Chevron U.S.A. Products Company
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August 5, 1992

Mr. Scott Seery
Alameda County Environmental Health
80 Swan Way, Room 200
Oakland, CA 94621

Re : Chevron Service Station No. 9-8139
16304 Foothill Rd., San Leandro, California

Mr. Seery :

Enclosed is the Supplemental Soil and Groundwater Investigation Report dated July 28, 1992.

This report discusses the installation of two additional groundwater monitoring wells at the above referenced site and the analytical results. These wells were labeled as MW-10 and MW-11. The analytical results show nondetectable levels of total petroleum hydrocarbon as gasoline (TPH-G), benzene, toluene, ethylbenzene, and xylenes (BTEX) in soil and groundwater.

From the analytical results, it is in Chevron and Burlington Environmental's opinion that the downgradient and crossgradient extent of the dissolved hydrocarbon in the groundwater have been determined.

If you have any questions or comments, call me at (510) 842-8752.

Sincerely,

Chevron U.S.A. Products Co.

Kenneth Kan
Engineer

LKAN/MacFile 9-8139R4

Enclosure

cc : Mr. Lester Feldman
RWQCB-S.F.Bay Region
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Ms. Bette Owen
Chevron U.S.A. Products Co.

reviewed
8/12/92
SDS

SUPPLEMENTAL SOIL AND GROUNDWATER INVESTIGATION REPORT

CHEVRON SERVICE STATION NO. 9-8139
16304 Foothill Boulevard
San Leandro, California

July 28, 1992

Prepared for:

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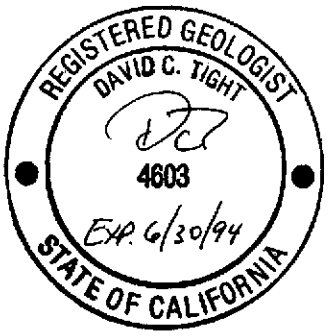

CHV149/366

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1.0 INTRODUCTION

This report presents the results of the supplemental soil and groundwater investigation conducted by Burlington Environmental (Burlington) at the Chevron U.S.A., Inc. (Chevron) Service Station No. 9-8139, located at 16304 Foothill Boulevard in San Leandro, California. This investigation was requested by Mr. Scott Seery of Alameda County Department of Environmental Health in a letter to Mr. Walt Posluszny of Chevron dated December 13, 1991. The request was to define the cross- and downgradient extents of petroleum hydrocarbons in the soil and groundwater in the subsurface adjacent to the site.

1.1 SCOPE OF WORK

The investigation consisted of the following tasks:

* Drilled and installed two monitoring wells offsite in the public right-of-way of Foothill Boulevard
* Collected and analyzed one soil sample from each well boring for petroleum hydrocarbons
* Developed the offsite groundwater monitoring wells
* Conducted a water level survey in the new wells
* Collected groundwater samples from the new wells, and submitted the samples for analysis for petroleum hydrocarbons
* Surveyed the new wells for location and elevation

1.2 BACKGROUND

1.2.1 Site Description

The site is occupied by an operating service station located on Foothill Boulevard in southern San Leandro, California (see Figure 1). The service station is located approximately 250 feet east of Highway 580, and 6,000 feet south of Lake Chabot. The site currently has three 10,000 gallon underground fiberglass fuel storage tanks, containing unleaded, premium unleaded, and supreme unleaded gasoline. Properties surrounding the site are occupied primarily by residential housing and small commercial businesses (see Figure 2).

1.2.2 Reported Leaks

Chevron has reports of two petroleum leaks detected from the underground storage tanks and pipelines located onsite. The leaks were detected in April 1982 and December 1986.

In April 1982 all tanks and lines were tested to confirm the existence of a reported fuel leak. A corroded section in the regular gasoline vapor line was discovered and a temporary spot repair was performed on the line. Shortly thereafter, the 17-year-old tank and line system was replaced. During the tank and line installation two vapor monitoring wells were installed in the tank excavation pit.

In December 1986 the station reported petroleum inventory losses. A full system tank test was conducted to confirm the existence of a leak. The Chevron spill/leak reporting form reports the discovery of a leak in the regular gasoline tank system. The leak was repaired and retested tight on December 30, 1986, by Gettler-Ryan, Inc.

1.2.3 Site Monitoring

On June 29, 1989, EA conducted a soil-vapor survey at the Chevron facility. Very low concentrations of light hydrocarbons were detected near the tank field and the west end of the south pump island. Benzene (1 part per million [ppm]) was detected near the west corner of the tank field. EA noted that high vacuums and long release times were required to obtain vapor samples from most sampling locations.

In December 1989, Burlington (formerly Chempro) conducted an investigation to determine the extent of soil and groundwater contamination. During the investigation four soil borings were drilled and completed as 2-inch-diameter monitoring wells. In addition, a survey of active, inactive, and destroyed wells, located within a 1/2-mile radius of the site was conducted.

In May through August 1990, Burlington conducted a remedial investigation on- and offsite. The work consisted of drilling and installing four wells onsite and one well offsite. Aquifer parameters were calculated by conducting hydraulic testing in extraction well E-1.

During Burlington's remedial investigation low levels of petroleum hydrocarbons were detected in soil samples collected from MW-5, MW-6, MW-7, and E-1.

In June 1991 offsite soil boring MW-9 was drilled and completed as a two-inch groundwater monitoring well. Groundwater monitoring wells MW-4 and MW-5 were decommissioned, and converted to groundwater extraction wells E-3 and E-2, respectively.

Low levels of petroleum hydrocarbons were detected in the soil sample collected and analyzed from the 15-foot interval from boring MW-9. Concentrations of 43 ppm TPH and 0.08 ppm benzene were found.

Detectable concentrations of TPH and BTEX have been found in the groundwater from wells MW-9, E-2, and E-3. The highest levels were found in well MW-9 at 16,000 ppb TPH and 94 ppb benzene.

1.3 LIMITATIONS

Services provided hereunder were performed in accordance with current, generally-accepted environmental consulting principles and practices. The conclusions and recommendations presented reflect opinions based on these practices. No other warranty, expressed or implied, is made.

2.0 INVESTIGATIVE METHODS

The additional investigation field work was conducted in April and May 1992. The field work was described in the "Workplan For Additional Soil And Groundwater Investigation", dated January 20, 1992.

The field work consisted of drilling and sampling two soil borings, installing groundwater monitoring wells in the borings, and collecting and analyzing soil and groundwater samples. Following the field work, this report was prepared presenting the findings of the investigation.

The following sections describe the methods used during the investigation. The results and interpretations are discussed in Section 3.

2.1 DECONTAMINATION AND QUALITY ASSURANCE PROCEDURES

All equipment that was placed in the borings or wells, or that came into contact with groundwater was either steam cleaned or washed with detergent and rinsed with tap water and distilled water prior to its use. The procedures used for decontamination are presented in Appendix A.

2.2 SOIL BORINGS

On April 21, 1992, after encroachment permits were acquired, two borings were drilled in the public right-of-way adjacent to Foothill Boulevard. The borings were drilled to determine the subsurface lithology, evaluate the presence of soil contamination, and provide for monitoring well installation. The borings were drilled by Exceltech/RESNA of Fremont, California, with a Mobile B-53 drill rig. The borings are labeled MW-10 and MW-11. The boring locations are shown on Figure 2.

Before the borings were drilled, drilling permits were obtained from the Alameda County Flood Control and Water Conservation District (ACFC & WCD) (see Appendix B). In addition, the boring locations were cleared with Underground Service Alert (USA).

In the offsite boring, MW-10, the first four feet of soil were excavated with a hand auger to ensure that there were no subsurface obstructions. The borings were then advanced with hollow-stem auger drilling equipment, consisting of 8-inch outside-diameter (OD) hollow-stem augers (HSA). Soil samples were collected at 5-foot intervals with a 2-inch-diameter modified-California split-spoon sampler. The lithology was logged in the field by a geologist using the Unified Soil Classification System. The logging was reviewed by a California State-registered geologist. Soil sampling procedures are presented in Section 2.3 and Appendix A. The boring logs are presented in Appendix B.

Two-inch-diameter monitoring wells were constructed in borings MW-10 and MW-11 (see Section 2.4). All soil cuttings generated during the drilling operation were stored onsite, on and covered with visqueen, pending the results of the chemical analysis. All stockpiled soil was disposed of by a Chevron contractor in accordance with Chevron guidelines.

2.3 SOIL SAMPLING

Soil samples were chosen for chemical analysis, during the drilling of MW-10 and MW-11, using a portable photoionization detector (PID) (PhotoVac MP-100) to determine the presence or absence of total volatile organic compounds in the samples. Sample handling and quality assurance/quality control procedures are detailed in Appendix A.

Chemical analysis of the soil samples was performed by Superior Precision Analytical, Inc. (Superior) of San Francisco, California. The samples were accompanied by chain-of-custody documentation which are presented in Appendix C.

Selected soil samples obtained from borings MW-10 and MW-11 were analyzed for TPH (as gasoline) using modified Environmental Protection Agency (EPA) method 8015, and BTEX by EPA method 8020. Rinsate samples were taken daily from the split-spoon sampler and analyzed for the same parameters.

2.4 MONITORING WELL INSTALLATION

Groundwater monitoring wells were installed in borings MW-10 and MW-11. The monitoring well locations are shown on Figure 2.

Monitoring wells MW-10 and MW-11 were constructed with 2-inch-diameter, schedule 40 polyvinyl chloride (PVC) well casing. The wells were screened with 0.010-inch machine-slotted well screen. The casing and screen assemblies were terminated with a flush-threaded bottom cap.

Approximately 15 feet of screen were installed in wells MW-10 and MW-11. The well construction details are presented on Table 1 and in Appendix B. Well installation procedures are presented in Appendix A.

2.5 GROUNDWATER SAMPLING

Prior to the sampling of the wells, monitoring wells MW-10 and MW-11 were developed on May 14, 1992, to remove fine-grained sediments from the well casings and sand pack, and align the grains of the aquifer material around the screen interval for more efficient groundwater flow into the well. This development helps create and maintain a properly functioning well and obtain representative water-quality samples. Well development procedures are presented in Appendix A.

Development and steam-cleaning water was temporarily contained in 55-gallon drums. The fluid was subsequently pumped through the groundwater treatment system.

Groundwater samples were collected for analysis from the monitoring and extraction wells on May 15, 1992. The results of the groundwater analyses and the analytical methods used are presented on Table 2.

The groundwater samples were collected under strict chain-of-custody procedures, which followed the guidelines established by Chevron and the EPA. Chain-of-custody forms are included in Appendix C. A detailed description of the sampling technique is presented in Appendix D. Groundwater purging records are presented in Appendix E.

Groundwater samples collected from wells MW-10 and MW-11 were analyzed by Superior for TPH by EPA method 8015, and BTEX by EPA method 8020/602. Duplicate groundwater samples were collected from MW-11. Bailer rinsate samples were collected before the duplicate groundwater samples were collected to check the effectiveness of the decontamination procedures. The rinsate samples were analyzed for the same parameters as the groundwater samples collected from the respective wells. Table 2 provides a summary of the sampling parameters and analytical techniques used.

2.6 WATER-LEVEL SURVEY

On May 14, 1992, the depth-to-water (DTW) in each well was obtained to determine the groundwater flow direction and gradient in the vicinity of the wells surveyed. Depth-to-water (DTW) measurements were taken with an electric water level sounder using the top of casing as the reference elevation (see Appendix D). The DTW values were converted to groundwater elevations relative to MSL by subtracting the DTW from the surveyed well-head elevation (see Section 3.2.1). The wells were inspected for phase-separated hydrocarbons (PSH) before taking the water-level measurements (see Appendix D).

2.7 WELL-HEAD SURVEY

On May 14, 1992, Nowack & Associates, Inc., professional land surveyors of Santa Clara, California, surveyed the locations and elevations of the newly installed monitoring wells at the site. The locations were surveyed to the nearest 1-foot northing and easting, and the elevations were surveyed to the closest 0.01-foot MSL. The well-head survey data are presented in Table 3 and Appendix F.

3.0 RESULTS

3.1 GEOLOGY

The regional geology is presented in Burlington's *Soil and Groundwater Investigation Report*, dated February 21, 1990. The borings completed during this investigation further characterizes the local geology in the subsurface adjacent to the site.

The site is underlain by distal alluvial cone deposits of sandy clays, clayey sands, and gravelly sands (Maslonkowski, 1984). The subsurface geology, extending down to a depth of approximately 40 feet is dominated by a series of grey to yellowish brown, low- to high-plasticity clays. Dispersed within the clays are sand and coarse gravel lenses. The lithology encountered during drilling is presented on the boring logs in Appendix B.

3.2 HYDROGEOLOGY

During drilling, saturated clayey sands and clayey gravel lenses were encountered between moist sandy clays. During the previous site investigations, groundwater was encountered under confining to subconfining pressure while drilling MW-1 through MW-8.

3.2.1 Groundwater Elevation, Gradient and Flow Direction

The results of the water-level survey conducted on May 14, 1992, are presented in Table 4. As shown in the table, the depth to groundwater found in wells MW-10 and MW-11 at the time of the May 14 survey ranged from 108.43 to 108.53 feet above MSL. No PSH were detected in either of the groundwater monitoring wells.

Groundwater elevation data were collected during this investigation from only the new wells. Therefore, no recent groundwater gradient data are presented in this report. Based on the groundwater elevation data from earlier reports, however, groundwater flow direction beneath and adjacent to the site is to the south-southwest with an approximate gradient of 0.034 ft/ft (Burlington, 1990).

3.3 GEOCHEMICAL RESULTS

3.3.1 Soil Geochemistry

The soil samples collected and analyzed from borings MW-10 and MW-11 were below method detection limits for petroleum hydrocarbons (see Table 5).

One quality assurance rinsate sample was collected during the drilling procedure, and analyzed for TPH and BTEX. Analysis of the rinsate sample collected before drilling MW-11 was below method detection limits for petroleum hydrocarbons.

3.3.2 Groundwater Geochemistry

Groundwater samples were collected from monitoring wells MW-10 and MW-11 on May 15, 1992. The groundwater samples collected and analyzed from both wells were below method detection limits for petroleum hydrocarbons. A summary of the analytical techniques and results are presented on Table 2. The Certified Analytical Results are presented in Appendix C.

No detectable concentrations of the analyzed parameters were found in the rinsate samples collected during the sampling event. Decontamination procedures are therefore considered to be adequate.

4.0 SUMMARY

This site investigation conducted at the Chevron Service Station No. 9-8139, in San Leandro, California, was conducted to further delineate the extent of dissolved petroleum hydrocarbons found in the subsurface adjacent to the site. Offsite soil borings MW-10 and MW-11 were drilled and completed as a two-inch groundwater monitoring wells. Wells MW-10 and MW-11 were developed, and sampled.

Petroleum hydrocarbons were not detected in the soil samples from the borings. In addition, no detectable levels of petroleum hydrocarbons were found in the groundwater samples collected and analyzed from wells MW-10 and MW-11.

The analytical results from the soil and groundwater samples indicate that the crossgradient and downgradient extents of the dissolved hydrocarbons found in the groundwater beneath Chevron Service Station Number 9-8139 have been determined.

5.0 REFERENCES

Burlington. 1990. *Remedial Investigation, Chevron Service Station No. 9-8139.* San Leandro, California. November 7, 1990.

Burlington. 1991. *Additional Soil and Groundwater Investigation Report, Chevron Service Station No. 9-8139.* San Leandro, California. September 23, 1991.

Chempro. 1990. *Soil and Groundwater Investigation, Chevron Service Station No. 9-8139.* San Leandro, California. February 21, 1990.

EA Engineering, Science, and Technology, Inc. 1989. *Report of Investigation, Soil Vapor Contaminant Assessment, Chevron Service Station 9-8139.* San Leandro, California. July 14, 1989.

Maslonkowski, Dennis P. 1984. *Groundwater in the San Lorenzo Alluvial Cones of the East Bay Plain of Alameda County.* Alameda County Flood Control and Water Conservation District, Hayward, California. June 1989.

Water Quality Control Board, North Coast, San Francisco Bay, and Central Valley Regions. 1988. *Regional Board Staff Recommendations For Initial Evaluation And Investigation Of Underground Tanks.* Revised August 10, 1990.

Table 1
WELL CONSTRUCTION
Chevron Service Station No. 9-8139
San Leandro, California

Well	Well-head Elevation (ft-MSL)	Boring Depth (ft-BGL)	Casing Depth (ft-BGL)	Surface-Seal Interval (ft-BGL)	Bottom-Seal Interval (ft-BGL)	Screen Interval (ft-BGL)	Casing Diameter I.D. (inch)	Screen Slot Size (inch)
MW-10	125.03	30.0	30.0	0-12	NA	14.5-29.5	2	0.010
MW-11	122.92	30.0	30.0	0-11	NA	14.5-29.5	2	0.010

NOTES:
ft-MSL = Feet above mean sea level
ft-BGL = Feet below ground level
NA = Not applicable
I.D. = Inside diameter

Table 2
GROUNDWATER ANALYSES AND ANALYTICAL TECHNIQUES
Chevron Service Station No. 9-8139
San Leandro, California

WELL DESIGNATION	SAMPLE DATE	SAMPLE NO.	TPH Gasoline	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES
Detection Method			M8015	8020	8020	8020	8020
Detection Limit (ppb)			50	0.5	0.5	0.5	0.5
MW-10	5/15/92	WS-72-SL	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
MW-11	5/15/92	WS-70-SL	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5
TRIP BLANK	5/15/92	TB-LB	ND<50	ND<0.5	ND<0.5	ND<0.5	ND<0.5

NOTES:
Groundwater chemistry values presented in parts per billion (ppb)
ND = Not detected above method detection limit

Table 3

WELL-HEAD SURVEY DATA

Chevron Service Station No. 9-8139

San Leandro, California

Well Designation	Ground-Level Elevation (ft-MSL)	TOC Elevation (ft-MSL)	Northing (feet)	Easting (feet)
MW-1	127.28	127.09	5006	4969
MW-2	126.37	125.98	4989	5031
MW-3	127.04	126.77	4939	5103
MW-4	125.43	125.22	4898	5075
MW-5	126.12	125.85	4897	5122
MW-6	124.83	124.18	4893	5027
MW-7	127.47	126.86	4979	5081
MW-8	124.25	123.61	4833	5121
MW-9	124.51	124.20	4836	5164
MW-10	NM	125.03	4866	5196
MW-11	NM	122.92	4778	5238
E-1	127.29	124.95	4920	5103
E-2	126.15	125.79	4898	5121
E-3	125.53	125.22	4898	5075

NOTES:
ft-MSL: Feet above mean sea level
TOC: Top of casing
NM: Not Measured
Wells MW-1 through MW-8 & E-1 surveyed by Ruth & Going, Inc.
Wells MW-1 through MW-4 surveyed on 12/11/89
Wells MW-5 through MW-8, MW-3, and E-1 surveyed on 9/6/90
Wells MW-9, E-2, and E-3 surveyed by Nowack & Assoc. on 6/26/91
MW-3 wellhead modified on 9/6/90
Wells MW-10 and MW-11 surveyed by Nowack & Assoc. on 5/14/92

Table 4
GROUNDWATER ELEVATION DATA
Chevron Service Station No. 9-8139
San Leandro, California

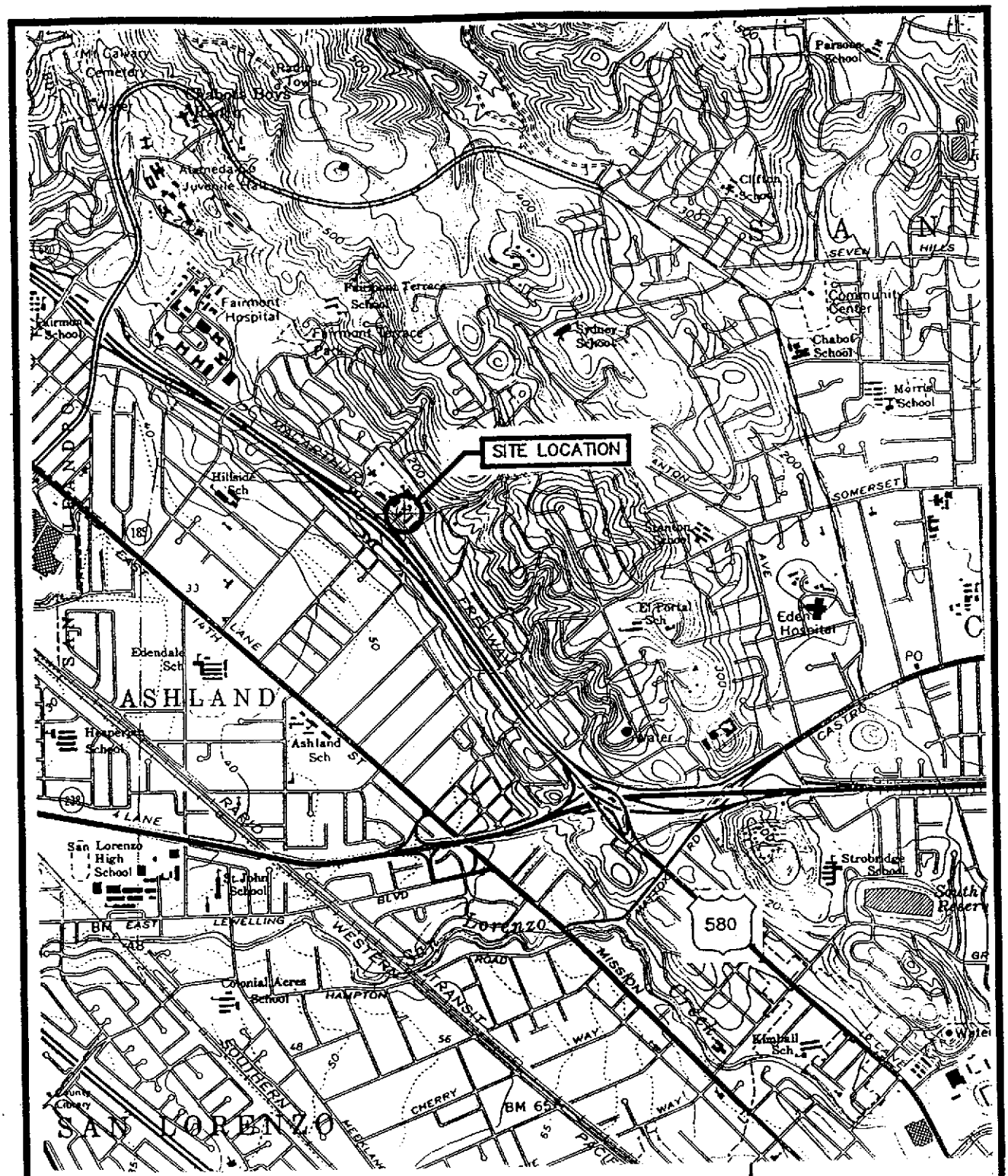
Well Designation	Date Measured	TOC Elevation (ft-MSL)	Depth to Water (ft-BTOC)	PSH (ft)	Water Elevation (ft-MSL)
MW-10	5/14/92	125.03	16.50	ND	108.53
MW-11	5/14/92	122.92	14.49	ND	108.43

NOTES:
TOC: Top of casing
ft-MSL: Feet above mean sea level
ft-BTOC: Feet below top of casing
PSH: Phase-separated hydrocarbons
ND: Not detected

Table 5
SOIL ANALYSES AND ANALYTICAL TECHNIQUES
Chevron Service Station No. 9-8139
San Leandro, California

SOIL BORING	SAMPLE DEPTH	DATE SAMPLED	SAMPLE NO.	TPH Gasoline	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENE	TOTAL LEAD
Detection Method				M8015	8020	8020	8020	8020	6010
Detection Limit (ppm)				1	0.005	0.005	0.005	0.005	5
MW-10	15-16.5	4/21/92	SS-60-SL	ND<1	ND<0.005	ND<0.005	ND<0.005	ND<0.005	6
MW-11	15-16.5	4/21/92	SS-54-SL	ND<1	ND<0.005	ND<0.005	ND<0.005	ND<0.005	NA

NOTES:
Soil chemistry values presented in parts per million (ppm)
NA = Not analyzed
ND = Not detected above method detection limit



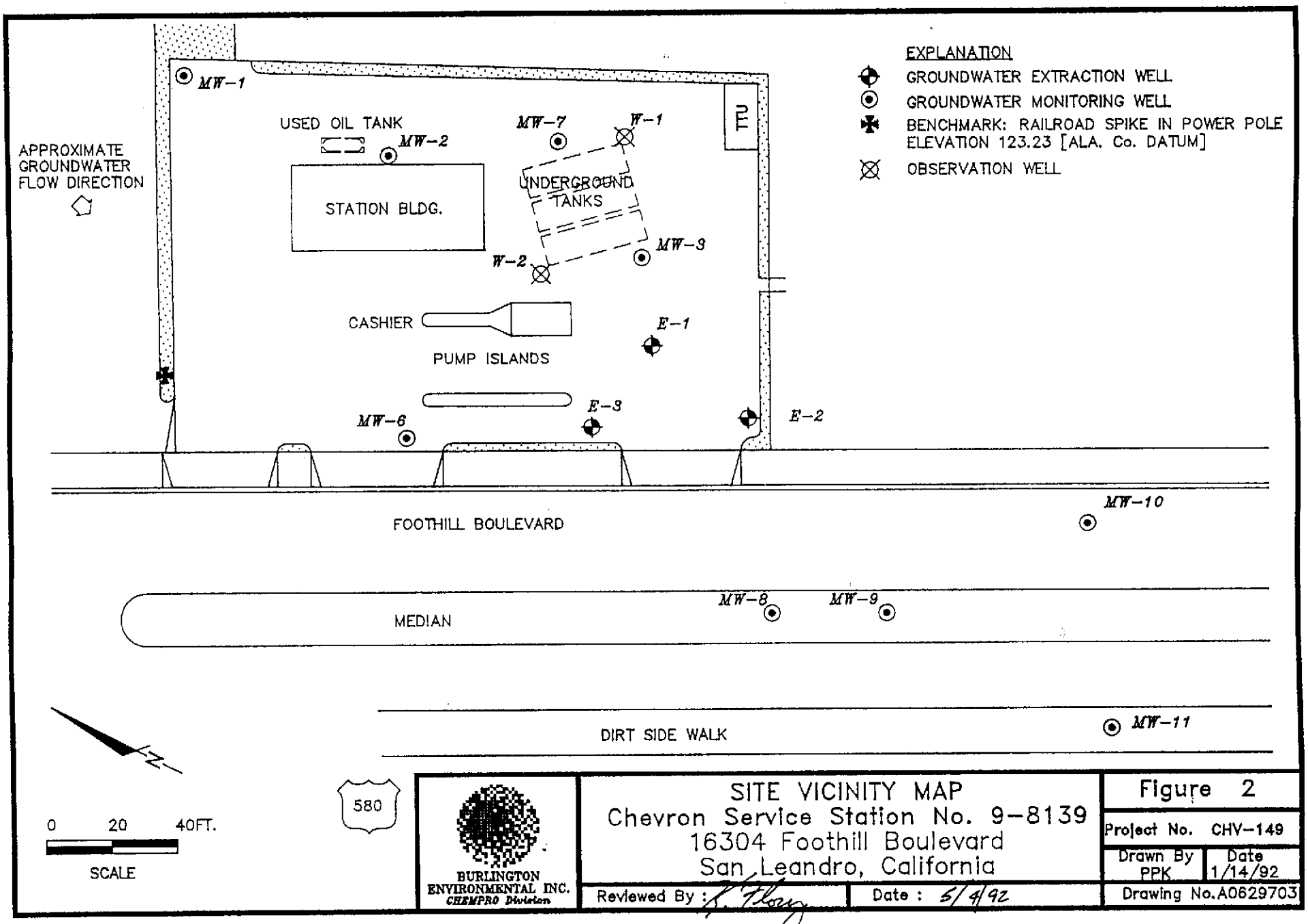
Hayward, California [NE/4 Hayward 15' Quadrangle]
N3737.5–W12200/7.5

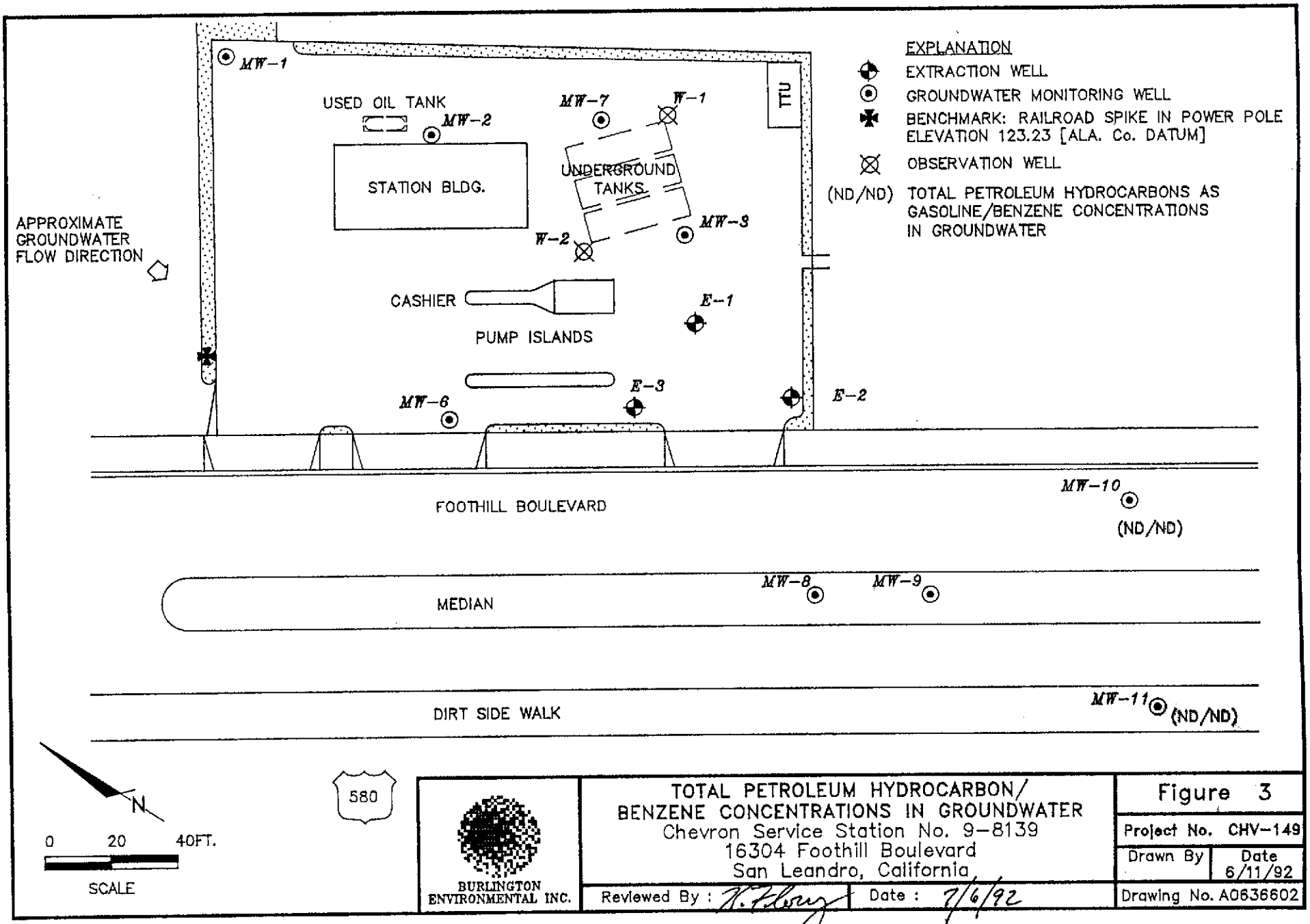
BURLINGTON ENVIRONMENTAL INC.
CHEMPRO Division

SITE LOCATION MAP
Chevron Service Station No. 9–8139
16304 Foothill Boulevard
San Leandro, California

Figure 1

Project No.	CHV149
Drawn By PPK	Date 6/28/91
Reviewed By :	Date : 7/1/92
Drawing No.	A0629701


EXPLANATION
GROUNDWATER EXTRACTION WELL
GROUNDWATER MONITORING WELL
BENCHMARK: RAILROAD SPIKE IN POWER POLE ELEVATION 123.23 [ALA. Co. DATUM]
OBSERVATION WELL
APPROXIMATE GROUNDWATER FLOW DIRECTION
MW-1
USED OIL TANK
MW-2
MW-7
W-1
STATION BLDG.
UNDERGROUND TANKS
MW-3
W-2
CASHIER
E-1
PUMP ISLANDS
MW-6
E-3
E-2
FOOTHILL BOULEVARD
MW-10
MEDIAN
MW-8
MW-9
DIRT SIDE WALK
MW-11
N
0 20 40FT.
SCALE
580
BURLINGTON ENVIRONMENTAL INC.
CHEMPRO Division
SITE VICINITY MAP
Chevron Service Station No. 9-8139
16304 Foothill Boulevard
San Leandro, California
Figure 2
Project No. CHV-149
Drawn By PPK
Date 1/14/92
Reviewed By :
Date : 5/4/92
Drawing No. A0629703



BURLINGTON ENVIRONMENTAL INC.

TOTAL PETROLEUM HYDROCARBON/
BENZENE CONCENTRATIONS IN GROUNDWATER
Chevron Service Station No. 9-8139
16304 Foothill Boulevard
San Leandro, California

Reviewed By : R. Flory Date : 7/6/92

Figure 3

Project No. CHV-149

Drawn By | Date 6/11/92

Drawing No. A0636602

Appendix A

EXPLORATORY BORING,
SOIL SAMPLING,
DECONTAMINATION AND QUALITY ASSURANCE SAMPLING,
MONITORING WELL INSTALLATION,
AND
WELL DEVELOPMENT PROCEDURES

Appendix A

Exploratory Boring,
Soil Sampling,
Decontamination and Quality Assurance Sampling,
Monitoring Well Installation,
and
Well Development Procedures

EXPLORATORY BORING

Before the exploratory borings were drilled a number of actions were taken: drilling and encroachment permits were obtained from the appropriate agencies prior to drilling. In addition, Underground Service Alert (USA) was contacted to schedule visits to the site by public and private utility companies. Each company located its utilities with the aid of maps, and the locating service verified and marked these locations. All utility clearances were coordinated with the client or client representative before drilling began.

Field personnel began drilling MW-10 by excavating the first four feet of soil with a hand auger to ensure that there were no subsurface obstructions. The exploratory borings to be completed as 2-inch-diameter monitoring wells were drilled with 8-inch outer-diameter (OD) hollow-stem augers (HSA). The augers were steam cleaned before each borings were drilled.

SOIL SAMPLING

Soil samples were collected while drilling to evaluate the geochemistry and stratigraphy of the soil beneath the boring location. The soil was sampled by driving an 18-inch-long modified-California split-spoon sampler fitted with 2-inch-diameter brass liners beyond the tip of the auger into undisturbed soil. The split-spoon sampler was driven into the soil with a 140-pound hammer. As the sampler was driven into the soil, blow counts were recorded for each 6-inches of penetration. The blows were recorded on the boring logs. Samples were collected every 5 feet or less, depending on the lithology encountered. Soil samples were classified and logged according to the Unified Soil Classification

System. The work was supervised by a California State registered geologist to ensure that it met regulatory standards.

Soil samples were selected for chemical analysis using a photoionization detector (PID). The PID determines the relative concentration of total volatile organic compounds. The soil samples were selected for analysis where 1) the PID reading first detected a reading above the background level, 2) at the point above this interval where the PID reading was negligible, 3) at the first point below the contaminated interval where the PID reading was negligible, and 4) at the water table. If no contaminants were detected with the PID, the sample collected 5 feet above the water table was submitted for analysis

Each soil sample was sealed inside the brass liners with Teflon^{TM} tape (Teflon) and polypropylene end caps, and wrapped with duct tape. The soil samples were labeled, and stored in an iced cooler for shipment to a Chevron and California Department of Health Services (DHS)-approved laboratory. At the time of sampling, each sample was logged on a Chain-of-Custody record which accompanied the sample to the laboratory. Soil samples selected for analysis had the request for analysis noted on the Chain-of-Custody. The remaining soil samples were sent to the laboratory on a hold for analysis basis.

Soil sampling equipment was steam cleaned between each boring and washed in an Tri-Sodium Phosphate solution and rinsed in distilled water between each sampling point. The 2-inch-diameter brass liners which were placed in the split-spoon sampler for soil sample collection had previously been steam-cleaned.

Drill cuttings were temporarily stockpiled on visqueen and stored on site. Drill cuttings were disposed of by a Chevron contractor using the appropriate method based on the analyses of the soil samples collected during drilling.

DECONTAMINATION PROCEDURES

Proper decontamination and cleansing of all equipment was performed to prevent cross-contamination between wells and sampling locations. The two methods of decontamination used at the site were steam cleaning and detergent washing followed by tap water and distilled water rinses. During field work, all equipment

that was placed in the borings or wells, or that came in contact with groundwater was decontaminated as follows:

Equipment	Decontamination procedures
Drill Rig	Steam cleaned prior to arriving on-site
Augers	Steam cleaned prior to drilling each boring
Drill Tools	Steam cleaned prior to drilling each boring
Split-Spoon Sampler	Steam cleaned between each boring, then Alconox™ (Alconox) washed, and tap water and distilled water rinsed between each sampling interval
PVC Casing	Steam cleaned before installing in well
Well Development Equipment	Alconox washed, and steam cleaned
Water Level Sensor	Alconox washed, tap water and distilled water rinsed between each use
Bailers	Steam cleaned between each use
Teflon™ Sampling Bailer	Alconox washed, then steam cleaned and rinsed with distilled water prior to sampling each well

The water used for steam cleaning was obtained from the site or was contained in the water tank of the drill rig or driller's support truck. Deionized water was used for rinses. The water generated during decontamination procedures was stored in 55-gallon drums onsite and was pumped through the groundwater treatment system located onsite.

Quality Assurance Sampling

One rinsate sample was collected at the beginning of each day or after 20 samples had been collected to determine if the sampling equipment was adequately decontaminated. After decontamination, rinse samples were collected from the equipment used for sampling (split-spoon sampler or Teflon bailer). The rinse samples were taken by: (1) trickling or rinsing deionized water through the split-spoon sampler and across the brass liners which the soils contacted, or through the inside of the Teflon bailer, and (2) filling the appropriate sample vial for analysis. The rinse samples were labeled, placed in coolers, noted on the

sample log and chain-of-custody forms, and handled according to EPA procedures. The samples were sent to the analytical laboratory and analyzed for the same parameters as the soil or groundwater samples collected after the rinse samples were taken.

WELL INSTALLATION

Two soil borings were completed as monitoring wells by installing 2-inch-diameter, flush-threaded, PVC casing inside the borings. No solvent cements were used on the casing. The screened casing will be machine-slotted with 0.010-inch slots. Screened sections of casing in the monitoring well extend across the saturated interval approximately 5 feet above the first encountered water. A threaded bottom cap was attached to the bottom of the casing. The annular space surrounding the casing was at least 2 inches thick, and packed with No. 2/12 to approximately 2 feet above the top of the screened interval. A minimum of 1 foot of bentonite seal was set above the sandpack and neat cement was tremie-grouted to the surface.

A traffic-rated vault box with a locking device was set in concrete to protect the wells. Well tags were affixed to the casing for identification. Well locations were surveyed to the closest 1-foot Northing and Easting and top-of-casing elevations were measured to the nearest 0.01 foot. Detailed well completion diagrams were then prepared.

Well Development

Monitoring wells were developed by surging, swabbing, and bailing methods until a non-turbid discharge or stabilization of parameters was obtained. During well development the groundwater was monitored for pH, temperature, and specific conductivity until the parameters stabilized within ten percent of the last reading. All development equipment was steam cleaned between wells. Development and steam-cleaning water was contained in 55-gallon drums until the water could be pumped through the groundwater treatment system located onsite.

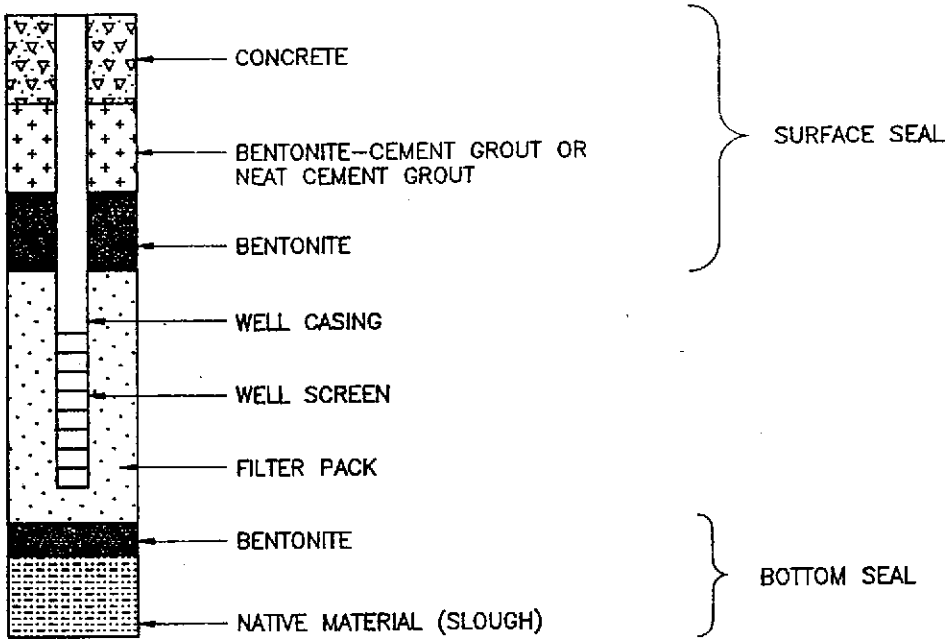
Appendix B

BORING LOGS, WELL CONSTRUCTION DETAILS, AND ENCROACHMENT AND WELL INSTALLATION PERMITS

BURLINGTON ENVIRONMENTAL INC.
CHEMPRO Division

EXPLANATION OF SYMBOLS ON EXPLORATORY BORING LOGS

WELL DETAIL COLUMN



SAMPLE COLUMN

BAG/BULK SAMPLES

FIVE–FOOT SPLIT BARREL SAMPLER (CONTINUOUS SAMPLER)

MODIFIED CALIFORNIA SPLIT SPOON

OTHER SAMPLERS (SEE REMARKS FOR TYPE AND SIZE)

PITCHER BARREL

ROCK CORE (SEE REMARKS FOR TYPE AND SIZE)

SHELBY TUBE SAMPLER

STANDARD PENETRATION TEST SPLIT SPOON SAMPLER (2" OD)

(OVER)

BORING LOG

BURLINGTON ENVIRONMENTAL INC.

Project Number: CHV-149
Chevron Service Station No. 9-8139
16304 Foothill Boulevard, San Leandro, CA
Drawing No.: A1036601 Page: 1 of 2

Monitoring WELL No.: MW-10
Ground Surface Elev.: Approx. 125.5 ft.(MSL)
Total Boring Depth: 30 ft.
By: K. FLORY Date: 4/21/92

Pocket penetrometer TSF	Recovery (in/in)	Blow Count (blows/6")	Sample Depth (feet)	Well Detail	Stratigraphic Column	Description
			0		AS / CONC / FILL	5" ASPHALT 7" CONCRETE 4" BASE COARSE
4.5	18/18	5 12 22	5		CL	**SANDY CLAY (CL),** Dark brown (7.5 YR, 3/3); 70-80% low plasticity fines; 20-30% very fine to fine sand; hard; dry.
4.5	18/18	5 6 10	10			@ 13': 50-60% low plasticity fines; 30-40% very fine to coarse sand; 10% gravel: hard, moist.
2.0	18/18	5 8 8	15			@ 15': 80-90% low plasticity fines; 10-20% very fine sand; very stiff.
			20			

NOTES: Boring was drilled using eight-inch outside diameter (OD) hollow-stem augers. Soil samples were collected using a two-inch OD split-spoon sampler at five foot intervals. A groundwater monitoring well was installed using two-inch diameter PVC casing (see attached well detail).

BORING LOG

BURLINGTON ENVIRONMENTAL INC.

Project Number: CHV–149
Chevron Service Station No. 9–8139
16304 Foothill Boulevard, San Leandro, CA
Drawing No.: A1036602 Page: 2 of 2

Monitoring WELL No.: MW–10
Ground Surface Elev.: Approx. 125.5 ft.(MSL)
Total Boring Depth: 30 ft.
By: K. FLORY Date: 4/21/92

Pocket penetrometer TSF	Recovery (in/in)	Blow Count (blows /6")	Sample Depth (feet)	Well Detail	Stratigraphic Column	Description
–	3/18	8 18 23	20		CL	**SANDY CLAY (CL),** Continued ● 20': Cobble in tip of spoon; little recovery; wet.
2.25	18/18	6 7 11	25			● 25': 60–70% low plasticity fines; 20–30% very fine to coarse sand; 10% fine gravel; very stiff; moist.
2.5	18/18	8 12 15	30			**BORING TERMINATED AT 30'**
			35			
			40			

NOTES: Boring was drilled using eight–inch outside diameter (OD) hollow–stem augers. Soil samples were collected using a two–inch OD split–spoon sampler at five foot intervals. A groundwater monitoring well was installed using two–inch diameter PVC casing (see attached well detail).

David C. Flory RG#4603 Exp. 6/30/94

BORING LOG

BURLINGTON ENVIRONMENTAL INC.

Project Number: CHV-149
Chevron Service Station No. 9-8139
16304 Foothill Boulevard, San Leandro, CA
Drawing No.: A1036603 Page: 1 of 2

Monitoring WELL No.: MW-11
Ground Surface Elev.: Approx. 123.4 ft.(MSL)
Total Boring Depth: 30 ft.
By: K. FLORY Date: 4/21/92

Pocket penetrometer TSF	Recovery (in/in)	Blow Count (blows/6")	Sample Depth (feet)	Well Detail	Stratigraphic Column	Description
2.2	–	–	0		CL	**SILTY CLAY (CL),** Very dark brown (10 YR, 2/2); 85–95% high plasticity fines; 5–15% very fine to fine sand; trace fine gravel; very stiff; slightly moist.
4.0	18/18	10 11 22	5			@ 5': Hard.
3.5	18/18	5 10 13	10		CL	**SANDY CLAY (CL),** Dark yellowish brown (10 YR, 4/4); 50–60% low plasticity fines; 30–40% fine to coarse sand; 10–20% fine gravel; very stiff; slightly moist.
0.5	18/18	7 12 14	15			@ 15': Dark brown (10 YR, 4/3); 65–75% low plasticity fines; 20–30% fine to coarse sand; 5% fine gravel; soft; slightly moist.
			20			

NOTES: Boring was drilled using eight–inch outside diameter (OD) hollow–stem augers. Soil samples were collected using a two–inch OD split–spoon sampler at five foot intervals. A groundwater monitoring well was installed using two–inch diameter PVC casing (see attached well detail).

BORING LOG

Project Number: CHV-149
Chevron Service Station No. 9-8139
16304 Foothill Boulevard, San Leandro, CA
Drawing No.: A1036604 Page: 2 of 2

Monitoring WELL No.: MW-11
Ground Surface Elev.: Approx. 123.4 ft.(MSL)
Total Boring Depth: 30 ft.
By: K. FLORY Date: 4/21/92

Pocket penetrometer TSF	Recovery (in/in)	Blow Count (blows /6")	Sample Depth (feet)	Well Detail	Stratigraphic Column	Description
0.5	18/18	5 6 9	20		CL	SANDY CLAY (CL), Continued. ● 20': Dark yellowish brown (10 YR, 3/4); 60–70% high plasticity fines; 20–30% fine to coarse sand; 10% gravel; soft; wet.
2.75	18/18	9 9 9	25			● 25': 50–60% low plasticity fines; 30–40% fine to coarse sand; 10% gravel; very stiff; moist.
2.75	18/18	4 5 9	30			BORING TERMINATED AT 30'
			35			
			40			

NOTES: Boring was drilled using eight-inch outside diameter (OD) hollow-stem augers. Soil samples were collected using a two-inch OD split-spoon sampler at five foot intervals. A groundwater monitoring well was installed using two-inch diameter PVC casing (see attached well detail).

David C. Gift, RG#4603, Exp. 6/30/94

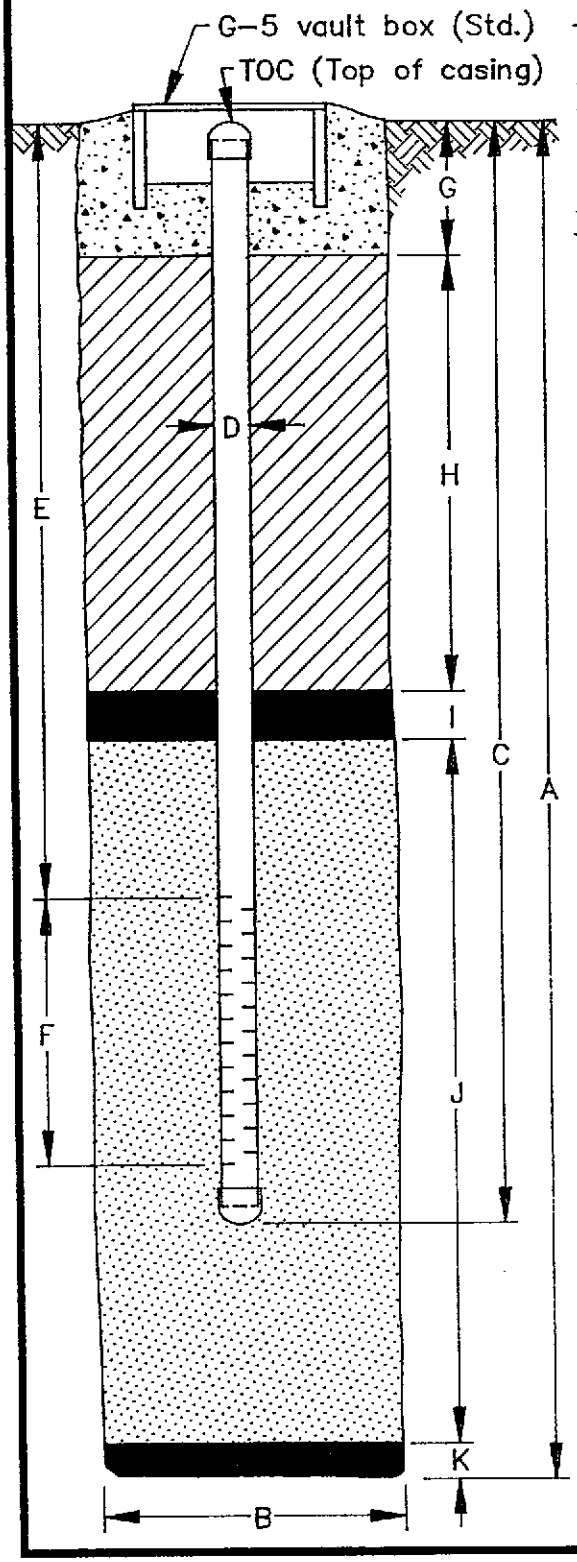
WELL DETAILS

BURLINGTON ENVIRONMENTAL INC.

Project Number: CHV-149
Chevron Service Station No. 9-8139
16304 Foothill Boulevard, San Leandro, CA
Drawing No.: A1036605

WELL No.: MW-10
Top of Casing Elev.: 125.03 FT (MSL)
Ground Surface Elev.: APPROX. 125.5ft.(MSL)
Installation Date: 4/21/92

Well Permit No.: 92124



EXPLORATORY BORING

A. Total depth: 30 ft.
B. Diameter: 8 in.
Drilling method: 8"ø HSA

WELL CONSTRUCTION

C. Total casing length: 29.5 ft.
Material: SCH 40 PVC
D. Diameter: 2 in.
E. Depth to top of perforations: 14.5 ft.
F. Perforated length: 15 ft.
Perforated interval from 14.5 to 29.5 ft.
Perforation type: MACHINE-SLOTTED
Perforation size: 0.010 INCH
G. Surface seal: 2 ft.
Seal material: CONCRETE
H. Backfill: 7 ft.
Backfill material: CEMENT-BENTONITE GROUT
I. Seal: 3 ft.
Seal material: BENTONITE-PELLETS
J. Gravel pack: 18 ft.
Pack material: 2/12 SAND
K. Bottom seal/fill: - ft.
Material: N/A

DeT

Form prepared by K. FLORY

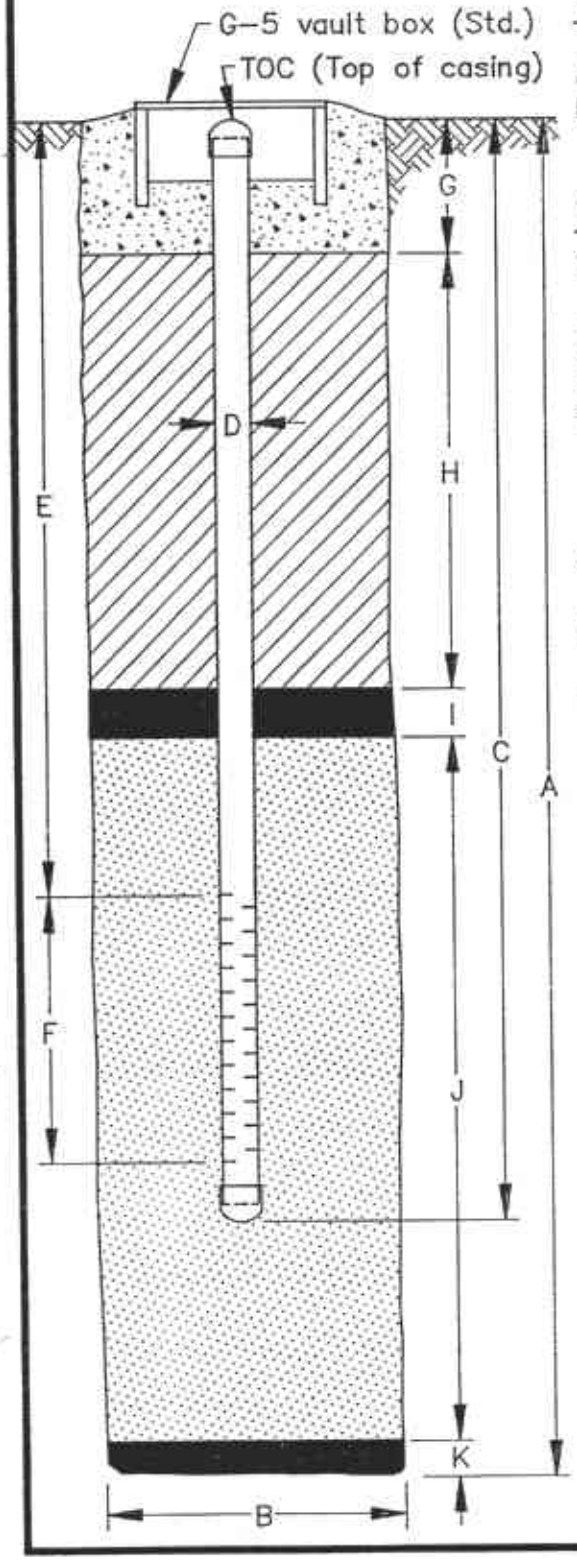
WELL DETAILS

BURLINGTON ENVIRONMENTAL, INC.

Project Number: CHV-149
Chevron Service Station No. 9-8139
16304 Foothill Boulevard, San Leandro, CA
Drawing No.: A1036606

WELL No.: MW-11
Top of Casing Elev.: 122.92ft.(MSL)
Ground Surface Elev.: APPROX. 123.4ft.(MSL)
Installation Date: 4/21/92

Well Permit No.: 92124



EXPLORATORY BORING

A. Total depth 30 ft.
B. Diameter 8 in.
Drilling method 8"ø HSA

WELL CONSTRUCTION

C. Total casing length 29.5 ft.
Material SCH 40 PVC
D. Diameter 2 in.
E. Depth to top of perforations 14.5 ft.
F. Perforated length 15 ft.
Perforated interval from 14.5 to 29.5 ft.
Perforation type MACHINE-SLOTTED
Perforation size 0.010 INCH
G. Surface seal 2 ft.
Seal material CONCRETE
H. Backfill 6 ft.
Backfill material CEMENT-BENTONITE GROUT
I. Seal 3 ft.
Seal material BENTONITE-PELLETS
J. Gravel pack 19 ft.
Pack material 2/12 SAND
K. Bottom seal/fill - ft.
Material N/A

DT

Form prepared by K. FLORY

ALAMEDA COUNTY PUBLIC WORKS
399 ELMHURST STREET, HAYWARD, CALIFORNIA 94544
ROAD ENCROACHMENT PERMIT

(In accordance with Chapter 1 of Title 5, Streets and Highways, Ordinance Code, County of Alameda, an ordinance providing for the protection of Public Highways and rights of way thereof regulating the use thereof) and the manner in which the same may be altered, excavated under, obstructed or encroached upon) and providing penalties for the violation of the provisions thereof)

Issued To: BURLINGTON ENVIRON.
950 B GILMAN STREET
BERKELEY, CA 94710
Phone: 524-9372

Permit Number: R00-920438
Issue Date: 4/15/1992
Expiration Date: 4/15/93
Permit Issue Receipt: 004013
Assessor Number: - - - 0
Work Order Number: 83452

Job Site: 16034 FOOTHILL BL.
Township: SL

in compliance with and subject to all the terms, conditions and restrictions contained in Chapter 1 of Title 5 of said Ordinance Code and as stated below or printed as general or special provisions on any part of or attached to and made a part of this encroachment permit.

THE ABOVE APPLICANT HEREBY REQUESTS PERMISSION TO:
DRILL THE ROAD RIGHT-OF-WAY IN TWO PLACES, IN THE VICINITY OF 16034 FOOTHILL BOULEVARD, SAN LEANDRO, TO INSTALL TWO GROUNDWATER MONITORING WELLS.

Attention is directed to the general provisions printed on the attached sheets of this permit and to the special provisions attached hereto and made a part hereof.

ALL MISCELLANEOUS GENERAL PROVISIONS AND THE FOLLOWING SPECIAL PROVISION NUMBERS:

C, K

THIS PERMIT AUTHORIZES BOTH THE INSTALLATION AND THE OPERATION, FOR THE PERIOD OF ONE YEAR, OF THE SUBJECT WELLS. ALL FLUIDS COLLECTED FROM THE WELLS MUST BE DISPOSED OF IN A HAZARDOUS WASTE SITE; NO FLUIDS ARE TO DISCHARGED INTO THE ROAD GUTTERS OR INTO THE STORM DRAIN SYSTEM.

THE LETTER OF CREDIT POSTED UNDER THIS PERMIT WILL BE RETAINED UNTIL THESE WELLS ARE DESTROYED AND THE RIGHT-OF-WAY IS RESTORED; SEPARATE ZONE 7 AND ROAD ENCROACHMENT PERMITS WILL BE REQUIRED FOR DESTRUCTION.

OPERATION OF THE WELLS BEYOND THE EXPIRATION DATE OF THIS PERMIT WILL REQUIRE AN ANNUAL RENEWAL.

This permit does not authorize, and it shall not be construed to authorize any infringement upon the property rights of owners of the fee title of the highway referred to herein. Notice of start of work and other required notices shall be given to the field office, 22341 Redwood Road, Castro Valley Phone (415) 582-7781.

Other Required Permits: DRILLING PERMIT #92124
Bond Information: $6000 LETTER OF CREDIT #284-796
Inspection Deposit: $25 CASH

By SEE APP. Applicant Reviewed By: JKR
Work Completed: __/__/__
By JK Rogers ALAMEDA COUNTY Inspector: _____

Where maps or plans are furnished, a sketch of the proposed work, showing location, name of road and other information must be made on a separate sheet, in triplicate.

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 CHEVRON SS 9-8139
16304 FOOTHILL BLVD
SAN LEANDRO, CA

CLIENT
Name CHEVRON USA, INC.
Address P.O. BOX 5004 Phone (510) 842-9500
City SAN RAMON, CA Zip 94583

APPLICANT
Name BURLINGTON ENVIRONMENTAL
Address 950 B GILMAN ST Phone (510) 524-9372
City BERKELEY, CA Zip 94710

TYPE OF PROJECT

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

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

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

DRILLER'S LICENSE NO. C57-596545

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 45 ft.
Surface Seal Depth 13 ft. Number 3

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

ESTIMATED STARTING DATE 3/25/92
ESTIMATED COMPLETION DATE 3/25/92

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

APPLICANT'S SIGNATURE [signature] Date 3/9/92

FOR OFFICE USE

PERMIT NUMBER 92124
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 16 Mar 92
Wyman Hong

121989

Appendix C

CERTIFIED ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY FORMS

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

BURLINGTON ENVIRONMENTAL INC.
Attn: KYLE FLORY

Project 367
Reported 04/29/92

TOTAL PETROLEUM HYDROCARBONS

Lab #	Sample Identification	Sampled	Analyzed	Matrix
85565- 1	RS-12-SL	04/21/92	04/27/92	Water
85565- 2	TB-4-SL	04/21/92	04/27/92	Water
85565- 5	SS-54-SL	04/21/92	04/27/92	Soil
85565-11	SS-60-SL	04/21/92	04/27/92	Soil

RESULTS OF ANALYSIS

Laboratory Number:	85565- 1	85565- 2	85565- 5	85565-11
Gasoline:	ND<50	ND<50	ND<1	ND<1
Benzene:	ND<0.5	ND<0.5	ND<.005	ND<.005
Toluene:	ND<0.5	ND<0.5	ND<.005	ND<.005
Ethyl Benzene:	ND<0.5	ND<0.5	ND<.005	ND<.005
Xylenes:	ND<0.5	ND<0.5	ND<.005	ND<.005
Concentration:	ug/L	ug/L	mg/kg	mg/kg

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: 85565

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

OIL AND GREASE ANALYSIS By Standard Methods Method 5520F:
Minimum Detection Limit in Soil: 50mg/kg

Modified EPA SW-846 Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Soil: 1mg/kg

EPA SW-846 Method 8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Soil: 1mg/kg;
in Water: 50 ug/L

EPA SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Soil: 0.005mg/kg; in Water: 0.5 ug/L

ANALYTE	SPIKE LEVEL	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Gasoline:	200 ng	103/103	0	70-130
Benzene:	200 ng	85/95	11	70-130
Toluene:	200 ng	92/104	12	70-130
Ethyl Benzene:	200 ng	97/109	12	70-130
Xylenes:	200 ng	92/103	12	70-130

Richard Srna, Ph.D.
Jelomina Vanzuela (for)
Laboratory Director

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.: 85565
CLIENT: BURLINGTON ENVIRONMENTAL INC.
CLIENT JOB NO.: 367

DATE RECEIVED: 04/22/92
DATE REPORTED: 04/29/92
DATE SAMPLED : 04/21/92

ANALYSIS FOR TOTAL LEAD
by SW-846 Method 6010

LAB #	Sample Identification	Concentration (mg/kg) Total Lead
11	SS-60-SL	6

mg/kg - parts per million (ppm)

Method Detection Limit for Lead in Soil: 5 mg/kg

QAQC Summary: MS/MSD Average Recovery : 91%
Duplicate RPD : 11

Richard Srna, Ph.D.

Silomina Vanguilig (for)
Laboratory Manager

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.: 85565
CLIENT: BURLINGTON ENVIRONMENTAL INC.
CLIENT JOB NO.: 367

DATE RECEIVED:04/22/92
DATE REPORTED:05/08/92

ANALYSIS FOR STLC LEAD
by SW-846 Method 6010

LAB #	Sample Identification	Concentration(mg/L) STLC Lead
11	SS-60-SL	ND<0.5

mg/L = parts per million

Method Detection Limit for Extractable Lead in Soil: 0.5 mg/L

QAQC Summary: MS/MSD Average Recovery : 88%
Duplicate RPD : 15

Richard Srna, Ph.D.

Filomena Hanquilig (for)
Laboratory Manager

Fax copy of Lab Report and COC to Chevron Contact: ☐ 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: 9-8139
Facility Address: 16304 FOOTHILL BLVD, SAN LEANDRO, CA
Consultant Project Number: 367
Consultant Name: BURLINGTON ENVIRONMENTAL
Address: 950 'B' GILMAN ST., BERKELEY, CA
Project Contact (Name): KYLE FLORY
(Phone) (510) 524-9372 (Fax Number) (510) 524-9439

Chevron Contact (Name): KEN KAN
(Phone) (510) 842-8752
Laboratory Name: SUPERIOR LAB
Laboratory Release Number: 7051651
Samples Collected by (Name): KYLE FLORY
Collection Date: 4/21/92
Signature: Kyle A. Flory

NOTE: DO NOT BILL TB-LB SAMPLES

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)	TOTAL LEAD 6010 or 7420	RCI			HOLD	Remarks
RS-12-SL	1	1	W	G		HCL	Y	X	—												TB (DO NOT BILL)
TB-4-SL	2	1	W	G	—		Y	X	—											X	
SS-52-SL	3	1	S	G	0910	—	Y	X	—											X	
SS-53-SL	4	1	S	G	0930	—	Y	X	—												
SS-54-SL	(5)	1	S	G	0950	—	Y	X	—									X			
SS-55-SL	6	1	S	G	1010	—	Y	X	—											X	
SS-56-SL	7	1	S	G	1040	—	Y	X	—											X	
SS-57-SL	8	1	S	G	1100	—	Y	X	—											X	
SS-58-SL	9	1	S	G	1330	—	Y	X	—											X	
SS-59-SL	10	1	S	G	1345	—	Y	X	—								X				IF LEAD IS PRESENT, ANALYZE FOR LEAD W/ CAM-17
SS-60-SL	(11)	1	S	G	1355	—	Y	X	—											X	
SS-61-SL	12	1	S	G	1415	—	Y	X	—											X	
SS-62-SL	13	1	S	G	1430	—	Y	X	—											X	
SS-63-SL	14	1	S	G	1450	—	Y	X	—											X	

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

Relinquished By (Signature) BURLINGTON	Organization BURLINGTON	Date/Time 4/22 1410	Received By (Signature) Charlotte Prater	Organization Express St	Date/Time 4/22/92 1410	Turn Around Time (Circle Choice)
Relinquished By (Signature) Charlotte Prater	Organization Express St	Date/Time 4/22 1430	Received By (Signature) Y. J Tanaka	Organization EX-IT	Date/Time 4/22 1430	24 Hrs.
Relinquished By (Signature) Y. J Tanaka	Organization EX-IT	Date/Time 4/22 1530	Received For Laboratory By (Signature) [illegible]		Date/Time 4-22-92 / 10-40	48 Hrs. 5 Days 10 Days As Contracted

COC-3.DWG/03.91/HCH

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

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

LABORATORY NO.: 13104
CLIENT: Burlington/Chempro
CLIENT JOB NO.: 366

DATE RECEIVED: 05/15/92
DATE REPORTED: 05/19/92

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
13104- 1	TB/LB	05/15/92	05/18/92
13104- 2	RS-10-SL	05/15/92	/ /
13104- 3	WS-70-SL	05/15/92	05/18/92
13104- 4	WS-71-SL	05/15/92	/ /
13104- 5	WS-72-SL	05/15/92	05/18/92

Laboratory Number:	13104 1	13104 2	13104 3	13104 4	13104 5
ANALYTE LIST	Amounts/Quantitation Limits (ug/L)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<50	NA	ND<50	NA	ND<50
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	ND<0.5	NA	ND<0.5	NA	ND<0.5
TOLUENE:	ND<0.5	NA	ND<0.5	NA	ND<0.5
ETHYL BENZENE:	ND<0.5	NA	ND<0.5	NA	ND<0.5
XYLENES:	ND<0.5	NA	ND<0.5	NA	ND<0.5

Superior Precision Analytical, Inc.
1555 Burke, Unit I • San Francisco, California 94124 • (415) 647-2081 / fax (415) 821-7123

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: 13104

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: 10/12/91

SW-846 Method 8020/BTXE
Minimum Quantitation Limit in Water: 0.5ug/L
Standard Reference: 04/07/92

ANALYTE	REFERENCE	SPIKE LEVEL	MS/MSD RECOVERY	RPD	CONTROL LIMIT
Oil & Grease	NA	NA	NA	NA	NA
Diesel	NA	NA	NA	NA	NA
Gasoline	04/07/92	200ng	97/96	0.6	76-111
Benzene	04/07/92	200ng	93/94	1.1	78-110
Toluene	04/07/92	200ng	88/88	0.6	78-111
Ethyl Benzene	04/07/92	200ng	86/87	1.2	78-118
Total Xylene	04/07/92	600ng	90/91	1.5	73-113

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

Fax copy of Lab Report and COC to Chevron Contact: ☐ 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 9-8139
Facility Address 16304 Foothill Blvd, San Leandro
Consultant Project Number 366
Consultant Name Burlington Environmental
Address 950-B. Gilman St., Berkeley
Project Contact (Name) Kyle Flory
(510) (Phone) 524-9372 (Fax Number) 524-7439

Chevron Contact (Name) Ken Kan
(Phone) (510) 842-8752
Laboratory Name Superior
Laboratory Release Number 4758680
Samples Collected by (Name) Daryl A. Lamb
Collection Date 5-15-92
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)	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
								Analyses To Be Performed								NOTE: DO NOT BILL TB-LB SAMPLES
																5-14-92
TB-LB		1	W	G	0700	HCL	Y	X								HOLD: 5-15-92
RS-10-SL		3	W	G	0715	HCL	Y	X								5-15-92
WS-70-SL		3	W	G	0745	HCL	Y	X								HOLD: 5-15-92
WS-71-SL		3	W	G	0800	HCL	Y	X								5-15-92
WS-72-SL		3	W	G	0905	HCL	Y	X								

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

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
M. Boyett	Burlington	5-15-92 11:01 AM.		Express	5-15-92 11:01 AM
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	Express II	5-15-92 1130 AM			
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
					5/15/92 1130.

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

Appendix D

GROUNDWATER SAMPLING AND ANALYSIS PROCEDURES

Appendix D

GROUNDWATER SAMPLING AND ANALYSIS PROCEDURES

INTRODUCTION

The sampling and analysis procedures for water-quality monitoring programs are contained in this Appendix. These procedures will ensure that consistent and reproducible sampling methods are used, proper analytical methods are applied, analytical results are accurate, precise, and complete, and the overall objectives of the monitoring program are achieved.

SAMPLE COLLECTION

Sample collection procedures include equipment cleaning, water-level and total well-depth measurements, and well purging and sampling.

Equipment Cleaning

Sample bottles, caps, and septa were precleaned and provided by Superior Analytical. All sampling containers were used only once and discarded after analysis is complete.

Before starting the sampling event, all equipment to be placed in the well or come in contact with groundwater was disassembled and cleaned thoroughly with detergent water, then steam cleaned with service station tap water, and rinsed with deionized water. Any parts that may absorb contaminants, such as plastic pump valves or bladders, were cleaned as described above or replaced.

During the sampling event the equipment used in the well was washed with detergent, steam-cleaned, and rinsed with distilled water before purging or sampling the next well. The water level sounder was washed with detergent and rinsed with distilled water before use in the each well. The rinsate water is stored

in 55-gallon drums onsite until the water could be pumped through the groundwater treatment system located onsite.

Quality Assurance Samples

To determine if the Teflon bailer used for sampling had been sufficiently decontaminated, rinsate samples were taken. One rinsate sample was collected during each sampling event by filling the Teflon sampling bailer with deionized water and then decanting that water into the sample vials. The rinsate samples were analyzed for the same parameters that the well was sampled for (see Table 6). The samples were sent to Superior Analytical for analysis.

Water-Level, Floating-Hydrocarbon, and Total Well-Depth Measurements

Before purging and sampling, the depth to water, floating hydrocarbon thickness, and the well total depth were measured using an electric sounder, and a bottom-filling clear Lucite™ bailer. The electric sounder, manufactured by Slope-Indicator, Inc., is a transistorized instrument that uses a reel-mounted, two conductor, coaxial cable that connects the control panel to the sensor. Cable markings are stamped at 1-foot intervals. An engineers rule was used to measure the depths to the closest 0.01 foot. The water level was measured by lowering the sensor into the monitoring well. A low current circuit is completed when the sensor contacts the water, which serves as an electrolyte. The current is amplified and fed across an indicator light and audible buzzer, signaling when water has been contacted. A sensitivity control compensates for very saline or conductive water. After the water level had been determined the bailer was lowered to a point just below the liquid level, retrieved, and inspected for floating hydrocarbons.

Floating hydrocarbon were not encountered in any of the wells monitored. If floating product greater than 1/32-inch in thickness had been detected, a sample would not have been collected from that well.

All liquid measurements were recorded to the nearest 0.01 foot in the field logbook. The groundwater elevation at each monitoring well was calculated by

subtracting the measured depth to water from the surveyed well-casing elevation. Well total depth was then measured by lowering the sensor to the bottom of the well. Well total depth, used to calculate purge volumes and to determine whether the well screen is partially obstructed by silt, was recorded to the nearest 0.5 foot in the field logbook.

Well Purging

Before sampling, standing water in the casing was purged from the monitoring wells using a piston pump or a bailer. In general, samples were collected from after a minimum of four casing volumes had been evacuated and the pH, electrical conductivity, and temperature had stabilized.

The pH, electrical conductivity, and temperature meter were calibrated each day before beginning field activities. The calibration was checked once each day to verify meter performance. All field meter calibrations were recorded in the field log book.

Groundwater generated from well-purging operations were contained for temporary storage in 55-gallon drums. All drums were labeled and stored on site in a location designated by the station manager. The sampler recorded the following information on the drum label for each drum generated:

* Drum content (groundwater)
* Source (well identification code)
* Date generated
* Client contact
* Project number
* Name of sampler

The Chevron representative was notified that the water is stored onsite and that the water could be pumped through the groundwater treatment system located onsite. Burlington will transport the drums off-site at Chevron's request when the water has been removed.

Well Sampling

A Teflon bailer was used for well sampling. Glass bottles of at least 40 milliliters volume and fitted with Teflon-lined septa were used in sampling for volatile organics. These bottles were filled completely to prevent air from remaining in the bottle. A positive meniscus forms when the bottle is completely full. A convex Teflon septum is placed over the meniscus to eliminate air. After capping, the bottle was inverted and tapped to verify that it did not contain air bubbles. The sample containers for other parameters were filled, and capped. Duplicate sample analysis was performed on groundwater samples taken from monitoring well MW-11 and were analyzed for the same chemical analyses.

SAMPLE HANDLING AND DOCUMENTATION

The following section specifies the procedures and documentation used during sample handling.

Sample Handling

All sample containers were labeled immediately following sample collection. Samples were kept cool with ice or cold packs until received by the laboratory. Cold packs or ice were replaced each day to maintain refrigeration. At the time of sampling, each sample was logged on a chain-of-custody record which accompanied the sample to the Chevron approved laboratory.

Sample Documentation

The following procedures were used during sampling and analysis to provide chain-of-custody control during sample handling from collection through storage. Sample documentation included the use of the following:

* Field logbooks to document sampling activities in the field
* Labels to identify individual samples
* Chain-of-custody record sheets for documenting possession and transfer of samples

Field Logbook

In the field, the sampler recorded the following information on the Water Sample Field Data Sheet for each sample collected:

* Project number
* Client name
* Location
* Name of sampler
* Date and time
* Pertinent well data (e.g.., casing diameter, depth to water, well depth)
* Calculated and actual purge volumes
* Purging equipment used
* Sampling equipment used
* Appearance of each sample (e.g.., color, turbidity, sediment)
* Results of field analyses (temperature, pH, electrical conductivity)
* General comments

The field logbooks were signed by the sampler.

Labels

Sample labels contained the following information:

* Project number
* Sample number (i.e.., well designation)
* Sampler's initials
* Date and time of collection
* Type of preservative used (if any)

Sampling and Analysis Chain-Of-Custody Record

The Sampling and Analysis Chain-Of-Custody Record, initiated at the time of sampling, contains, but is not limited to, the well number, sample type, analytical request, date of sampling, and the name of the sampler. The record sheet was signed, timed, and dated by the sampler when transferring the samples. The number of custodians in the chain of possessions were kept to a minimum.

Appendix E

WELL DEVELOPMENT AND GROUNDWATER SAMPLE DATA SHEETS

WATER DATA SHEET

PROJECT NO.: 366 SAMPLE ID.: WS - 72 - SL

LOCATION: 16304 Foothill BLVD, San Leandro DATE: 5.14.92

STATION NO.: 9.8139 WELL/SAMPLE

SAMPLER: DAL POINT DESIGNATION: mw-10

☐ SAMPLING ☒ DEVELOPING ☐ BAILING FLOATING PRODUCT

Casing Diameter:
2 inch X
3 inch ____
4 inch ____
6 inch ____
other ____
Casing Elev. (ft.): ____

Screened Int. (ft.): 14.5 - 29.5
Initial DTW (ft.): 16.50 @ 1045
Initial TD (ft.): 29.38
Water Column Height (ft.): 12.88
80 % Recovery (ft.): 19.16

Calc. Casing Vol. (gal.): 2.18
(2" = .17) (3' = .38) (4" = .66) (6" = 1.5)
Calc. Purge Vol. (gal.): 8.75
Final DTW (ft.): 23.12 @1223
Final TD (ft.): 29.50
Product Bailed (gal.): Ø

TD (Actual) (ft.): 29.5

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	pH (units)	TEMP. (degrees F)	E.C. (umhos/cm)	COLOR	DTW (if dry)
1150	4	8.18	70.2	1.25×10^3	BRN./YELLOW	
1155	8	8.11	68.8	1.30×10^3	BRN./YELLOW	
1201	12	8.21	69.4	1.24×10^3	BRN./YELLOW	
1208	16	8.17	68.6	1.23×10^3	BRN./YELLOW	
1219	24	8.20	69.1	1.23×10^3	BRN./YELLOW	

Odor? NONE

Actual Purge Vol. (gal.): 24

PURGE METHOD:
___ Bailer (Teflon)
X Bailer (PVC)
___ Well Wizard
___ Dedicated Bailer
___ Other ____

SAMPLE METHOD:
X Bailer (Teflon)
___ Bailer (PVC)
___ Dedicated Bailer
___ Other ____

REMARKS: ON 5-15-92: DTW = 16.52'
TD = 29.49'
WS-72-SL SAMPLED @ 0905

WEATHER: PARTLY CLOUDY, SLIGHT BREEZE, ~66°

WATER DATA SHEET

PROJECT NO.: 366

SAMPLE ID.: WS-71-SL (Duplicate) WS-70-SL

LOCATION: 16304 Foothill BLVD., SAN LEANDRO DATE: 5.14.92

STATION NO.: 9.8139

WELL/SAMPLE POINT DESIGNATION: MW-11

SAMPLER: DAL

☐ SAMPLING ☒ DEVELOPING ☐ BAILING FLOATING PRODUCT

Casing Diameter:
2 inch X
3 inch ____
4 inch ____
6 inch ____
other ____

Casing Elev. (ft.): ____

TD (Actual) (ft.): 29.5

Screened Int. (ft.): 14.5-29.5

Initial DTW (ft.): 14.49 @ 0805

Initial TD (ft.): 29.37

Water Column Height (ft.): 14.88

80 % Recovery (ft.): 17.55

Calc. Casing Vol. (gal.): 2.53
(2" = .17) (3' = .38) (4" = .66) (6" = 1.5)

Calc. Purge Vol. (gal.): 10.12

Final DTW (ft.): 20.92 @ 0938

Final TD (ft.): 29.40

Product Bailed (gal.): Ø

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	pH (units)	TEMP. (degrees F)	E.C. (umhos/cm)	COLOR	DTW (if dry)
0900	5	7.69	64.7	1.00×10^3	BRN./YELLOW	
0905	10	7.67	65.0	0.89×10^3	BRN./YELLOW	
0910	15	7.98	63.6	0.73×10^3	BRN./YELLOW	
0915	20	7.96	64.9	0.77×10^3	BRN. YELLOW	
0925	30	7.98	63.2	0.70×10^3	BN./YELLOW	
0936	40	7.99	63.0	0.69×10^3	BRN/YELLOW	

Odor? NONE

Actual Purge Vol. (gal.): 40

PURGE METHOD:
___ Bailer (Teflon)
X Bailer (PVC)
___ Well Wizard
___ Dedicated Bailer
___ Other ____

SAMPLE METHOD:
X Bailer (Teflon)
___ Bailer (PVC)
___ Dedicated Bailer
___ Other ____

REMARKS: ON 5.15.92: DTW = 14.50'
TD = 29.31'
WS.70.SL SAMPLED @ 0745 ON 5.15.92
WS.71.SL SAMPLED @ 0800 ON 5.15.92

WEATHER: OVERCAST, COOL, SLIGHT BREEZE, ~60°.

FIELD REPORT
WATER LEVEL / FLOATING PRODUCT SURVEY

PROJECT NO.: 366
LOCATION: 16304 Foothill BLVD., SAN LEANDRO
SAMPLER: DAL
STATION NO.: 9-8139
DATE: 5.14.92
TIME AND DATE OF SYSTEM START-UP:

WELL ID	TOTAL DEPTH (Feet)	WELL DIAMETER (in)	DEPTH TO WATER (Feet)	DEPTH TO FLOATING PRODUCT (Feet)	FLOATING PRODUCT THICKNESS (Feet)	TIME	COMMENTS
mw-11	29.37	2	14.49	—	—		5-14-92
mw-10	29.38	2	16.50	—	—		5-14-92

Appendix F

WELL-HEAD SURVEY DATA SHEETS

2775 Park Avenue
Santa Clara, CA 95050
(408) 243-4066
FAX (408) 243-4764

Nowack & Associates, Inc.
Civil Engineers/Planners

Job No. 91-258

Chemical Processors Inc.
Chevron Station No. 9-8139
May 19, 1992

Monitoring Well Survey - 16304 Foothill Blvd, San Leandro

Point	Desc.	Northing	Easting	Elevation (PVC)
401	E-1	4919.8770	5103.4718	124.95
402	E-2	4898.2407	5121.3835	125.79
403	E-3	4898.2437	5075.2886	125.22
501	MW-1	5006.4566	4968.8419	127.09
502	MW-2	4989.0815	5030.5792	125.98
503	MW-3	4939.3489	5102.6793	126.77
504	MW-4	4898.2436	5075.2885	125.22
505	MW-5	4896.8881	5121.5084	125.85
506	MW-6	4893.0517	5026.6293	124.18
507	MW-7	4979.0438	5080.6453	126.86
508	MW-8	4833.2063	5121.4477	123.61
509	MW-9	4835.9866	5164.0142	124.20
510	MW-10	4865.7063	5195.6417	125.03
511	MW-11	4778.3935	5237.6708	122.92

Error North = 0.0011
Error East = 0.0038
Absolute Error = 0.0039
Precision in Error = 1 in 1359898
Error Vertical = 0.005