Chevron U.S.A. Inc.
2410 Camino Ramon, San Ramon, California • Phone (510) 842-9500
Mail Address: P.O. Box 5004, San Ramon, CA 94583-0804

Marketing Department

November 14, 1991

Mr. Scott Seery
Alameda County Health Care Services
Department of Environmental Health
Hazardous Materials Program
80 Swan Way, Room 200
Oakland, CA 94621

Re: Chevron Service Station #9-6991
2920 Castro Valley Blvd., Castro Valley

Dear Mr. Seery:

Enclosed we are forwarding the Well Installation Report dated November 11, 1991, prepared by our consultant Groundwater Technology, Inc. for the above referenced site. This report documents the installation of the 3/4-inch experimental ground water monitor wells designed for shallow ground water environments.

As indicated in the report, three (3) borings were advanced and completed into ground water monitor wells to characterize the subsurface and ground water beneath the site. These wells were designated MW-1, MW-2 and MW-3. Soil samples collected from the drill cuttings were analyzed for total petroleum hydrocarbons as gasoline (TPH-G), BTEX and total oil & grease (TOG) from MW-1 located adjacent to the former waste oil tank. The results reported non-detectable concentrations of these constituents in the soils with the exception of negligible concentrations of toluene, ethylbenzene and xylenes in MW-2 (.005 to .014 ppm).

Depth to ground water was measured at approximately 8 to 12-feet below grade, and the direction of flow appears to slope to the west. The depth to ground water measurement from MW-3 appears to be high and may be an anomalous water level measurement. This may be a result of the 1-foot gravel layer encountered at .5 to 1.5 feet below grade which may act as a conduit for infiltration. Subsequent water level measurements will confirm the ground water gradient and flow direction. Ground water samples collected were analyzed for TPH-G, BTEX and TOG from MW-1. Analytical results reported Benzene concentrations ranging from 1.9 to 45 ppb. TOG was reported below method detection limit in MW-1. Thus, subsequent monitoring events will not include the analysis of TOG from this well.

Based on the data collected, Chevron recommends quarterly monitoring and sampling this site for a minimum of one (1) year. At that time, the data collected will be evaluated and appropriate next actions recommended. This will allow the confirmation of ground water flow direction and assess if MW-3 is a valid monitoring point.

The analytical results of the ground water samples collected indicate that the 3/4-inch wells do provide access to viable ground water samples. As agreed to, Chevron will perform sampling and monitoring of the newly installed wells each month for the first three months. After completion of the first quarter, a routine quarterly groundwater monitoring program will continue.

If you have any questions or comments, please do not hesitate to contact me at (510) 842-9581.

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

Nancy Vukelich
Environmental Engineer

Enclosures

cc: Mr. Eddy So, RWQCB-Bay Area
Ms. Sandra Lindsey, GTI-Concord
Mr. W.T. Scudder
File (9-6991A1)

GROUNDWATER TECHNOLOGY, INC.

4057 Port Chicago Highway, Concord, CA 94520 (415) 671-2387
FAX: (415) 685-9148

WELL INSTALLATION REPORT
CHEVRON SERVICE STATION NO. 9-6991
2920 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

NOVEMBER 11, 1991

Prepared for:

Ms. Nancy Vukelich
Chevron U.S.A. Inc.
2410 Camino Ramon
Bishop Ranch #6
San Ramon, CA 94583

R1038A1.GLM
(020522)

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San Ramon, CA 94583

Prepared by:

GROUNDWATER TECHNOLOGY,INC.
4057 Port Chicago Highway
Concord, CA 94520

Gregory Mischel
Project Geologist

Gregg A. Mischel for
Sandra L. Lindsey
Project Manager

REGISTERED GEOLOGIST
DAVID R. KLEESATTEL
NO. 5136
STATE OF CALIFORNIA

David R. Kleesattel
Registered Geologist
No. 5136

R1038A1.GLM
(020522)

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WELL INSTALLATION REPORT
CHEVRON SERVICE STATION NO. 9-6991
2920 CASTRO VALLEY BOULEVARD
CASTRO VALLEY, CALIFORNIA

NOVEMBER 11, 1991

INTRODUCTION

This report presents the results of the groundwater monitoring well installation project conducted by Groundwater Technology, Inc. at Chevron Service Station No. 9-6991 located at 2920 Castro Valley Boulevard in Castro Valley, California (Figure 1). This work was performed under Work Release No. 483-7640 issued by Ms. Nancy Vukelich of Chevron U.S.A. Inc. (Chevron). Analytical services were provided by Superior Analytical Laboratories, Inc. (Superior) of Martinez, California, under Release No. 483-7960. This phase of site work included the installation of three on-site groundwater monitoring wells, the collection and analyses of soil and groundwater samples, and the preparation of this report.

BACKGROUND

SITE HISTORY

In September 1990, Groundwater Technology was retained by Chevron to perform soil sampling operations in association with the removal of two underground storage tanks: a 1,000-gallon waste-oil tank and a 6,000-gallon unleaded gasoline tank. Both tanks and the associated product lines were excavated and removed from the site on September 11, 1990. Two remaining underground storage tanks were left in place, and new product lines were installed in preparation for the completion of a service station/mini-market.

Based on results of the chemical analyses performed on soil samples collected from the excavation side walls, additional soil was removed from the waste-oil tank and product line excavations. This additional excavation was conducted on September 18, 1990, until field soil analyses results

indicated that hydrocarbon concentrations were below method detection limits (MDLs) or until excavation to the north and west of the waste-oil tank pit became impractical. The soil analyses were performed in the field by a California certified mobile laboratory. In December, 1990, Groundwater Technoloyg issued a Summary Tank Excavation Report Chevron Service Station No. 9-6991, 2920 Castro Valley Boulevard, Castro Valley, California which summarized the details of the tank removal.

SITE SETTING

Chevron Service Station No. 9-6991 is located on the northeast corner of the intersection of Castro Valley Boulevard and Anita Road (Figure 2). The parking lot of a small shopping mall abuts the site to the north and east. Commercial buildings are located across Castro Valley Boulevard to the south. Across Anita Road, on the northwest corner of the intersection of Anita Road and Castro Valley Boulevard, is a former service station site. The structures at that site, including the pump island foundations, are still in place. Currently, that site is the location of an automobile interiors business. The surface elevation at the site is approximately 170 feet above mean sea level. The local land surface slopes gently toward South Reservoir located approximately 0.7 miles to the south.

SCOPE OF WORK

Subsurface soil and groundwater conditions beneath this site were investigated to assess the possible presence of petroleum hydrocarbons. The following work steps were completed for this investigation:

- Obtained permission from Mr. Scott Seery of the Alameda County Health Care Services, Department of Environmental Health, Hazardous Materials Program for the installation of three experimental, 3/4-inch-diameter groundwater monitoring wells.
- Obtained a groundwater well installation permit from the Alameda County Flood Control and Water Conservation District (Zone 7).
- Cored and logged three on-site soil borings to assess the possible extent of adsorbed petroleum hydrocarbons in the soils beneath the site. Soil samples were retained for laboratory analysis.

- Installed 3/4-inch-diameter polyvinyl chloride (PVC) groundwater monitoring wells in the soil borings.
- Subcontracted a professional survey company to determine wellhead elevation and location.
- Developed and sampled the groundwater monitoring wells to assess groundwater quality.
- Prepared this report.

MONITORING WELL INSTALLATION

Permitting. Before beginning monitoring well installation activities, Groundwater Technology applied to the Alameda County Health Services Department for permission to install a new type of groundwater monitoring well. After several months of negotiation, permission was granted to install the proposed 3/4-inch-diameter monitoring wells. After securing permission to install the wells, Groundwater Technology submitted a Groundwater Protection Ordinance Permit Application for monitoring well installation to the Alameda County Flood Control and Water Conservation District (Zone 7). A copy of the approved permit is included in Appendix A.

Soil Borings. On September 24 and 30, 1991, a total of three soil borings were cored on-site at the locations shown on Figure 3. The boring locations were selected to assess the subsurface conditions in the vicinity of the former underground storage tanks. The soil borings were advanced using a portable soil sampling system that uses a hydraulic sledgehammer to drive a series of 2-inch-diameter steel sampling barrels into the ground. Each sampling barrel is 2½-feet-long and the barrels are extracted between each drive, producing a continuous core of the encountered soils and a 2-inch-diameter hole. Coring was supervised by a Groundwater Technology geologist who maintained continuous logs of the subsurface materials according to the Unified Soil Classification System. Copies of the boring logs are included in Appendix B. Selected soil samples were also field-screened for the presence of volatile organic vapors with a photo-ionization detector (PID). Vapor concentrations detected by the PID are included in the boring logs.

During coring, soil samples were retained for possible laboratory analysis. The soil samples were collected by putting 2-inch-diameter by 6-inch-long brass tubes within the sampling barrel. The tubes were sealed with aluminum foil, capped and sealed with plastic tape. The labeled samples

were placed in an ice-chilled insulated cooler for transport under chain-of-custody protocol to Superior in Martinez, California, a California-certified facility.

Soil samples were analyzed for the presence of benzene, toluene, ethylbenzene, xylenes (BTEX), and total petroleum hydrocarbons (TPH)-as-gasoline using modified U.S. Environmental Protection Agency (EPA) Methods 8015/8020. One sample taken from the core collected near the former waste-oil tank was analyzed for oil and grease by Standard Methods 503E. Copies of all laboratory reports and chain-of-custody records are included in Appendix C.

Monitoring Well Construction. All three soil-boring holes were completed as groundwater monitoring wells. The wells were constructed of 3/4-inch-diameter, 0.020-inch machine-slotted Schedule 80 PVC well screen and blank casing. A well filter pack comprised of No. 2/12 lapis lustre sand was set in the annular space to approximately 1 foot above the well screen. A layer of hydrated bentonite 1 foot thick was placed above the filter pack and a cement seal was placed to surface grade above the bentonite. The wellhead was capped and encased in a 9-inch-diameter, traffic-rated street box. Well construction details are presented on the boring logs in Appendix B.

Wellhead Survey. After installation, the monitoring wells were professionally surveyed to establish wellhead elevation and location. A copy of the surveyor's notes are included in Appendix D and Table 1 presents the wellhead elevation data.

Well Development, Monitoring, and Sampling. On October 8, 1991, the three groundwater monitoring wells were monitored, developed, and sampled. The wells were first monitored using an electronic slope indicator to determine static water levels. These data, along with surveyed wellhead data, were used to construct the Potentiometric Surface Map (Figure 3). The wells were developed by using a peristaltic pump to extract water from the wells. Each well was pumped for approximately one hour or until the purge water had a consistent clarity. Except for monitoring well MW-1, all wells pumped dry during well development. All purge water was stored on-site in a single 55-gallon steel drum pending disposal.

After development, the groundwater monitoring wells were monitored again to assure that they had recharged to at least 80 per cent of their static volume. The wells were then sampled using a ½-inch-diameter stainless steel bailer. The water samples were placed in clean glass containers with Teflon®-lined caps. Because of the apparent presence of dissolved carbonate in the water, the

sample collected from MW-3 was not acidified. The groundwater samples were labeled and placed in an ice-chilled cooler for transport to Superior for analysis. The samples were analyzed for the presence of BTEX and TPH-as-gasoline using EPA Methods 8015/8020. The groundwater sample collected from MW-1 was also analyzed for oil and grease using Standard Methods 503E.

SUBSURFACE CONDITIONS

SOIL

The soils encountered in borings MW-1 and MW-3 consisted primarily of clays, silts, and clayey or silty gravels. The gravels were not encountered in boring MW-2. The material encountered in boring MW-1 provided almost no recovery in the sample barrel and thus yielded only one sample for laboratory analysis. A 1-foot gravel layer from 0.5 foot to 1.5 feet below grade was encountered in boring MW-3. This 1-foot gravel layer yielded water that caused the borehole to collapse after extracting the sample barrel. The collapse of borehole MW-3 prevented the collection of representative samples below a depth of 10 feet.

On the basis of field observations and PID readings, five soil samples were submitted for laboratory analysis. Analytical results indicate concentrations of benzene and TPH-as-gasoline were below the MDL in each of the five samples. Toluene, ethylbenzene and xylenes were detected in soil sample MW-2A at concentrations of 0.005 milligrams per kilogram (mg/Kg), 0.006 mg/Kg and 0.014 mg/Kg, respectively. The analytical results also indicate concentrations of oil and grease were below MDL in soil sample MW-1A. The analytical results are summarized in Table 2 and copies of the analytical reports are presented in Appendix C.

GROUNDWATER

Groundwater monitoring data collected on October 8, 1991, indicate that the depth to groundwater beneath the site ranged from 8.27 feet at MW-3 to 11.95 feet at MW-2. On the basis of monitoring data collected on October 8, 1991, the hydraulic gradient was calculated at 0.04 ft/ft and slopes to the west. The groundwater level measured at MW-3 appears to be anomalously high. Subsequent monitoring of the wells will confirm the groundwater elevation, gradient direction and if MW-3 is a valid monitoring point. Figure 3 shows the groundwater elevation contours that were drawn using the October 1991 monitoring data.

Laboratory results for the groundwater samples show measurable concentrations of gasoline hydrocarbons in the groundwater samples collected from monitoring wells MW-1, MW-2 and MW-3. The analytical results of the groundwater sample collected from MW-1 indicated that the concentration of oil and grease was below MDL. Analytical results indicate concentrations of benzene detected in the groundwater samples ranged from 1.9 micrograms per liter (μg/l) to 45 μg/l and concentrations of TPH-as-gasoline ranged from 81 μg/l to 230 μg/l. Table 3 presents the groundwater sample analytical results. Figure 4 shows the concentrations of dissolved TPH-as-gasoline.

SUMMARY AND CONCLUSIONS

The soil cores collected and logged at the site in September 1991 showed that the shallow underlying sediments consist primarily of silts, clays, and gravels. The water encountered in the 1-foot gravel layer may be causing an anomalously high groundwater level at MW-3. Groundwater is present beneath the site at depths ranging from 8.27 feet to 11.95 feet below grade.

Laboratory analyses of the soil samples collected at the site during this investigation detected concentrations of gasoline hydrocarbons in only the soil sample collected from 5 feet at boring MW-2. Toluene, ethylbenzene, and xylenes were detected in soil sample MW-2A at concentrations of 0.005 mg/Kg, 0.006 mg/Kg and 0.014 mg/Kg, respectively. Analytical results indicate that concentrations of benzene detected in the groundwater samples ranged from 1.9 μg/l to 45 μg/l and concentrations of TPH-as-gasoline ranged from 81 μg/l to 230 μg/l.

CLOSURE

This concludes Groundwater Technology's Well Installation Report for Chevron Service Station No. 9-6991 located at 2920 Castro Valley Boulevard, Castro Valley, California.

LIST OF FIGURES

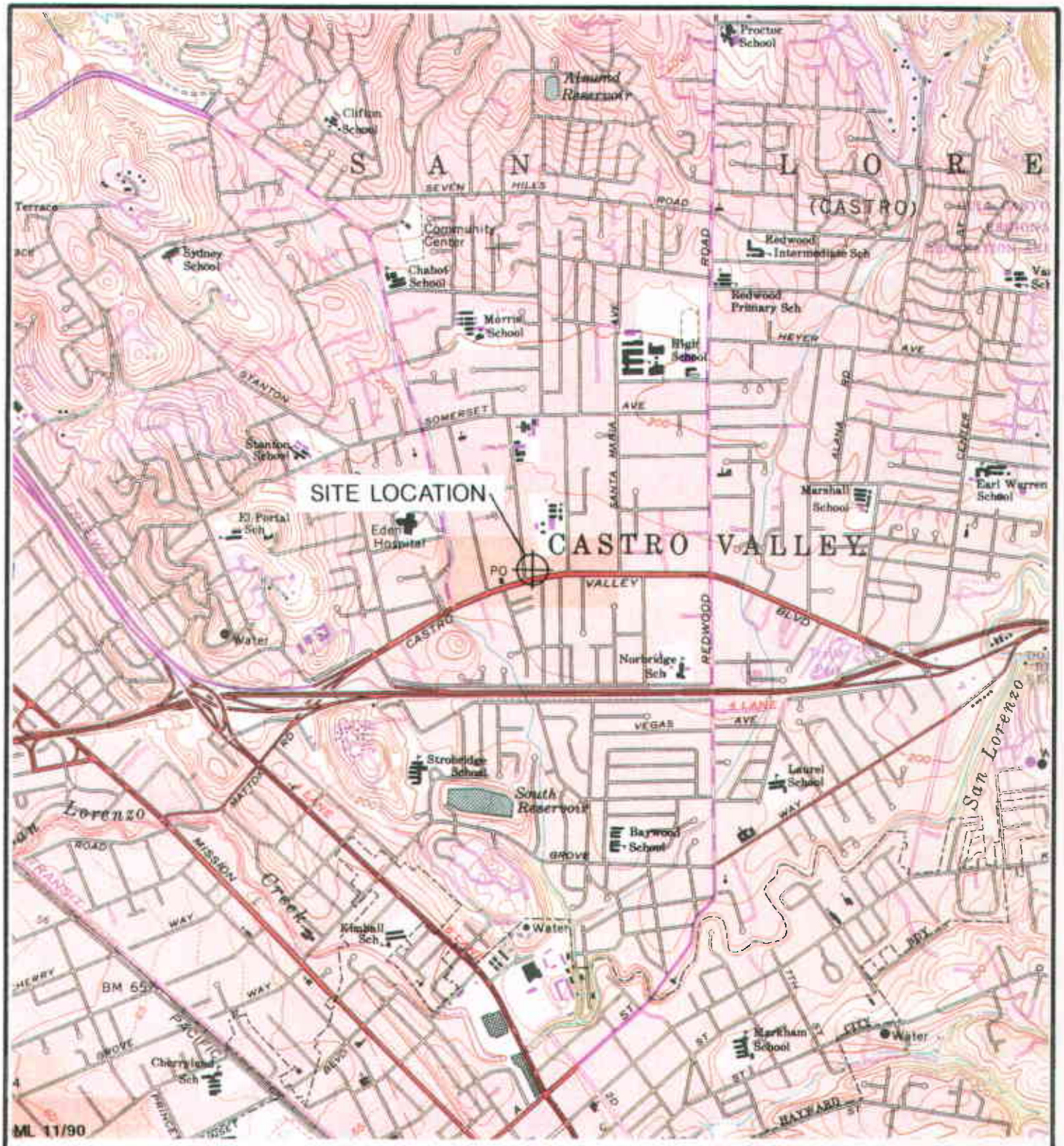
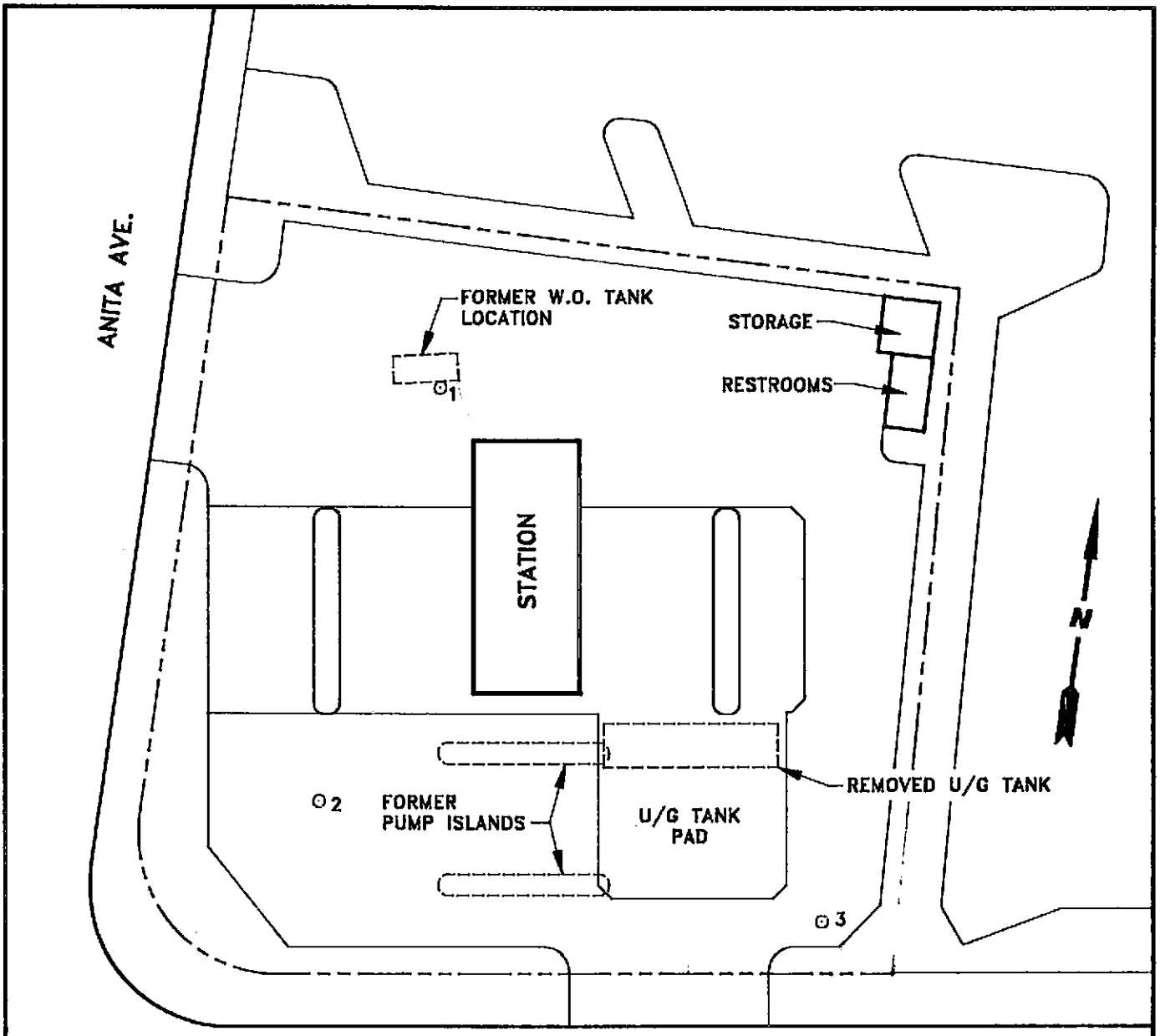


FIGURE 1
SITE LOCATION MAP

CHEVRON USA
CASTRO VALLEY, CALIFORNIA



LEGEND

⊙ MONITORING WELL

FIGURE 2
SITE PLAN

0 FEET 30
SCALE

CHEVRON U.S.A. Inc.
SERVICE STATION #9-6991
2920 CASTRO VALLEY BLVD.
CASTRO VALLEY, CALIFORNIA

DRAWN BY: ML 10/28/91

GROUNDWATER TECHNOLOGY, INC.

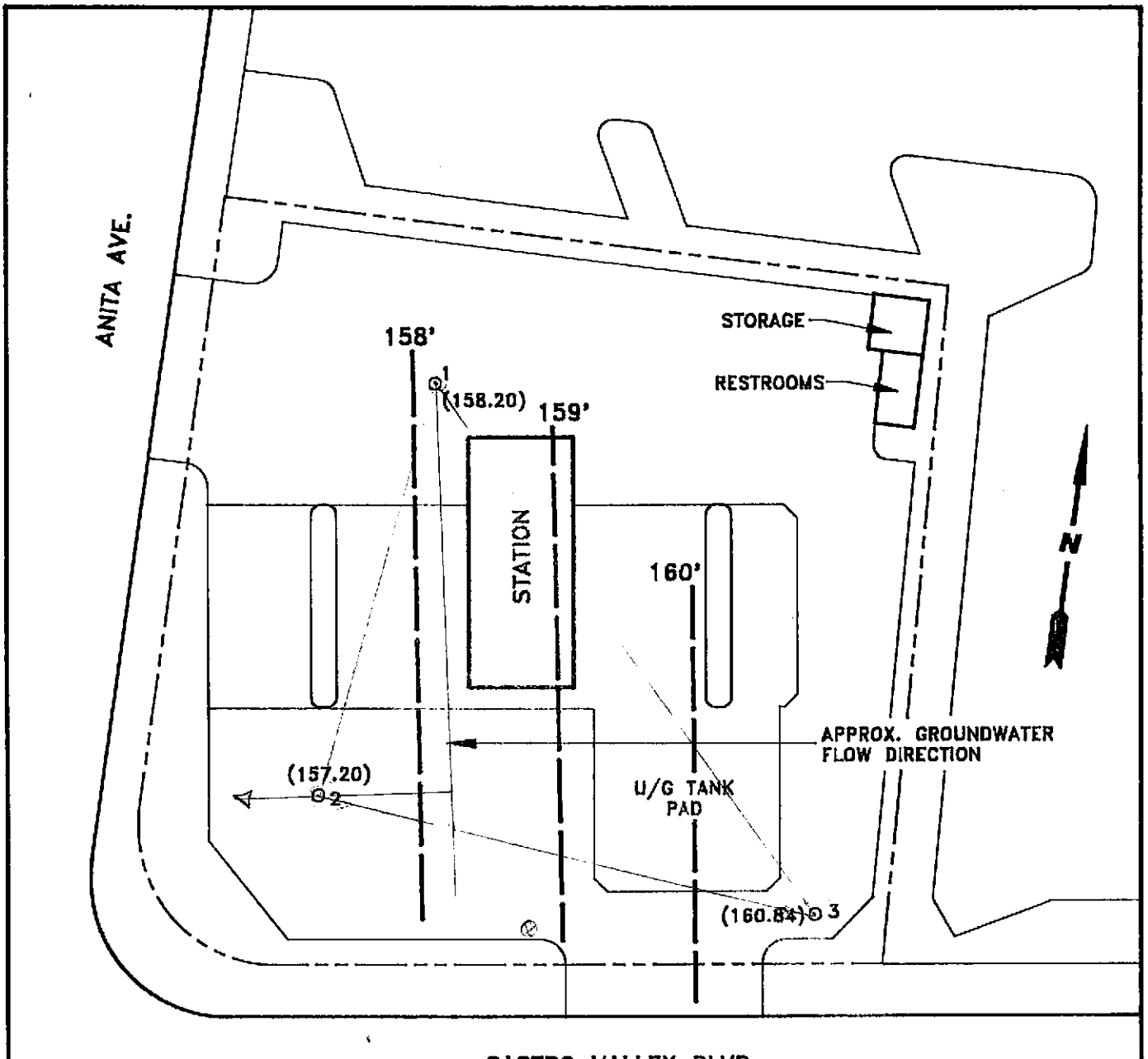
$$\frac{\Delta EI \ (H\text{-}m)}{\Delta EI \ (H\text{-}L)} = \frac{x}{\text{Dist } H-L}$$

$$\frac{158.26 - 158.20}{158.26 - 157.20} = \frac{x}{97.5'}$$

$$97.5' \left(\frac{0.06}{1.06}\right)' = x$$

$$5.52' = x$$

$$\frac{1''}{30'} = \frac{x''}{5.52'}$$



LEGEND

⊙ MONITORING WELL

( ) POTENTIOMETRIC SURFACE ELEVATION

—— POTENTIOMETRIC SURFACE CONTOUR

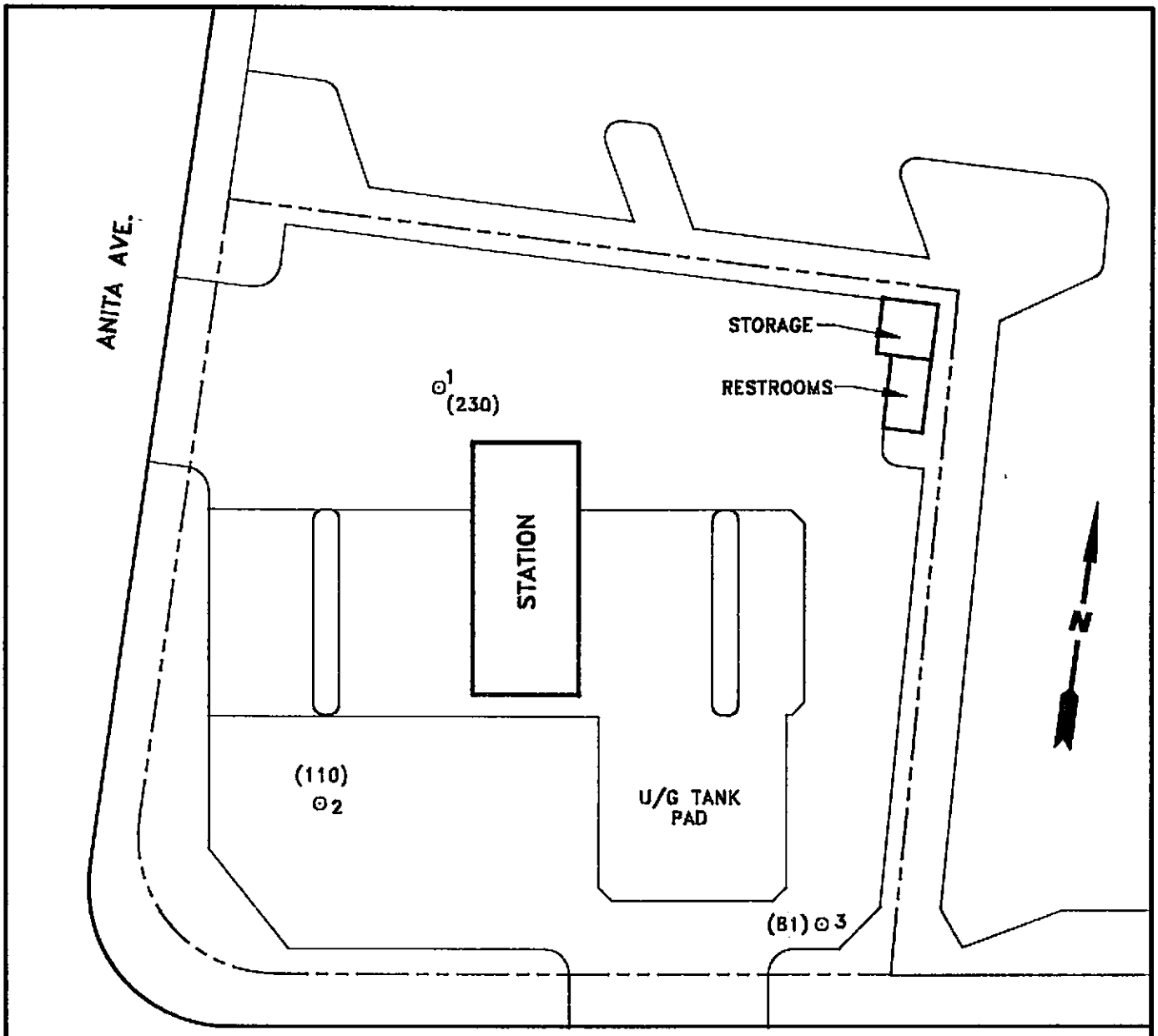
FIGURE 3
POTENTIOMETRIC SURFACE MAP
(10/8/91)

0 FEET 30
SCALE

CHEVRON U.S.A. Inc.
SERVICE STATION #9-6991
2920 CASTRO VALLEY BLVD.
CASTRO VALLEY, CALIFORNIA

DRAWN BY: ML 10/29/91

GROUNDWATER TECHNOLOGY, INC.



LEGEND

⊙ MONITORING WELL

( ) TPH–AS–GASOLINE CONCENTRATION (ppb)

FIGURE 4

DISSOLVED TPH–AS–GASOLINE CONCENTRATIONS
(10/8/91)

0 FEET 30
SCALE

CHEVRON U.S.A. Inc.
SERVICE STATION #9–6991
2920 CASTRO VALLEY BLVD.
CASTRO VALLEY, CALIFORNIA

DRAWN BY: ML 10/28/91

GROUNDWATER TECHNOLOGY, INC.

LIST OF TABLES

TABLE 1
WELL SURVEY AND MONITORING DATA
DATA COLLECTED OCTOBER 8, 1991
(Measurements in feet above mean sea level)

WELL NO.	WELLHEAD ELEVATION	DEPTH-TO-WATER	HYDROSTATIC ELEVATION
MW-1	169.30	11.10	158.20
MW-2	169.15	11.95	157.20
MW-3	169.11	8.27	160.84

11/4 10.85

169.11
10.85
158 26' MSL

TABLE 2
SOIL SAMPLE ANALYTICAL RESULTS
(Results in milligrams per kilogram)

SAMPLE ID	SAMPLE DATE	DEPTH (ft)	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TPH-AS-GASOLINE	OIL AND GREASE
MW-1A	09/24/91	9	<0.005	<0.005	<0.005	<0.005	<1	<50
MW-2A	09/24/91	5	<0.005	0.005	0.006	0.014	<1	NA
MW-2B	09/24/91	10	<0.005	<0.005	<0.005	<0.005	<1	NA
MW-3A	09/30/91	6	<0.005	<0.005	<0.005	<0.005	<1	NA
MW-3C	09/30/91	10	<0.005	<0.005	<0.005	<0.005	<1	NA

NA = Not analyzed

TABLE 3
WATER SAMPLE ANALYTICAL RESULTS
SAMPLES COLLECTED ON OCTOBER 8, 1991
(Results in micrograms per liter)

WELL ID	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	TPH-AS-GASOLINE	OIL AND GREASE
MW-1	45	<0.5	0.9	9.1	230	<5000
MW-2	5.1	1.1	0.8	26	110	NA
MW-3	1.9	0.7	0.8	2.4	81	NA

NA = Not analyzed

Cl HC
TPH-D ?
"
"
2270 ?
metals ??

APPENDIX A

WELL INSTALLATION PERMIT

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

5 September 1991

Groundwater Technology
4057 Port Chicago Highway
Concord, CA 94520

Gentlemen:

Enclosed is Drilling permit 91504 for a monitoring well construction project at 2920 Castro Valley Boulevard in Castro Valley for Chevron USA.

Please note that permit condition A-2 requires that a well construction report be submitted after completion of the work. The report should include drilling and completion logs, location sketch, and permit number.

If you have any questions, please contact Wyman Hong or me at 484-2600.

Very truly yours,

Craig A. Mayfield

Craig A. Mayfield
Water Resources Engineer

WH:mm
Enc.

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94566 ♦ (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

LOCATION OF PROJECT 2920 Castro Valley Blvd.
Castro Valley, California

CLIENT
Name Chevron U S A
Address P.O. Box 5004 Phone 842-1000
City San Ramon Zip 94583

APPLICANT
Name Groundwater Technology, Inc.
Address 4057 Port Chicago Hwy Phone 671-2387
City Concord Zip 94520

TYPE OF PROJECT

Well Construction		Geotechnical Investigation	
Cathodic Protection	___	General	___
Water Supply	___	Contamination	___
Monitoring	✓	Well Destruction	___

PROPOSED WATER SUPPLY WELL USE
Domestic ___ Industrial ___ Other ___
Municipal ___ Irrigation ___

DRILLING METHOD:
Mud Rotary ___ Air Rotary ___ Auger ___
Cable ___ Other X

DRILLER'S LICENSE NO. 607550 (Contractors license No)

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

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

ESTIMATED STARTING DATE 9/16/91
ESTIMATED COMPLETION DATE 9/20/91

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

APPLICANT'S SIGNATURE Gregg A. Meckel Date 8/30/91

FOR OFFICE USE

PERMIT NUMBER 91504
LOCATION NUMBER ___

PERMIT CONDITIONS

Circled Permit Requirements Apply

(A.) GENERAL
1. A permit application should be submitted so as to arrive at the Zone 7 office five days prior to proposed starting date.
2. Submit to Zone 7 within 60 days after completion of permitted work the original Department of Water Resources Water Well Drillers Report or equivalent for well projects, or drilling logs and location sketch for geotechnical projects.
3. Permit is void if project not begun within 90 days of approval date.

(B.) WATER WELLS, INCLUDING PIEZOMETERS
1. Minimum surface seal thickness is two inches of cement grout placed by tremie.
2. Minimum seal depth is 50 feet for municipal and industrial wells or 20 feet for domestic and irrigation wells unless a lesser depth is specially approved. Minimum seal depth for monitoring wells is the maximum depth practicable or 20 feet.

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

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

E. WELL DESTRUCTION. See attached.

Approved Wyman Hong Date 3 Sep 91
Wyman Hong

121989

APPENDIX B

SOIL BORING LOGS

Drilling Log

GROUNDWATER TECHNOLOGY

Monitoring Well MW-1

Project CHV/2920 Castro Valley Blvd. Owner Chevron U.S.A. Inc.

Location Castro Valley, CA Project Number 020301038

Date Drilled 9/24/91 Total Depth of Hole 21.0 ft. Diameter 2 in.

Top of Casing ____ Water Level Initial 11 ft. Static ____

Screen: Dia .75 in. Length 15 ft. Slot Size .020 in.

Casing: Dia .75 in. Length 3.0 ft. Type SCH 80 PVC

Filter Pack Material No 2/12 Labis Lustre Rig/Core Type ____

Drilling Company Power Core Dril./Mon. Method Percussion Hammer / PID

Driller Michael Nosewicz Log By Glen Mitchell

Geologist/Engineer David Kleesattel License No 5136

See Site Map For Boring Location

NOTES:

Depth (feet)	Well Completion	PID (ppm)	Sample ID	Graphic Log	Soil Class	Description (Color, Texture, Structure)
0		PID				Six inches ASPHALT
2					GC	light gray clayey GRAVEL (loose, dry)
4					SC	Brown clayey SAND (loose, dry)
6		0			SP	Tan gravelly SAND (loose, moist)
8						
10		0	A			*Encountered water 9/24/91 (09:32 hours)*
12					GP	*Tan sandy gravel (loose, saturated)*
14					CL	*Mottled tan and dark brown silty CLAY (soft, saturated)*
16					GC	*Tan clayey GRAVEL (loose, saturated)*
18					CL	*Dark brown silty CLAY (soft, saturated)*
20					GC	*Tan clayey GRAVEL (loose, saturated)*
22					CL	*Mottled tan and gray silty CLAY (firm, moist)*
24						*End of boring at 21.0 feet. Constructed monitoring well.*
26						

11/11/1991 gtbasic oct

Drilling Log

GROUNDWATER TECHNOLOGY

Monitoring Well ~~MW~~-2

Project CHV/2920 Castro Valley Blvd. Owner Chevron U.S.A. Inc.

Location Castro Valley, CA Project Number 020301038

Date Drilled 9/24/91 Total Depth of Hole 21.0 ft. Diameter 2 in.

Top of Casing ____ Water Level Initial 11 ft. Static ____

Screen: Dia .75 in. Length 15 ft. Slot Size .020 in.

Casing: Dia .75 in. Length 6.0 ft. Type SCH 80 PVC

Filter Pack Material No 2/12 Labis Lustre Rig/Core Type ____

Drilling Company Power Core Dril./Mon. Method Percussion Hammer / PID

Driller Michael Nosewicz Log By Glen Mitchell

Geologist/Engineer David Kleesattel License No 5136

See Site Map For Boring Location

NOTES:

Depth (feet)	Well Completion	PID (ppm)	Sample ID	Graphic Log	Soil Class	Description (Color, Texture, Structure)
0		PID				ASPHALT
						gravel FILL
2		8				Gray brown silty CLAY (firm, moist)
						Dark gray silty CLAY (firm, moist)
4			A			
6		4.4			CL	Mottled gray and tan silty CLAY (firm, moist)
8						Grades with minor gravel
		1.0 .4				
10			B			
						Encountered water 9/24/91 (12:00 hours)
12		89.0				*Gray brown clayey SILT with fine sand (firm, moist)*
14					ML	
						Tan silty SAND (hard, saturated)
16						
						Gray clayey fine SAND (hard, saturated)
18					SC	*Gray and rusty sandy CLAY (saturated.)*
20						*Gray silty CLAY (saturated)*
					CL	
22						*End of boring at 21.0 feet. Constructed groundwater monitoring well.*
24						
26						

11/11/1991 gtibasic oct

Drilling Log

GROUNDWATER TECHNOLOGY

Monitoring Well MW-3

Project CHV/2920 Castro Valley Blvd. Owner Chevron U.S.A. Inc.

Location Castro Valley, CA Project Number 020301038

Date Drilled 9/30/91 Total Depth of Hole 20.0 ft. Diameter 2 in.

Top of Casing ____ Water Level Initial ____ Static ____

Screen: Dia .75 in. Length 15 ft. Slot Size .020 in.

Casing: Dia .75 in. Length 5.0 ft. Type SCH 80 PVC

Filter Pack Material No 2/12 Labis Lustre Rig/Core Type ____

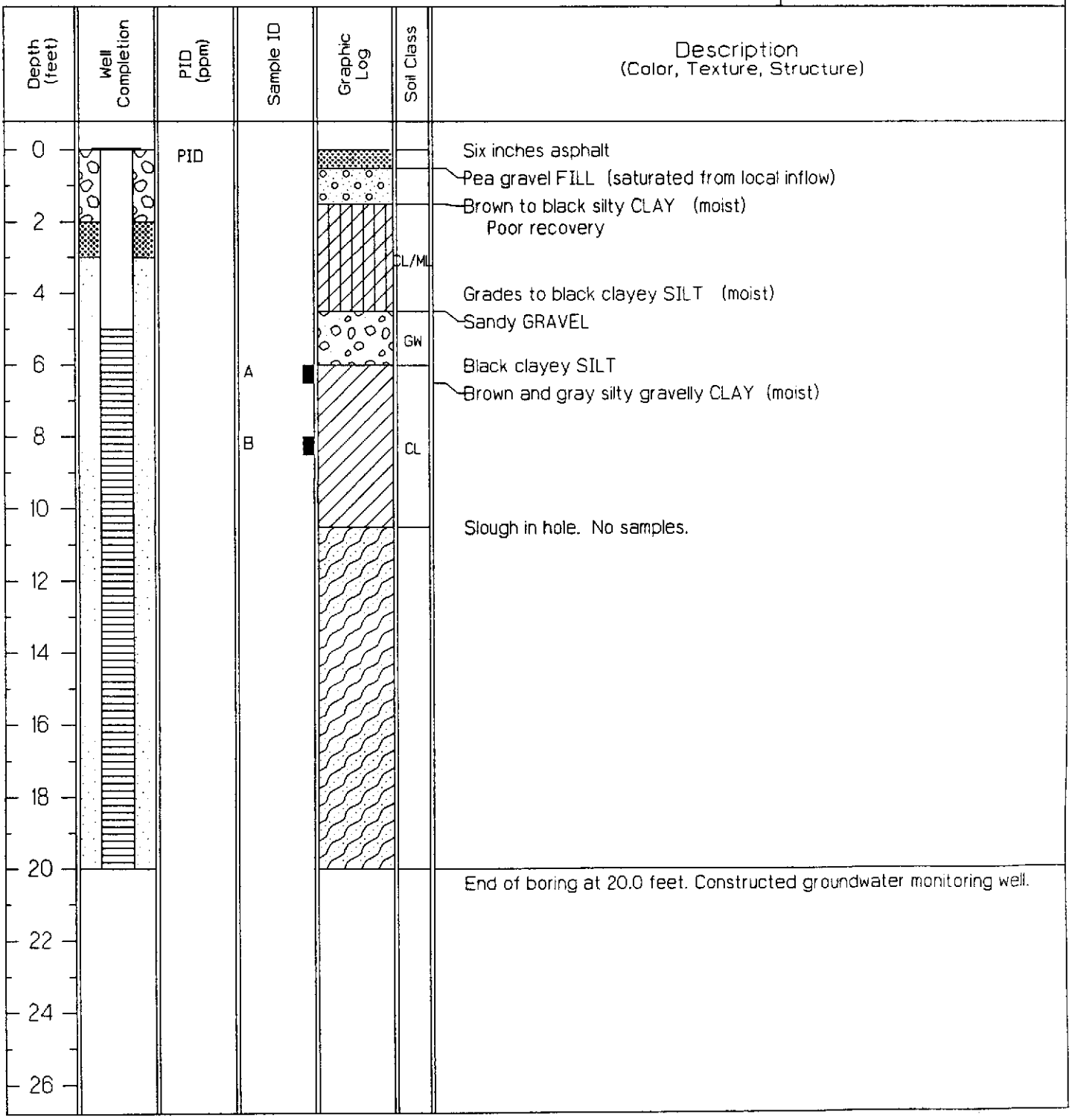
Drilling Company Power Core Dril./Mon. Method Percussion Hammer / PID

Driller Michael Nosewicz Log By Greg Mischel

Geologist/Engineer David Kleesattel License No RG 5136

See Site Map For Boring Location

NOTES:



11/11/1991 gtbasic oct

APPENDIX C

LABORATORY REPORTS

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax 510) 229-1526

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

LABORATORY NO.: 83977
CLIENT: GROUNDWATER TECHNOLOGIES INC.
CLIENT JOB NO.: 020301038.030504

DATE RECEIVED: 09/24/91
DATE REPORTED: 10/01/91

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
83977- 1	MW1A	09/23/91	09/30/91
83977- 2	MW2A	09/23/91	10/01/91
83977- 3	MW2B	09/23/91	09/28/91

Laboratory Number:	83977 1	83977 2	83977 3
ANALYTE LIST	Amounts/Quantitation Limits (mg/Kg)		
OIL AND GREASE:	ND <50	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	0.005	ND<.005
ETHYL BENZENE:	ND<.005	0.006	ND<.005
XYLENES:	ND<.005	0.014	ND<.005

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • (510) 229-1512 / fax (510) 229-1526

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: 83977

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: 06/26/91

SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Soil: 0.005mg/Kg
Standard Reference: 07/08/91

ANALYTE	REFERENCE	SPIKE LEVEL	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Oil & Grease	09/10/91	20 ppm	78/74	5	56-106
Diesel	NA	NA	NA	NA	NA
Gasoline	06/26/91	200 ng	96/100	4	70-130
Benzene	07/08/91	200 ng	94/84	11	70-130
Toluene	07/08/91	200 ng	94/90	5	70-130
Ethyl Benzene	07/08/91	200 ng	100/96	5	70-130
Total Xylenes	07/08/91	200 ng	96/92	4	70-130

Richard Srna, Ph.D.
Laboratory Director

Fax copy of Lab Report and COC to Chevron Contact: ☐ Yes ☐ No

Chain-of-Custody-Record

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

Chevron Facility Number: 9-6991
Facility Address: 2920 Castro Valley Blvd
Consultant Project Number: 020301038.030504
Consultant Name: GTI
Address: 4057 Port Chicago Highway, Concord, CA
Project Contact (Name): Greg Mitchell
(Phone) 671-2387 (Fax Number) 685-9148

Chevron Contact (Name): Ms. Nancy Vukelich
(Phone) (415) 842-9581
Laboratory Name: Superior Analytical
Laboratory Release Number:
Samples Collected by (Name):
Collection Date: 9/23/91
Signature:

Sample Number	Lab 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)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)	Remarks
MW-1A	1	1	S	G	9:32		Y	X		X						
MW-2A	2	1	S	G	11:50		Y	X								
MW-2B	3	1	S	G	12:05		Y	X								

Please Initial:
Samples Stored in ice: BAO
Appropriate containers: BAO
Samples preserved: BAO
VOA's without headspace: N/A
Comments:

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Greg A. Mitchell	GTI	9/24/91 3:30			
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
					9/24/91 1530

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

COC-3.DWG/03 91/HCH

Superior Precision Analytical, Inc.
P.O. Box 1545 • Martinez, California 94553 • 510.229-1590 / fax 510.229-0915

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

LABORATORY NO.: 84043
CLIENT: GROUNDWATER TECHNOLOGIES INC.
CLIENT JOB NO.: 020301038 030504

DATE RECEIVED: 10/01/91
DATE REPORTED: 10/08/91

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
84043- 1	MW-3A	09/30/91	10/08/91
84043- 2	MW-8C	09/30/91	10/08/91

Laboratory Number:	84043 1	84043 2
ANALYTE LIST	Amounts/Quantitation Limits (mg/Kg)	
OIL AND GREASE:	NA	NA
TPH/GASOLINE RANGE:	ND<1	ND<1
TPH/DIESEL RANGE:	NA	NA
BENZENE:	ND<0.005	ND<0.005
TOLUENE:	ND<0.005	ND<0.005
ETHYL BENZENE:	ND<0.005	ND<0.005
XYLENES:	ND<0.005	ND<0.005

Superior Precision Analytical, Inc.
P.O. Box 1545 • Martinez, California 94553 • 510. 229-1590 / fax 510 229-1013

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: 84043

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 5520F:
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: 06/26/91

SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Soil: 0.005mg/Kg
Standard Reference: 07/08/91

ANALYTE	REFERENCE	SPIKE LEVEL	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Oil & Grease	NA	NA	NA	NA	NA
Diesel	NA	NA	NA	NA	NA
Gasoline	06/26/91	200 ng	84/84	0	70-130
Benzene	07/08/91	200 ng	101/99	2	70-130
Toluene	07/08/91	200 ng	108/108	0	70-130
Ethyl Benzene	07/08/91	200 ng	110/111	1	70-130
Total Xylene	07/08/91	200 ng	108/109	1	70-130

Richard Srna, Ph.D.
RHH (for)
Laboratory Director

Fax copy of Lab Report and COC to Chevron Contact: ☐ Yes ☐ No (6991) 94095

Chain-of-Custody-Record

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

Chevron Facility Number 9-6991
Facility Address 2720 Cas[illegible]
Consultant Project Number 020301038 030504
Consultant Name Groundwater Technology
Address 4057 Port Chicago Hwy, Concord, CA
Project Contact (Name) Greg Mischel
(Phone) 671-2387 (Fax Number) 685-9148

Chevron Contact (Name) Ms. Nancy Vukelich
(Phone) 842-9581
Laboratory Name Superior Analytical
Laboratory Release Number 4837960
Samples Collected by (Name) Greg Mischel
Collection Date 9/30/91
Signature Gregory A. Mischel

Sample Number	Lab 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)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)					Remarks
MW-3A	1	1	S	G	9:41	Ice	Y	X												
MW-3B	2	1	S	G	9:50	Ice	Y													
MW-3C	3	1	S	G	10:10	Ice	Y	X												

Please Initial:
Samples Stored in ice BW
Appropriate containers BW
Samples preserved BW
VOA's without headspace N/A
Comments:

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Greg Mischel	GTI	10/1/91 8:40			
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
					10-1-91 8:40

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

COC-3.DWG/03 91/HCH

Superior Precision Analytical, Inc.
P.O. Box 1545 • Martinez, California 94553 • (510) 229-1590 / fax (510) 229-6916

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

LABORATORY NO.: 84100
CLIENT: GROUNDWATER TECHNOLOGIES INC.
CLIENT JOB NO.: 020301038 030504

DATE RECEIVED: 10/09/91
DATE REPORTED: 10/16/91

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
84100- 1	MW-1	10/08/91	10/16/91
84100- 2	MW-2	10/08/91	10/14/91
84100- 3	MW-3	10/08/91	10/14/91
84100- 4	RBMW-1	10/08/91	10/14/91
84100- 7	TRIP BLANK	10/08/91	10/15/91

Laboratory Number:	84100 1	84100 2	84100 3	84100 4
ANALYTE LIST	Amounts/Quantitation Limits (ug/L)			
OIL AND GREASE:	ND<5000	NA	NA	NA
TPH/GASOLINE RANGE:	230	110	81	ND <50
TPH/DIESEL RANGE:	NA	NA	NA	NA
BENZENE:	45	5.1	1.9	ND <0.5
TOLUENE:	ND <0.5	1.1	0.7	ND <0.5
ETHYL BENZENE:	0.9	0.8	0.8	ND <0.5
XYLENES:	9.1	26	2.4	ND <0.5

Laboratory Number:	84100 7
ANALYTE LIST	Amounts/Quantitation Limits (ug/l)
OIL AND GREASE:	NA
TPH/GASOLINE RANGE:	ND <50
TPH/DIESEL RANGE:	NA
BENZENE:	ND <0.5
TOLUENE:	ND <0.5
ETHYL BENZENE:	ND <0.5
XYLENES:	ND <0.5

Superior Precision Analytical, Inc.
825 Arnold Drive, Suite 114 • Martinez, California 94553 • 510 229-1512 / fax 510 229-1526

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: 84100

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: 10/04/91

SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Water: 0.5ug/L
Standard Reference: 10/11/91

ANALYTE	REFERENCE	SPIKE LEVEL	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Oil & Grease	09/10/91	20 ppm	69/68	1	56-106
Diesel	NA	NA	NA	NA	NA
Gasoline	10/04/91	200 ng	106/106	0	70-130
Benzene	10/11/91	200 ng	105/105	0	70-130
Toluene	10/11/91	200 ng	96/97	1	70-130
Ethyl Benzene	10/11/91	200 ng	92/93	1	70-130
Total Xylenes	10/11/91	200 ng	96/97	1	70-130

Richard Srna, Ph.D.
Laboratory Director

Fax copy of Lab Report and COC to Chevron Contact: ☐ Yes ☐ No 8/4/00

Chain of Custody Record

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

Chevron Facility Number: 9-6991
Facility Address: 2920 Castro Valley Blvd.
Consultant Project Number: 02030103B 036504
Consultant Name: Groundwater Technology
Address: 4057 Port Chicago Hwy, Concord, CA
Project Contact (Name): Greg Mischel
(Phone) 671-2387 (Fax Number) 685-9148

Chevron Contact (Name): Ms. Nancy Wkelich
(Phone) 842-9581
Laboratory Name: Superior Analytical
Laboratory Release Number: 9937960
Samples Collected by (Name): Randy Ruiz
Collection Date: 10-8-91
Signature: Randy Ruiz

Sample Number	Lab 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)	Purgeable Halocarbons (8010)	Purgeable Aromatics (8020)	Purgeable Organics (8240)	Extractable Organics (8270)	Metals Cd,Cr,Pb,Zn,Ni (ICAP or AA)		Hold				Remarks
MW-1	1	3V				HCl	Yes	✓													
MW-2	2	3V				HCL		✓													
MW-3	3	3V				None		✓													
MW-1	1	1L				None				✓											
RBMW-1	4	1V				HCL		✓													
RBMW-2	5	1V				HCL											X				
RBMW-3	6	1V				None															
TRIP Blank	7	2V				HCL	Yes	✓													

Please Initial:
Samples Stored in Ice: MC
Appropriate containers: MC
Samples preserved: MC
VOA's w/o headspace: MC
Comments:

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Randy Ruiz	GTI	10/9/91 9:15			
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time 915 10/9/91

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

COC-3.DWG/03 91/HCH

APPENDIX D

WELL SURVEY DATA

FREMONT ENGINEERS INCORPORATED

4551 EGGERS DRIVE ▪ POST OFFICE BOX 726 ▪ FREMONT, CALIFORNIA 94537

LAND SURVEYING, CIVIL & SUBDIVISION ENGINEERING

RALPH E. COTTER, JR., P.E.
PAUL WEISSHAAR, JR., P.E.
CHARLES A. LUDWIG, P.E.

(415) 792-1817
(FAX) 790-2838

October 9, 1991

Mr. Greg Mischel
Groundwater Technology, Inc.
4057 Port Chicago Highway
Concord, CA 94520

RE: MONITORING WELLS AT 2920 Castro Valley Blvd., Castro Valley, California P.O. #120424

Dear Mr. Mischel:

Transmitted to you is a copy of our field notes of 10/8/91 for the work we did at the Chevron Station, 2920 Castro Valley, Blvd., Castro Valley, California.

Please call us if you have any questions or need anything else.

Job 3956
0983-9wp

FB 147 pg 23

#3756

LOCATION & ELEVATIONS OF MONITORING WELLS @ CHEVRON STATION - 2930 CASTRO VALLEY BLVD. FOR GROUNDWATER TECHNOLOGY, INC.

BENCHMARK - A.C.Co. BRASS DISC SET IN EAST END OF HEADWALL @ BACK WALK, S'LY SIDE C.V. BLVD 62'± EAST OF ℄ PARKWAY EXTENDED, STAMPED "CVB-2G"
ELEVATION = 159.860 PER ALAMEDA COUNTY

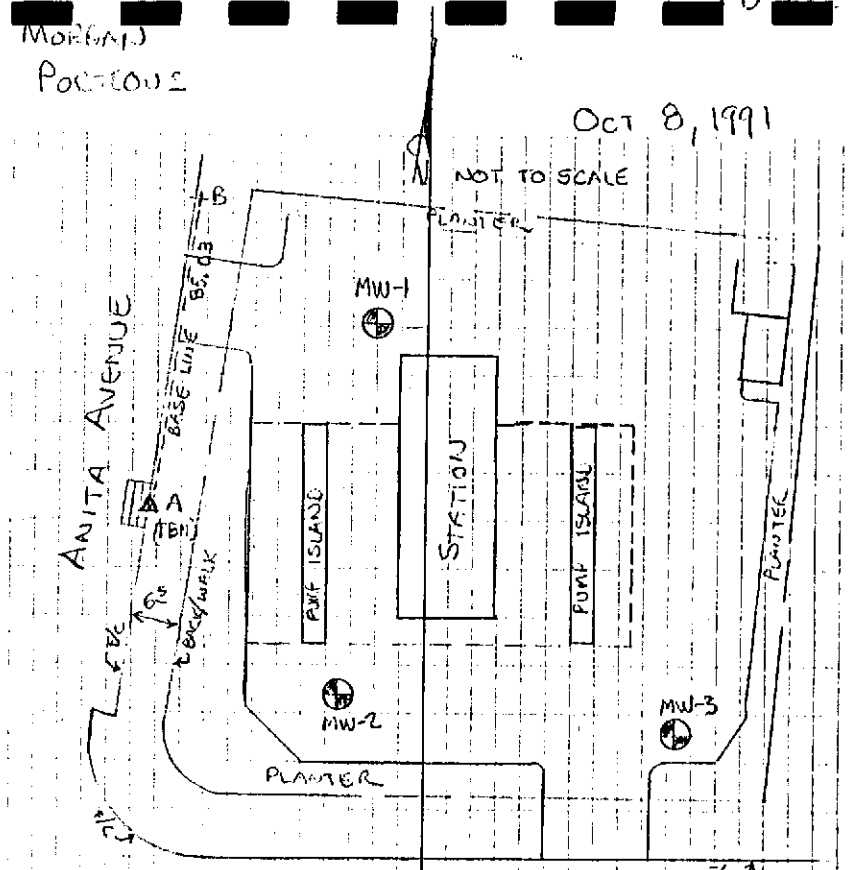
TBM - EXISTING BRASS DISC ON T/C @ ℄ SWI ON ANITA AVE, STAMPED "ANITA-CVB"
ELEVATION = 168.06

LEVEL LOOP

STA	+	HI	-	ELEV	DESC.
BM				159.86	"CVB-2G"
	5.50	165.36			
TP#1			4.86	160.50	T/C @ FH RET POLICE S'LY SIDE CVB
	6.92	167.42			
TP#2			3.11	164.31	T/C RET @ 2803 CVB S'LY SIDE
	7.93	172.24			
TBM			4.18	168.06	"ANITA-CVB" BRASS DISC @ ℄ SWI. ON @ ANITA
	4.25	172.31			
TP#2			8.00	164.31	T/C RET 2803
	3.13	167.44			
TP#1			6.94	160.50	T/C @ FH RET POLICE
	4.99	165.49			
BM			5.63	159.86 ✓	"CVB-2G"

MORGAN'S POSITIONS

OCT 8, 1991



TEA, BSB W/0°00'00"

PT #	HOR & RT	HOR DIST	℄ RIM LID ELEV.	TOP/¾" PVC @ HIGHEST POINT
MW-1	38-16-20	80.31	169.40	169.30
MW-2	114-27-55	41.55	169.31	169.15
MW-3	101-39-45	136.47	169.32	169.11

LEGEND:

- MONITORING WELL
- ▲A TBM LOCATION & BEGIN BASE LINE ON CURB
- +B CHISELED CROSS AT END BASE LINE ON CURB