Chevron U.S.A. Inc.
2410 Camino Ramon, San Ramon, California • Phone (415) 842-9500
Mail Address P.O. Box 5004, San Ramon, CA 94583-0804

91 JUN 19 AM 11:40

Marketing Operations

R. B. Bellinger
Manager, Operations
S. L. Patterson
Area, Manager, Operations
C. G. Trimbach
Manager, Engineering

June 17, 1991

Mr. Paul Smith
Alameda County Environmental Health
80 Swan Way, Room 200
Oakland, California 94621

Re: Former Chevron Station #9-4816
301 14th Street
Oakland, California

Dear Mr. Smith:

Enclosed we are forwarding the Well Installation Report dated June 13, 1991, conducted by our consultant GeoStrategies, Inc. for the above referenced site. This report documents the installation of four (4) off-site wells to obtain plume delineation. Groundwater was encountered in the monitor wells at a depth of approximately 21-feet. Analytical testing of the groundwater reported non-detectable concentrations of Benzene. Soil analysis detected TPH-Gasoline below the groundwater interface from monitor well MW-8 only at a concentration of 10 ppm.

Groundwater samples were also collected from the existing wells at this time. Analytical results of the groundwater remain consistent with previous sampling results. Phase-separated hydrocarbons were observed in Monitor Well C-5 at a measured thickness of 2.0 feet. Purging of this well will continue until a dedicated recovery system can be designed and installed.
at what frequency?

As you are aware, elevated levels of hydrocarbon contamination were detected in the soils beneath one of the former tanks and in an area beneath one of the former pump islands. To prevent further transport of the contaminants from the soils to the groundwater, Chevron has initiated a source removal approach by excavating the impacted soils in these areas to remove the elevated levels detected and to assess the magnitude and extent of the subsurface contamination.

The soils remediation (source removal) consisted of excavating soils containing adsorbed gasoline hydrocarbons in the vicinity of the former underground fuel storage tanks and one of the former pump islands. Approximately 1,500 cubic yards of soil has been removed. The excavated soils containing adsorbed gasoline hydrocarbons are being aerated on-site in accordance with the BAAQMD Regulation 8, Rule 40, Aeration of Contaminated Soils. The soils are being aerated to reduce the levels to below 10 ppm, then used as backfill for the excavation pits. This should reduce the primary source of dissolved hydrocarbons in the vadose zone soils which continue to impact the groundwater beneath the site. Confirmatory samples will be collected prior to backfilling the excavation.

The soils remediation activity will be documented in the tank closure report that will be forwarded to you upon completion of this activity. A work plan describing the groundwater remedial approach we propose to implement at this site is currently being prepared and will be forwarded to you.

If you have any questions or comments, please do not hesitate to contact me at (415) 842-9581.

Very truly yours,
CHEVRON U.S.A. INC.

Nancy Vukelich
Environmental Engineer

Enclosures

cc: Mr. Rich Hiett, RWQCB-Bay Area
Ms. B.C. Brummett-Owen
File (9-4816A2 Listing)

GeoStrategies Inc.

WELL INSTALLATION REPORT

Former Chevron Service Station No. 4816
301 14th Street
Oakland, California

727002-6

June 13, 1991

GeoStrategies Inc.
2140 WEST WINTON AVENUE
HAYWARD, CALIFORNIA 94545

June 13, 1991

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

Attn: Mr. Jeff Monroe

Re: WELL INSTALLATION REPORT
Former Chevron Service Station No. 4816
301 14th Street
Oakland, California

Gentlemen:

This report has been prepared by GeoStrategies Inc. (GSI) and summarizes the ground-water monitoring well installations and soil sampling at the above-referenced location (Plate 1). Four soil borings were drilled on April 23, 24, 25, and 30, 1991 and completed as ground-water monitoring wells C-6 through C-9. This scope of investigation was proposed in the GSI Work Plan dated November 7, 1991, as requested by Chevron U.S.A. Inc. The locations of these wells are shown on Plate 2. In addition, this report includes the results of ground-water sampling performed by Gettler-Ryan Inc. (G-R) on May 2, 1991 for the second quarter of 1991. Field work was performed to comply with current State of California Water Resources Control Board guidelines. Field work was performed according to GSI Field Methods and Procedures presented in a previous GSI Well Installation Report dated December 15, 1990.

SITE BACKGROUND

Conversations with the Alameda County Health Department indicate that tank tests were performed on the underground storage systems at the site in April and May, 1988. The 10,000 gallon supreme unleaded tank failed integrity testing. In August, 1988 a subsurface product line was repaired.

In June 1990, eight exploratory borings C-A through C-D and C-1 through C-4 were drilled on-site (Plate 2). Borings C-1 through C-4 were completed as ground-water monitoring wells. Results of this investigation are presented in the GSI Soil Boring and Well Installation Report dated August 9, 1990. Quarterly groundwater sampling and weekly separate-phase hydrocarbon bailing were initiated in June, 1990.

In October 1990, two additional exploratory borings were drilled on-site. Borings C-5 and CR-1 were completed as a groundwater monitoring well and a recovery well, respectively. Results of this investigation are presented in the GSI Well Installation Report dated December 5, 1990.

FIELD PROCEDURES

Four exploratory soil borings were drilled using a truck-mounted, hollow-stem auger rig. The borings were subsequently completed as ground-water monitoring wells C-6 through C-9. Soil samples were collected at five-foot depth intervals, using a modified California split-spoon sampler fitted with clean brass or stainless steel tube liners. A GSI geologist observed the drilling, described soil samples using the Unified Soil Classification System (ASTM D-2488) and Munsell Soil Color Chart, and prepared a lithologic log for each borehole. Exploratory boring logs are presented in Appendix A.

Soil Sampling

A 4-inch long stainless steel tube of soil from each sampled interval was collected to perform head-space analysis in the field to screen for the presence of organic vapor. Head-space analysis involved transferring soil from the stainless steel 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 Monitor (OVM) photoionization detector. Head-space analysis results are presented on the exploratory boring logs in Appendix A.

Selected soil samples retained for chemical analysis were collected in clean stainless steel 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 and transported in a cooler with blue ice to Superior Analytical Laboratory (Superior), a State-certified laboratory located in San Francisco or Martinez, California.

Monitoring Well Construction

Borings C-6 through C-9 were drilled with 8-inch-diameter hollow-stem augers to total depths of 35.5 feet below existing grade. Each well was constructed through the hollow-stem augers using 2-inch-diameter Schedule 40 PVC well casing and 0.020-inch factory slotted well screen. Lonestar #2/12 graded sand was placed in the annular space across the entire screened interval and extended a minimum of 2-feet above the top of the well screen. A 2-foot bentonite seal was placed above the sand pack, followed by a cement grout and concrete seal to the ground surface. A traffic-rated vault box with a cover was placed at ground surface for each well. A locking cap with lock was then placed on each well. The well construction details are presented with the boring logs in Appendix A.

HYDROGEOLOGIC CONDITIONS

The site is located approximately one mile east of San Francisco Bay. Lake Merritt is approximately 1/4-mile to the east of the site. The area is underlain by unconsolidated, Pleistocene-age silty and clayey sand of the Merritt Formation and at depth by the Alameda Formation. The Merritt Formation is approximately 40 feet thick in this area and overlies a sandy, silty clay which comprises the upper part of the Alameda Formation (Radbruch, 1957).

Lithology beneath the area of the site consists of silty sand and sand, underlain by silt to the total depth explored of 35.5 feet below grade. Silty sand was observed to a depth of approximately 17 feet below grade. Sand was encountered in the interval from approximately 17 to 35 feet below grade. The basal silt layer was observed in Borings C-6 and C-9 in the interval of 30 to 35.5 feet and in Borings C-7 and C-8 at a depth of 34.5 feet. This silt layer appears to form a continuous unit in the site vicinity. The uppermost water-bearing zone is believed to occur in the interval from 22 feet below grade to the contact of the sand with the underlying silt unit.

Ground-water was first encountered during drilling at depths ranging from approximately 21.25 to 23 feet below grade in each boring. Depth-to-water measurements, taken by G-R May 2, 1991, indicated that ground-water levels in Wells C-6 through C-9 stabilized at depths ranging from 21.24 to 22.54 feet below grade. The close correlation between first observed and stabilized water-levels suggests unconfined conditions in the uppermost water-bearing zone. Water-level data are presented in Table 1 and on the boring logs in Appendix A.

SOIL CHEMICAL ANALYSES

Soil samples were analyzed for Total Petroleum Hydrocarbons calculated as Gasoline (TPH-Gasoline), according to EPA Method 8015 (Modified), and Benzene, Toluene, Ethylbenzene, and Xylenes (BTEX), according to EPA Method 8020. Chemical analyses of soil samples were performed by Superior.

Soil Analytical Results

Soil samples were selected for chemical analysis from Borings C-6 through C-9 from depths ranging from 15.5 to 25.5 feet below grade. TPH-Gasoline was detected in the 25.5 foot sample from Boring C-8 at a concentration of 10 parts per million (ppm). Benzene was reported as not detected (ND) in the 25.5 foot sample from Boring C-8. TPH-Gasoline and benzene were reported as ND in the remaining soil samples. A summary of the soil analytical data is presented in Table 2. Soil chemical analytical reports are presented in Appendix B.

GROUNDWATER SAMPLING RESULTS

Potentiometric Data

Prior to ground-water sampling, depth to ground-water levels were measured in each well using an electronic oil-water interface probe. Static ground-water levels were measured from the surveyed top of the well box and recorded to the nearest ± 0.01 foot. Wells C-3 and CR-1 were not monitored or sampled due to on-site demolition activities. Corresponding ground-water elevations, referenced to mean sea level (MSL), are presented in Table 1. Water-level data from the newly installed off-site wells have been plotted and contoured and are presented as a potentiometric map (Plate 3). Data from on-site monitoring wells were not used in contouring due to site demolition activities. Based on water-level data from the recently installed wells, shallow groundwater flow is to the southwest at a calculated hydraulic gradient of 0.002.

Separate-phase Hydrocarbon Measurements

Each well was monitored for the presence of separate-phase hydrocarbons using an electronic oil-water interface probe. A clear acrylic bailer was used to confirm probe results. Separate-phase hydrocarbons were observed in Well C-5 at a measured thickness of 2.0 feet. Although Wells C-3 and CR-1 were not monitored this quarter, historically they have contained separate-phase hydrocarbons.

Why not?

Chemical Analytical Data

Ground-water samples were collected from the site monitoring wells, excluding Wells C-3 and CR-1, on May 2, 1991 by G-R. The samples were analyzed for TPH-Gasoline according to EPA Method 8015 (Modified) and BTEX according to EPA Method 8020. Samples were analyzed by Superior.

TPH-Gasoline was detected in Wells C-1, C-2, C-4, and C-8 at concentrations of 59000 parts per billion (ppb), 19000 ppb, 330 ppb, and 5000 ppb, respectively. Benzene was identified in Wells C-1, C-2, and C-4 at concentrations of 5600 ppb, 4500 ppb, and 140 ppb, respectively. TPH-Gasoline and benzene were reported as ND for samples from Wells C-6, C-7, and C-9. Benzene was also reported as ND for Well C-8.

A summary of current and historical chemical analytical data is presented in Table 3. TPH-Gasoline and benzene chemical analytical data have been plotted and are presented as a concentration map on Plate 4. Superior analytical data and Chain-of-Custody Forms are presented in Appendix C.

ONE-HALF-MILE RADIUS WELL SURVEY

A well survey was performed to identify ground-water wells within a one-half-mile radius of the site and assess potential groundwater usage in the project vicinity. Data for the survey was obtained from the County of Alameda Public Works Agency. The two wells identified within a one-half-mile radius of the site have been plotted on Plate 1. Both wells are located in the apparent up-gradient direction with the closest of these approximately 600 feet east of the site. Available information about the wells has been summarized in Table 4.

DISCUSSION

Bailing of separate-phase hydrocarbons from Wells C-3, C-5, and CR-1 took place on a weekly basis between November 16, 1990 and January 11, 1991. Demolition activities and soil aeration on-site has prevented bailing of these observation wells from January 11, 1991 to the present time. A total of approximately 35.5 gallons of separate-phase hydrocarbons were bailed from Wells C-3, C-5, and CR-1 from November, 1990 to January, 1991. A copy of the G-R monitoring data is presented in Appendix E.

Summary of Findings

The results of this investigation are summarized below.

- Four exploratory borings were drilled on May 23, 24, 25, and 30, 1991. The borings were completed as ground-water monitoring wells C-6 through C-9.

- Based on the exploratory borings, the lithology of the site consists primarily of silty sand and sand underlain by silt to the total depth explored of 36.0 feet. A basal silt layer has been observed as underlying the uppermost water-bearing unit, at a thickness of up to 5 feet and appears to be continuous beneath the site vicinity.

- TPH-Gasoline was detected in the soil sample from the 25.5 foot depth interval from Boring C-8 at a concentration of 10 ppm. Benzene was reported as ND in this same soil sample. TPH-Gasoline and benzene were reported as ND for the remaining soil samples analyzed.

- Ground-water samples collected by G-R on May 2, 1991 detected TPH-Gasoline in Wells C-1 (59000 ppb), C-2 (19000 ppb), C-4 (330 ppb), and C-8 (5000 ppb). Separate-phase hydrocarbons were detected in Well C-5 at a measured thickness of approximately 2 feet.

If you have any questions, please call.

GeoStrategies Inc. by,

Robert C. Mallory
Geologist

David H. Peterson
Senior Geologist
C.E.G. 1186

REGISTERED GEOLOGIST
DAVID H. PETERSON
No. 1186
CERTIFIED
ENGINEERING
GEOLOGIST
STATE OF CALIFORNIA

RCM/DHP/mlg

Plate 1. Vicinity Map with 1/2 Mile Well Survey
Plate 2. Site Plan
Plate 3. Potentiometric Map
Plate 4. TPH-G/Benzene Concentration Map

Appendix A. Exploratory Boring Logs/Well Construction Details
Appendix B. Soil Analytical Report
Appendix C. Ground-water Analytical Report
Appendix D. Gettler-Ryan Inc. Ground-water Monitoring Data

QC Review: DHP

References Cited

Radbruch, D.H., 1957, "Areal and Engineering Geology of the Oakland West Quadrangle, California", Miscellaneous Geologic Investigations Map I-239, U.S. Geological Survey, Washington, D.C.

TABLE 1

FIELD MONITORING DATA

WELL NO.	MONITORING DATE	CASING DIA. (IN)	TOTAL WELL DEPTH (FT)	WELL ELEV. (FT)	DEPTH TO WATER (FT)	PRODUCT THICKNESS (FT)	STATIC WATER ELEV. (FT)	PURGED WELL VOLUMES	pH	TEMPERATURE (F)	CONDUCTIVITY (u MHOS/CM)
C-1	02-May-91	2	30.6	30.82	22.06	----	8.76	5	6.86	66.4	731
C-2	02-May-91	2	32.0	30.91	22.44	----	8.47	5	6.56	67.1	690
C-4	02-May-91	2	30.7	31.42	22.54	----	8.88	5	6.67	63.9	939
C-5	02-May-91	2	----	31.25	22.02	2.0	10.83	----	----	----	----
C-6	02-May-91	2	29.6	30.41	21.84	----	8.57	5	6.88	65.1	465
C-7	02-May-91	2	34.9	30.56	21.81	----	8.75	5	6.97	67.8	558
C-8	02-May-91	2	35.0	30.12	21.24	----	8.88	2	7.32	65.8	567
C-9	02-May-91	2	34.7	30.15	21.27	----	8.88	5	6.85	67.9	326

Notes: 1. Static water elevations referenced to Mean Sea Level (MSL).
2. Physical parameter measurements represent stabilized values.
3. pH values reported in pH units.
4. Static water-levels corrected for floating product (conversion factor = 0.80).
5. Wells C-3 and CR-1 were not monitored or sampled due to excavation work on-site.

TABLE 2

SOIL ANALYSES DATA

SAMPLE NO	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
C-6-15.5	25-Apr-91	04-May-91	<1	<.005	<.005	<.005	<.005
C-6-22.5	25-Apr-91	04-May-91	<1	<.005	<.005	<.005	<.005
C-6-25.5	25-Apr-91	04-May-91	<1	<.005	<.005	<.005	<.005
C-7-15.5	23-Apr-91	04-May-91	<1	<.005	<.005	<.005	<.005
C-7-20.5	23-Apr-91	04-May-91	<1	<.005	<.005	<.005	<.005
C-7-24.5	23-Apr-91	04-May-91	<1	<.005	<.005	<.005	<.005
C-8-15.5	24-Apr-91	04-May-91	<1	<.005	<.005	<.005	<.005
C-8-22.5	24-Apr-91	04-May-91	<1	<.005	<.005	<.005	<.005
C-8-25.5	24-Apr-91	04-May-91	10	<.005	0.04	0.03	0.1
C-9-15.5	30-Apr-91	08-May-91	<1	<.005	<.005	<.005	<.005
C-9-20.5	30-Apr-91	08-May-91	<1	<.005	<.005	<.005	<.005
C-9-23.5	30-Apr-91	08-May-91	<1	<.005	<.005	<.005	<.005

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

Note: 1. All data shown as <x are reported as ND (not detected).

TABLE 3

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	DEPTH TO WATER (FT)
13-Jun-90	C-1	26000	2800	5100	400	2600	21.97
30-Oct-90	C-1	67000	6700	8700	900	5000	21.72
07-Jan-91	C-1	100000	12000	20000	1600	11000	21.95
02-May-91	C-1	59000	5600	7700	700	5200	22.06
13-Jun-90	C-2	15000	1100	1900	260	1700	22.08
30-Oct-90	C-2	13000	2800	1900	240	1000	21.81
07-Jan-91	C-2	15000	3400	2500	340	1400	22.03
02-May-91	C-2	19000	4500	3200	660	2900	22.44
13-Jun-90	C-3	Floating Product		-	3.0 feet		24.75
30-Oct-90	C-3	Floating Product		-	2.5 feet		23.81
07-Jan-91	C-3	Floating Product		-	2.5 feet		24.13
02-May-91	C-3	Not monitored or sampled due to on site excavation work.					
13-Jun-90	C-4	440	47	47	3	61	22.73
30-Oct-90	C-4	210	72	13	1	11	22.48
07-Jan-91	C-4	890	100	130	15	88	22.74
02-May-91	C-4	330	140	11	2	9	22.54
30-Oct-90	C-5	20000	2500	3300	320	2200	22.11
07-Jan-91	C-5	Floating Product		-	0.04 feet		22.36
02-May-91	C-5	Floating Product		-	2.0 feet		22.02
02-May-91	C-6	<50	<0.5	<0.5	<0.5	<0.5	21.84
02-May-91	C-7	<50	<0.5	<0.5	<0.5	<0.5	21.81

TABLE 3

HISTORICAL GROUND WATER QUALITY DATABASE

SAMPLE DATE	SAMPLE POINT	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	DEPTH TO WATER (FT)
02-May-91	C-8	5000	<0.5	17	140	470	21.24
02-May-91	C-9	<50	<0.5	<0.5	<0.5	0.8	21.27
30-Oct-90	CR-1	Floating Product - 2.5 feet					23.81
07-Jan-91	CR-1	Floating Product - 3.0 feet					23.80
02-May-91	CR-1	Not monitored or sampled due to on site excavation work.					
02-May-91	CD-2	21000	3200	2200	410	2000	----
02-May-91	TB	<50	<0.5	<0.5	<0.5	<0.5	----

Current Regional Water Quality Control Board Maximum Contaminant Levels
Benzene 1. ppb Xylenes 1750. ppb Ethylbenzene 680. ppb

Current DHS Action Levels Toluene 100.0 ppb

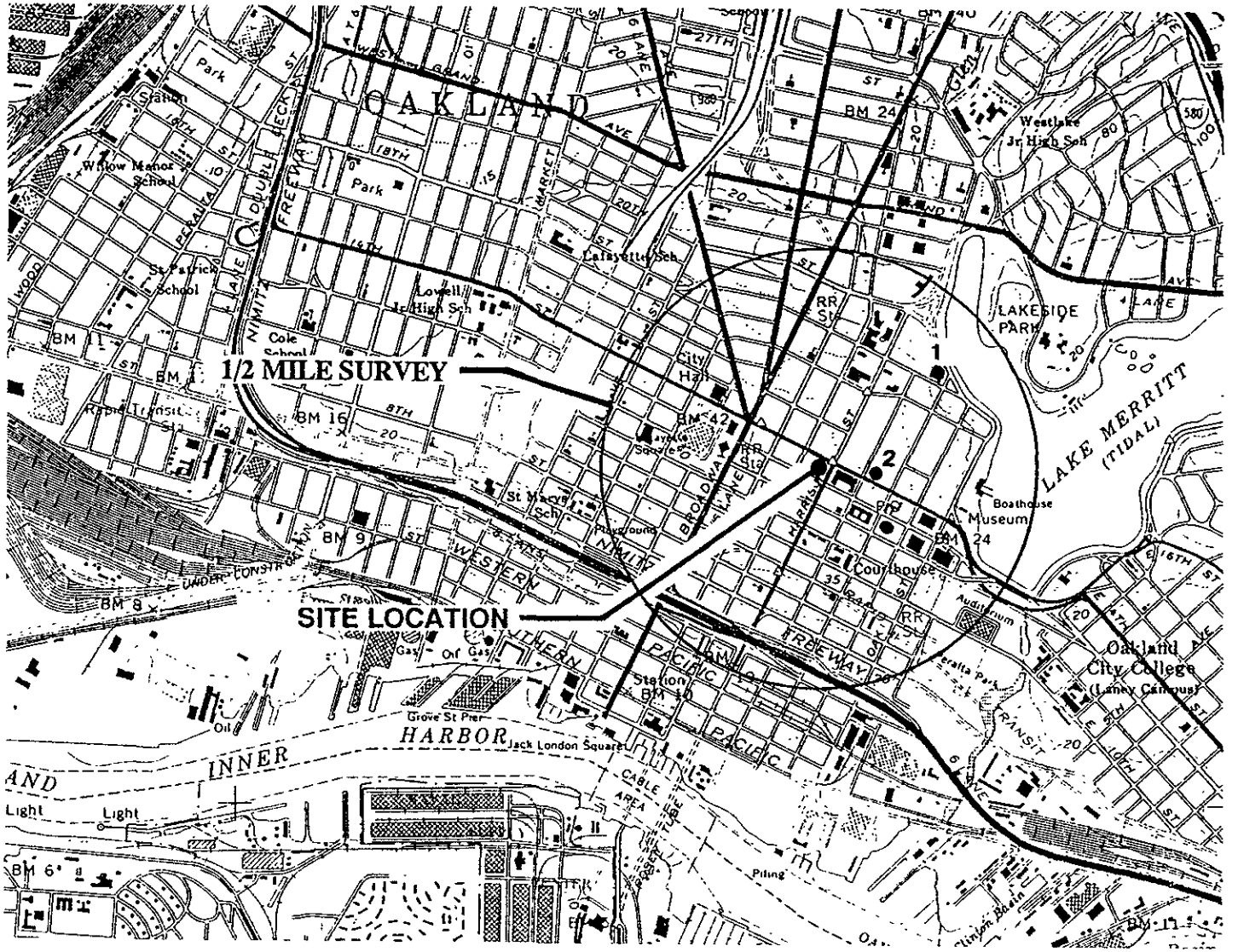
TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPB = Parts Per Billion CD = Duplicate Sample TB = Trip Blank
NOTE: 1. DHS Action levels and MCL's are subject to change pending State of California review.
2. All data shown as <X are reported as ND (none detected).

TABLE 4

SUMMARY OF ONE-HALF-MILE RADIUS WELL SURVEY
Former Chevron Service Station No. 4816
301 14th Street/Harrison Street
Oakland, California

MAP I.D.	STATE NO.	WELL LOCATION	TOTAL DEPTH (FT)	YEAR DRILLED	USAGE STATUS)
1	154W35A2	244 Lakeside	95	1977	irrigation
2	154W35H1	Alice and 14th Street	150	1927	abandoned

ILLUSTRATIONS



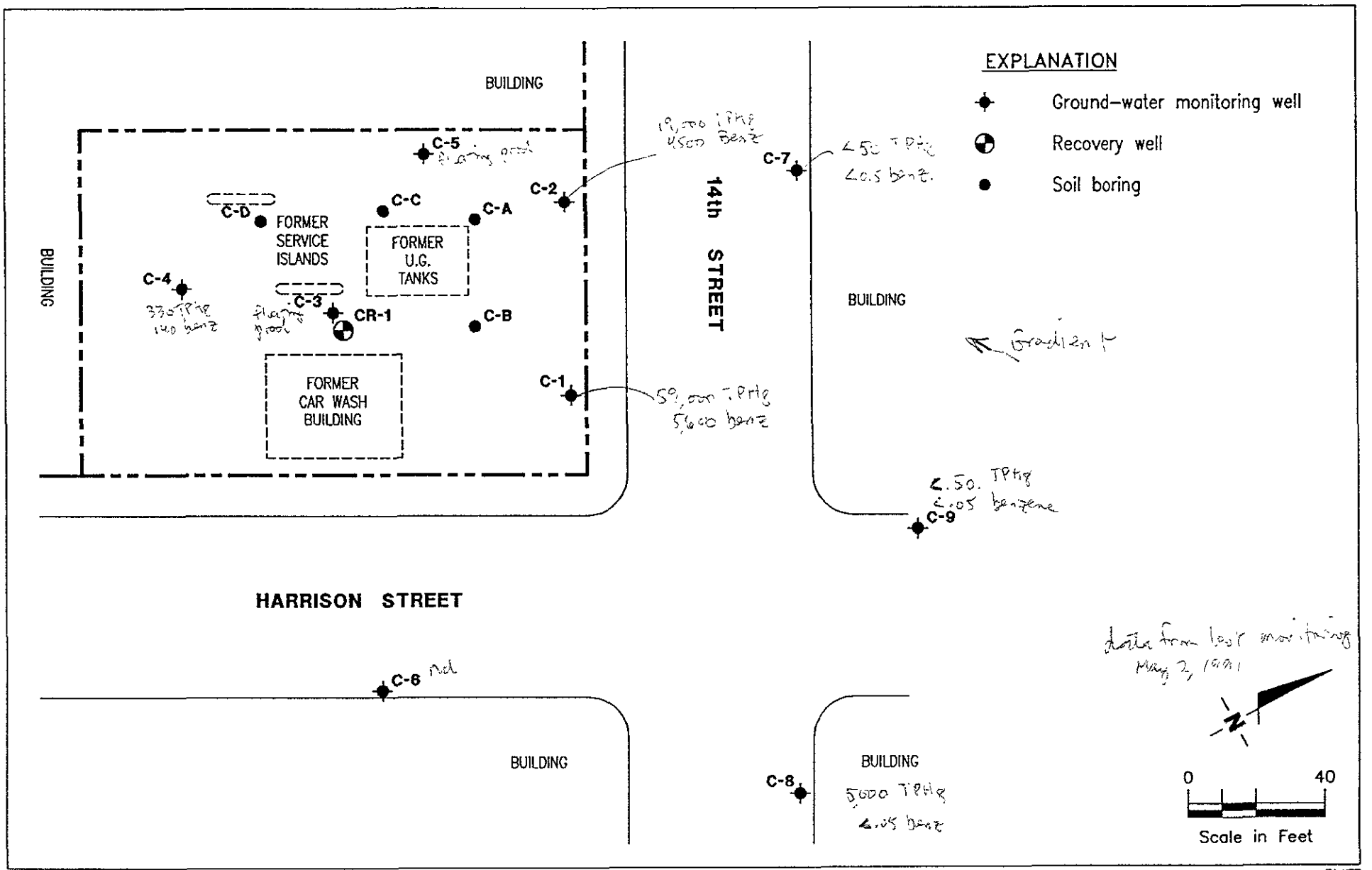
Base Map: USGS Topographic Map

GeoStrategies Inc.

VICINITY MAP with 1/2 MILE WELL SURVEY
Former Chevron Service Station #4816
301 14th Street
Oakland, California

PLATE 1

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
727002-6		6/91	

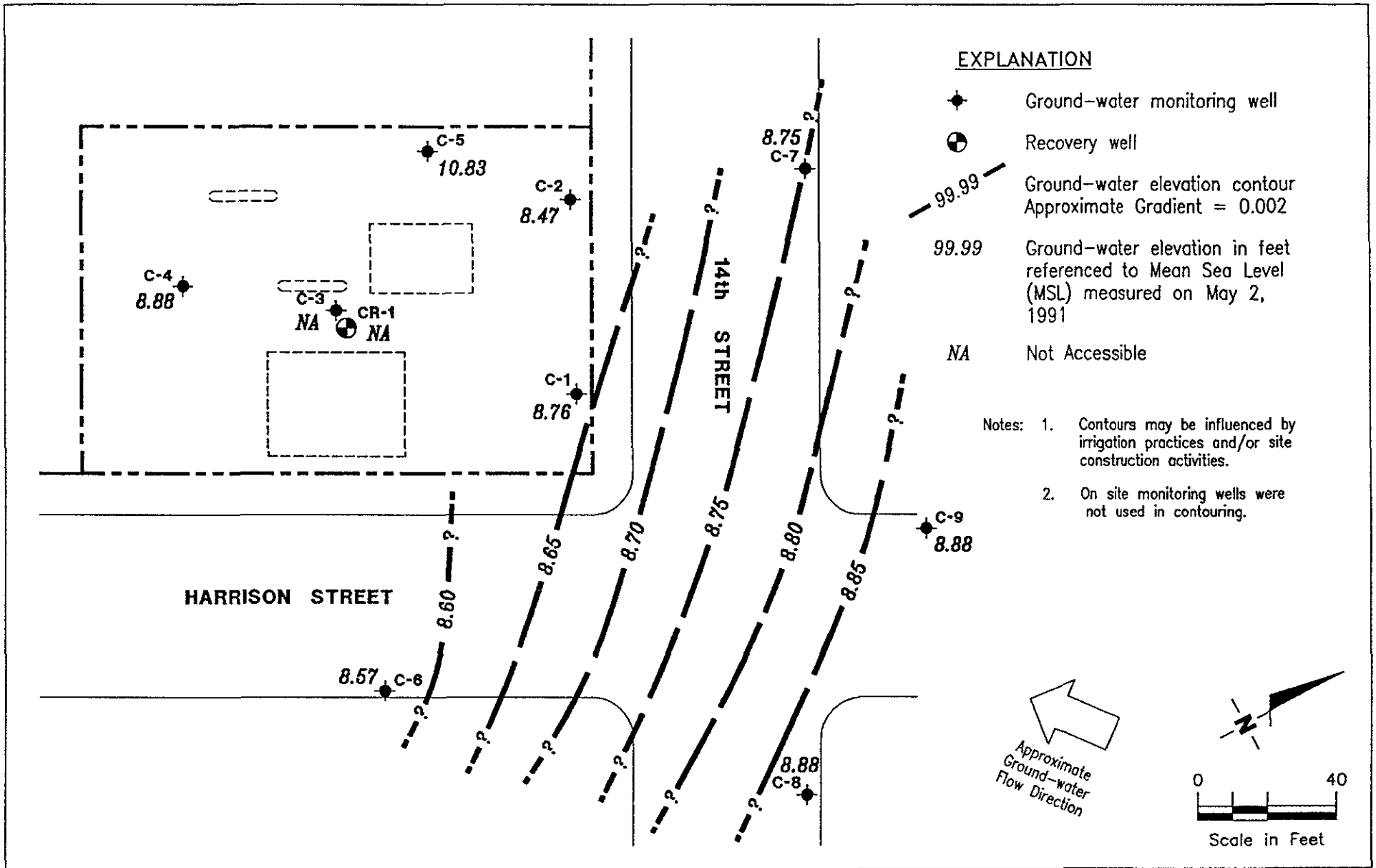


GeoStrategies Inc.

SITE PLAN
Former Chevron Service Station #4816
301 14th Street
Oakland, California

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
727002-6	DHP	6/91	



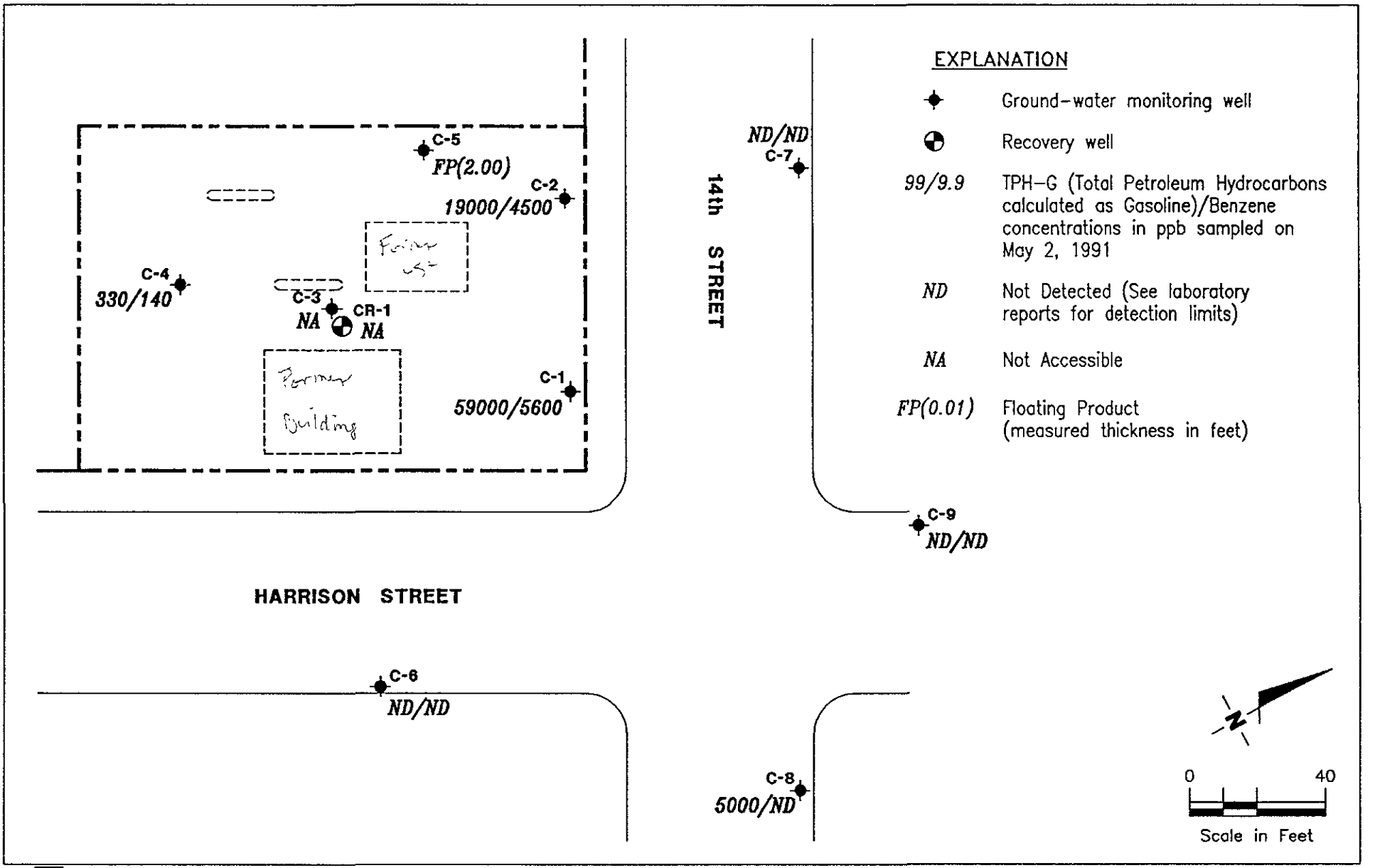
GeoStrategies Inc.

POTENTIOMETRIC MAP
Former Chevron Service Station #4816
301 14th Street
Oakland, California

5-2-91

PLATE 3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
727002-6	DHP	6/91	



GeoStrategies Inc.

TPH-G/BENZENE CONCENTRATION MAP
Former Chevron Service Station #4816
301 14th Street
Oakland, California

PLATE 4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
727002-6	DHP	6/91	

APPENDIX A
EXPLORATORY BORING LOGS
WELL CONSTRUCTION DETAILS

Field location of boring: (See Plate 2)	Project No.: 727002	Date: 04/24/91	Boring No: C-6
	Client: Chevron U.S.A. SS No. 4816		
	Location: 301 14th Street/Harrison		
	City: Oakland, California		Sheet 1 of 2
	Logged by: R.C.M.	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inches	Top of Box Elevation: 30.41'		Datum: MSL

Water Level	21.5'	21.7'	21.84'
Time	10:05	8:50	
Date	04/25/91	04/30/91	05/02/91

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 - 1.0 ft.
				2				SILTY SAND (SM) - yellowish brown (10YR 5/8), loose, damp; 80% fine sand; 20% fines (mostly silt).
				3				
				4				
				5				
				6				
0	200	S&H		7				(pushed for approximately 6 inches, no sample recovery.)
		push						
				8				
				9				
	500	S&H		10				Fe oxide staining at 10.5 feet.
	500	push	C-6-					
0	500		10.5	11				
				12				
				13				
				14				
			C-6-	15				
0	22	S&H	15.5					medium dense at 15.5 ft.
				16				
				17				
				18				
				19				

Remarks:

*Converted to equivalent Standard Penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. C-6

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
727002	DHP	4/91		

Field location of boring:

(See Plate 2)

Project No.: 727002	Date: 04/25/91	Boring No: C-6	
Client: Chevron U.S.A. SS No. 4816			
Location: 301 14th Street/Harrison			
City: Oakland, California		Sheet 2 of 2	
Logged by: R.C.M.	Driller: Bayland		

Drilling method: Hollow Stem Auger

Hole diameter: 8-inches

Casing installation data:

Top of Box Elevation: 30.41' Datum: MSL

Water Level								
Time								
Date								

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				20				
				21				
								SAND (SP) - light olive brown (2.5Y 5/4), very dense,
			C-6-	22				saturated; 95% fine sand; 5% fines.
0	52	S&H	22.5					
				23				
				24				
			C-6-	25				
0	66	S&H	25.5					
				26				
				27				
				28				
				29				
0	94	S&H	C-6-	30				
			30.5					CLAYEY SILT (ML/CL) - greenish gray (5GY 5/1), stiff,
				31				damp; 90% fines (mostly silt); 10% fine sand; caliche
				32				stringers to 1 inch in length.
				33				
				34				
			C-6-	35				
0	12	S&H	35.5					
				36				Bottom of Boring at 35.5 ft.
				37				04/25/91
				38				
				39				

Remarks:

Heaving sand came into augers from 30 to 35.5 ft.

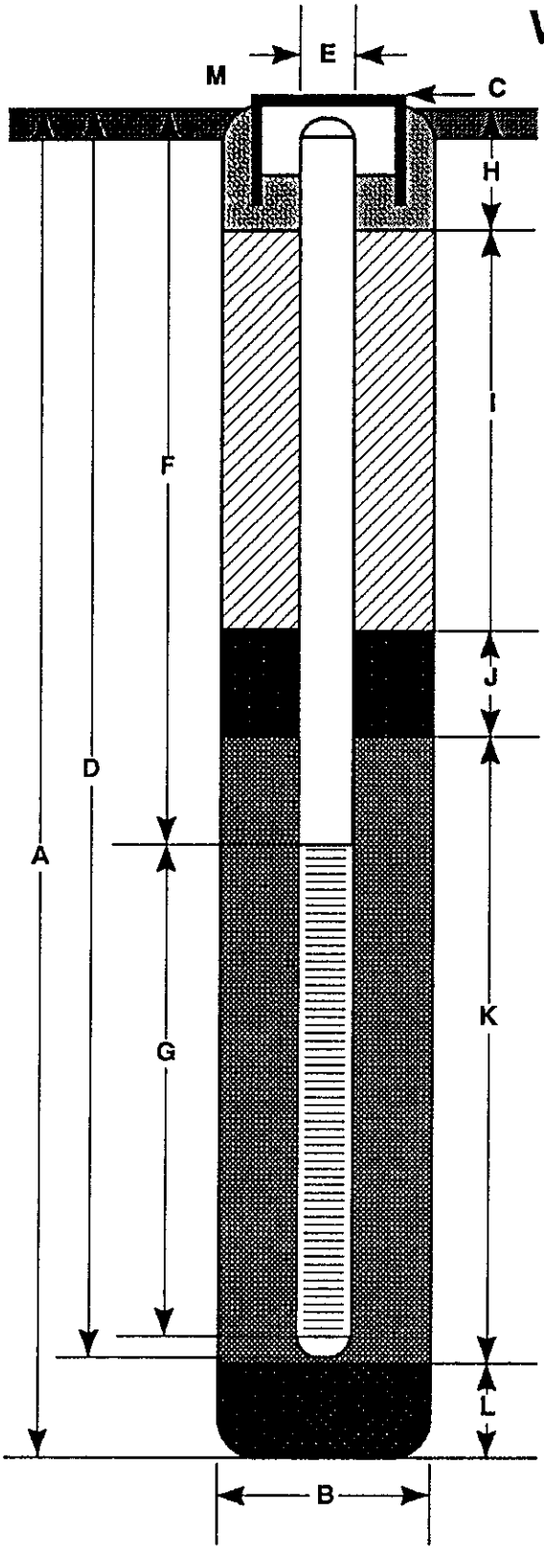
GeoStrategies Inc.

Log of Boring

BORING NO. C-6

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
727002	DHP	4/91		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring: 35.5 ft.

B Diameter of Boring: 8 in.
Drilling Method: Hollow Stem Auger

C Top of Box Elevation: 30.41 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length: 29.5 ft.
Material: Schedule 40 PVC

E Casing Diameter: 2 in.

F Depth to Top Perforations: 14.5 ft.

G Perforated Length: 15 ft.
Perforated Interval from: 14.5 to 29.5 ft.
Perforation Type: Factory slotted
Perforation Size: 0.020 in.

H Surface Seal from: 0 to 1.5 ft.
Seal Material: Concrete

I Backfill from: 1.5 to 10.5 ft.
Backfill Material: Cement Grout

J Seal from: 10.5 to 12.5 ft.
Seal Material: Bentonite Pellets

K Gravel Pack from: 12.5 to 30 ft.
Pack Material: Lonestar #2/12 graded sand

L Bottom Seal: ft.
Seal Material:

M Traffic-rated vault box with locking cap, lock and cover.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO.

C-6

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
727002	DHP	4/91		

Field location of boring:	Project No.: 727002	Date: 04/23/91	Boring No:
(See Plate 2)	Client: Chevron U.S.A. SS No.4816		C-7
	Location: 301 14th Street /Harrison		
	City: Oakland, California		Sheet 1 of 2
	Logged by: R.C.M.	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inches	Top of Box Elevation: 30.56'		Datum: MSL

Water Level	23.0'	21.5'	21.81'
Time	13:25	15:10	
Date	04/23/91	04/27/91	05/02/91

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Description
				0	
				1	PAVEMENT SECTION - 1.0 ft
				2	SILTY SAND (SM) - dark yellowish brown (10YR 4/6), medium dense, damp; 75% fine to medium sand; 25% fines (mostly silt).
				3	
				4	
0	200	S&H		5	
	200	push			(no sample recovery at 4.0 ft; recovery in shoe of sampler).
	200				
				6	
				7	
				8	
				9	
			C-7-	10	COLOR CHANGE to light olive brown (2.5Y 5/4), with dark yellowish brown (10YR 4/6) mottling at 10.5 ft.
0	17	S&H	10.0		
				11	
				12	
				13	
				14	
				15	predominantly dark yellowish brown (10YR 4/6), decreasing fines to 15% at 15.5 ft.
			C-7-		
0	47	S&H	15.5	16	
				17	
				18	
				19	

Remarks:

* Converted to equivalent Standard Penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. **C-7**

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
727002	DHP	4/91		

Field location of boring:	Project No.: 727002	Date: 04/23/91	Boring No:
(See Plate 2)	Client: Chevron U.S.A. SS No. 4816		C-7
	Location: 301 14th Street/Harrison		
	City: Oakland, California		Sheet 2
	Logged by: R.C.M.	Driller: Bayland	of 2
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inches	Top of Box Elevation: 30.56'	Datum: MSL	

	Water Level			
	Time			
	Date			

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				20				SAND (SP) - olive brown (2.5Y 4/4), dense, moist; 95% fine sand; 5% fines (mostly silt).
			C-7-					
1.5	45	S&H	20.5	21				
				22		▼		
				23		▽		
								very dense, saturated at 23.0 ft.
			C-7-	24				
0	59	S&H	24.5	25				
				26				
				27				
				28				
				29				
			C-7-	30				
0	55	S&H	30.5	31				
				32				
				33				
				34				increasing fine gravel to 15%; color change to light olive brown (7.5Y 5/4) at 34.5 ft.
			C-7-	35				
0	48	S&H	35.5	36				SILTY CLAY (CL/ML) - light olive brown (2.5Y 5/4), hard, damp; 100% fines (mostly clay); Fe oxide staining.
				37				Bottom of Boring at 35.5 ft.
								04/23/91
				38				
				39				

Remarks:

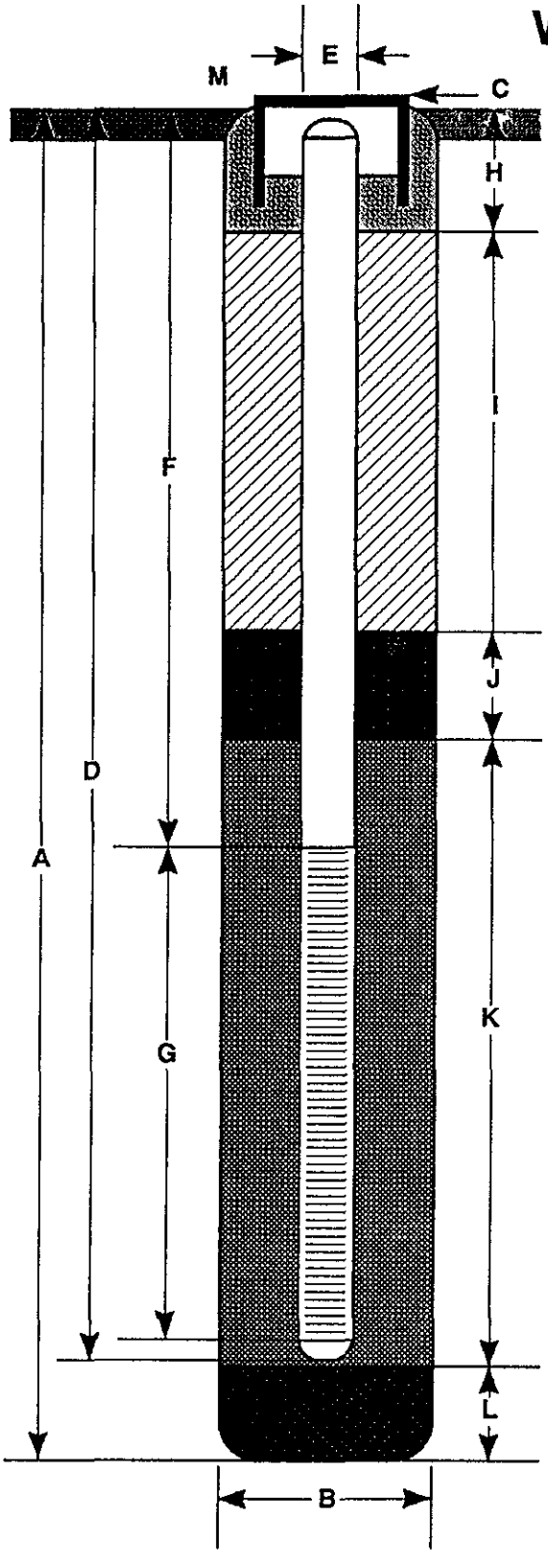
GeoStrategies Inc.

Log of Boring

BORING NO. C-7

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
727002	DHP	4/91		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring: 35.5 ft.

B Diameter of Boring: 8 in.
Drilling Method: Hollow Stem Auger

C Top of Box Elevation: 30.56 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length: 35 ft.
Material: Schedule 40 PVC

E Casing Diameter: 2 in.

F Depth to Top Perforations: 15 ft.

G Perforated Length: 20 ft.
Perforated Interval from: 15 to 35 ft.
Perforation Type: Factory slotted
Perforation Size: 0.020 in.

H Surface Seal from: 0 to 1.5 ft.
Seal Material: Concrete

I Backfill from: 1.5 to 11 ft.
Backfill Material: Cement Grout

J Seal from: 11 to 13 ft.
Seal Material: Bentonite Pellets

K Gravel Pack from: 13 to 35.5 ft.
Pack Material: Lonestar #2/12 graded sand

L Bottom Seal: ft.
Seal Material:

M Traffic-rated vault box with locking cap, lock and cover.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO. C-7

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
727002	DHP	4/91		

Field location of boring: (See Plate 2)	Project No.: 727002	Date: 04/24/91	Boring No.: C-8
	Client: Chevron U.S.A. SS No. 4816		
	Location: 301 14th Street/Harrison		
	City: Oakland, California		Sheet 1 of 2
	Logged by: R.C.M.	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inches	Top of Box Elevation: 30.12'		Datum: MSL

Water Level	21.25'	21.20'	21.24'
Time	10:00	12:25	
Date	04/24/91	04/30/91	05/02/91

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 - 1.0 ft.
				2				SILTY SAND (SM) - dark brown (10YR 4/4), loose, damp; 80% fine to medium sand; 20% fines (mostly silt).
				3				
			C-8-	4				
	250	S&H	4.5					COLOR CHANGE to olive (5Y 4/3), at 4.5 ft.
0	250	push		5				
	250							
				6				
				7				
				8				
	250	S&H	C-8-	9				
6.2	250	push	9.5					
	300			10				
				11				
				12				
				13				
				14				
			C-8-					SAND with SILT (SP-SM) - dark greenish gray (5GY 4/1), medium dense, damp; 90% medium sand; 10% fines.
58.1	26	S&H	15.0	15				
				16				
				17				
				18				
				19				

Remarks:

* Converted to equivalent Standard Penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. C-8

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
727002	DHP	4/91		

Field location of boring: (See Plate 2)	Project No.: 727002	Date: 04/24/91	Boring No: C-8
	Client: Chevron U.S.A. SS No. 4816		
	Location: 301 14th Street/Harrison		
	City: Oakland, California		Sheet 2 of 2
	Logged by: R.C.M.	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing Installation data:		
Hole diameter: 8-inches	Top of Box Elevation: 30.12'		Datum: MSL

Water Level								
Time								
Date								

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				20				
				21				
87.5		S&H						SAND (SP) - dark greenish gray (5GY 4/1), dense, saturated; 95% fine sand; 5% fines (mostly silt).
			C-8-	22				
57.3	44		22.5					
				23				
				24				
557		S&H						
			C-8-	25				very dense at 25.0 ft, increasing fines to 35% from 25.0 to
112.6	46		25.5					25.3 ft.
				26				
				27				
				28				
				29				
			C-8-	30				sand increasing to 100% at 29.0 ft.
276	45	S&H	30.5					
				31				
				32				
				33				
				34				
			C-8-					
100.6	18	S&H	35	35				
				36				CLAYEY SILT (ML/CL) - light olive brown (2.5Y 5/4), stiff, damp; 90% fines; 10% fine sand.
				37				
				38				Bottom of Boring at 35.5 ft. 04/24/91
				39				

Remarks:

*Converted to equivalent Standard Penetration blows/ft.

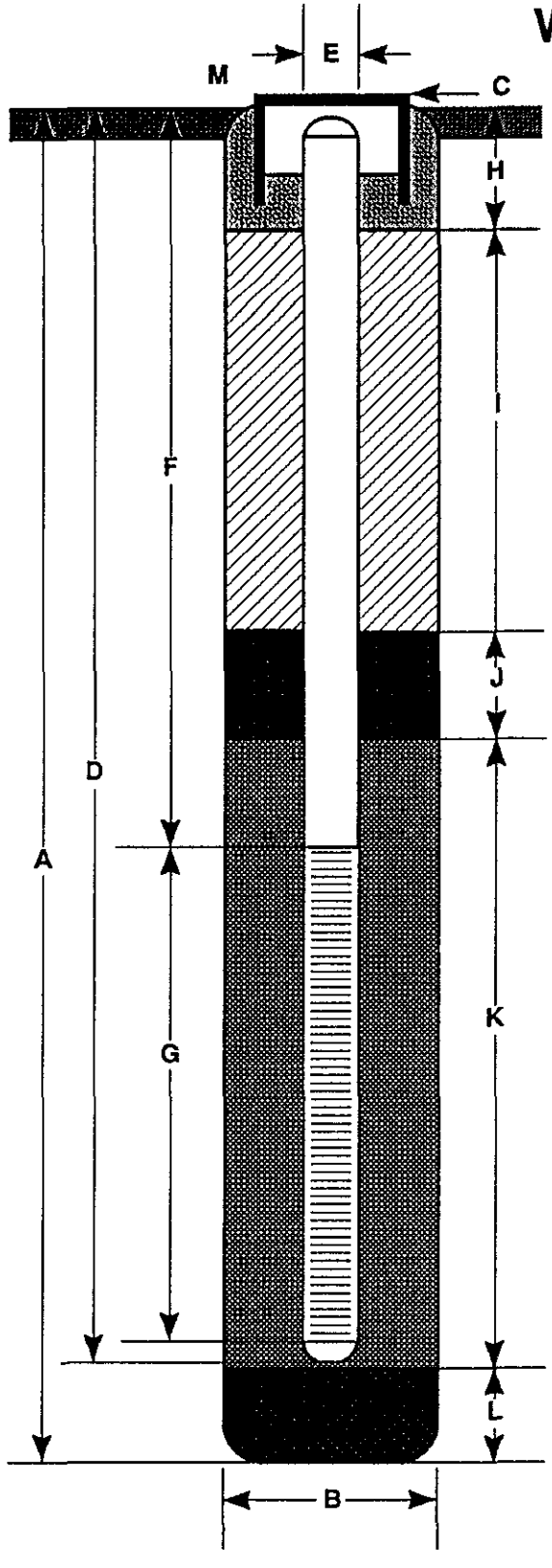
GeoStrategies Inc.

Log of Boring

BORING NO. C-8

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
727002	DHP	4/91		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 35.5 ft.

B Diameter of Boring 8 in.
Drilling Method Hollow Stem Auger

C Top of Box Elevation 30.12 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 35 ft.
Material Schedule 40 PVC

E Casing Diameter 2 in.

F Depth to Top Perforations 15 ft.

G Perforated Length 20 ft.
Perforated Interval from 15 to 35 ft.
Perforation Type Factory slotted
Perforation Size 0.020 in.

H Surface Seal from 0 to 1.5 ft.
Seal Material Concrete

I Backfill from 1.5 to 11 ft.
Backfill Material Cement Grout

J Seal from 11 to 13 ft.
Seal Material Bentonite pellets

K Gravel Pack from 13 to 35.5 ft.
Pack Material Lonestar #2/12 graded sand

L Bottom Seal ft.
Seal Material

M Traffic-rated vault box with locking cap, lock and cover.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO. C-8

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
727002	DHP	4/91		

Field location of boring: (See Plate 2)	Project No.: 727002	Date: 04/30/91	Boring No.: C-9
	Client: Chevron U.S.A. SS No. 4816		
	Location: 301 14th Street/Harrison		
	City: Oakland, California		Sheet 1 of 2
	Logged by: R.C.M.	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inches	Top of Box Elevation: 30.15'		Datum: MSL

Water Level	21.5'	21.4'	21.27'
Time	10:35	12:30	
Date	04/30/91	04/30/91	05/02/91

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 - 1.5 ft.
				2				
				3				SILTY SAND (SM) - dark yellowish brown (10YR 4/6), loose, damp; 85% sand; 15% fines (mostly silt).
				4				
0	500	S&H		5				
		push						(no sample recovery at 4.0 ft.)
				6				
				7				
				8				
				9				
0	500	S&H		10				COLOR CHANGE to olive brown (2.5Y 4/4) at 9.0 ft (no sample recovery).
		push						
				11				
				12				
				13				
				14				
			C-9-	15				
0	35	S&H	15.5					dense at 15.5 ft.
				16				
				17				
				18				
				19				

Remarks:

* Converted to equivalent Standard Penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. C-9

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
727002	DHP	4/91		

Field location of boring: (See Plate 2)	Project No.: 727002	Date: 04/30/91	Boring No.: C-9
	Client: Chevron U.S.A. SS No. 4816		
	Location: 301 14th Street/Harrison		
	City: Oakland, California		Sheet 2 of 2
	Logged by: R.C.M.	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inches	Top of Box Elevation: 30.15'		Datum: MSL

	Water Level			
	Time			
	Date			

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				20				SAND (SP) - olive (5Y 5/3), dense, damp; 95% fine sand; 5% fines.
			C-9-					
1.0	39	S&H	20.5					
				21				
						▽		
				22		▼		COLOR CHANGE to light olive brown (2.5Y 5/4), saturated at 21.5 ft.
			C-9-					
0	62	S&H	23.0	23				
				24				
				25				
				26				
				27				
				28				
				29				
			C-9-	30				
0	27	S&H	30.5					SAND with SILT (SW-SM) - light olive brown (2.5Y 5/4), medium dense, moist; 70% fine to coarse sand; 25% fines (mostly silt); 5% fine gravel.
				31				
				32				
				33				
				34				
								CLAYEY SILT (ML/CL) - olive (5Y 5/4), very stiff, damp; 100% fines (mostly silt).
			C-9-	35				
0	26	S&H	35.5					COLOR CHANGE to greenish gray (5GY 5/1) at 34.5 ft.
				36				
								Bottom of Boring at 35.5 ft.
				37				04/30/91
				38				
				39				

Remarks:

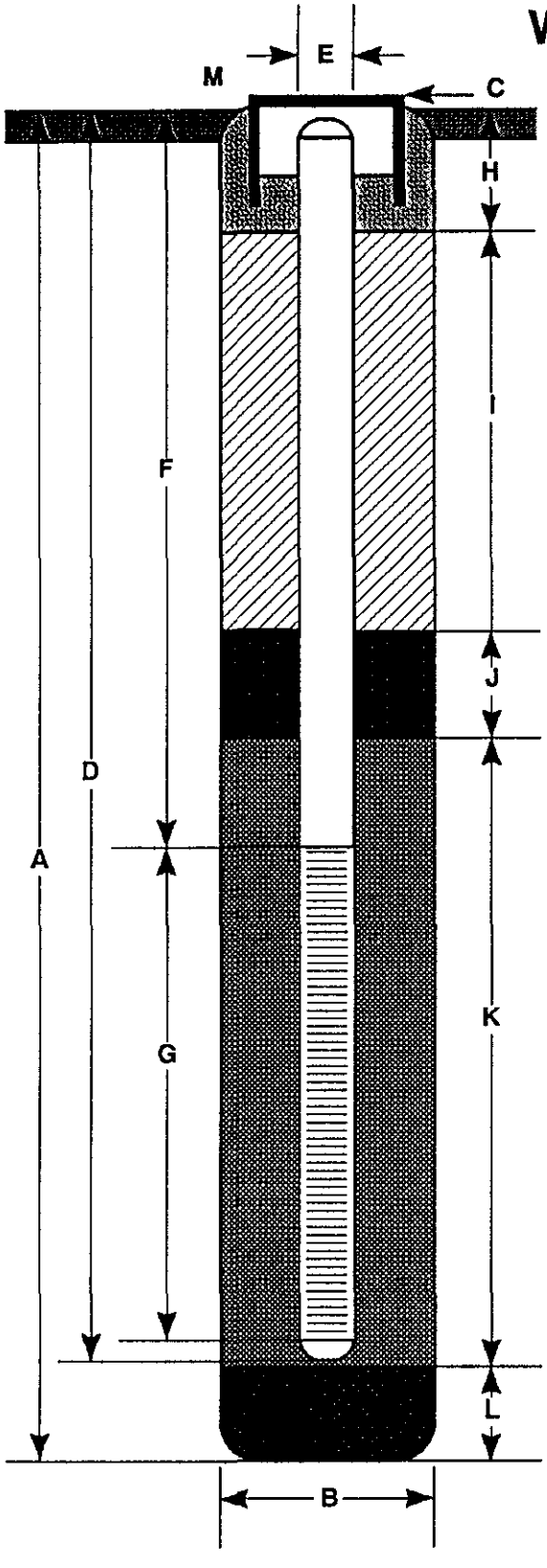
GeoStrategies Inc.

Log of Boring

BORING NO. **C-9**

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
727002	DHP	4/91		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 35.5 ft.

B Diameter of Boring 8 in.
Drilling Method Hollow Stem Auger

C Top of Box Elevation 30.15 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 34 ft.
Material Shedule 40 PVC

E Casing Diameter 2 in.

F Depth to Top Perforations 15 ft.

G Perforated Length 19 ft.
Perforated Interval from 15 to 34 ft.
Perforation Type Factory slotted
Perforation Size 0.020 in.

H Surface Seal from 0 to 1.5 ft.
Seal Material Concrete

I Backfill from 1.5 to 11 ft.
Backfill Material Cement Grout

J Seal from 11 to 13 ft.
Seal Material Bentonite Pellets

K Gravel Pack from 13 to 35.5 ft.
Pack Material Lonestar #2/12 graded sand

L Bottom Seal ft.
Seal Material

M Traffic-rated vault box with locking cap, lock and cover.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO. C-9

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
727002	DHP	4/91		

APPENDIX B
SOIL ANALYTICAL REPORT

SUPERIOR ANALYTICAL LABORATORY, INC.
1555 BURKE, UNIT I · SAN FRANCISCO CA 94124 · PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 11785
CLIENT: Geo Strategies Inc.
CLIENT JOB NO.: 7270

DATE RECEIVED: 04/26/91
DATE REPORTED: 05/07/91

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
11785- 1	C-6-15.5	04/25/91	05/04/91
11785- 2	C-6-22.5	04/25/91	05/04/91
11785- 3	C-6-25.5	04/25/91	05/04/91
11785- 4	C-7-15.5	04/23/91	05/04/91
11785- 5	C-7-20.5	04/23/91	05/04/91
11785- 6	C-7-24.5	04/23/91	05/04/91
11785- 7	C-8-15.5	04/24/91	05/04/91
11785- 8	C-8-22.5	04/24/91	05/04/91
11785- 9	C-8-25.5	04/24/91	05/04/91

Laboratory Number:	11785 1	11785 2	11785 3	11785 4	11785 5
ANALYTE LIST	Amounts/Quantitation Limits (mg/kg)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<1	ND<1	ND<1	ND<1	ND<1
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	ND<.005	ND<.005	ND<.005	ND<.005	ND<.005
TOLUENE:	ND<.005	ND<.005	ND<.005	ND<.005	ND<.005
ETHYL BENZENE:	ND<.005	ND<.005	ND<.005	ND<.005	ND<.005
XYLENES:	ND<.005	ND<.005	ND<.005	ND<.005	ND<.005

Laboratory Number:	11785 6	11785 7	11785 8	11785 9
ANALYTE LIST	Amounts/Quantitation Limits (mg/kg)			
OIL AND GREASE:	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<1	ND<1	ND<1	10
TPH/DIESEL RANGE:	NA	NA	NA	NA
BENZENE:	ND<.005	ND<.005	ND<.005	ND<.005
TOLUENE:	ND<.005	ND<.005	ND<.005	0.04
ETHYL BENZENE:	ND<.005	ND<.005	ND<.005	0.03
XYLENES:	ND<.005	ND<.005	ND<.005	0.1

SUPERIOR ANALYTICAL LABORATORY, INC.
1555 BURKE. UNIT I · SAN FRANCISCO. CA 94124 · PHONE (415) 647-2081 DHS #1332

CERTIFICATE OF ANALYSIS

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 11785

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
mg/kg = part per million (ppm)

OIL AND GREASE ANALYSIS By Standard Methods Method 503E:
Minimum Detection Limit in Soil: 50mg/kg

Modified EPA-SW846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Soil: 10mg/kg
Standard Reference: NA

EPA-SW846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Soil: 1mg/kg
Standard Reference: 08/24/90

SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Soil: 0.005mg/kg
Standard Reference: 04/09/91

ANALYTE	REFERENCE	SPIKE LEVEL	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Oil & Grease	NA	NA	NA	NA	NA
Diesel	NA	NA	NA	NA	NA
Gasoline	08/24/90	200ng	100/101	0.2	58-120
Benzene	04/09/91	200ng	91/91	0.6	65-121
Toluene	04/09/91	200ng	87/87	0.6	65-120
Ethyl Benzene	04/09/91	200ng	90/89	0.6	65-122
Total Xylene	04/09/91	600ng	88/88	0.2	65-122

Richard Srna, Ph.D.
Cecilia G Joaquin (for)
Laboratory Director

1783

Chain-of-Custody-Record

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number 4816
Facility Address 301 14TH ST. / HARRISON, OAKLAND
Consultant Project Number 7270
Consultant Name GEOSTRATEGIES INC.
Address 2140 WEST WINTON AVE., HAYWARD
Project Contact (Name) RANDY YOUNG
(Phone) 352-4800 (Fax Number) 783-1089

Chevron Contact (Name) NANCY VUKELICH
(Phone) 415-842-9581
Laboratory Name Superior Analytical Laboratory
Laboratory Release Number 3523000
Samples Collected by (Name) ROBERT C. MALLORY
Collection Date 4/25/91, 4/23/91, 4/24/91
Signature [signature]

Sample Number	Number of Containers	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Chlorinated HC (8010)	Non Chlorinated HC (8020)	Total Lead (AA)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)						Remarks
C-6-15.5	1	S	D	9:54		YES	✓												sampled 4/25/91
C-6-22.5	1	S	D	10:00		↓	✓												
C-6-25.5	1	S	D	10:10		↓	✓												
C-7-15.5	1	S	D	13:15		↓	✓												4/23/91
C-7-20.5	1	S	D	13:20		↓	✓												
C-7-24.5	1	S	D	13:32		↓	✓												
C-8-15.5	1	S	D	9:57		↓	✓												4/24/91
C-8-22.5	1	S	D	10:07		↓	✓												
C-8-25.5	1	S	D	10:15		✓	✓												

Please initial: MJ
Samples Stored in ice. ✓
Appropriate containers. ✓
Samples preserved.
VOA's without headspace. NA
Comments:

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
[signature]	GSI		to refrigerator #2 17:00 4/25 relinquish		
from refrigerator #2		8:30 4/26/91	[signature]	GTR	4-26-91 8:30
[signature]	GTR	4-26-91 16:40	Received For Laboratory By (Signature) M. Goldenberg		4/26/91 16:40

Turn Around Time (Circle Choice)
24 Hrs.
48 Hrs.
5 Days
10 Days
As Contracted

SUPERIOR ANALYTICAL LABORATORIES, INC.
825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 83013
CLIENT: Geo Strategies
CLIENT JOB NO.: 7270

DATE RECEIVED: 05/01/91
DATE REPORTED: 05/08/91

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
83013- 1	C-9-15.5	04/30/91	05/08/91
83013- 2	C-9-20.5	04/30/91	05/08/91
83013- 3	C-9-23.0	04/30/91	05/08/91

Laboratory Number:	83013 1	83013 2	83013 3
ANALYTE LIST	Amounts/Quantitation Limits (mg/kg)		
OIL AND GREASE:	NA	NA	NA
TPH/GASOLINE RANGE:	ND<1	ND<1	ND<1
TPH/DIESEL RANGE:	NA	NA	NA
BENZENE:	ND<.005	ND<.005	ND<.005
TOLUENE:	ND<.005	ND<.005	ND<.005
ETHYL BENZENE:	ND<.005	ND<.005	ND<.005
XYLENES:	ND<.005	ND<.005	ND<.005

SUPERIOR ANALYTICAL LABORATORIES, INC.
825 ARNOLD, STE. 114 • MARTINEZ, CALIFORNIA 94553 • (415) 229-1512
DOHS #319
DOHS #220

C E R T I F I C A T E O F A N A L Y S I S

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 83013

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
mg/kg = part per million (ppm)

OIL AND GREASE ANALYSIS By Standard Methods Method 503E:
Minimum Detection Limit in Soil: 50mg/kg

Modified EPA-SW846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Soil: 1mg/kg
Standard Reference: NA

EPA-SW846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Soil: 1mg/kg
Standard Reference: 03/28/91

SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Soil: 0.005mg/kg
Standard Reference: 04/18/91

ANALYTE	REFERENCE	SPIKE LEVEL	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Oil & Grease	NA	NA	NA	NA	NA
Diesel	NA	NA	NA	NA	NA
Gasoline	03/28/91	200 ng	111	0	70-130
Benzene	04/18/91	200 ng	97	0	70-130
Toluene	04/18/91	200 ng	108	0	70-130
Ethyl Benzene	04/18/91	200 ng	104	0	70-130
Total Xylene	04/18/91	200 ng	111	4	70-130

Richard Srna, Ph.D.
Laboratory Director

OUTSTANDING QUALITY AND SERVICE

Chain-of-Custody-Record

x 3013

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number 4816
Facility Address 301 14TH ST. / HARRISON OAKLAND
Consultant Project Number 7270
Consultant Name GeoSTRATEGIES INC.
Address 2110 W. WINTON AVE. HAYWARD
Project Contact (Name) RANDY YOUNG
(Phone) 352-4800 (Fax Number) 783-1089

Chevron Contact (Name) NANCY VUKELICH
(Phone) (415)-842-9581
Laboratory Name SUPERIOR ANALYTICAL LABS.
Laboratory Release Number 352300
Samples Collected by (Name) ROBERT C. MALLORY
Collection Date 4/30/96
Signature Robert C. Mallory

Sample Number	Number of Containers	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	Analyses To Be Performed: BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Chlorinated HC (8010)	Non Chlorinated HC (8020)	Total Lead (AA)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)						Remarks
C-7-15.5	1	S	D			YES	✓												
C-7-20.5	1	S	D			↓	✓												
C-9-23.0	1	S	D			↓	✓												

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Robert C. Mallory	C-51	5/1/96 14:45	W. EICH	EXP-IT	5-1-96 14:45
W. EICH	EXP-IT	5-1-96 16:10			
			Received For Laboratory By (Signature)		Date/Time
			Robert C. Mallory		5/1/96 16:10

Turn Around Time (Circle Choice)
24 Hrs.
48 Hrs.
(5 Days)
10 Days
As Contracted

APPENDIX C
GROUND-WATER ANALYTICAL REPORT

SUPERIOR ANALYTICAL LABORATORY, INC.
1555 BURKE, UNIT I • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 11805
CLIENT: Chevron USA Inc.
CLIENT JOB NO.: 3270.01

DATE RECEIVED: 05/03/91
DATE REPORTED: 05/11/91

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
11805- 1	C-1	05/02/91	05/09/91
11805- 2	C-2	05/02/91	05/09/91
11805- 3	C-4	05/02/91	05/09/91
11805- 4	C-6	05/02/91	05/09/91
11805- 5	C-7	05/02/91	05/09/91
11805- 6	C-8	05/02/91	05/09/91
11805- 7	C-9	05/02/91	05/09/91
11805- 8	CD-2	05/02/91	05/09/91
11805- 9	TRIP BLANK	05/02/91	05/09/91

Laboratory Number:	11805 1	11805 2	11805 3	11805 4	11805 5
ANALYTE LIST	Amounts/Quantitation Limits (ug/L)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	59000	19000	330	ND<50	ND<50
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	5600	4500	140	ND<0.5	ND<0.5
TOLUENE:	7700	3200	11	ND<0.5	ND<0.5
ETHYL BENZENE:	700	660	2	ND<0.5	ND<0.5
XYLENES:	5200	2900	9	ND<0.5	ND<0.5

Laboratory Number:	11805 6	11805 7	11805 8	11805 9
ANALYTE LIST	Amounts/Quantitation Limits (ug/L)			
OIL AND GREASE:	NA	NA	NA	NA
TPH/GASOLINE RANGE:	5000	ND<50	21000	ND<50
TPH/DIESEL RANGE:	NA	NA	NA	NA
BENZENE:	ND<0.5	ND<0.5	3200	ND<0.5
TOLUENE:	17	ND<0.5	2200	ND<0.5
ETHYL BENZENE:	140	ND<0.5	410	ND<0.5
XYLENES:	470	0.8	2000	ND<0.5

SUPERIOR ANALYTICAL LABORATORY, INC.

1555 BURKE, UNIT I • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081 DHS #1332

CERTIFICATE OF ANALYSIS

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS

QA/QC INFORMATION
SET: 11805

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT
ug/l = part per billion (ppb)

OIL AND GREASE ANALYSIS By Standard Methods Method 503E:
Minimum Detection Limit in Water: 5000ug/L

Modified EPA-SW846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 50ug/l
Standard Reference: NA

EPA-SW846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 50ug/l
Standard Reference: 08/24/90

SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Water: 0.5ug/l
Standard Reference: 04/09/91

ANALYTE	REFERENCE	SPIKE LEVEL	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Oil & Grease	NA	NA	NA	NA	NA
Diesel	NA	NA	NA	NA	NA
Gasoline	08/24/90	200ng	94/92	2.3	63-111
Benzene	04/09/91	200ng	106/105	0.5	72-119
Toluene	04/09/91	200ng	97/97	0.0	70-116
Ethyl Benzene	04/09/91	200ng	99/100	0.5	73-119
Total Xylene	04/09/91	600ng	98/98	0.5	71-118

Richard Srna, Ph.D.
Ony A Dnga (for)
Laboratory Director

CHAIN OF CUSTODY RECORD

Chevron U.S.A. Inc.
P.O. BOX 5004
San Ramon, CA 94583
FAX (415)842-9591

Chevron Facility Number 4816 11805
Facility Address 301 14th / Harrison - Oakland
Consultant Project Number 3270.01
Consultant Name Gettler-Ryan
Address 2150 W. Winton - Hayward
Project Contact (Name) Tom Paulsen
(Phone) 783-7500 (Fax Number)

Chevron Contact (Name) Nancy Vukelich
(Phone) (510) 842-9500
Laboratory Name SUPERIOR
Laboratory Release Number 3523000
Samples Collected by (Name) CHRIS O'CONNOR
Collection Date 5-2-91
Signature

Sample Number	Number of Containers	Matrix S = Soil A = Air W = Water C = Charcoal	Type G = Grab C = Composite D = Discrete	Time	Sample Preservation	Iced (Yes or No)	BTEX + TPH GAS (8020 + 8015)	TPH Diesel (8015)	Oil and Grease (5520)	Chlorinated HC (8010)	Non Chlorinated HC (8020)	Total Lead (AA)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)						Remarks
C-1	2	W		10:39	HCL	Yes	✓												
C-2				11:11			✓												
C-4				11:55			✓												
C-6				10:57			✓												
C-7				10:17			✓												
C-8				12:15			✓												
C-9				10:35			✓												
TB-2				—			✓												
Trip Blank	1			—			✓												

Please initial:
Samples Stored in ice.
Appropriate containers.
Samples preserved.
VOA's without headspace.
Comments:

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	G/R	5/2/91 1430	REFRIG #1	G-R	5/2/91 1430
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	G/R	5391 900		G/R	5-3-91 915
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
	G/R	5-3-91 1500			5/3/91 1:05P

Turn Around Time (Circle Choice)
24 Hrs.
48 Hrs.
5 Days
10 Days
As Contracted

APPENDIX D

GETTLER-RYAN INC.

GROUND-WATER MONITORING DATA

CHEVRON USA 4816 OAKLAND - 301 14TH/HARRISON JOB 5270

DATE	WELL	DTH	DTW	HT	BAILED	PPM	LEL	NORM	DTB	EMP	C.ELEV
30-Nov-90	C1		21.75	0.00							
14-Dec-90	C1		21.67	0.00							
28-Dec-90	C1		21.72	0.00							
04-Jan-91	C1		21.84	0.00							
07-Jan-91	C1		21.95	0.00							
11-Jan-91	C1	21.99	(1.00)	0.00							
15-Feb-91	C1	22.12	(1.00)	0.00							
02-May-91	C1		22.06	0.00							
30-May-91	C1		22.04	0.00							
30-Nov-90	C2		21.83	0.00							
14-Dec-90	C2		21.77	0.00							
28-Dec-90	C2		21.81	0.00							
04-Jan-91	C2		21.90	0.00							
07-Jan-91	C2		22.03	0.00							
11-Jan-91	C2	22.13	(1.00)	0.00							
15-Feb-91	C2		22.36	0.00							
02-May-91	C2	22.44	(1.00)	0.00							
30-May-91	C2		22.44	0.00							
30-Nov-90	C3	21.45	24.24	0.39	4.0						
14-Dec-90	C3	21.34	23.88	2.54	4.0						
28-Dec-90	C3	21.38	24.03	2.65	4.0						
04-Jan-91	C3	21.45	24.15	2.70	3.5						
07-Jan-91	C3	21.63	24.13	2.50	0.0						
11-Jan-91	C3	21.69	24.35	2.66	4.0						
15-Feb-91	C3	21.77	24.70	2.93	0.0						
02-May-91	C3		N/A	0.00							
30-May-91	C3	21.59	24.08	2.49	0.0						
30-Nov-90	C4		22.53	0.00							
14-Dec-90	C4		22.45	0.00							
28-Dec-90	C4		22.51	0.00							
04-Jan-91	C4		22.64	0.00							
07-Jan-91	C4		22.74	0.00							
11-Jan-91	C4	22.81	(1.00)	0.00							
15-Feb-91	C4		22.55	0.00							
02-May-91	C4		22.54	0.00							
30-May-91	C4		22.55	0.00							
30-Nov-90	C5		22.25	0.00							
14-Dec-90	C5		22.12	0.00							
28-Dec-90	C5	22.24	(1.00)	0.00							
04-Jan-91	C5	22.24	22.55	0.31	0.75						
07-Jan-91	C5	22.32	22.36	0.04	0.0						
11-Jan-91	C5	22.35	23.08	0.73	0.5						
15-Feb-91	C5	21.96	24.70	2.74	0.0						
02-May-91	C5	20.02	22.02	2.00	0.0						

gettler — ryan inc. (415) 783-7500
general and environmental contractors

DATE	WELL	DTH	DTW	HT	BAILED	PPM	LEL	NORM	DTB	EMP	C.ELEV
30-May-91	C5	22.08	24.78	2.70	0.0						
02-May-91	C6		21.84	0.00							
30-May-91	C6		N/A								
02-May-91	C7		21.81	0.00							
30-May-91	C7		N/A								
02-May-91	C8		21.24	0.00							
30-May-91	C8		N/A								
02-May-91	C9		21.27	0.00							
30-May-91	C9		N/A								
30-Nov-90	CR1	21.35	24.02	2.67	2.0					SM	
14-Dec-90	CR1	21.25	23.78	2.53	4.0					RA	
28-Dec-90	CR1	21.30	23.94	2.64	2.0					SM	
04-Jan-91	CR1	21.38	24.08	2.70	3.5					RA	
07-Jan-91	CR1	20.27	23.30	3.03	0.0					JZ	
11-Jan-91	CR1	21.60	24.24	2.64	3.0					SM	
15-Feb-91	CR1	21.80	24.72	2.92	0.0					RA	
02-May-91	CR1		N/A							SD	
30-May-91	CR1	20.65	23.07	2.42	0.0					RA	

gettler — ryan inc. (415) 783-7500
general and environmental contractors