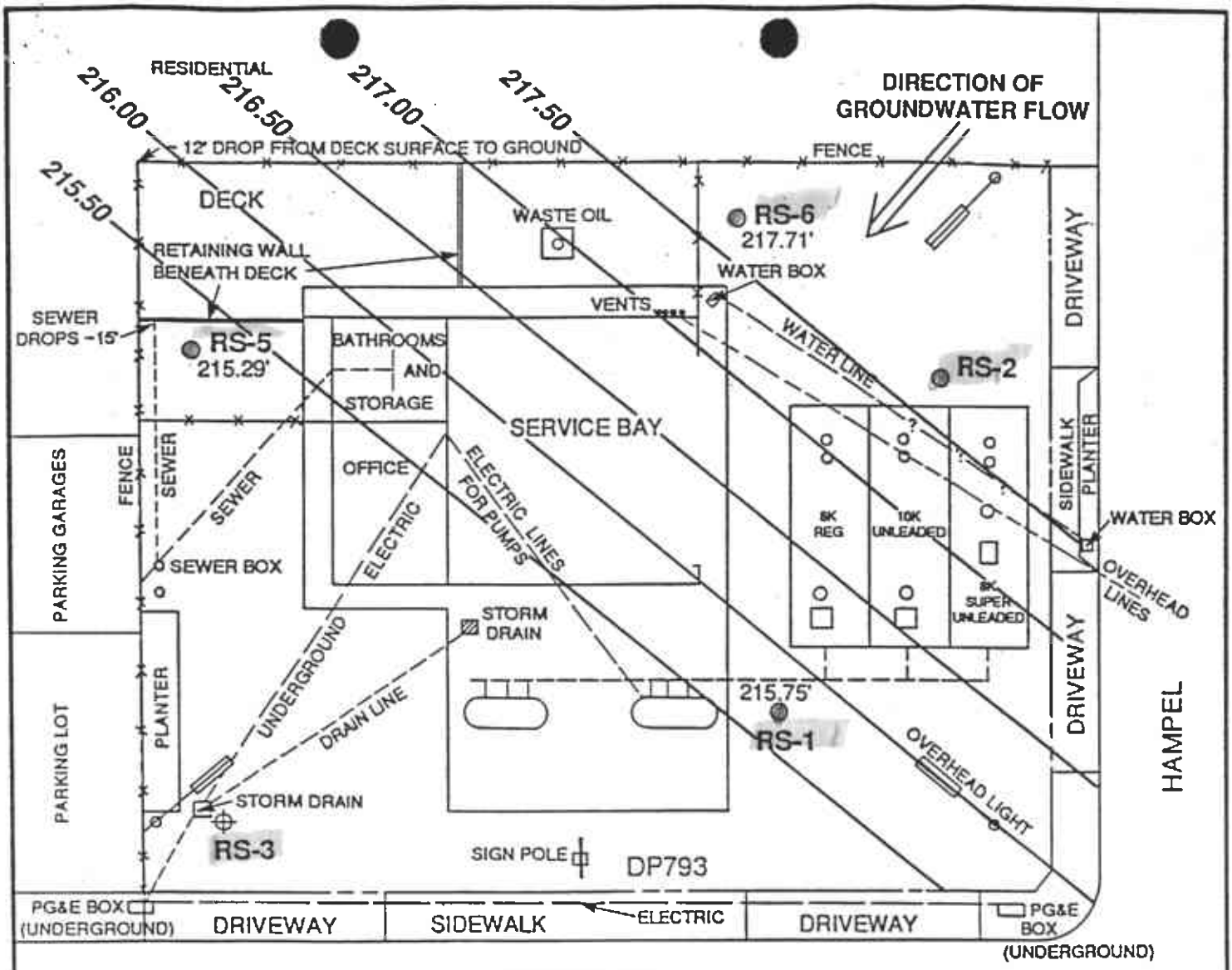
N

0 200 400

SCALE IN FEET

RGL

FIGURE 4



WATER TABLE ELEVATION MAP
DECEMBER 14, 1989
DESERT PETROLEUM STATION NO. 793
OAKLAND, CALIFORNIA

Prepared for

DESERT PETROLEUM
VENTURA, CALIFORNIA

ELEVATIONS ARE IN FEET ABOVE MSL

EXPLANATION

RS-4 ⊕ RSI Boring (12/89)

RS-6 ○ RSI Monitoring Well (12/89)

0 20 40

SCALE IN FEET

FIGURE 5

TABLE 1

DP 793
Well Construction Data

All Measurements are in feet unless otherwise indicated.

Well Number	RS-1	RS-2	RS-5
Date Constructed	12-12-89	12-12-89	12-13-89
Type of Casing	PVC	PVC	PVC
Casing Diameter	4 inch	4 inch	4 inch
Total Depth	30	20	39
Blank Casing	0 - 5	0 - 5	0 - 14
Slotted Casing	5 - 30	5 - 20	14 - 39
Slot Size	0.02 inch	0.02 inch	0.02 inch
Cement	0 - 1.5	0 - 1.5	0 - 9
Bentonite	1.5 - 4.5	1.5 - 4.5	9 - 13
Filter Pack	4.5 - 31	4.5 - 20.5	13 - 40
Type of Pack	#3 sand	#3 sand	#3 sand

Well Number	RS-6	RS-7 (abandoned)
Date Constructed	12-13-89	12-13-89
Type of Casing	PVC	PVC
Casing Diameter	4 inch	4 inch
Total Depth	34	8
Blank Casing	0 - 9	0 - 3
Slotted Casing	9 - 34	3 - 5
Slot Size	0.02 inch	0.02 inch
Cement	0 - 4	0 - 1
Bentonite	4 - 7	0
Filter Pack	7 - 35	1 - 8
Type of Pack	#3 sand	pea gravel

TABLE 2

DP 793
Summary of Analytical Results for Soil Samples
Collected during December 1989

Results are shown in parts per million and depth is in feet.

Well/ Boring	Depth	B	T	E	X	TPH
RS-1	5	na	na	na	na	16
RS-1	10	na	na	na	na	33
RS-1	15	na	na	na	na	ND
RS-1	20	ND	0.008	ND	ND	ND
RS-1	25	0.056	0.12	0.041	0.13	10
RS-1	30	ND	0.012	ND	ND	ND
RS-2	5	na	na	na	na	ND
RS-2	10	na	na	na	na	11
RS-2	15	na	na	na	na	ND
RS-2	20	ND	0.017	ND	ND	ND
RS-3	5	ND	0.043	ND	0.008	ND
RS-3	10	ND	0.020	ND	ND	ND
RS-4	5	0.78	3.4	0.74	4.1	50
RS-4	10	0.25	0.94	0.17	0.92	8
RS-5	5	na	na	na	na	ND
RS-5	10	na	na	na	na	ND
RS-5	15	na	na	na	na	ND
RS-5	20	1.5	8.4	3.9	22.0	530
RS-5	25	0.7	0.42	0.058	0.26	4
RS-5	30	na	na	na	na	1600
RS-5	35	na	na	na	na	ND
RS-5	40	0.036	0.069	0.009	0.043	1
RS-6	5	na	na	na	na	ND
RS-6	10	na	na	na	na	ND
RS-6	15	na	na	na	na	ND
RS-6	20	0.017	0.007	ND	0.015	ND
RS-6	25	0.009	0.011	ND	ND	ND
RS-6	30	na	na	na	na	ND
RS-6	35	0.005	0.007	ND	0.006	ND
SB-1	Pile	0.46	3.6	1.0	7.6	130
SB-2	Pile	1.1	13.0	4.4	29.0	370

B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
TPH = Total Petroleum Hydrocarbons
na = not analyzed
ND = Not Detected

TABLE 3

DP 793
Summary of Analytical Results for Water Samples
Collected On December 14, 1989

Results are reported in parts per million.

Well	B	T	E	X	TPH
RS-1	2.6	2.7	0.2	1.2	19
RS-5	3.1	4.3	0.67	3.4	57
RS-6	1.4	1.7	0.16	0.86	11

B = Benzene
T = Toluene
E = Ethylbenzene
X = Xylenes
TPH = Total Petroleum Hydrocarbons

TABLE 4

DP 793
Groundwater Elevation Data for 12-14-89.

Measurements are in feet and elevations are in feet above MSL.

Well Number	Depth to Water Table	Top of Casing Elevation	Water Table Elevation
RS-1	24.25	240.00	215.75
RS-5	25.97	241.26	215.29
RS-6	22.52	240.23	217.71

Elevation of RS-1 is approximated based on U.S.G.S. topographical map of the area. All other wellhead elevations are referenced to RS-1.

REFERENCES

United States Geological Survey, 1959 photorevised 1980. Oakland East Quadrangle, 7.5 Minute Series (Topographical).

Rick Jirsa, 1989. Chronology of Events, Verbal.

John Rutherford, 1989. Chronology of Events, Verbal.

UNDERGROUND STORAGE TANK UNAUTHORIZED RELEASE (LEAK) / CONTAMINATION SITE REPORT

EMERGENCY: ☐ YES ☒ NO — HAS STATE OFFICE OF EMERGENCY SERVICES REPORT BEEN FILED? ☐ YES ☒ NO

FOR LOCAL AGENCY USE
I HEREBY CERTIFY THAT I AM A DESIGNATED GOVERNMENT EMPLOYEE AND THAT I HAVE REPORTED THIS INFORMATION TO LOCAL OFFICIALS PURSUANT TO SECTION 25180.7 OF THE HEALTH AND SAFTY CODE.
SIGNED _____ DATE _____

REPORT DATE: 12/08/89 — CASE #:

REPORTED BY
NAME OF INDIVIDUAL FILING REPORT: J.P. RUTHERFORD — PHONE: 805 644-5892 — SIGNATURE: [signature]
REPRESENTING: ☒ OWNER/OPERATOR ☐ REGIONAL BOARD ☐ LOCAL AGENCY ☐ OTHER _____ — COMPANY OR AGENCY NAME: DESERT PETROLEUM INC.
ADDRESS: P.O. BOX 1601 (STREET) — OXNARD (CITY) — CA (STATE) — 93032 (ZIP)

RESPONSIBLE PARTY
NAME: JASON GOLPAD ☐ UNKNOWN — CONTACT PERSON: JASON GOLPAD — PHONE: 415 530-1033
ADDRESS: 4035 PARK Blvd. (STREET) — OAKLAND (CITY) — CA (STATE) — 94602 (ZIP)

SITE LOCATION
FACILITY NAME (IF APPLICABLE): J+M SERVICE STATION — OPERATOR: JASON GOLPAD — PHONE: 415 530-1033
ADDRESS: 4035 (STREET) PARK Blvd (CITY) OAKLAND (COUNTY) ALAMEDA — 94602
CROSS STREET — TYPE OF AREA: ☐ COMMERCIAL ☐ INDUSTRIAL ☐ RURAL ☒ RESIDENTIAL ☐ OTHER _____ — TYPE OF BUSINESS: ☒ RETAIL FUEL STATION ☐ FARM ☐ OTHER _____

IMPLEMENTING AGENCIES
LOCAL AGENCY: ALAMEDA County Health Services — CONTACT PERSON: Arlin Leui — PHONE: 415 271-4320
REGIONAL BOARD: San Francisco RWQCB — CONTACT PERSON: L. Feldmon — PHONE: 415 464-1255

SUBSTANCES INVOLVED
(1) NAME: Motor Fuel (Gasoline) — QUANTITY LOST (GALLONS): _____ ☒ UNKNOWN
(2) NAME: _____ — QUANTITY LOST (GALLONS): _____ ☐ UNKNOWN

DISCOVERY/ABATEMENT
DATE DISCOVERED: 11/30/89 — HOW DISCOVERED: ☐ INVENTORY CONTROL ☐ SUBSURFACE MONITORING ☑ NUISANCE CONDITIONS ☐ TANK TEST ☐ TANK REMOVAL ☑ OTHER Tele. Call - ACHS.
DATE DISCHARGE BEGAN: __/__/__ ☑ UNKNOWN
HAS DISCHARGE BEEN STOPPED? ☒ YES ☐ NO IF YES, DATE: 12/05/89
METHOD USED TO STOP DISCHARGE (CHECK ALL THAT APPLY): ☑ REMOVE CONTENTS ☐ REPLACE TANK ☑ CLOSE TANK ☐ REPAIR TANK ☐ REPAIR PIPING ☐ CHANGE PROCEDURE ☐ OTHER _____

SOURCE/CAUSE
SOURCE OF DISCHARGE: ☐ TANK LEAK ☑ UNKNOWN ☑ PIPING LEAK ☐ OTHER
TANKS ONLY/CAPACITY: _____ GAL. AGE _____ YRS ☒ UNKNOWN
MATERIAL: ☐ FIBERGLASS ☑ STEEL ☐ OTHER _____
CAUSE(S): ☐ OVERFILL ☐ RUPTURE/FAILURE ☐ CORROSION ☑ UNKNOWN ☐ SPILL ☐ OTHER _____

CASE TYPE (CHECK ONE ONLY)
☑ UNDETERMINED ☐ SOIL ONLY ☐ GROUNDWATER ☐ DRINKING WATER - (CHECK ONLY IF WATER WELLS HAVE ACTUALLY BEEN AFFECTED)

CURRENT STATUS (CHECK ONE ONLY)
☑ SITE INVESTIGATION IN PROGRESS (DEFINING EXTENT OF PROBLEM) ☑ CLEANUP IN PROGRESS ☐ SIGNED OFF (CLEANUP COMPLETED OR UNNECESSARY)
☐ NO ACTION TAKEN ☐ POST CLEANUP MONITORING IN PROGRESS ☐ NO FUNDS AVAILABLE TO PROCEED ☑ EVALUATING CLEANUP ALTERNATIVES

REMEDIAL ACTION (CHECK APPROPRIATE ACTION(S) (SEE BACK FOR DETAILS))
☐ CAP SITE (CD) ☐ EXCAVATE & DISPOSE (ED) ☑ REMOVE FREE PRODUCT (FP) ☐ ENHANCED BIO DEGRADATION (IT)
☐ CONTAINMENT BARRIER (CB) ☐ EXCAVATE & TREAT (ET) ☐ PUMP & TREAT GROUNDWATER (GT) ☐ REPLACE SUPPLY (RS)
☐ TREATMENT AT HOOKUP (HU) ☐ NO ACTION REQUIRED (NA) ☐ OTHER (OT) _____

COMMENTS
Informed of Gasoline in Sewer Near Location on 11/30/89 Approx. 10:30 AM. Conducted Inventory Reconciliation of Tanks P.M. 11/30/89. Tank Test on 12/6/89. Facility Shut Down.

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE • PLEASANTON, CALIFORNIA 94566 • (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

(1) LOCATION OF PROJECT 4035 PARK BLVD. OAKLAND, CA

(2) CLIENT
Name DESERT PETROLEUM
Address 2060 KNOLL DR. Phone (805) 644-6784
City VENTURA Zip 93003

(3) APPLICANT
Name RSI - REMEDIATION SERVICE, INT'L
Address P.O. Box 1601 Phone (805) 644-5892
City OXNARD, CA Zip 93032

(4) DESCRIPTION OF PROJECT
Water Well Construction ___ Geotechnical Investigation
Cathodic Protection ___ General ___
Well Destruction ___ Contamination X

(5) PROPOSED WATER WELL USE
Domestic ___ Industrial ___ Irrigation ___
Municipal ___ Monitoring X Other EXTRACTION

(6) PROPOSED CONSTRUCTION
Drilling Method:
Mud Rotary ___ Air Rotary ___ Auger X
Cable ___ Other ___

DRILLER'S LICENSE NO. 480802 DATUM DRILLING

WELL PROJECTS
Drill Hole Diameter 12 in. Maximum
Casing Diameter 4 in. Depth 30 ft.
* Surface Seal Depth 4 ft. Number 5
* NECESSARY DUE TO PRODUCT IN SHALLOW WATER TABLE. NEED TO SCREEN ABOVE W.T.

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

(7) ESTIMATED STARTING DATE 12/11/89
ESTIMATED COMPLETION DATE 12/12/89

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

APPLICANT'S SIGNATURE Brian Mossman Date 12-9-89

FOR OFFICE USE

PERMIT NUMBER ___
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

A. GENERAL
1. A permit application should be submitted so as arrive at the Zone 7 office five days prior proposed starting date.
2. Submit to Zone 7 within 60 days after completi of permitted work the original Department Water Resources Water Well Drillers Report equivalent for well projects, or drilling lo and location sketch for geotechnical projects.
3. Permit is void if project not begun within days of approval date.

B. WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal a industrial wells or 20 feet for domestic, irrig tion, and monitoring wells unless a lesser dep is specially approved.

C. GEOTECHNICAL. Backfill bore hole with compacted cu tings or heavy bentonite and upper two feet with co pacted material. In areas of known or suspect contamination, tremied cement grout shall be used place of compacted cuttings.

D. CATHODIC. Fill hole above anode zone with concre placed by tremie.

E. WELL DESTRUCTION. See attached.

Approved ___ Date ___

CITY OF OAKLAND

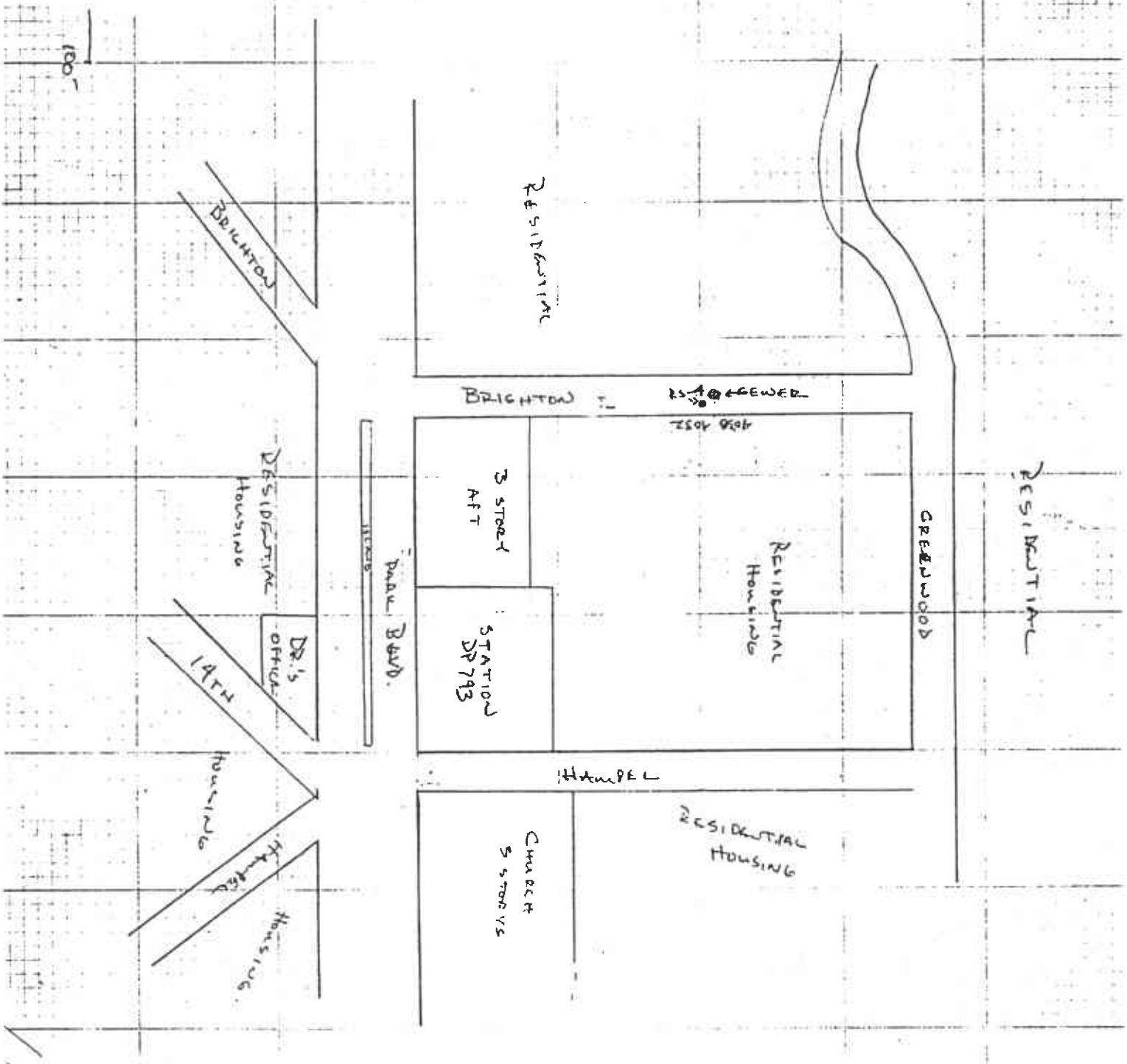
OO REFUND W/O RECPT

12-12-89 #1

ENCROACH 195.00
SUBTL 195.00
CHECK 195.00

ITEM 1
1CL 0274 10:04TM

1) ENCROACHMENT PERMIT NEEDED to investigate gasoline vapors in sewer line at manway located at centerline 4032-4038 Brighton St



LEGEND SHEET FOR BORING LOGS

BORING LOG SYMBOLS


Modified California Sampler (blow count)

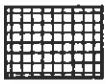

No Sample Recovered

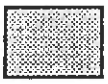

First Water Encountered


Measured Water Level

MONITORING WELL SYMBOLS


Concrete Seal


Bentonite Seal

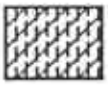

Sand Pack


Native Backfill


Slotted Section of Casing

LITHOLOGIES


CLAY

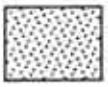

Silty CLAY


Sandy CLAY


SILT

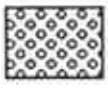

Clayey SILT


Sandy SILT


SAND


Clayey SAND


Silty SAND


Gravels & Gravel-Sand Mixtures


All Silty or Clayey Gravels


Bedrock


Fill


Asphalt/ Concrete

DEFINITION OF TERMS USCS CLASSIFICATION FOR SOILS

PRIMARY DIVISIONS			SYM-BOLS	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO.200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO.4 SIEVE SIZE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines
		GRAVELS WITH FINES	GM	Silty gravels, gravel-sand-silt mixtures, non-plastic fines
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO.4 SIEVE SIZE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines
			SP	Poorly graded sands, gravelly sands, little or no fines
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines
			SC	Clayey sands, sand-clay mixtures, plastic fines
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO.200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50%		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, lean clays
			OL	Organic silts and organic silty clays of low plasticity
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50%		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
			CH	Inorganic clays of high plasticity, fat clays
			OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils

DESERT PETROLEUM STATION #793

Oakland, CA
Date: 12-11-89
Time Started/Finished: 9:00/1:00 (12-12-89)
Sampling Method: Mod Cal
Rig Type: MOBILE B-61 HSA
Drilling Contractor: Datum

BORING/MONITORING WELL: RS-1

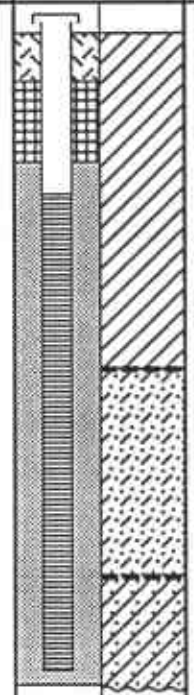
Logged By: BJM
Casing Size & Type: 4" PVC
Screen Size & Type: 4" PVC; 0.020" Slots
Filter Pack: #3 Sand
Traffic Cover Elevation:
Datum/Reference:

DEPTH (FEET)	SAMPLE INT.	PID ppm	BLOWS PER HALF FOOT	WELL DETAILS	USCS	SOIL DESCRIPTION AND NOTES
0						
5	X	110	2, 3, 3		CL	SILTY CLAY, BLACK, VERY DAMP, SLIGHT HYDROCARBON ODOR.
10	X	52	7, 10, 13		CL	CLAY, BLACK, VERY MOIST, "STICKY", SLIGHT HYDROCARBON ODOR.
15	X	105	17, 22, 28			CLAY, BROWN, DAMP, MALLEABLE, NO HYDROCARBON ODOR.
20	X	102	14, 17, 21		SC	CLAYEY SAND WITH SOME GRAVEL, GREY-TAN, FINE-MEDIUM GRAIN, DAMP, NO HYDROCARBON ODOR.
						12-11-89
						12-12-89
25	X	50	11, 13, 18		CL	SANDY CLAY WITH GRAVEL, TAN, FINE GRAIN, SAMPLER WET BUT SAMPLE IS NOT SATURATED, SLIGHT HYDROCARBON ODOR.
30	X	5	21, 37, 50		SC	CLAYEY SAND WITH SOME GRAVEL, TAN, MEDIUM-COARSE GRAIN, SAMPLER WET BUT SAMPLE IS NOT SATURATED, NO HYDROCARBON ODOR.
35						TD AT 31 FEET.
40						CSG AT 30 FEET.
45						

DESERT PETROLEUM STATION #793
Oakland, CA
Date: 12-11-89
Time Started/Finished: 11:00/10:00 (12-12-89)
Sampling Method: Mod Cal
Rig Type: MOBILE B-61 HSA
Drilling Contractor: Datum

BORING/MONITORING WELL: RS-2
Logged By: BJM
Casing Size & Type: 4" PVC
Screen Size & Type: 4" PVC; 0.020" Slots
Filter Pack: #3 Sand
Traffic Cover Elevation:
Datum/Reference:

DEPTH (FEET)	SAMPLE INT.	PID ppm	BLOWS PER HALF FOOT	WELL DETAILS	USCS	SOIL DESCRIPTION AND NOTES
0						
5	X	2	2, 2, 3		CL	CLAY, BLACK, DAMP, NO HYDROCARBON ODOR.
10	X	1.5	9, 13, 19			SANDY CLAY WITH GRAVEL IN BOTTOM 2" OVERLAIN BY BLACK CLAY, DAMP, NO HYDROCARBON ODOR.
15	X	<1	17, 27, 34		SC	CLAYEY SAND WITH SOME GRAVEL, TAN TO GRAY GREEN, FINE-MEDIUM GRAIN, DAMP, SEMI-CONSOLIDATED, NO HYDROCARBON ODOR.
20	X	<1	27, 37, 41		CL	SANDY CLAY WITH SOME GRAVEL, BROWN, SLIGHTLY DAMP, NO HYDROCARBON ODOR.
25						TD AT 20.5 FEET. CSG AT 20 FEET.
30						
35						
40						
45						



DESERT PETROLEUM STATION #793
Oakland, CA
Date: 12-11-89
Time Started/Finished: 3:15/4:00
Sampling Method: Mod Cal
Rig Type: MOBILE B-61 HSA
Drilling Contractor: Datum

BORING/MONITORING WELL: RS-3
Logged By: BJM
Casing Size & Type: –
Screen Size & Type: –
Filter Pack: –
Traffic Cover Elevation:
Datum/Reference:

DEPTH (FEET)	SAMPLE INT.	PID ppm	BLOWS PER HALF FOOT	WELL DETAILS	USCS	SOIL DESCRIPTION AND NOTES
0						
5	X	6	3, 3, 4		CL	SILTY CLAY, BLACK, DAMP, NO HYDROCARBON ODOR.
					CL	
10	X	2	7, 8, 9			SILTY CLAY, AS ABOVE.
						TD AT 10 FEET.
						BACKFILL WITH CEMENT TO 5 FEET.
						BACKFILL WITH CUTTINGS FROM 5 FEET TO SURFACE.
15						
20						
25						
30						
35						
40						
45						

RCI

DESERT PETROLEUM STATION #793
Oakland, CA
Date: 12-12-89
Time Started/Finished: 1:45/2:45
Sampling Method: Mod Cal
Rig Type: MOBILE B-61 HSA
Drilling Contractor: Datum

BORING/MONITORING WELL: [redacted]
Logged By: BJM
Casing Size & Type: –
Screen Size & Type: –
Filter Pack: –
Traffic Cover Elevation:
Datum/Reference:

DEPTH (FEET)	SAMPLE INT.	PID ppm	BLOWS PER HALF FOOT	WELL DETAILS	USCS	SOIL DESCRIPTION AND NOTES
0						
5	X	4	5, 10, 13		CL	CLAY, TAN, DAMP, MALLEABLE, NO HYDROCARBON ODOR.
					CL	
10	X	3	10, 12, 17			CLAY, AS ABOVE.
						TD AT 10 FEET.
						BACKFILL WITH CUTTINGS.
15						
20						
25						
30						
35						
40						
45						

DESERT PETROLEUM STATION #793
Oakland, CA
Date: 12-12-89
Time Started/Finished: 4:15/12:00 (12-13-89)
Sampling Method: Mod Cal
Rig Type: MOBILE B-61 HSA
Drilling Contractor: Datum

BORING/MONITORING WELL: RS-5
Logged By: BJM
Casing Size & Type: 4" PVC
Screen Size & Type: 4" PVC; 0.020" Slots
Filter Pack: #3 Sand
Traffic Cover Elevation:
Datum/Reference:

DEPTH (FEET)	SAMPLE INT.	PID ppm	BLOWS PER HALF FOOT	WELL DETAILS	USCS	SOIL DESCRIPTION AND NOTES
0						
5	X	2	3, 4, 8		CL	SILTY CLAY, BLACK AND TAN MOTTLED, DAMP, NO HYDROCARBON ODOR.
10	X	1	9, 11, 15		ML	SANDY CLAY, TAN, FINE-COARSE GRAIN, DAMP, NO HYDROCARBON ODOR.
15	X	13	7, 7, 8		CL	CLAY , DARK BROWN, DAMP, NO HYDROCARBON ODOR.
						12-12-89
						12-13-89
20	X	64	7, 9, 9		CL	SILTY CLAY, BLACK AND TAN MOTTLED, COHESIVE, DAMP, NO HYDROCARBON ODOR.
25	X	14	7, 7, 6	▼	SC	CLAYEY SAND, TAN, MEDIUM-COARSE GRAIN, DAMP, NO HYDROCARBON ODOR.
30	X	96	17, 30, 40		SC	CLAYEY SAND, AS ABOVE OVERLAIN BY A VERY COHESIVE SANDY CLAY, SLIGHT HYDROCARBON ODOR.
35	X	34	17, 24, 34		CL	SILTY CLAY, TAN, SAMPLER WET BUT SAMPLE NOT SATURATED, SLIGHT HYDROCARBON ODOR.
40	X	60	13, 19, 27		CL	SANDY CLAY WITH SOME GRAVEL OVERLAIN BY CLAY, TAN, DAMP, SLIGHT HYDROCARBON ODOR.
						TD AT 40 FEET.
						CSG AT 39 FEET.
45						

RCI

DESERT PETROLEUM STATION #793
Oakland, CA
Date: 12-13-89
Time Started/Finished: 1:15/4:45
Sampling Method: Mod Cal
Rig Type: MOBILE B-61 HSA
Drilling Contractor: Datum

BORING/MONITORING WELL: MS-6
Logged By: BJM
Casing Size & Type: 4" PVC
Screen Size & Type: 4" PVC; 0.020" Slots
Filter Pack: #3 Sand
Traffic Cover Elevation:
Datum/Reference:

DEPTH (FEET)	SAMPLE INT.	PID ppm	BLOWS PER HALF FOOT	WELL DETAILS	USCS	SOIL DESCRIPTION AND NOTES
0						
5	X	1	4, 7, 7		CL	SILTY CLAY, DARK BROWN TO TAN, DAMP, SLIGHT HYDROCARBON ODOR.
10	X	1.5	4, 5, 7		CL	SILTY CLAY, AS ABOVE, NO HYDROCARBON ODOR.
15	X	2	9, 9, 13		CL	SANDY CLAY WITH SOME GRAVEL, TAN, DAMP, COHESIVE, NO HYDROCARBON ODOR.
20	X	6	9, 18, 21		CL	SILTY CLAY WITH SOME FINE GRAINED SAND, TAN, DAMP, SLIGHT HYDROCARBON ODOR.
25	X	2	12, 23, 32		SM	SILTY SAND, TAN, FINE-COARSE GRAIN, WET, SLIGHT HYDROCARBON ODOR.
30	X	4	18, 29, 37		CL	CLAY, TAN, DAMP, VERY MALLEABLE, NO HYDROCARBON ODOR.
35	X	16	17, 19, 27		CL	SILTY CLAY, TAN, DAMP, NO HYDROCARBON ODOR. TD AT 35 FEET. CSG AT 34 FEET.
40						
45						

DESCRIPTION OF BORING TECHNIQUES AND SAMPLING PROCEDURES

Under the supervision of a Remediation Service Int'l - (RSI) geologist, the soil borings are advanced using a truck mounted hollow-stem auger. Each auger flight is 5 feet in length with an inner diameter of 3.5 inches and an outer diameter of 8 inches. A pilot assembly, in conjunction with the auger head which is fitted with cutting blades, helps advance the auger through the soil and prevents solids from entering the hollow-stem portion of the auger. The hollow auger acts as a "temporary casing" preventing collapse of the borehole wall. Soil cuttings are carried up to the surface via the auger flights.

When the desired sample depth is reached, the drill bit and center plug are removed from the auger stem and replaced with a Modified California Split Spoon sampler. Usually, sampling is done at the end of each 5 foot auger flight. The sampler consists of an outer 12 to 18 inch long "split barrel" sampler in which a thin-walled set of rings is inserted. These rings are brass or stainless steel cylinders, each 2.0 to 3.25 inches in diameter and 3 to 6 inches long.

A 140 pound hammer is used to drive the sampler into the formation below the bottom of the auger flight, thereby filling all of the sampling rings with soil. This method allows for collection of an undisturbed soil sample, preventing introduction of overburden soil by the drilling process. The number of hammer blows (blows per foot, BPF) to advance the sampler a given distance is recorded on the boring log. This gives an indication of the amount of force required to recover the sample.

After retrieving and dismantling the sampler, all the thin tube rings are removed. The bottom ring is immediately sealed for laboratory analysis by covering both ends with teflon sheeting, plastic caps and securing the caps with tape. If some of the soil in the bottom ring has fallen out or appears to have been disturbed during the recovery operation, the second to last ring is used. This ring is labeled and placed in an ice chest for cold storage pending transportation to the laboratory. This packaging protocol is designed to prevent loss of volatiles from the soil sample, and to prevent any cross contamination. Standard chain of custody procedures are followed for all samples.

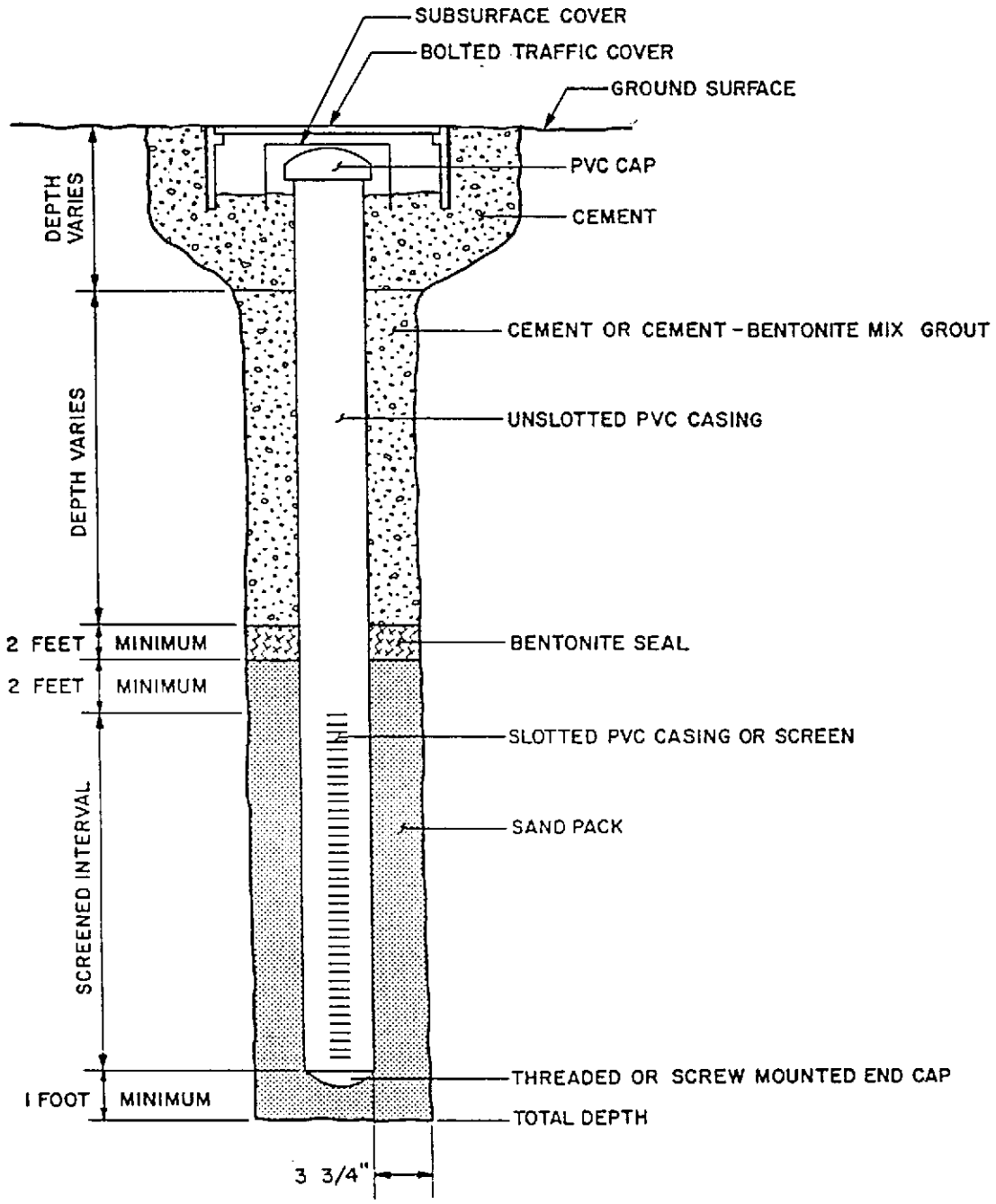
Soil from the second ring is used for field analysis of possible hydrocarbon contamination. The sample is placed in a Ziploc bag, sealed and allowed to volatilize for a HNU Photoionization Analyzer (PID) measurement. A head-space measurement is taken by breaking the seal just enough to insert the probe. The highest reading is recorded. However, if the reading stabilizes at a significantly different level, this also is noted. The PID has a detection range from 0.1 ppm to 2000 ppm for hydrocarbon vapors, when calibrated with a benzene standard.

Soils in the remaining rings are used for the field descriptions. The field data includes a written soils description, the Unified Soil Classification code, and any notable odors, staining or contamination. Also recorded are unusual drilling conditions, equipment malfunctions or other observations of field conditions for future reference. All data are included on the boring logs.

An alternative method to the use of brass rings is glass jars for sample collection. This method still utilizes the split spoon sampler, but no brass rings are inserted. Instead, soil from the base of the sampler is encapsulated in a glass jar. The jar is then treated in the same manner as soil samples in brass rings. The remaining soil in the sampler is used for field analysis and description.

To prevent any cross - contamination, the augers are steam cleaned prior to drilling each boring. The split spoon sampler is cleaned using a three step process commonly referred to as a "three bucket wash". This consist of first a trisodium phosphate wash, followed by a tap water rinse and finally a deionized water rinse. This process is completed between each sample run.

All cuttings and excess sample material recovered during the drilling operations are placed in 55 gallon DOT hazardous waste drums pending laboratory analysis results. Proper disposal is the client's responsibility.



NO SCALE
TYPICAL ONLY

TYPICAL MONITORING WELL CONSTRUCTION

SAMPLING PROCEDURES FOR GROUNDWATER MONITORING WELLS

1. Survey to top of casing from on site reference point for all wells if not already done.

2. Put down new polyethelyene sheeting around well. Designate a "clean" area for decontaminated equipment and a "dirty" area for equipment already used.

3. Measure depth to water and depth to product if present. Measure total depth of well with tape. If free product is present, collect sample with interface sampler - place in vial, label, store.

4. Bail 4-5 casing volumes of water with PVC bailer (.163 gallons per foot of depth for 2" wells, .653 gallons per foot with 4" well) discharge into plastic drum. When finished place bailer on "dirty " area to await decontamination procedure. If water is turbid, continue bailing until clean.

5. Put on surgical gloves and attach new, clean cord to sampling bailer.

6. Rinse sampling bailer and a few feet of the cord with distilled water. Collect sample by lowering bailer into well. Discharge into vial and fill to overflowing. Seal vial, label, place in plastic jar with carbon, seal with security tape, and store in small ice chest.

7. Secure well and cover.

8. Complete Field Data Sheet and pertinent data on chain of custody sheet.

9. Decontaminate water level probe and bailers or pumps with 3 bucket wash and place in clean poly bag.

10. Discard poly sheeting, bailer cords, and gloves.

Sample from the cleanest expected well first to the most contaminated well last.

When sample is withdrawn, be aware of any smoke, vapors, etc... from running engines, etc... that may contaminate the sample. Take at least one field blank per station. This is done by pouring laboratory-provided distilled water into a sample vial at the sampling site.

GROUNDWATER SAMPLE
FIELD LOG

PROJECT NAME DP 793
LOCATION Oakland
WELL NUMBER RS-1

SAMPLER BJM

DATE OF SAMPLING 12-14-89
WEATHER CONDITIONS sunny and cool
DEPTH TO FREE PRODUCT ———
DEPTH TO WATER 24.25
DATUM ELEVATION(msl) _____
GROUNDWATER ELEVATION(msl) _____
TOTAL WELL DEPTH 30'

SAMPLE:
WELL ✓
SURFACE WATER _____
SEEP _____
OTHER (DESCRIBE) _____

WATER LEVEL MEASURING EQUIPMENT interface probe
FREE PRODUCT LEVEL MEASURING EQUIPMENT "
EVACUATION EQUIPMENT PVC bailer
GALLONS TO BE EVACUATED (4 casing vols.) 15
TIME OF EVACUATION START 8:00 FINISH 8:10
TOTAL GALLONS EVACUATED dry at 6

SAMPLING EQUIPMENT teflon bailer
SAMPLING TIME START 10:15 FINISH 10:20
SAMPLING RATE (ml/min.) _____
APPEARANCE OF SAMPLE slightly cloudy

FIELD OBSERVATIONS AND/OR PROBLEMS ENCOUNTERED _____

EQUIPMENT DECONTAMINATION 3 bucket wash

SAMPLES HAND CARRIED/SHIPPED ON 12-14-89 (date) AT 12:45 (time)

VIA express courier (carrier and shipper's number) TO Superior laboratory

FOR ANALYSIS OF TPH (gas) BTXE

GROUNDWATER SAMPLE
FIELD LOG

PROJECT NAME DP 793
LOCATION Oakland
WELL NUMBER RS-5

SAMPLER BJM

DATE OF SAMPLING 12-14-89
WEATHER CONDITIONS sunny and cool
DEPTH TO FREE PRODUCT ———
DEPTH TO WATER 25.97
DATUM ELEVATION (msl) ———
GROUNDWATER ELEVATION (msl) ———
TOTAL WELL DEPTH 40'

SAMPLE:
WELL ✓
SURFACE WATER ———
SEEP ———
OTHER (DESCRIBE) ———

WATER LEVEL MEASURING EQUIPMENT interface probe
FREE PRODUCT LEVEL MEASURING EQUIPMENT "
EVACUATION EQUIPMENT PVC bailer
GALLONS TO BE EVACUATED (4 casing vols.) 37
TIME OF EVACUATION START 8:40 FINISH 9:00
TOTAL GALLONS EVACUATED 37

SAMPLING EQUIPMENT teflon bailer
SAMPLING TIME START 10:40 FINISH 10:45
SAMPLING RATE (ml/min.) ———
APPEARANCE OF SAMPLE slightly cloudy

FIELD OBSERVATIONS AND/OR PROBLEMS ENCOUNTERED ———

EQUIPMENT DECONTAMINATION 3 bucket wash

SAMPLES HAND CARRIED/SHIPPED ON 12-14-89 (date) AT 12:45 (time)

VIA express courier (carrier and shipper's number) TO Superior laboratory

FOR ANALYSIS OF TPH (gas) BTXE

GROUNDWATER SAMPLE
FIELD LOG

PROJECT NAME DP 793
LOCATION Oakland
WELL NUMBER RS-6

SAMPLER BJM

DATE OF SAMPLING 12-14-89
WEATHER CONDITIONS sunny and cool
DEPTH TO FREE PRODUCT ———
DEPTH TO WATER 22.52
DATUM ELEVATION (msl) _____
GROUNDWATER ELEVATION (msl) _____
TOTAL WELL DEPTH 35'

SAMPLE:
WELL ✓
SURFACE WATER _____
SEEP _____
OTHER (DESCRIBE) _____

WATER LEVEL MEASURING EQUIPMENT interface probe
FREE PRODUCT LEVEL MEASURING EQUIPMENT " "
EVACUATION EQUIPMENT PVC bailer
GALLONS TO BE EVACUATED (4 casing vols.) 33
TIME OF EVACUATION START 8:15 FINISH 8:30
TOTAL GALLONS EVACUATED dry at 15

SAMPLING EQUIPMENT teflon bailer
SAMPLING TIME START 10:25 FINISH 10:30
SAMPLING RATE (ml/min.) _____
APPEARANCE OF SAMPLE clear

FIELD OBSERVATIONS AND/OR PROBLEMS ENCOUNTERED _____

EQUIPMENT DECONTAMINATION 3 bucket wash

SAMPLES HAND CARRIED/SHIPPED ON 12-14-89 (date) AT 12:45 (time)

VIA express courier (carrier and shipper's number) TO Superior laboratory

FOR ANALYSIS OF TPH (Gas) BTXE

SUPERIOR ANALYTICAL LABORATORY, INC.

1385 FAIRFAX ST., STE. D. • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 51478
CLIENT: REMEDIATION SERVICE, INT'L
CLIENT JOB NO.: N/A

DATE RECEIVED: 12/14/89
DATE REPORTED: 12/22/89

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 5030 and 8015

LAB #	Sample Identification	Concentration (mg/kg) Gasoline Range
4	RS-1;20' 12/11/89	ND<1
5	RS-1;25' 12/12/89	10
6	RS-1;30' 12/12/89	ND<1
10	RS-2;20' 12/11/89	ND<1
11	RS-3; 5' 12/11/89	ND<1
12	RS-3;10' 12/11/89	ND<1
13	RS-4; 5' 12/12/89	50
14	RS-4;10' 12/12/89	8
18	RS-5;20' 12/13/89	530
19	RS-5;25' 12/13/89	4
22	RS-5;40' 12/13/89	1
26	RS-6;20' 12/13/89	ND<1
27	RS-6;25' 12/13/89	ND<1
29	RS-6;35' 12/13/89	ND<1
30	SB-1; 12/14/89	130
31	SB-2; 12/14/89	370
32	RS-1; 12/14/89	19
33	RS-5; 12/14/89	57
34	RS-6; 12/14/89	11

(mg/L) / (mg/kg) - parts per million (ppm)

Minimum Detection Limit for Gasoline in Soil: 1mg/kg
Minimum Detection Limit for Gasoline in Water:0.1mg/L

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline = <15%
MS/MSD Average Recovery = 95%: Duplicate RPD = 5%

Richard Srna, Ph.D.

Laboratory Director

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL LABORATORY, INC.

1385 FAIRFAX ST., STE. D. • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 51478
CLIENT: REMEDIATION SERVICE, INT'L
CLIENT JOB NO.: N/A

DATE RECEIVED: 12/14/89
DATE REPORTED: 12/22/89

ANALYSIS FOR TOTAL PERTROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 8015

LAB #	Sample Identification	Concentration (mg/kg) Gasoline Range
1	RS-1; 5' 12/11/89	16
2	RS-1;10' 12/11/89	33
3	RS-1;15' 12/11/89	ND<1
7	RS-2; 5' 12/11/89	ND<1
8	RS-2;10' 12/11/89	11
9	RS-2;15' 12/11/89	ND<1
15	RS-5; 5' 12/12/89	ND<1
16	RS-5;10' 12/12/89	ND<1
17	RS-5;15' 12/12/89	ND<1
20	RS-5;30' 12/13/89	1600
21	RS-5;35' 12/13/89	ND<1
23	RS-6; 5' 12/13/89	ND<1
24	RS-6;10' 12/13/89	ND<1
25	RS-6;15' 12/13/89	ND<1
28	RS-6;30' 12/13/89	ND<1

mg/kg - parts per million (ppm)

Minimum Detection Limit for Gasoline in Soil: 1mg/kg
Minimum Detection Limit for Gasoline in Water: 0.1mg/L

QAQC Summary:

Daily Standard run at 2mg/L: RPD Gasoline =2%
MS/MSD Average Recovery =106%: Duplicate RPD =0%

Richard Srna, Ph.D.

for
Laboratory Director

OUTSTANDING QUALITY AND SERVICE

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE. D. • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 51478
CLIENT: REMEDIATION SERVICE, INT'L
CLIENT JOB NO.: N/A

DATE RECEIVED: 12/14/89
DATE REPORTED: 12/22/89

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

LAB #	Sample Identification	Concentration(ug/kg) Benzene	Toluene	Ethyl Benzene	Xylenes
4	RS-1;20' 12/11/89	ND<3	8	ND<3	ND<3
5	RS-1;25' 12/12/89	56	120	41	130
6	RS-1;30' 12/12/89	ND<3	12	ND<3	ND<3
10	RS-2;20' 12/11/89	ND<3	17	ND<3	ND<3
11	RS-3; 5' 12/11/89	ND<3	43	ND<3	8
12	RS-3;10' 12/11/89	ND<3	20	ND<3	ND<3
13	RS-4; 5' 12/12/89	780	3400	740	4100
14	RS-4;10' 12/12/89	250	940	170	920
18	RS-5;20' 12/13/89	1500	8400	3900	22000
19	RS-5;25' 12/13/89	700	420	58	260
22	RS-5;40' 12/13/89	36	69	9	43
26	RS-6;20' 12/13/89	17	7	ND<3	15
27	RS-6;25' 12/13/89	9	11	ND<3	ND<3
29	RS-6;35' 12/13/89	5	7	ND<3	6
30	SB-1; 12/14/89	460	3600	1000	7600
31	SB-2; 12/14/89	1100	13000	4400	29000
32	RS-1; 12/14/89	2600	2700	200	1200
33	RS-5; 12/14/89	3100	4300	670	3400
34	RS-6; 12/14/89	1400	1700	160	860

(ug/L) / (ug/kg) - parts per billion (ppb)

Minimum Detection Limit in Soil: 3.0ug/kg
Minimum Detection Limit in Water:0.3ug/L

QAQC Summary:

Daily Standard run at 20ug/L: RPD = <15%
MS/MSD Average Recovery = 92% ; Duplicate RPD = 3%

Richard Srna, Ph.D.
Laboratory Director

OUTSTANDING QUALITY AND SERVICE

DP 793 OAKLAND, CA

BRIAN MOSSMAN
RSI
P.O. BOX 1601
OXNARD, CA 93032

CHAIN OF CUSTODY

SAMPLE	DATE/TIME	SOIL	WATER	# OF CONTAINERS	ANALYSIS TPH (GAS)	ANALYSIS BTXE
RS-1 5'	12-11-89	X		1	X	
RS-1 10'	12-11-89	X		1	X	
RS-1 15'	12-11-89	X		1	X	
RS-1 20'	12-11-89	X		1	X	X
RS-1 25'	12-12-89	X		1	X	X
RS-1 30'	12-12-89	X		1	X	X
RS-2 5'	12-11-89	X		1	X	
RS-2 10'	12-11-89	X		1	X	
RS-2 15'	12-11-89	X		1	X	
RS-2 20'	12-11-89	X		1	X	X
RS-3 5'	12-11-89	X		1	X	X
RS-3 10'	12-11-89	X		1	X	X
RS-4 5'	12-12-89	X		1	X	X
RS-4 10'	12-12-89	X		1	X	X
RS-5 5'	12-12-89	X		1	X	
RS-5 10'	12-12-89	X		1	X	
RS-5 15'	12-12-89	X		1	X	
RS-5 20'	12-13-89	X		1	X	X
RS-5 25'	12-13-89	X		1	X	X
RS-5 30'	12-13-89	X		1	X	
RS-5 35'	12-13-89	X		1	X	
RS-5 40'	12-13-89	X		1	X	X
RS-6 5'	12-13-89	X		1	X	
RS-6 10'	12-13-89	X		1	X	
RS-6 15'	12-13-89	X		1	X	
RS-6 20'	12-13-89	X		1	X	X
RS-6 25'	12-13-89	X		1	X	X
RS-6 30'	12-13-89	X		1	X	
RS-6 35'	12-13-89	X		1	X	X
SP-1	12-14-89	X		1	X	X
SP-2	12-14-89	X		1	X	X
RS-1	12-14-89 10:20		X	2	X	X
RS-5	12-14-89 10:45		X	2	X	X
RS-6	12-14-89 10:30		X	2	X	X

RELEASED BY BRIAN MOSSMAN TO PAULA STEWART OF EXPRESS-IT COURIERS FOR TRANSPORT TO SUPERIOR LAB ON 12-14-89 AT 12:45

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE. D. • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 51541
CLIENT: Remediation Service
JOB NO.: DP793

DATE SAMPLED: 12/30/89
DATE ANALYZED: 01/01/90
DATE REPORTED: 01/02/90

ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

Concentration (ug/l)

LAB#	CLIENT ID	Benzene	Toluene	Ethyl Benzene	Xylenes
1	01	59	84	4	[illegible]
2	02	2	1	1	4
3	03	110	120	7	38
4	04	100	110	6	30
5	05	0.3	0.4	ND<0.3	0.7
6	06	ND<0.3	ND<0.3	ND<0.3	0.3
7	99	15000	24000	1700	10000

ug/l = part per billion (ppb)
Minimum Detection Limit for BTXE in water = 0.3 ug/l
QA/QC Summary:
Daily standards run at 20 ug/L; RPD = <15%
MS/MSD: Average Recovery = 99%; Duplicate RPD = <9%

Richard Srna, Ph.D.
Laboratory Director

SUPERIOR ANALYTICAL LABORATORY, INC.
1385 FAIRFAX ST., STE. D. • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 51541
CLIENT: Remediation Services

DATE RECEIVED: 12/30/89
DATE REPORTED: 01/02/89
JOB NO.: DP793

ANALYSIS FOR VOLATILE PETROLEUM HYDROCARBONS
by Modified EPA SW-846 Method 8015

LAB #	Sample Identification	Concentration (mg/l) Gasoline Range
1	01	0.5
2	02	0.08
3	03	0.6
4	04	0.6
5	05	0.06
6	06	ND<0.05
7	99	130

mg/l = part per million (ppm)
Minimum Detection Limit for Gasoline in water = 0.05 mg/l

QA/QC Summary:
Daily standards run at 2 mg/L;RPD Gasoline= 15%
MS/MSD: Average Gasoline Recovery = 90%; Duplicate RPD =9%

Richard Srna, Ph.D.
Laboratory Director

RSI PO Box 1601 OXNARD 93032 805 644 5892

CHAIN OF CUSTODY RECORD

5154 QA

PROJ. NO.	PROJECT NAME	P.O.#
	DP 793	

SAMPLERS. (Signature) mike LuRA

Superior Analytical Inc.
1385 Fairfax, Suite D
San Francisco, CA 94124
(415) 647-2081

SAMPLE NO.	DATE	TIME	COMP.	GRAB	SAMPLE LOCATION	MEDIA	ANALYSES REQ'D: TPH (8015 Lin)	BTXE	DETECTION LIMIT	TURN-AROUND TIME	SUSPECTED CONTAMINANT
01	12-29	1615		X	SAVE OUTLET	H_2O LIQ	X	X		~~LAST WEEK~~ 24 HR	~~GASOLINE~~
02	12-29	1647		X	CARBON OUTLET	H_2O LIQ	X	X			
03	12-30	0917		X	SAVE OUT	H_2O LIQ	X	X			
04	12-30	0918		X	SAVE OUT DUPLICATE	H_2O LIQ	X	X			
05	12-30	09:28		X	CARBON OUT	H_2O LIQ	X	X			
06	12-30	0930		X	CARBON OUT DUPLICATE	H_2O LIQ	X	X			
99	12-29	16:24		X	WELL WATER		X	X	—	NORMAL	—

Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature)	Date / Time	Received by: (Signature)	Relinquished by: (Signature)	Date / Time	Received by: (Signature)
Relinquished by: (Signature) mike LuRA	Date / Time 12/30/89 11:07	Received for Laboratory by: (Signature) [illegible]	Date / Time 12/30/89 1107	Remarks ICE CHEST	

EQUIPMENT OPERATION AND PROCESS DESCRIPTION

The following is a description of the operation of the RSI S.A.V.E. System. The concepts behind this system are "thermal vacuum spray aeration" and "compressive thermal oxidation". Both of these are well proven concepts. Spray aeration has been proven effective on both large and small scales for the separation of dissolved hydrocarbons and water. The technology for the control of internal combustion engine emissions by using a catalytic converter has also been effectively demonstrated.

The S.A.V.E. System is a blending of three separate types of remediation which is more efficient than the three systems alone. The three systems are as follows:

1. Vapor extraction from soil
2. Spray aeration treatment of ground water
3. Thermal oxidation using an engine for combusting hydrocarbon-laden vapors and a catalytic converter to control the exhaust.

The soil vapor extraction system consists of a vacuum pump driven by the internal combustion engine. The vacuum on the well causes the hydrocarbons to volatilize and flow with the air into the well, up to the vacuum pump, and then to the engine for treatment before discharge.

Ground water contamination is remediated by use of a spray aerator. Spray aeration works on the same principle as an air stripper. In an air stripper, air is moved quickly over the surface of the hydrocarbon-laden water in order to volatilize the hydrocarbons. In spray aeration, hydrocarbon laden water droplets move quickly through the air causing the hydrocarbons to volatilize. However, in the spray aerator there is no packing to foul or replace. To ensure sufficient hydrocarbon removal, the water is recirculated through a second set of spray nozzles. In this part of the system, water-hydrocarbon separation is enhanced by both vacuum and heat; by lowering the pressure, the temperature at which the hydrocarbons vaporize drops. Increasing the temperature further increases the potential for the hydrocarbons to vaporize. The RSI spray aerator takes advantage of both of these principles by spraying heated water in a vacuum. The engine provides the energy source for heating the water.

At an assumed recovery rate of 10 gpm total and a circulating rate through the system of 100 gpm there will be an average of 20 cycles through the system before discharge. An 80% - 90% reduction in contaminants per cycle is the normal achieved rate, resulting in final removal rates approaching 100%.

As the water level rises from the influx of water from the wells, a float will trigger a discharge of an equal amount of remediated water. The level of contaminant reduction will be determined by sampling water inputs and discharges from the equipment.

Discharge water will then be passed through activated charcoal for final polishing before discharge.

Hydrocarbons extracted from the water in the spray aerator are combined with the vapors drawn out of the wells. The combined vapors are fed directly to the intake of the engine and after combustion in the engine, the exhaust is passed through a catalytic converter to ensure complete combustion.

The entire system is under vacuum until vapors enter the cylinders of the engine for combustion, so any possible leaks of the seals or connections are into the system, resulting in no loss of hydrocarbons to the atmosphere. If there is no combustion, the engine stops running. Since the engine is the power source for all other equipment, all systems stop when the engine stops, thereby preventing any uncontrolled releases. In addition, the engine will have shut off devices triggered by low oil pressure, loss of vacuum, or engine overheat.

A formal health and safety plan will be prepared for operation of the S.A.V.E. System. To provide for safe and secure operation of this equipment, the following safety elements have been designed into the system:

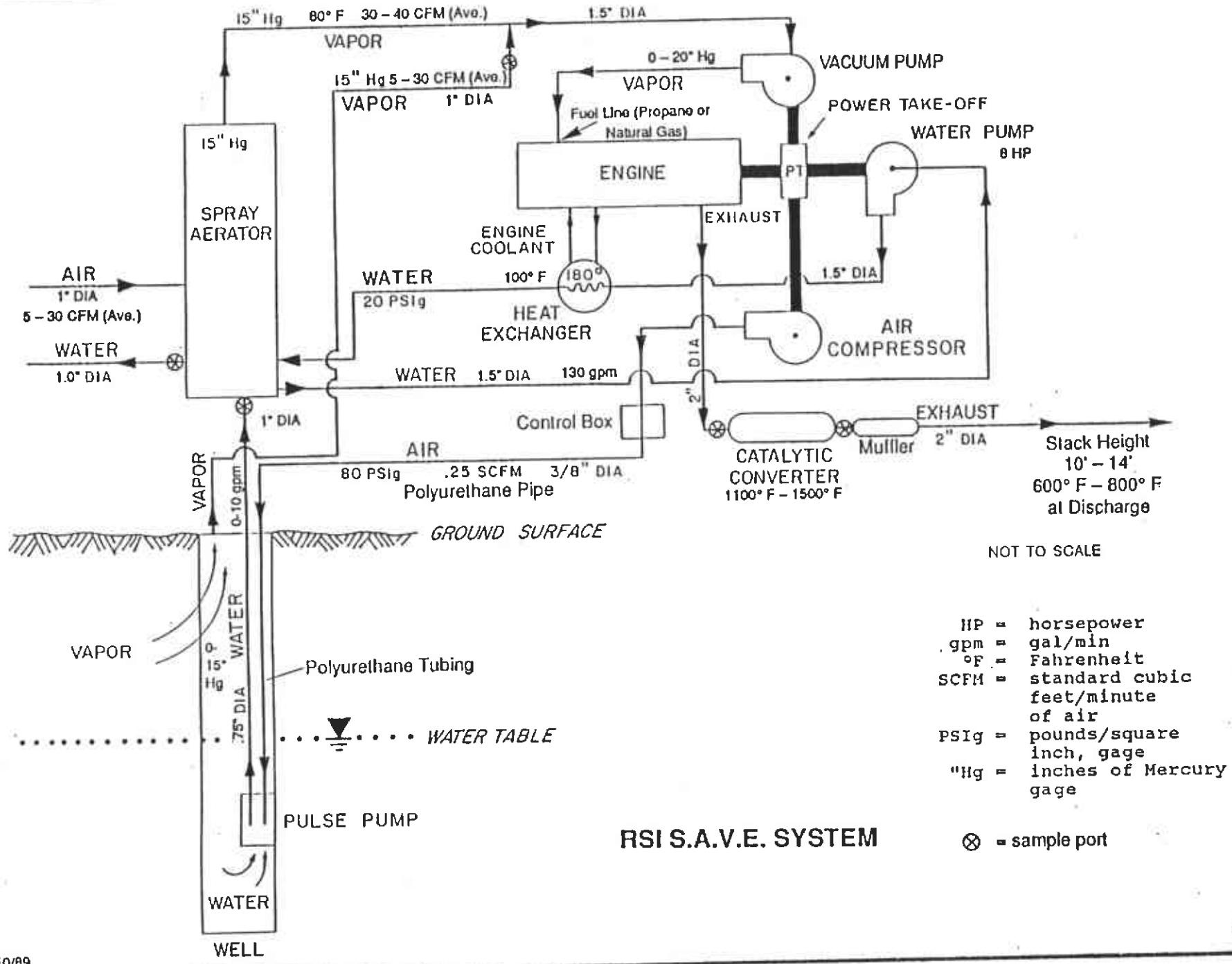
1. The engine has automatic features which will turn the entire system off under any of the following conditions:

   a. Engine overheating
   b. Recirculating pump pressure dropping below normal range
   c. Engine oil pressure dropping below normal range.

2. The vacuum type fuel pump is mechanically driven by the engine; this ensures that when the engine stops running, all fuel pumping also ceases.

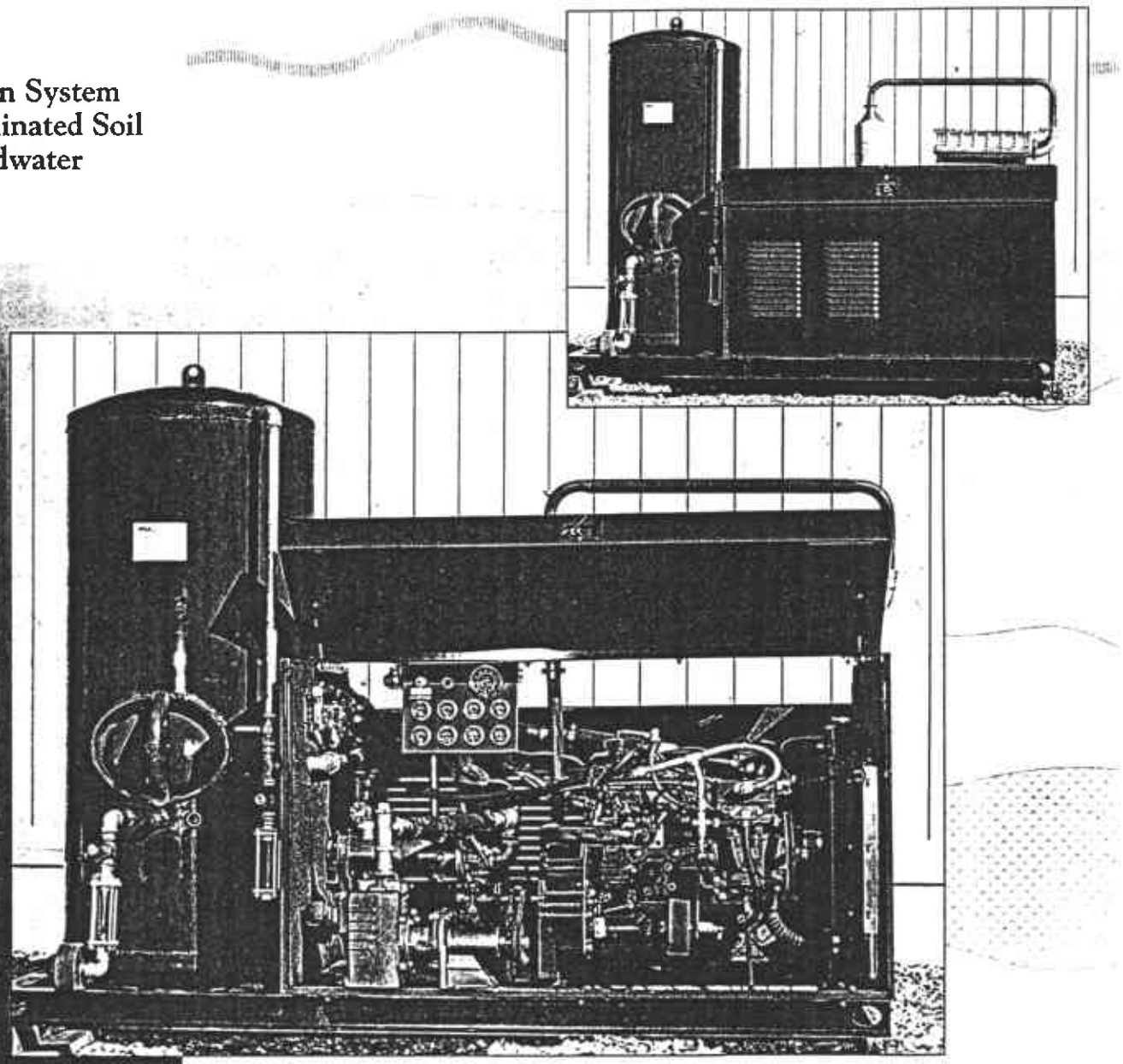
3. The hoses connecting the wells to the equipment will run underground through piping.

4. All equipment, including the fuel tank, shall be enclosed in a fenced compound, including a fence cover over the top to prevent any tampering with the equipment.


15" Hg 80° F 30 – 40 CFM (Ave.)
VAPOR
1.5" DIA
0 – 20" Hg
VACUUM PUMP
VAPOR
15" Hg 5 – 30 CFM (Ave.)
VAPOR 1" DIA
Fuel Line (Propane or Natural Gas)
POWER TAKE-OFF
WATER PUMP
8 HP
15" Hg
ENGINE
PT
SPRAY AERATOR
EXHAUST
ENGINE COOLANT
AIR
1" DIA
5 – 30 CFM (Ave.)
WATER
100° F
180°
1.5" DIA
20 PSIg
HEAT EXCHANGER
AIR COMPRESSOR
WATER
1.0" DIA
WATER 1.5" DIA 130 gpm
2" DIA
1" DIA
Control Box
EXHAUST
AIR
CATALYTIC CONVERTER
1100° F – 1500° F
Muffler
2" DIA
Stack Height
10' – 14'
600° F – 800° F
at Discharge
VAPOR
0-10 gpm
80 PSIg .25 SCFM 3/8" DIA
Polyurethane Pipe
GROUND SURFACE
NOT TO SCALE
VAPOR
0-15" Hg
WATER
.75" DIA
Polyurethane Tubing
WATER TABLE
HP = horsepower
gpm = gal/min
°F = Fahrenheit
SCFM = standard cubic feet/minute of air
PSIg = pounds/square inch, gage
"Hg = inches of Mercury gage
PULSE PUMP
RSI S.A.V.E. SYSTEM
⊗ = sample port
WATER
WELL
-10/89

THE S.A.V.E. SYSTEM

Remediation System
for Contaminated Soil
and Groundwater



REMEDIATION SERVICE, INT'L.

Remediation Equipment • Environmental Services

THE S.A.V.E. SYSTEM

Spray
Aeration
Vacuum
Extraction

RSI's engineered and designed S.A.V.E. system is a cost-effective solution for the separation and destruction of hydrocarbons from contaminated soils and groundwater.

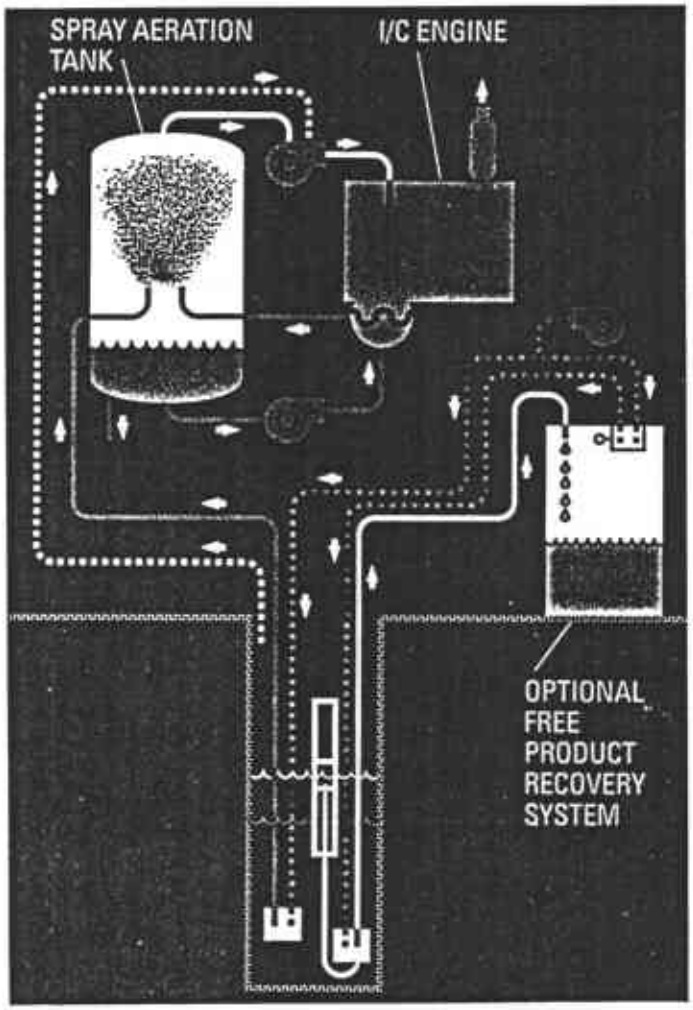
This self contained system is ideally suited for use with monitoring wells at service stations. Designed for ease of installation, operation and maintenance. The system is compact and mobile. It does not need an outside source of power and operates with minimal attendance. A system of gauges and automatic shut-offs prevent engine burnout or needless operation. Negative vapor pressure on the system prevents leakage to atmosphere at valves and connections.

Operation

Draws water and vapors from monitoring wells.

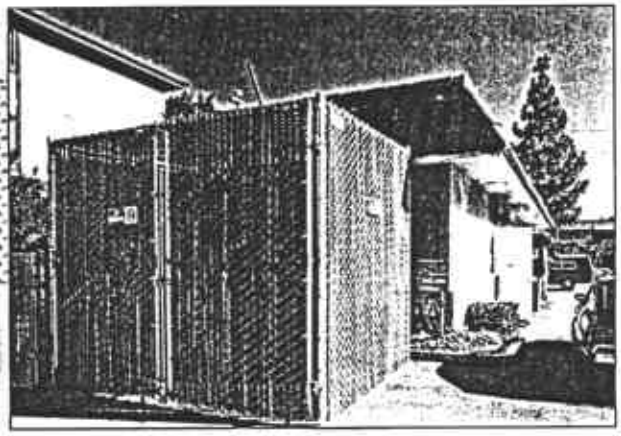
Separates hydrocarbons from water by volatilization in the spray aeration tank.

Burns up hydrocarbons from water and soil in a small internal combustion engine with catalytic converter.



Security

If security is important, this compact system can be fully enclosed by security fencing with all laterals to wells placed underground.



For Additional Information Please Contact:

RSI
REMEDIATION SERVICE, INT'L.
P.O. Box 1601 Oxnard, CA 93032 (805) 644-5892 FAX (805) 654-0720

VAPOR SAMPLING PROTOCOL

EQUIPMENT

1. Vacuum chamber with fittings.
2. 2 liter tedlar bags with valves attached.
3. Two sets of hoses (1 exhaust, 1 intake).
4. Vacuum pump to connect to chamber.

Sampling ports on the equipment consist of female spring loaded quick connect/disconnect fittings. These mate with male fittings on the hoses. The fittings are self sealing and provide complete integrity from sample port to tedlar bag.

PROCEDURE

Samples are collected by placing a tedlar bag in the vacuum chamber and connecting it to a port on the chamber with a short length of hose. The sample hose is purged with clean air, then connected to the sample port and to the chamber. Using the vacuum pump, air is evacuated from the chamber and vapors are drawn into the tedlar bag. Once the bag is full, the vacuum is released and the bag is allowed to purge back to the source. This procedure is repeated except that when the bag is full it is now sealed before releasing the vacuum.

Subsequent samples are taken using the same procedure. A fresh hose is fitted prior to taking exhaust samples and new hoses are used for each different site. Intake and exhaust samples are kept cool in separate storage containers prior to, and during, transportation to a laboratory for analysis.

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-9
Please print or type. *(Form designed for use on elite (12-pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: C A L 0 0 0 0 5 0 6 9 — Manifest Document No.: 0 0 0 0 1

2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
DESERT PETROLEUM
P. O. Box 1601
Oxnard, CA 93032
JOB SITE: BEACON STATION, DP793
4035 Park Boulevard
Oakland, CA

4. Generator's Phone (805) 644-6784

A. State Manifest Document Number: 8949294

B. State Generator's ID:

5. Transporter 1 Company Name: H & H Ship Service Company

6. US EPA ID Number: C A D 0 0 4 7 7 1 1 6 8

C. State Transporter's ID: 003757

D. Transporter's Phone: (415) 543-4835

7. Transporter 2 Company Name:

8. US EPA ID Number:

E. State Transporter's ID:

F. Transporter's Phone:

9. Designated Facility Name and Site Address
H & H Ship Service Company
220 China Basin Street
San Francisco, CA 94107

10. US EPA ID Number: C A D 0 0 4 7 7 1 1 6 8

G. State Facility's ID: C A D 0 0 4 7 7 1 1 6 8

H. Facility's Phone: (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, N.O.S. ORM-E NA 9189	0 0 1	T T	0 2 5 0 0	G	State 241 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above
FUEL OIL AND WATER

K. Handling Codes for Wastes Listed Above
a. 01 b. c. d.

15. Special Handling Instructions and Additional Information
APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATOR.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

GENERATOR

Printed/Typed Name: J.D. Rutherford — Signature: [signature] — Month Day Year: 11 12 11 13 18 19

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name: EDWARD G. MILANO — Signature: Edward G. Milano — Month Day Year: 11 12 11 13 18 19

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name: — Signature: — Month Day Year:

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name: PETER YIMBO — Signature: Peter O. Yimbo — Month Day Year: 11 21 11 4 18 9

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

8949294 Job # 2136

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

Do Not Write Below This Line

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

State of California—Health and Welfare Agency
Form Approved OMB No. 2050-0039 (Expires 9-30-89)
Please print or type. (Form designed for use on elite (12-pitch typewriter).

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
CAL000506919	001012		

3. Generator's Name and Mailing Address
DESERT PETROLEUM
P. O. Box 1601
Oxnard, CA 93032
4. Generator's Phone (805) 644-6784

JOB SITE: BEACON STATION, DP793
4035 Park Boulevard
Oakland, CA

A. State Manifest Document Number: WM 89492956
B. State Generator's ID:

5. Transporter 1 Company Name: H & H Ship Service Company
6. US EPA ID Number: CAD047711168
C. State Transporter's ID: 003756
D. Transporter's Phone: (415) 543-4835

7. Transporter 2 Company Name: Tom's Barrel Company
8. US EPA ID Number: CAT000612110
E. State Transporter's ID: 001588
F. Transporter's Phone: (415) 223-5012

9. Designated Facility Name and Site Address
H & H Ship Service Company
220 China Basin Street
San Francisco, CA 94107
10. US EPA ID Number: CAD047711168
G. State Facility's ID: CAD047711168
H. Facility's Phone: (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, N.O.S. ORM-E NA 9189	001	TT	12000	G	State 241 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above
FUEL OIL AND WATER

K. Handling Codes for Wastes Listed Above
a. 01
b.
c.
d.

15. Special Handling Instructions and Additional Information
APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATOR

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GENERATOR

Printed/Typed Name	Signature	Month	Day	Year
JOHN RUTHERFORD		11	13	89

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
FREDERICK TYRONE NEAL		11	13	89

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
JOSEPH FORTINI		11	14	89

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
PETER YIMBO	Peter O. Yimbo	11	21	89

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

89492956

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EPA 8700—22
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Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAL000005069 | Manifest Document No. 000003

2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
DESERT PETROLEUM
P. O. Box 1601
Oxnard, CA 93032
4. Generator's Phone (805) 644-6784

JOB SITE: BEACON STATION, DP793
4035 Park Boulevard
Oakland, CA

A. State Manifest Document Number: 8493042
B. State Generator's ID:

5. Transporter 1 Company Name: H & H Ship Service Company
6. US EPA ID Number: CAD004771168
C. State Transporter's ID: 003756
D. Transporter's Phone: (415) 543-4835

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
H & H Ship Service Company
220 China Basin Street
San Francisco, CA 94107
10. US EPA ID Number: CAD004771168
G. State Facility's ID: CAD004771168
H. Facility's Phone: (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, N.O.S. ORM-E NA 9189	001	TT	00600	G	State 135 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above
FUEL OIL AND WATER

K. Handling Codes for Wastes Listed Above
a. 01 b. c. d.

15. Special Handling Instructions and Additional Information
APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATOR.

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GENERATOR

Printed/Typed Name: ABRAHAM ALEANO
Signature: A J Aleano
Month Day Year: 11 15 89

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: ROBERT V. PETRUCCI
Signature: Robert V. Petrucci
Month Day Year: 11 16 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name:
Signature:
Month Day Year:

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: PETER YIMBO
Signature: Peter O. Yimbo
Month Day Year: 11 21 89

Do Not Write Below This Line

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

8493042

10 of 13

State of California—Health and Welfare Agency
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Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAL000105069 | Manifest Document No. 000014 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
DESERT PETROLEUM
P. O. Box 1601
Oxnard, CA 93032
4. Generator's Phone (805) 644-6784

JOB SITE: BEACON STATION, DP793
4035 Park Boulevard
Oak land, California

A. State Manifest Document Number: 89493069
B. State Generator's ID:

5. Transporter 1 Company Name: H & H Ship Service Company
6. US EPA ID Number: CAD044771168
C. State Transporter's ID: 003751
D. Transporter's Phone: (415) 543-8835

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
H & H Ship Service Company
220 China Basin Street
San Francisco, CA 94107
10. US EPA ID Number: CAD044771168
G. State Facility's ID: CAD044771168
H. Facility's Phone: (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, N.O.S. ORM-E NA 9189	001	TT	00055	G	State 135 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above: FUEL OIL AND WATER

K. Handling Codes for Wastes Listed Above: a. 01 b. c. d.

15. Special Handling Instructions and Additional Information
APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATOR.

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GENERATOR — Printed/Typed Name: ABRAHAM ALBANO — Signature: A D Albano — Month Day Year: 11 16 89

TRANSPORTER
17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JAMES R. MORGAN — Signature: James R. Morgan — Month Day Year: 11 16 89
18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Month Day Year:

FACILITY
19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: PETER YIMBO — Signature: Peter O. Yimbo — Month Day Year: 11 21 89

Do Not Write Below This Line

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

89493069 106#2136

State of California—Health and Welfare Agency
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Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. C|A|L|0|0|0|0|5|0|6|9 | Manifest Document No. 0|0|0|0|5 | 2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
DESERT PETROLEUM
P. O. Box 1608
Oxnard, CA 93032
4. Generator's Phone (805) 644-6784

JOB SITE: BEACON STATION, DP793
4035 Park Boulevard
Oakland, CA

A. State Manifest Document Number 89493068
B. State Generator's ID

5. Transporter 1 Company Name: H & H Ship Service Company
6. US EPA ID Number: C|A|D|0|0|4|7|7|1|1|6|8
C. State Transporter's ID: 003752
D. Transporter's Phone: (415) 543-4835

7. Transporter 2 Company Name
8. US EPA ID Number
E. State Transporter's ID
F. Transporter's Phone

9. Designated Facility Name and Site Address
H & H Ship Service Company
220 China Basin Street
San Francisco, CA 94107
10. US EPA ID Number: C|A|D|0|0|4|7|7|1|1|6|8
G. State Facility's ID: C|A|D|0|0|9|7|7|1|1|6|8
H. Facility's Phone: (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, N.O.S. ORM-E NA 9189	0011	TT	003000	G	State 135 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above
FUEL OIL AND WATER

K. Handling Codes for Wastes Listed Above
a. 01 b. c. d.

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GENERATOR

Printed/Typed Name: ABRAHAM ALBANO
Signature: A Albano
Month 11 Day 12 Year 89

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JAMES R. MORGAN
Signature: James R. Morgan
Month 11 Day 12 Year 89

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name
Signature
Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: PETER YIMBO
Signature: Peter O. Yimbo
Month 11 Day 21 Year 89

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

89493068 #067 MR

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

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State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-9
Please print or type. *(Form designed for use on elite 12-pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

89493071 Job #281

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-800-852-7550

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAL000050691 — Manifest Document No.
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
DESERT PETROLEUM
P. O. Box 1601
Oxnard, CA 93032
JOB SITE: BEACON STATION, DP793
4035 Park Boulevard
Oakland, California
4. Generator's Phone (805) 644-6784

A. State Manifest Document Number: 8949307 1
B. State Generator's ID:

5. Transporter 1 Company Name: H & H Ship Service Company
6. US EPA ID Number: CAD004771168
C. State Transporter's ID: 003751
D. Transporter's Phone: (415) 543-4835

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
H & H Ship Service Company
220 China Basin Street
San Francisco, CA 94107
10. US EPA ID Number: CAD004771168
G. State Facility's ID: CAD004771168
H. Facility's Phone: (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, N.O.S. ORM-E NA 9189	001	TT	001300	G	State 241 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above
FUEL OIL AND WATER

K. Handling Codes for Wastes Listed Above
a. 01 b. c. d.

15. Special Handling Instructions and Additional Information
APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATOR.

16. GENERATOR'S CERTIFICATION: I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

If I am a large quantity generator, I certify that I have a program in place to reduce the volume and toxicity of waste generated to the degree I have determined to be economically practicable and that I have selected the practicable method of treatment, storage, or disposal currently available to me which minimizes the present and future threat to human health and the environment; OR, if I am a small quantity generator, I have made a good faith effort to minimize my waste generation and select the best waste management method that is available to me and that I can afford.

Printed/Typed Name: Rick Jirsa — Signature — Month Day Year: 12 6 88

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JAMES R. MORGAN — Signature: James R Morgan — Month Day Year: 12 6 88

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name — Signature — Month Day Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Ruskan Shaddox — Signature — Month Day Year: 12 8 88

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

Do Not Write Below This Line

Yellow: TSDF SENDS THIS COPY TO GENERATOR WITHIN 30 DAYS

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-
Please print or type. *(Form designed for use on elite (12-pitch) typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

89493060 Tag #811

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UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAL 000 0 0 0 5 0 6 9 — Manifest Document No. 0 0 0 0 6
2. Page 1 of 1 — Information in the shaded areas is not required by Federal law.

GENERATOR

3. Generator's Name and Mailing Address
DESERT PETROLEUM
P. O. Box 1601
Oxnard, CA 93032
4. Generator's Phone (805) 644-6784

JOB SITE: BEACON STATION, DP793
4035 Park Boulevard
Oakland, California

A. State Manifest Document Number: 89493060
B. State Generator's ID:

5. Transporter 1 Company Name: H & H Ship Service Company
6. US EPA ID Number: CAD 0 0 4 7 7 1 1 6 8
C. State Transporter's ID: 001564
D. Transporter's Phone: (415) 543-4835

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
H & H Ship Service Company
220 China Basin Street
San Francisco, CA 94107
10. US EPA ID Number: CAD 0 0 4 7 7 1 1 6 8
G. State Facility's ID: CAD 0 0 4 7 7 1 1 6 8
H. Facility's Phone: (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, N.O.S. ORM-E NA 9189	0 0 1 1	TT	0 0 3 1 0 0	G	State 135 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above: FUEL OIL AND WATER

K. Handling Codes for Wastes Listed Above: a. 01 b. c. d.

15. Special Handling Instructions and Additional Information

APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATOR.

16. **GENERATOR'S CERTIFICATION:** I hereby declare that the contents of this consignment are fully and accurately described above by proper shipping name and are classified, packed, marked, and labeled, and are in all respects in proper condition for transport by highway according to applicable international and national government regulations.

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Printed/Typed Name: John Rutherford — Signature: [signature] — Month Day Year: 11 12 12 0 8 9

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JAMES R. MORGAN — Signature: James R. Morgan — Month Day Year: 11 12 12 0 8 9

18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Month Day Year:

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.
Printed/Typed Name: Richard Shelton — Signature: [signature] — Month Day Year: 11 12 12 0 8 9

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

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State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires 9-30-
Please print or type. *(Form designed for use on elite 12-pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.	Manifest Document No.	2. Page 1 of 1	Information in the shaded areas is not required by Federal law.
CAL000056991	0000		

3. Generator's Name and Mailing Address
DESERT PETROLEUM
P. O. Box 1601
Oxnard, CA 93032
4. Generator's Phone (805) 644-6784

JOB SITE: BEACON STATION, DP793
4035 Park Boulevard
Oakland, California

A. State Manifest Document Number: 89493102
B. State Generator's ID:

5. Transporter 1 Company Name	6. US EPA ID Number	C. State Transporter's ID	D. Transporter's Phone
H & H Ship Service Company	CAD004771161 8	001564	(415) 543-4835

7. Transporter 2 Company Name	8. US EPA ID Number	E. State Transporter's ID	F. Transporter's Phone

9. Designated Facility Name and Site Address	10. US EPA ID Number	G. State Facility's ID	H. Facility's Phone
H & H Ship Service Company 220 China Basin Street San Francisco, CA 94107	CAD004771161 8	CAD004771161 8	(415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, N.O.S. ORM-E NA 9189	001	TT	002250	G	State 135 EPA/Other
b.					State EPA/Other
c.					State EPA/Other
d.					State EPA/Other

J. Additional Descriptions for Materials Listed Above	K. Handling Codes for Wastes Listed Above	
FUEL OIL AND WATER	a. 01	b.
	c.	d.

15. Special Handling Instructions and Additional Information

APPROPRIATE PRUTECTIVE CLOTHING AND RESPIRATOR.

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Printed/Typed Name	Signature	Month	Day	Year
x John Rutherford	x	12	12	89

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
JOSE J. MORENO		12	12	89

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
PETER YIMBO	Peter O. Yimbo	12	21	89

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

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GENERATOR

IN CASE OF AN EMERGENCY OR SPILL, CALL THE NATIONAL RESPONSE CENTER 1-800-424-8802; WITHIN CALIFORNIA CALL 1-916-852-7550

89493102

10 EZ 2811

State of California—Health and Welfare Agency
Form Approved OMB No. 2050—0039 (Expires
Please print or type. *(Form designed for use on eli... pitch typewriter).*

Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No.: C|A|L|0|0|0|0|0|5|0|6|9 — Manifest Document No.: 0|0|0|0|9
2. Page 1 of 1
Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
DESERT PETROLEUM
P. O. Box 1601
Oxnard, CA 93032
4. Generator's Phone (805) 644-6784

JOB SITE: BEACON STATION, #793
4035 Park Boulevard
Oakland, California

A. State Manifest Document Number: 8949299**8**
B. State Generator's ID:

5. Transporter 1 Company Name: H & H Ship Service Company
6. US EPA ID Number: C|A|D|0|0|4|7|7|1|1|6|8
C. State Transporter's ID: 001564
D. Transporter's Phone: (415) 543-4835

7. Transporter 2 Company Name:
8. US EPA ID Number:
E. State Transporter's ID:
F. Transporter's Phone:

9. Designated Facility Name and Site Address
H & H Ship Service Company
220 China Basin Street
San Francisco, CA 94107
10. US EPA ID Number: C|A|D|0|0|4|7|7|1|1|6|8
G. State Facility's ID: C|A|D|0|0|4|7|7|1|1|6|8
H. Facility's Phone: (415) 543-4835

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, N.O.S. ORM-E NA 9189	0|1	TT	0103000	G	State 135 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above
FUEL OIL AND WATER

K. Handling Codes for Wastes Listed Above
a. 01 b. c. d.

15. Special Handling Instructions and Additional Information
APPROPRIATE PROTECTIVE CLOTHING AND RESPIRATOR.

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GENERATOR — Printed/Typed Name: ABRAHAM ALBANO — Signature: A D Albano — Month Day Year: 1|2|2|3|8|9

TRANSPORTER
17. Transporter 1 Acknowledgement of Receipt of Materials
Printed/Typed Name: JAMES R. MORGAN — Signature: James R. Morgan — Month Day Year: 1|2|2|3|8|9
18. Transporter 2 Acknowledgement of Receipt of Materials
Printed/Typed Name: — Signature: — Month Day Year:

FACILITY
19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in item 19.
Printed/Typed Name: PETER YIMBO — Signature: Peter O. Yimbo — Month Day Year: 1|2|2|6|8|9

DHS 8022 A (1/88)
EPA 8700—22
(Rev. 9-88) Previous editions are obsolete.

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8949299**8** Page #01

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Department of Health Services
Toxic Substances Control Division
Sacramento, California

UNIFORM HAZARDOUS WASTE MANIFEST

1. Generator's US EPA ID No. CAL000050691 | Manifest Document No. 000110
2. Page 1 of 1 | Information in the shaded areas is not required by Federal law.

3. Generator's Name and Mailing Address
DESERT PETROLEUM
P. O. Box 1601
Oxnard, CA 93032
4. Generator's Phone (805) 644-6784

JOB SITE: BEACON STATION, DP793
4035 Park Boulevard
Oakland, California

A. State Manifest Document Number 89493154
B. State Generator's ID
C. State Transporter's ID 001564
D. Transporter's Phone (415) 543-4835
E. State Transporter's ID
F. Transporter's Phone
G. State Facility's ID CAD010471116 8
H. Facility's Phone (415) 543-4835

5. Transporter 1 Company Name: H & H Ship Service Company
6. US EPA ID Number: CAD010471116 8
7. Transporter 2 Company Name
8. US EPA ID Number

9. Designated Facility Name and Site Address
H & H Ship Service
220 China Basin Street
San Francisco, CA 94107
10. US EPA ID Number: CAD010471116 8

11. US DOT Description (Including Proper Shipping Name, Hazard Class, and ID Number)	12. Containers No.	12. Containers Type	13. Total Quantity	14. Unit Wt/Vol	I. Waste No.
a. HAZARDOUS WASTE LIQUID, N.O.S. ORM-E NA 9189	011	TIT	002510	G	State 135 / EPA/Other
b.					State / EPA/Other
c.					State / EPA/Other
d.					State / EPA/Other

J. Additional Descriptions for Materials Listed Above
FUEL OIL AND WATER

K. Handling Codes for Wastes Listed Above
a. 01 b.
c. d.

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GENERATOR

Printed/Typed Name	Signature	Month	Day	Year
MIKE SULKA	Mike Sulka	11	12	16 18 19

TRANSPORTER

17. Transporter 1 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year
JAMES R. MORGAN	James R. Morgan	11	12	16 18 19

18. Transporter 2 Acknowledgement of Receipt of Materials

Printed/Typed Name	Signature	Month	Day	Year

FACILITY

19. Discrepancy Indication Space

20. Facility Owner or Operator Certification of receipt of hazardous materials covered by this manifest except as noted in Item 19.

Printed/Typed Name	Signature	Month	Day	Year
Ralph Shanteau		11	26	19

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89493154 Tob #3811

DHS 8022 A (1/88)
EPA 8700—22
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