gettler — ryan inc.
general contractors

July 6, 1990

Mr. Stan Roller
Shell Oil Company
Post Office Box 4023
Concord, California 94520

Reference: Shell Service Station
350 Grand Avenue
Oakland, California

Gentlemen:

Enclosed is the GeoStrategies Inc. Soil Boring Report dated July 5, 1990, for the referenced location. The report documents the results of the soil borings that were drilled on May 11, 1990.

Should you have any questions or comments regarding this project please do not hesitate to call.

Sincerely,

John P. Werfal
Project Manager

JPW/ch

enclosures

cc: Ms. Diane Lindquist, Shell Oil Company

1992 national avenue • hayward, california 94545-1787 • 783-7500

GeoStrategies Inc.

SOIL BORING REPORT

Shell Service Station
350 Grand Avenue
Oakland, California

Report No. 7667-1

July 5, 1990

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545
(415) 352-4800

July 5, 1990

Gettler-Ryan Inc.
2150 West Winton Avenue
Hayward, California 94545

Attn: Mr. John Werfal

Re: SOIL BORING REPORT
Shell Service Station
350 Grand Avenue
Oakland, California

Gentlemen:

This report summarizes the field activities performed by GeoStrategies Inc. (GSI) and chemical analytical results for soil samples collected at the above referenced location (Plate 1). Five exploratory soil borings were drilled on May 11, 1990, to evaluate soil conditions prior to replacement of the underground storage tanks (UGST).

SITE DESCRIPTION

The site is presently occupied by an operating Shell Service Station. The service station consists of a kiosk and three fueling islands. The underground storage tank complex consists of three 12,000 gallon tanks containing leaded and unleaded gasoline and one tank containing diesel fuel (Plate 2).

FIELD PROCEDURES

Five exploratory soil borings (S-A through S-E) were drilled using a truck mounted hollow-stem auger drilling rig according to GSI Field Methods and Procedures (Appendix A). Three soil borings were drilled in the vicinity of the gasoline UGSTs (S-A, S-B, and S-C) and two soil borings were drilled in the area of the diesel UGST (S-D and S-E). The locations of the soil borings are shown on Plate 2.

Borings S-A through S-E were drilled to total depths of 13.5 to 15.0 feet below ground surface.

Soils were sampled at approximately five-foot depth intervals. Soil samples were collected using a modified California split-spoon sampler fitted with precleaned brass tube liners. A GSI geologist supervised the drilling and described soil samples using the Unified Soil Classification System (ASTM-2488) and Munsell Soil Color Charts. Lithologic logs were prepared for each boring and are presented in Appendix B.

A 4-inch long brass tube of soil from each sampled interval was used to perform head-space analysis in the field to screen for the presence of Volatile Organic Compounds (VOCs). Head-space analysis involved transferring soil from the brass liner into a clean glass jar and immediately covering the jar with aluminum foil secured with a ring-type threaded lid. After approximately twenty minutes, the foil was pierced and the head-space within the jar was tested for total organic vapor measured in parts per million (ppm) using an Organic Vapor Meter (OVM) photoionization detector. Head-space analysis results are presented on each boring log in Appendix B.

Soil samples retained for chemical analyses were collected in clean brass liners, covered on both ends with aluminum foil, and sealed with plastic end caps. The samples were labeled, entered on a Chain-of-Custody form, placed in a cooler with blue ice, and transported to International Technology (IT) Analytical Services, a State-certified environmental laboratory located in San Jose, California.

HYDROGEOLOGIC CONDITIONS

The lithology beneath the site appears to consist primarily of clay (CL), silt (ML), and sand fill material underlain by silty sand (SM) and clay (CL) to the total explored depth of 15 feet below grade. Fill material extends to an approximate depth of 11.5 feet and appeared to be relatively uniform in thickness across the site. Clay and silt were the primary fill materials in Borings S-A through S-C and sand predominated the fill material in Borings S-D and S-E. Boring S-A encountered a sand layer from approximately 11.5 to 13.5 feet below grade. The remaining borings encountered sandy clay and clay from 11.5 feet to the bottom of the respective borings. Groundwater was first encountered in Boring S-A at 12 feet below ground surface and at depths of 8.5 to 9.5 feet in Borings S-B through S-E.

CHEMICAL ANALYTICAL DATA

Soil samples were analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline) and Diesel (TPH-Diesel) according to EPA Method 8015 (Modified), Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX) according to EPA Method 8020, and Lead according to EPA Method 7421. One soil sample was analyzed for organic lead according to the California Department of Health Services (DHS) Method.

Soil samples collected from Borings S-A through S-C contained the highest concentrations of petroleum hydrocarbons. Soil samples from the 9.0 to 9.5 foot interval for borings S-A through S-C contained concentrations of TPH-Gasoline ranging from 22 to 2,900 parts per million (ppm). The soil samples from Borings S-A and S-B collected from 13.0 feet below grade did not contain detectable concentrations of TPH-Gasoline. TPH-Gasoline was reported as None Detected (ND) for all soil samples from Borings S-D and S-E.

Concentrations of BTEX were detected in soil samples from Borings S-A, S-B, S-C, and S-E. BTEX concentrations were highest in the soil samples collected from the 9.0 to 9.5 foot depth interval (210 ppm xylenes).

TPH-Diesel was detected in Borings S-A through S-D at depths of 9.0 to 9.5 feet at concentrations of 20 to 2400 ppm. Additionally, TPH-Diesel was detected in Boring S-B at 6.5 feet (42 ppm).

It appears that the highest concentrations of petroleum hydrocarbons were detected in soil samples collected at or near the first encountered ground-water level in soil samples from Borings S-A, S-B, and S-C, drilled near the gasoline UGSTs. The TPH-Diesel detected in soil samples from Borings S-A through S-C may have been a result of gasoline present in the soil. The IT Analytical Services report states "...Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline". The chromatographic pattern observed for the TPH-Diesel in the sample from Boring S-D did not match the diesel standard used by IT Analytical Services.

Lead was detected in all soil samples at concentrations ranging from 2.6 to 38 ppm. Soil chemical analytical data are summarized in Table 1. IT analytical services chemical analytical report is presented in Appendix C.

SUMMARY

A summary of activities and findings associated with this report is presented below:

- Five exploratory soil borings (S-A through S-E) were drilled in the vicinity of the UGSTs to depths of 13.5 to 15.0 feet below grade.

- The area of the UGSTs appears to be underlain by clay, silt, and sand fill material to an approximate depth of 11.5 feet. Clay underlies the fill to the total depth explored of approximately 15.0 feet, except for Boring S-A where silty sand was observed.

- TPH-Gasoline was detected in soil samples from Borings S-A through S-C at the 9.0 to 9.5 depth interval at concentrations ranging from 22 to 2900 ppm. TPH-Gasoline was also detected in a soil sample from Boring S-B at a depth of 6.5 feet. Soil samples from Borings S-D and S-E, near the diesel UGST, were reported as ND for TPH-Gasoline.

- TPH-Diesel was detected in soil samples from a depth of approximately 9 feet below grade in Borings S-A, S-B, S-C, and S-D (20 to 2,400 ppm). The gas chromatograph response from the analyzed samples resembled less volatile constituents of gasoline. TPH-Diesel was not detected in the soil samples from Boring S-E.

- The highest concentrations of BTEX were detected in soil samples from the 9-foot depth interval. The highest concentrations were detected in samples from Borings S-A, S-B, and S-C, near the gasoline UGSTs.

If you have any questions, please call.

GeoStrategies Inc. by,

Robert C. Mallory
Geologist

Jeffrey L. Peterson
Senior Hydrogeologist
R.E.A. 1021

REGISTERED GEOLOGIST
CHRISTOPHER M. PALMER
№ 1262
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

Christopher M. Palmer
C.E.G. 1262, R.E.A. 285

RCM/JLP/mlg

Plate 1: Vicinity Map
Plate 2: Site Plan

Appendix A: Field Methods and Procedures
Appendix B: Boring Logs
Appendix C: Soil Chemical Analytical Report

TABLE 1

SOIL ANALYSIS DATA

SAMPLE NO	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TPH-D (PPM)	LEAD (PPM)
S-A-4.5	11-May-90	25-May-90	<2.5	0.045	<0.025	<0.025	<0.05	<5.	5.3
S-A-9.5	11-May-90	26-May-90	[redacted]	[redacted]	7.	44.	210.	[redacted]	8.7
S-A-13.5	11-May-90	25-May-90	<2.5	<0.025	<0.025	<0.025	<0.05	<5.	5.7
S-B-6.5	11-May-90	26-May-90	21.	0.082	<0.025	0.24	0.91	42. *	38.
S-B-9.0	11-May-90	26-May-90	[redacted]	[redacted]	3.	31.	130.	[redacted]	6.3
S-B-13.5	11-May-90	26-May-90	2.5	0.30	<0.025	0.027	0.09	<5.	9.3
S-C-9.5	11-May-90	26-May-90	22.	0.30	0.052	0.57	1.3	20. *	3.5
S-D-4.5	11-May-90	25-May-90	<2.5	<0.025	<0.025	<0.025	<0.05	<5.	7.6
S-D-9.0	11-May-90	25-May-90	<2.5	<0.025	<0.025	<0.025	<0.05	36.	9.2
S-D-15.0	11-May-90	25-May-90	<2.5	<0.025	<0.025	<0.025	<0.05	<5.	6.8

TPH-G = Total Petroleum Hydrocarbons as Gasoline
TPH-D = Total Petroleum Hydrocarbons as Diesel
PPM = Parts Per Million

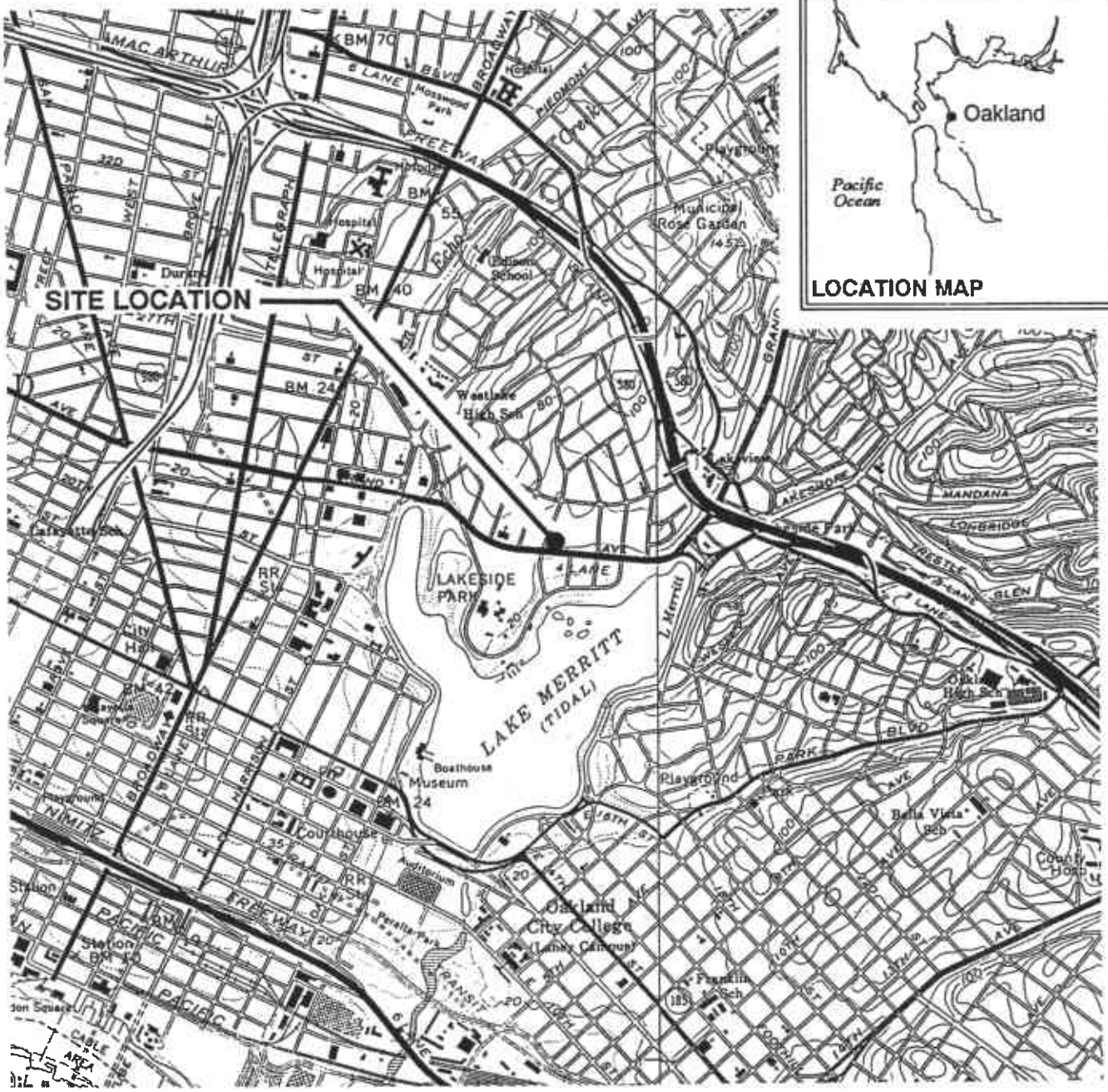
NOTE: 1. All data shown as <x are reported as ND (none detected).
2. TPH-D appears to be less volatile constituents of gasoline.
3. Sample S-B-6.5 was reported as ND (<1 ppm) for organic lead.

Report No. 7667-1

TABLE 1

SOIL ANALYSIS DATA

SAMPLE NO	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TPH-D (PPM)	LEAD (PPM)
S-E-9.5	11-May-90	25-May-90	<2.5	0.10	<0.025	<0.025	0.21	<5.	2.6
S-E-13.5	11-May-90	24-May-90	<2.5	<0.025	<0.025	<0.025	<0.05	<5.	8.1



Base Map: USGS Topographic Map

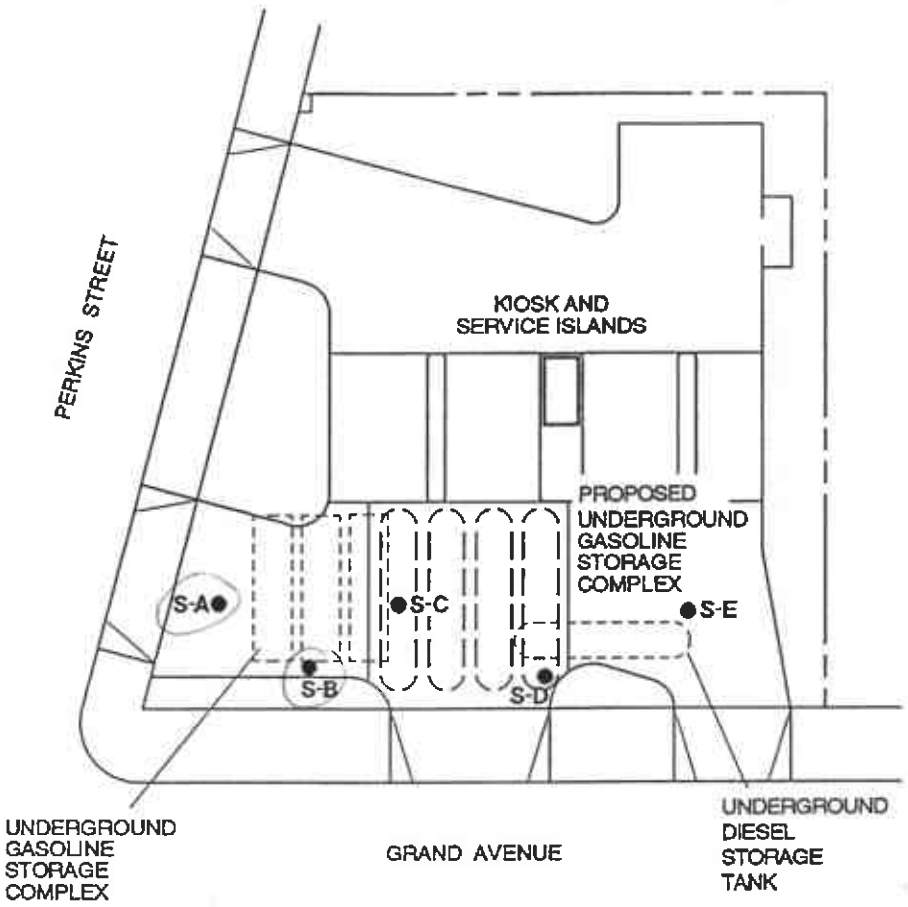
Approximate Scale : 1" = 2000'

GeoStrategies Inc.

Vicinity Map
Shell Service Station
350 Grand Avenue
Oakland, California

PLATE
1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7667		4/90		



EXPLANATION

● S-A Soil boring location

○ hits at ~9' bgs

N

0 40 80

Scale in Feet

GeoStrategies Inc.

Site Plan
Shell Service Station
350 Grand Avenue
Oakland, California

PLATE
2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7667	CEG 12/6	6/90		

APPENDIX A
FIELD METHODS AND PROCEDURES

FIELD METHODS AND PROCEDURES

EXPLORATION DRILLING

Mobilization

Prior to any drilling activities, GeoStrategies Inc. (GSI) will verify that necessary drilling permits have been secured.

Utility locations will be located and drilling will be conducted so as not to disrupt activities at a project site. GSI will obtain and review available public data on subsurface geology and if warranted, the location of wells within a half-mile of the project site will be identified. Drillers will be notified in advance so that drilling equipment can be inspected prior to performing work.

Drilling

The subsurface investigations are typically performed to assess the lateral and vertical extent of petroleum hydrocarbons present in soils and groundwater. Drilling methods will be selected to optimize field data requirements as well as be compatible with known or suspected subsurface geologic conditions.

Monitoring wells are installed using a truck-mounted hollow-stem auger drill rig or mud-rotary drill rig. Typically, the hollow-stem rig is used for wells up to 100 feet, if subsurface conditions are favorable. Wells greater than 100-feet deep are typically drilled using mud-rotary techniques. When mud rotary drilling is used, an electric log will be performed for additional lithological information. Also during mud rotary drilling, precautions will be taken to prevent mud from circulating contaminants by using a conductor casing to seal off contaminated zones. Samples will be collected for lithologic logging by continuous chip, and where needed by drive sample or core as specified by the supervising geologist.

Soil Sampling

Shallow soil borings will be drilled using a truck-mounted hollow-stem auger drilling rig, unless site conditions favor a different drilling method. Drilling and sampling methods will be consistent with ASTM Method D-1452-80. The auger size will be a minimum 6-inch nominal outside-diameter (O.D). No drilling fluids will be used during this drilling method. The augers and other tools used in the bore hole will be steam cleaned before use and between borings to minimize the possibilities of cross-contamination between borings.

Soil samples are typically collected at 5-foot intervals as a minimum from ground surface to total depth of boring. Additional soil samples will be collected based on significant lithologic changes and/or potential chemical content. Soil samples from each sampling interval will be lithologically described by a GSI geologist (Figure 1). Soil colors will be described using the Munsell Color Chart. Rock units will be logged using appropriate lithologic terms, and colors described by the G.S.A. Rock Color Chart.

Head-space analyses will be performed to check for the evidence of volatile organic compounds. Head-space analyses will be performed using an organic vapor analyzer; either an OVA, HNU, or OVM. Organic vapor concentrations will be recorded on the GSI field log of boring (Figure 1). The selection of soil samples for chemical analysis are typically based on the following criteria:

1) Soil discoloration
2) Soil odors
3) Visual confirmation of chemical in soil
4) Depth with respect to underground tanks (or existing grade)
5) Depth with respect to ground water
6) OVA reading

Soil samples (full brass liners) selected for chemical analysis are immediately covered with aluminum foil and the liner ends are capped to prevent volatilization. The samples are labeled and entered onto a Chain-of-Custody form, and placed in a cooler on blue ice for transport to a State-certified analytical laboratory.

Soil cuttings are stockpiled on-site. Soils are sampled and analyzed for site-specific chemical parameters. Disposition of soils is dependent of chemical analytical results of the samples.

Soil Sampling - cont.

Soil borings not converted to monitoring wells will be backfilled (sealed) to ground surface using either a neat cement or cement-bentonite grout mixture. Backfilling will be tremied by continuously pumping grout from the bottom to the top of the boring where depth exceeds 20' or as required by local permit requirements.

All field and office work, including exploratory boring logs, are prepared under the direction of a registered geologist.

Monitoring Well Installation

Monitoring well casing and screen will be constructed of Schedule 40, flush-joint threaded polyvinylchloride (PVC). The well screen will be factory mill-slotted unless additional open area is required (eg. conversion to an extraction well in a low-yield aquifer). The screen length will be placed adjacent to the aquifer material to a minimum of 2-feet above encountered water. No screen shall be placed in a borehole that potentially creates hydraulic interconnection of two or more aquifer units. Screen slot size and well sand pack will be compatible with encountered aquifer materials, as confirmed by sieve analysis.

Monitoring wells will be completed below grade (Figure 2) unless special conditions exist that require above-grade completion design. In the event a monitoring well is required in an aquifer unit beneath an existing aquifer, the upper aquifer will be sealed off by installing a steel conductor casing with an annular neat cement or cement-bentonite grout seal. This seal will be continuously tremie pumped from the bottom of the annulus to ground surface.

The monitoring well sand pack will be placed adjacent to the entire screened interval and will extend a recommended minimum distance of 2-feet above the top of the screen. No sand pack will be placed that interconnects two or more aquifer units. A minimum 2-foot bentonite pellet or bentonite slurry seal will be placed above the sand pack. Sand pack, bentonite, and cement seal levels will be confirmed by sounding the annulus with a calibrated weighted tape. The remaining annular space above the bentonite seal will be grouted with a bentonite-cement mixture and will be tremie-pumped from the bottom of the annular space to the ground surface. The bentonite content of the grout will not exceed 5 percent by weight. A field log of boring and a field well completion form will be prepared by GSI for each well installed.

Decontamination of drilling equipment before drilling and between wells will consist of steam cleaning, and/or Alconox wash.

Well Development

All newly installed wells will be properly developed within 48 hours of completion. No well will be developed until the well seal has set a minimum of 12 hours. Development procedures will include one or more of the methods described below:

Bailing

Bailing will be used to remove suspended sediments and drilling fluids from the well, where applicable. The bailer will be raised and lowered through the column of water in the well so as to create a gentle surging action in the screened interval. This technique may be used in conjunction with other techniques, such as pumping, and may be used alone if the well is of low yield.

Pumping

Pumping will be used in conjunction with bailing or surging. The pump will be operated in such a manner as to gently surge the entire screened interval of the well. This may involve operating the pump with a packer type mechanism attached and slowly raising and lowering the pump, or by cycling the pump off and on to allow water to move in and out of the screened interval. Care will be used not to overpump a well.

Surging

Surging will be performed on wells that are screened in known or suspected high yield formations and/or on larger diameter (recovery) wells. A surge block will be raised and lowered through the entire screened interval, forcing water in and out of the well screen and sand pack. Pumping or air lifting will be used in conjunction with this method of development to remove any sediment brought into the well during surging.

Air Lifting

Air lifting will be used to remove sediment from wells as an alternative to pumping under certain conditions. When appropriate, a surge block designed for use with air lifting will be used to agitate the entire screened interval and water will be lifted out of the well using forced air. When air lifting is performed, the air source will be either nitrogen or filtered air and the procedure will be performed gently to prevent any damage to the well screen or casing and to insure that discharged water is contained.

Well Development - cont.

All well developing equipment will be thoroughly decontaminated prior to development using a steam cleaner and/or Alconox detergent wash and clean water rinse. During development procedures, field parameters (temperature, specific conductance and pH) will be monitored and recorded on well development forms (Figure 3). Equilibration requirements consist of a minimum of three readings with the following accuracy standards:

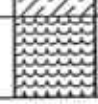
pH	± 0.1 pH units
Specific Conductance	± 10% of full scale reading
Temperature	± 0.5 degrees Celsius

The wells will be developed until water is visibly clear and free of sediment, and well purging parameters stabilized. A minimum of 8 to 10 well volumes will be purged from each well, if feasible. If well purging parameters have not stabilized before 10 casing volumes have been removed, well development will continue until purging parameters have stabilized and formation water is being drawn into the well. The adequacy of well development will be judged by the field technician performing the well development and based on known formation conditions.

Well Surveying

Monitoring wells will be surveyed to obtain top of box elevations to the nearest ±0.01 foot. Water level measurements will be recorded to the nearest ±0.01 foot and referenced to Mean Sea Level (MSL). If additional wells are required, then existing and newly installed wells are surveyed relative to MSL.

APPENDIX B
EXPLORATORY SOIL BORING LOG

MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 15% FINES	GM		SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC		CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 15% FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL		ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

Perm	- Permeability
Consol	- Consolidation
LL	- Liquid Limit (%)
PI	- Plastic Index (%)
G_s	- Specific Gravity
MA	- Particle Size Analysis
2.5 YR 6/2	- Soil Color according to Munsell Soil Color Charts (1975 Edition)
5 GY 5/2	- GSA Rock Color Chart

☒	- No Soil Sample Recoverd
■	- "Undisturbed" Sample
⊠	- Bulk or Classification Sample
▽	- First Encountered Ground Water Level
▼	- Piezometric Ground Water Level
Penetration	- Sample drive hammer weight - 140 pounds falling 30 inches. Blows required to drive sampler 1 foot are indicated on the logs

GeoStrategies Inc.

Unified Soil Classification - ASTM D 2488-85 and Key to Test Data

Field location of boring: (See Plate 2)	Project No.: 7667	Date: 05/11/90	Boring No: S-A
	Client: Shell Oil Company		
	Location: 350 Grand Avenue		
	City: Oakland, California		Sheet 1 of 1
	Logged by: R.C.M.	Driller: Bayland	
Drilling method: Solid Flight Auger	Casing installation data:		
Hole diameter: 5-Inches	Top of Box Elevation:		Datum:

Water Level	12.0'		
Time	9:30		
Date	05/11/90		

PID (ppm)	Blows/ft or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				PAVEMENT SECTION - 0.5 feet
				1				
4								FILL - Silty Clay (CL/ML) - brownish yellow (10YR 6/6),
				2				medium stiff, moist, medium plasticity; 70% clay; 30%
				3				silt; stained gray; moderate chemical odor.
	150							
	150	S&H	S-A-4.5	4				
16	150	push						FILL - Clay with Sand (CL) - very dark gray (10YR 3/1),
				5				stiff, damp, medium plasticity; 80% clay; 20% sand;
				6				stained green; strong chemical odor.
				7				damp; moderate chemical odor.
				8				
	150							saturated with product; strong chemical odor.
	150	S&H	S-A-9.5	9				
623	150	push						
				10				
				11				
				12		▽		
	150							SILTY SAND (SM) - brown (10YR 5/3), medium dense,
	200	S&H	S-A-13.5	13				saturated; 55% fine sand; 45% silt; trace gravel;
43	250	push						rootholes; slight chemical odor.
				14				
								Bottom of boring at 13.5 feet.
				15				Bottom of sample at 13.5 feet.
								05/11/90
				16				
				17				
				18				
				19				

Remarks: Backfilled to 10 feet with bentonite pellets, to 1.0 foot with cuttings, and to surface with concrete

GeoStrategies Inc.

Log of Boring

BORING NO. S-A

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7667	CMP CEG 1202	05/90		

Field location of boring:

(See Plate 2)

Project No.:	7667	Date: 05/11/90	Boring No: S-B
Client:	Shell Oil Company		
Location:	350 Grand Avenue		
City:	Oakland, California		Sheet 1 of 1
Logged by:	R.C.M.	Driller: Bayland	

Casing installation data:

Drilling method: Solid Flight Auger

Hole diameter: 5-Inches

Top of Box Elevation: Datum:

Water Level	8.5'			
Time	11:32			
Date	05/11/90			

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				
				1				PAVEMENT SECTION - 0.5 feet
				2				FILL - Silty Clay (CL/ML) - dark gray (10YR 4/1), medium stiff, damp; 60% clay; 40% silt; trace fine sand and gravel; stained green; moderate chemical odor.
				3				
				4				
				5				
	150			6				FILL - Silt with Sand (ML) - dark gray (10YR 4/1), medium stiff, damp; 70% silt; 20% fine sand; 10% clay; stained green; strong chemical odor.
	150	S&H	S-B-6.5					
895	150	push		7				
				8				
	150			9		▽		saturated with product at 8.0 feet.
	200	S&H	S-B-9.0					
874	200	push		10				
				11				
				12				
	150			13				SANDY CLAY (CL) - brownish yellow (10YR 6/6), medium stiff, saturated, medium plasticity; 70% clay; 30% fine sand; stained green; rootholes; moderate chemical odor.
	200	S&H	S-B-13.5					
110	250	push		14				
58	300							
	400	S&H		15				Bottom of boring at 15.0 feet.
	500	push						Bottom of sample at 15.0 feet.
				16				05/11/90
				17				
				18				
				19				

Remarks: Backfilled to 10 feet with bentonite pellets, to 1.0 foot with cuttings, and to surface with concrete

GSI GeoStrategies Inc.

Log of Boring

BORING NO. S-B

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7667	CMP CEG 1262	05/90		

Field location of boring:

(See Plate 2)

Project No.:	7667	Date: 05/11/90	Boring No: S-C
Client:	Shell Oil Company		
Location:	350 Grand Avenue		
City:	Oaklanc, California		Sheet 1 of 1
Logged by: R.C.M.		Driller: Bayland	

Casing installation data:

Drilling method: Solid Flight Auger

Hole diameter: 5-Inches

Top of Box Elevation: Datum:

Water Level	9.5'			
Time	10:15			
Date	05/11/90			

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				PAVEMENT SECTION - 0.5 feet
				1				FILL - Clay (CL) - very dark gray (10YR 3/1), medium stiff, damp; 70% clay; 30% silt; weak chemical odor.
				2				FILL - Silty Clay (CL/ML) - light yellowish brown (10YR 6/4), medium stiff, damp; 70% clay; 30% silt; trace fine sand and gravel; stained green; moderate chemical odor.
	150			3				
	150	S&H	S-C-4.5	4				
4	150	push		5				FILL - Silt (ML) - very dark gray (10YR 3/1), medium stiff, damp, low plasticity; 95% silt; 5% fine sand; moderate chemical odor.
				6				
				7				
				8				
	150			9				FILL - SANDY SILT (ML) - brown (10YR 5/3), medium stiff, saturated, low plasticity; 80% silt; 20% fine to medium sand; stained green; strong chemical odor
841	150	S&H	S-C-9.5	10		▽		
	150	push		11				
				12				
	150			13				
	250	S&H	S-C-13.5	14				CLAY (CL) - yellowish brown (10YR 5/6), stiff, damp, medium plasticity; 90% clay; 10% silt; trace fine sand; rootholes; stained green; weak chemical odor.
5	350	push		15				
				16				Bottom of boring at 13.5 feet.
				17				Bottom of sample at 13.5 feet.
				18				05/11/90
				19				

Remarks: Backfilled to 10 feet with bentonite pellets, to 1.0 foot with cuttings, and to surface with concrete

GSI GeoStrategies Inc.

Log of Boring

BORING NO. S-C

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7667	CMP CEG 12/92	05/90		

Field location of boring: (See Plate 2)	Project No.: 7667	Date: 05/11/90	Boring No: S-D
	Client: Shell Oil Company		
	Location: 350 Grand Avenue		
	City: Oakland, California		Sheet 1 of 1
	Logged by: R.C.M.	Driller: Bayland	
Drilling method: Solid Flight Auger	Casing installation data:		
Hole diameter: 5-Inches	Top of Box Elevation:		Datum:

Water Level	8.5'
Time	13:30
Date	05/11/90

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				PAVEMENT SECTION - 0.5 feet
				1				FILL - Silty Clay (CL/ML) - dark gray (10YR 4/1), damp; 70% clay; 30% silt; trace fine sand; gray-green stained; moderate chemical odor.
				2				FILL - Silty Sand (SM) - brownish yellow (10YR 6/8), damp; 60% fine to medium sand; 30% silt; 10% clay; gray-green stained; rootholes; weak chemical odor.
				3				
				4				FILL - Silty Sand (SM) - yellowish brown (10YR 5/6), damp; 60% fine to medium sand; 40% silt; gray-green stained; weak chemical odor.
0	500	S&H	S-D-4.5	5				
		push		6				
				7				
				8				
	350			9		▽		FILL - Sand with Silt and Gravel (SW-SM) - dark yellowish brown (10YR 4/4), poorly graded, loose, damp; 75% sand; 15% gravel; 10% silt; moderate chemical odor.
1	550	S&H	S-D-9.0	10				
		push		11				
				12				
	300			13				CLAY (CL) - brownish yellow (10YR 6/6), stiff, damp; 90% clay; 10% silt; trace fine sand; gray stained; weak chemical odor.
	7	S&H	S-D-13.5	14				
4	12			15				
	6			16				Bottom of boring at 15.0 feet.
	10	S&H	S-D-15.0	17				Bottom of sample at 15.0 feet.
2	14			18				05/11/90
				19				

Remarks: Backfilled to 10 feet with bentonite pellets, to 1.0 foot with cuttings, and to surface with concrete

GSI GeoStrategies Inc.

Log of Boring

BORING NO. S-D

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7667	RMP CEG 12/92	05/90		

Field location of boring:

(See Plate 2)

Project No.:	7667	Date: 05/11/90	Boring No: S-E
Client:	Shell Oil Company		
Location:	350 Grand Avenue		
City:	Oakland, California		Sheet 1 of 1
Logged by:	R.C.M.	Driller: Bayland	
Casing installation data:			

Drilling method: Solid Flight Auger

Hole diameter: 5-Inches

Top of Box Elevation: Datum:

Water Level	9.0'			
Time	14:18			
Date	05/11/90			

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				
				1				PAVEMENT SECTION - 0.5 feet
0				2				FILL - Silt with Sand (ML) - dark gray (10YR 4/1), moist; 80% silt; 20% fine to medium sand; trace gravel; green stained; moderate to strong chemical odor.
				3				
				4				Concrete - 3.0 to 3.2 feet
0	500	S&H	S-E-4.5	5				FILL - Silty Sand (SM) - dark greenish gray (5BG 4/1), loose, moist; 60% sand; 35% silt; 5% gravel; strong chemical odor.
		push		6				
				7				
				8				
	250			9		▽		COLOR CHANGE to olive (5Y 5/3), loose, saturated; 75% sand; 20% silt; 5% gravel; strong chemical odor.
	250	S&H	S-E-9.5	10				
33	350	push		11				
				12				
	250			13				CLAY (CL) - brownish yellow (10YR 6/6), stiff, damp, medium plasticity; 90% clay; 10% silt; trace fine sand; gray stained; moderate chemical odor.
	350	S&H	S-E-13.5	14				
2	500	push		15				Bottom of boring at 13.5 feet.
				16				Bottom of sample at 13.5 feet.
				17				05/11/90
				18				
				19				

Remarks: Backfilled to 10 feet with bentonite pellets, to 1.0 foot with cuttings, and to surface with concrete

GSI GeoStrategies Inc.

Log of Boring

BORING NO. S-E

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
7667	[signature] 12/92	05/90		

APPENDIX C
SOIL CHEMICAL ANALYTICAL REPORT

INTERNATIONAL TECHNOLOGY CORPORATION

ANALYTICAL SERVICES

CERTIFICATE OF ANALYSIS

Shell Oil Company
Gettler-Ryan
2150 West Winton
Hayward, CA 94545
John Werfal

Date: 05/30/90

Work Order: TO-05-150 P.O. Number: MOH 880-021

This is the Certificate of Analysis for the following samples:

Client Work ID: GR7667, 350 Grand Ave, Oakld
Date Received: 05/14/90
Number of Samples: 12
Sample Type: solid

TABLE OF CONTENTS FOR ANALYTICAL RESULTS

Reviewed and Approved:

Suzanne Veaudry
Project Manager

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: T0-05-150

TEST NAME: Metals Analysis

SAMPLE ID: S-A- 4.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-01
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Lead	7421	0.2	5.3

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-A- 4.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-01
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020	05/17/90	05/25/90
Low Boiling Hydrocarbons	Mod.8015	05/17/90	05/25/90
High Boiling Hydrocarbons	Mod.8015	05/20/90	05/23/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	2.5	None
BTEX		
Benzene	0.025	0.045
Toluene	0.025	None
Ethylbenzene	0.025	None
Xylenes (total)	0.05	None
High Boiling Hydrocarbons calculated as Diesel	5.	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Metals Analysis

SAMPLE ID: S-A- 9.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-02
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Lead	7421	0.2	8.7

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-A- 9.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-02
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020	05/17/90	05/26/90
Low Boiling Hydrocarbons	Mod.8015	05/17/90	05/26/90
High Boiling Hydrocarbons	Mod.8015	05/20/90	05/24/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	210.	2,900.
BTEX		
Benzene	2.	13.
Toluene	2.	7.
Ethylbenzene	2.	44.
Xylenes (total)	4.	210.
High Boiling Hydrocarbons calculated as Diesel	70.	*2,400.

*Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: T0-05-150

TEST NAME: Metals Analysis

SAMPLE ID: S-A-13.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-03
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Lead	7421	0.2	5.7

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-A-13.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-03
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020	05/17/90	05/25/90
Low Boiling Hydrocarbons	Mod.8015	05/17/90	05/25/90
High Boiling Hydrocarbons	Mod.8015	05/20/90	05/23/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	2.5	None
BTEX		
Benzene	0.025	None
Toluene	0.025	None
Ethylbenzene	0.025	None
Xylenes (total)	0.05	None
High Boiling Hydrocarbons calculated as Diesel	5.	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: T0-05-150

TEST NAME: Metals Analysis

SAMPLE ID: S-B- 6.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-04
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Lead	7421	0.2	38.
Lead (org.)	DHS	1.0	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Crder: TO-05-150

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-B- 6.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-04
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020	05/17/90	05/26/90
Low Boiling Hydrocarbons	Mod.8015	05/17/90	05/26/90
High Boiling Hydrocarbons	Mod.8015	05/20/90	05/24/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	2.5	21.
BTEX		
Benzene	0.025	0.082
Toluene	0.025	None
Ethylbenzene	0.025	0.24
Xylenes (total)	0.05	0.91
High Boiling Hydrocarbons calculated as Diesel	5.	*42.

*Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Metals Analysis

SAMPLE ID: S-B- 9.0
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: TO05150-05
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Lead	7421	0.2	6.3

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: T0-05-150

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-B- 9.0
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-05
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020	05/17/90	05/26/90
Low Boiling Hydrocarbons	Mod.8015	05/17/90	05/26/90
High Boiling Hydrocarbons	Mod.8015	05/20/90	05/24/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	100.	1,400.
BTEX		
Benzene	1.	7.
Toluene	1.	3.
Ethylbenzene	1.	31.
Xylenes (total)	2.	130.
High Boiling Hydrocarbons calculated as Diesel	30.	*1,300.

*Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: T0-05-150

TEST NAME: Metals Analysis

SAMPLE ID: S-B-13.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-06
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Lead	7421	0.2	9.3

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-B-13.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-06
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020	05/17/90	05/26/90
Low Boiling Hydrocarbons	Mod.8015	05/17/90	05/26/90
High Boiling Hydrocarbons	Mod.8015	05/20/90	05/24/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	2.5	None
BTEX		
Benzene	0.025	0.30
Toluene	0.025	None
Ethylbenzene	0.025	0.027
Xylenes (total)	0.05	0.09
High Boiling Hydrocarbons calculated as Diesel	5.	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: T0-05-150

TEST NAME: Metals Analysis

SAMPLE ID: S-C- 9.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-07
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Lead	7421	0.2	3.5

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-C- 9.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-07
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020	05/17/90	05/26/90
Low Boiling Hydrocarbons	Mod.8015	05/17/90	05/26/90
High Boiling Hydrocarbons	Mod.8015	05/20/90	05/24/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	2.5	22.
BTEX		
Benzene	0.025	0.30
Toluene	0.025	0.052
Ethylbenzene	0.025	0.57
Xylenes (total)	0.05	1.3
High Boiling Hydrocarbons calculated as Diesel	5.	*20.

*Compounds detected and calculated as diesel appear to be the less volatile constituents of gasoline.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: T0-05-150

TEST NAME: Metals Analysis

SAMPLE ID: S-D- 4.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-08
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Lead	7421	0.2	7.6

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-D- 4.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-08
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020	05/17/90	05/25/90
Low Boiling Hydrocarbons	Mod.8015	05/17/90	05/25/90
High Boiling Hydrocarbons	Mod.8015	05/20/90	05/24/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	2.5	None
BTEX		
Benzene	0.025	None
Toluene	0.025	None
Ethylbenzene	0.025	None
Xylenes (total)	0.05	None
High Boiling Hydrocarbons calculated as Diesel	5.	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: T0-05-150

TEST NAME: Metals Analysis

SAMPLE ID: S-D- 9.0
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-09
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Lead	7421	0.2	9.2

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: T0-05-150

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-D- 9.0
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-09
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020	05/17/90	05/25/90
Low Boiling Hydrocarbons	Mod.8015	05/17/90	05/25/90
High Boiling Hydrocarbons	Mod.8015	05/20/90	05/24/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	2.5	None
BTEX		
Benzene	0.025	None
Toluene	0.025	None
Ethylbenzene	0.025	None
Xylenes (total)	0.05	None
High Boiling Hydrocarbons calculated as Diesel	5.	*36.

*Chromatographic pattern of compounds detected and calculated as diesel is similar to but does not match that of the diesel standard used for calibration.

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Metals Analysis

SAMPLE ID: S-D-15.0
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: TO05150-10
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Lead	7421	0.2	6.8

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: T0-05-150

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-D-15.0
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-10
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020	05/17/90	05/25/90
Low Boiling Hydrocarbons	Mod.8015	05/17/90	05/25/90
High Boiling Hydrocarbons	Mod.8015	05/20/90	05/24/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	2.5	None
BTEX		
Benzene	0.025	None
Toluene	0.025	None
Ethylbenzene	0.025	None
Xylenes (total)	0.05	None
High Boiling Hydrocarbons calculated as Diesel	5.	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Metals Analysis

SAMPLE ID: S-E- 9.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: T005150-11
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Lead	7421	0.2	2.6

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-E- 9.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: TO05150-11
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020	05/17/90	05/25/90
Low Boiling Hydrocarbons	Mod.8015	05/17/90	05/25/90
High Boiling Hydrocarbons	Mod.8015	05/20/90	05/24/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	2.5	None
BTEX		
Benzene	0.025	0.10
Toluene	0.025	None
Ethylbenzene	0.025	None
Xylenes (total)	0.05	0.21
High Boiling Hydrocarbons calculated as Diesel	5.	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Metals Analysis

SAMPLE ID: S-E-13.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: TO05150-12
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

PARAMETER	METHOD	DETECTION LIMIT	DETECTED
Lead	7421	0.2	8.1

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST NAME: Petroleum Hydrocarbons

SAMPLE ID: S-E-13.5
SAMPLE DATE: 05/11/90
LAB SAMPLE ID: TO05150-12
SAMPLE MATRIX: solid
RECEIPT CONDITION: Cool

RESULTS in Milligrams per Kilogram:

	METHOD	EXTRACTION DATE	ANALYSIS DATE
BTEX	8020	05/17/90	05/25/90
Low Boiling Hydrocarbons	Mod.8015	05/17/90	05/25/90
High Boiling Hydrocarbons	Mod.8015	05/20/90	05/24/90

PARAMETER	DETECTION LIMIT	DETECTED
Low Boiling Hydrocarbons calculated as Gasoline	2.5	None
BTEX		
Benzene	0.025	None
Toluene	0.025	None
Ethylbenzene	0.025	None
Xylenes (total)	0.05	None
High Boiling Hydrocarbons calculated as Diesel	5.	None

IT ANALYTICAL SERVICES
SAN JOSE, CA

Company: Shell Oil Company
Date: 05/30/90
Client Work ID: GR7667, 350 Grand Ave, Oakld

Work Order: TO-05-150

TEST CODE METALS TEST NAME Metals Analysis

The methods of analysis for metals are taken from E.P.A. protocol, using methods from SW-846, 3rd Edition or Methods for Chemical Analysis of Water and Wastes, 600/4-79-020. The method used is listed adjacent to the parameter in in the table.

TEST CODE ORGPBS TEST NAME Organic Lead in Soil

The method of analysis of organic lead was taken from the California Department of Health Services, Method for Organic Lead Analysis.

TEST CODE TPHN TEST NAME TPH High Boiling by 8015

The method of analysis for high boiling hydrocarbons involves extracting the samples with solvent and examining the extracts by gas chromatography using a flame ionization detector.

TEST CODE TPHVB TEST NAME TPH Gas,BTEX by 8015/8020

The method of analysis for low boiling hydrocarbons is taken from EPA Methods 8015, 8020 and 5030. The sample is examined using the purge and trap technique. Final detection is by gas chromatography using a flame ionization detector as well as a photoionization detector. The result for total low boiling hydrocarbons is calculated as gasoline and includes benzene, toluene, ethylbenzene and xylenes.

Gettler - Ryan Inc. TO-OS-150 ENVIRONMENTAL DIVISION **Chain of Custody**

COMPANY SHELL OIL COMPANY JOB NO. 7667

JOB LOCATION 350 GRAND AVE. / PERKINS

CITY OAKLAND PHONE NO.

AUTHORIZED JOHN WERFAL DATE 5/11/90 P.O. NO.

SAMPLE ID	NO. OF CONTAINERS	SAMPLE MATRIX	DATE/TIME SAMPLED	ANALYSIS REQUIRED	SAMPLE CONDITION LAB ID
S-A-4.5	1	SOIL	5/11/90	TPH-GAS, TPH-DIESEL, BTEX, Pb PER SHELL DECISION TREE	Cool/OIC
S-A-9.5	1				
S-A-13.5	1				
S-B-6.5	1				
S-B-9.0	1				
S-B-13.5	1				
S-C-9.5	1				
S-D-4.5	1				
S-D-9	1				
S-D-15	1				
S-E-9.5	1				
S-E-13.5	1				

RELINQUISHED BY: Robert C. Mallory 5/14/90 1200

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY:

RELINQUISHED BY:

RECEIVED BY LAB: Robenthal 5/14/90 1200

DESIGNATED LABORATORY: ITAS DHS #

REMARKS: AFE # 086699

WIC # 204 5510 0204 ENG. = DIONE LUNDQUIST

EXP CODE 5440

NORMAL TAT

DATE COMPLETED 5/11/90 FOREMAN

ORIGINAL