REMEDIAL INVESTIGATION REPORT

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

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1.2.2 Reported Leaks

Chevron has reports of two petroleum leaks detected in 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, dated January 6, 1987, 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 Engineering, Science, and Technology, Inc. (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 (see Figure 3). Measurable concentrations of benzene (1 part per million [ppm]) were 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. The EA report (1989) stated that the data obtained from the vapor analyses may have been lower than actual hydrocarbon concentrations due to the difficulty in obtaining samples.

In December 1989, Chempro conducted an investigation to determine the extent of soil and groundwater contamination. The results of the investigation were published in a report titled "Soil and Groundwater Investigation, Chevron Service Station 9-8139", dated January 17, 1990. During the investigation four soil borings were drilled and completed as 2-inch-diameter monitoring wells. The monitoring wells were developed and sampled. In addition, a survey of active,

inactive, and destroyed wells, located within a 1/2-mile radius of the site was conducted.

During Chempro's soil and groundwater investigation low levels of petroleum hydrocarbons were detected in soil samples collected from MW-1, MW-3, and MW-4. A maximum of 24 ppm total petroleum hydrocarbons as gasoline (TPH) was encountered in boring MW-4. Groundwater samples collected from wells MW-3 and MW-4, located hydraulically downgradient from the underground fuel storage complex, contained elevated concentrations of TPH, and benzene, toluene, ethylbenzene, and xylenes (BTEX). The maximum TPH concentration in the groundwater was detected in MW-3 at 24,000 parts per billion (ppb). Based on the results, a remedial action plan was developed, and the subsequent remedial investigation and interim contaminant migration control plan were implemented. The following report has been prepared for Chevron to document the investigation results.

1.3 LIMITATIONS

Services provided hereunder were performed in accordance with current generally accepted environmental consulting principles and practices. No other warranty, expressed or implied, is made.

The opinions presented apply to site conditions existing at the time of performance of services and are based in part on interpretation of data from discrete sampling locations which may not represent conditions between sampling locations. Chempro is unable to report on or accurately predict events which may impact the site following performance of services, whether occurring naturally or caused by external forces. Chempro assumes no responsibility for conditions Chempro did not investigate, or conditions generally recognized as environmentally unacceptable at the time services were performed.

2.0 INVESTIGATIVE METHODS

The remedial investigation field work began in May 1990. The field work described in the "Workplan For Soil And Groundwater Investigation, and Interim Groundwater Remediation System", dated May 7, 1990, was completed in September 1990.

The field work consisted of drilling and sampling soil borings, installing groundwater monitoring and extraction wells in the borings, and collecting and analyzing soil and groundwater samples. In addition, a pumping test was conducted in the extraction well to determine the hydraulic parameters of the aquifer. Using the hydraulic parameters and site specific groundwater elevation data, the groundwater velocity and the zone of capture for the extraction well were calculated.

The following sections describe the methods used during the remedial 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. The procedures used for decontamination are presented in Appendix A.

Soil and groundwater quality assurance sampling included the collection of a rinsate sample at the beginning of each day, or after 20 samples had been collected (see Appendix A). The procedures for the collection and handling of rinsate samples is outlined in Appendix B.

2.2 SOIL BORINGS

Four borings were drilled onsite between May 14 and 17, 1990. On August 30, 1990, after encroachment permits were acquired, one additional boring was drilled in the center median strip of Foothill Boulevard. The five borings were drilled to determine the subsurface lithology, evaluate the presence of soil contamination, and provide for monitoring and extraction well installation. The

borings were drilled by B & F Drilling Inc., of Rancho Cordova, California, with a Mobile B-61 drill rig. The borings are labeled, MW-5 through MW-8, and E-1. 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 C). In addition, the boring locations were cleared with Cruz Brothers, subsurface locators of Milpitas, California, Underground Service Alert (USA), and the Chevron maintenance mechanic.

In each boring, 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. While drilling MW-7 an unmarked telephone line was hit with the outside edge of the auger flights. The telephone service was notified and the line was repaired. Borings MW-5 through MW-8 were drilled using 8-inch outside-diameter (OD) hollow-stem augers. Boring E-1 was drilled using 12.5-inch OD hollow-stem augers. Soil samples were collected at 5-foot intervals with a 2-inch-diameter modified-California split-spoon sampler. Continuous soil samples were collected while drilling borings MW-6, MW-8, and E-1 from surface to the total boring depth, and in boring MW-5 from 15 feet below grade level (BGL) to the total boring depth (see boring log notes in Appendix C for details). The lithology was logged in the field by a geologist using the Unified Soil Classification System. The logging was supervised by a California State-registered geologist. Soil sampling procedures are presented in Appendix A. The boring logs are presented in Appendix C.

Two-inch-diameter monitoring wells were constructed in borings MW-5 through MW-8, and a six-inch-diameter extraction well was installed in boring E-1 (see Section 2.4). All soil cuttings generated during the drilling operation were drummed, labeled, and stored onsite pending chemical results. All drummed soil was disposed of by Chempro in accordance with Chevron guidelines.

2.3 SOIL SAMPLING

Soil samples were chosen for chemical analysis using a portable photoionization detector (PID) (PhotoVac Micro Tip II) to determine the presence or absence of

total volatile organic compounds in the samples. At the beginning of each day, the PID was calibrated against fresh air and an isobutylene gas standard. To screen for the presence or absence of volatile organic compounds in the soil samples, soil was crumbled into a mason jar and immediately covered with aluminum foil and sealed. Readings were taken by punching the PID probe through the foil. The PID values are recorded on the boring logs (see Appendix C). 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 Analytical) of San Francisco, California. The samples were accompanied by chain-of-custody documentation which are presented in Appendix D.

Selected soil samples obtained from borings MW-5 through MW-8 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.

Soil samples collected from the 20 and 25 foot BGL intervals in boring E-1 were analyzed by EMCON Associates of San Jose, California for particle sieve analysis. The results of the analysis are presented in Appendix E. Exploratory boring and soil sampling procedures are presented in Appendix F.

2.4 MONITORING AND EXTRACTION WELL INSTALLATION

Groundwater monitoring wells were installed in borings MW-5 through MW-8. An extraction well was installed in boring E-1. The monitoring and extraction well locations are shown on Figure 2.

The monitoring wells are constructed with 2-inch-diameter, schedule 40 polyvinyl chloride (PVC) well casing. Extraction well E-1 is constructed with 6-inch-diameter schedule 40 PVC casing. The wells are screened with 0.020-inch machine-slotted well screen. The casing and screen assembly is terminated with a flush-threaded bottom cap.

During drilling, confined aquifer conditions were encountered in borings MW-6, MW-7, and MW-8 (see Section 3.2). Because aquitards were logged above and below the confined water-bearing horizon, only the zones in each well containing the saturated lenses were screened. Five feet of screen was installed in MW-6 and MW-7, and 10 feet of screen was installed in MW-8. Confining conditions were not apparent in borings MW-5 and E-1 but aquitards were logged above and below the water-bearing horizon, and therefore the unsaturated zone was not screened. Approximately 9.5 and 8.5 feet of screen were installed in MW-5 and E-1, respectively. The well construction details are presented on Table 1 and in Appendix C.

To prevent interconnection between hydraulically separate zones encountered during drilling, bentonite or cement-bentonite grout bottom seals were tremmied into all borings, except for MW-6, before the sand packs were installed (see Table 1). Well installation procedures are presented in Appendix F.

2.5 GROUNDWATER SAMPLING

Prior to the sampling of the wells, the monitoring and extraction wells were developed to remove fine-grained sediments from the well casing 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 maintain a properly functioning well and obtain representative water-quality samples. Well development procedures are presented in Appendix F.

Development and steam-cleaning water was contained in 55-gallon drums until a Chevron contractor could collect the water and transport it offsite for treatment.

Groundwater samples were collected for analysis from the monitoring and extraction wells during May and September 1990. During the second sampling event, groundwater samples were not collected from well E-1. In addition, no samples were taken from MW-5 because 0.04 feet of floating product were encountered before sampling. The dates of the sampling events 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 D. A detailed description of the sampling technique is presented in Appendix B. Groundwater purging records are presented in Appendix G.

Groundwater samples collected during May 1990 were analyzed by Superior Analytical for TPH (as gasoline) by EPA method 8015, BTEX and chlorinated hydrocarbons by EPA method 8240/624, and ethylene dibromide by EPA method 504. During the September sampling event, the groundwater samples were analyzed for BTEX by EPA method 8020/602, as well as TPH (as gasoline) and EDB by the above mentioned methods. Duplicate groundwater samples were collected from MW-3 and MW-6 in May and September, respectively. 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 24, and September 7 and 25, 1990, the water level in each well was obtained to determine the groundwater flow direction and gradient beneath the site. The wells were inspected for phase separated hydrocarbons (PSH) before taking the water-level measurement (see Appendix B).

2.7 WELL-HEAD SURVEY

On September 30, 1990, Ruth and Going, Inc., professional land surveyors of San Jose, California, surveyed the locations and elevations of the monitoring wells at the site. The top of casing on wells E-1, MW-3 and MW-5 through MW-8 were surveyed for location and elevation. The elevation of well MW-3 was resurveyed after a section of the PVC well casing was cut off to provide space between the wellhead and the vault box. 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.

2.8 HYDRAULIC TESTING

Hydraulic testing was performed at the site from May 29 through June 1, 1990. The tests were conducted to determine the transmissivity, hydraulic conductivity, and storage coefficient of the aquifer beneath the site. In addition, the hydraulic parameters of the aquifer were used to evaluate the approximate zone of capture for the extraction well.

The hydraulic testing consisted of four parts: (1) baseline water-level survey, (2) step-drawdown test, (3) constant-discharge pumping test, and (4) water-level recovery test. Extraction well E-1 was used as the pumping well and monitoring wells MW-3, MW-5, and MW-7 were used as observation wells (see Figure 2). Water levels were monitored with pressure transducers, and checked with a water-level sounder. All equipment was steam cleaned before and after the test. The discharge water from well E-1 was pumped into a Baker Tank™ for onsite storage.

The baseline water-level survey was conducted to record normal fluctuations in the water level beneath the site. The transducer/datalogger equipment was setup on Tuesday, May 29, and the water level was monitored for 48 hours prior to starting the step-discharge test.

The step-drawdown test was conducted on May 31, to determine the optimum pumping rate to be used during the constant-discharge pumping test. During the step-drawdown test, water from extraction well E-1 was pumped at steps of 0.5 and 1 gallon per minute (gpm). The depth-to-water data versus time was recorded and plotted in the field to determine the maximum pumping rate that could be sustained in well E-1 without dewatering the well during the subsequent constant-discharge pumping test.

A 5-hour constant-discharge test was conducted at a pumping rate of 0.7 gpm. The water level changes were monitored with pressure transducers in extraction well E-1 and monitoring wells MW-3, MW-5, and MW-7. After pumping the well for 5 hours, the pump was turned off, and the water-level recovery was monitored. The water level was monitored until the level in well E-1 returned to the static water level.

Depth-to-water information versus time during the constant-discharge and recovery test were plotted for wells E-1, MW-3, MW-5, and MW-7. Three methods of analysis were used to analyze the data. The drawdown data were analyzed using methods described by Theis (1935) and Cooper and Jacob (1946). The water-level recovery data were analyzed using a method described by Jacob (1963). The late-time test data was used in the analyses to minimize the effects of casing storage. The aquifer test plots are presented in Appendix H.

3.0 RESULTS

3.1 GEOLOGY

The regional and site geology were presented in Chempro's Soil and Groundwater Investigation Report, dated February 21, 1990. The borings completed during this investigation further characterize the local geology beneath 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 C. A geologic cross section of the site extending from MW-8 to MW-7 is presented on Figure 3.

3.2 HYDROGEOLOGY

During drilling, saturated clayey sands and clayey gravel lenses were encountered between moist sandy clays. When the saturated soils were penetrated in wells MW-6, MW-7, and MW-8 the groundwater rose rapidly up into the augers to a static elevation of approximately 107.5 feet above mean sea level (MSL). Groundwater in wells MW-5 and E-1 was encountered within one foot of the static water level while drilling. During the previous site investigation, groundwater was encountered under confining pressure while drilling MW-1 through MW-4. This investigation confirmed that in most site wells the first-encountered aquifer beneath the site is under confined conditions. The lenses containing the confined groundwater were encountered at elevations ranging from 98.5 to 100.5 feet above MSL.

3.2.1 Groundwater Elevation, Gradient and Flow Direction

The results of the water-level surveys conducted on May 23 and September 7 and 25, 1990 are presented in Table 4. As shown in the table, the depth to groundwater beneath the site at the time of the September 25 survey ranged from 107.41 to 112.08 feet above MSL. PSH was detected in well MW-5 during the September water-level surveys, with a maximum thickness of 1.3 feet measured

on September 25. Depth-to-water (DTW) measurements were taken with an electric water level sounder using the top of casing as the reference elevation (see Appendix B). The DTW values were converted to groundwater elevations relative to MSL by subtracting the DTW from the surveyed well-head elevation (see Section 2.7). The adjusted depth-to-water (ADTW) in MW-5 was corrected for the presence of PSH before converting to MSL using the following formula:

$$ADTW = DTW - (0.72)(PSH\ thickness)$$

where 0.72 is the approximate specific gravity of gasoline.

Based on the groundwater elevation data, the potentiometric surface beneath the site slopes south to southwest, suggesting the groundwater flows to the south to southwest. The groundwater elevations and a contour map of the potentiometric surface are presented on Figure 4. Based on the groundwater contour map, the hydraulic gradient is approximately 0.034 ft/ft.

3.2.2 Hydraulic Testing

Based on the results of the constant-discharge and water-level recovery tests, the transmissivity of the aquifer is approximately 550 gallons per day per foot (gpd/ft). Based on an effective aquifer thickness of 7 feet, the hydraulic conductivity in the aquifer was calculated to be approximately 4.3×10^{-3} cm/sec. The storage coefficient was calculated to be approximately 2.6×10^{-3}. The results from the aquifer test analysis are presented in Table 5. Appendix H contains the methodology and special considerations used to obtain the aquifer parameters.

3.2.2.1 Groundwater Velocity

Based on the groundwater gradient and hydraulic conductivity presented above, the average groundwater flow velocity in the first encountered aquifer beneath the site was calculated using the following modification of Darcy's Law (from Freeze and Cherry, 1979):

$$V = \frac{Ki}{n}$$

where:
- V = Average Linear Velocity in cm/sec
- K = Hydraulic Conductivity in cm/sec
- i = Hydraulic Gradient in ft/ft
- n = Effective Porosity.

Using the average hydraulic conductivity determined from the pumping test (4.3×10^{-3} cm/sec), a hydraulic gradient of 0.03 ft/ft, and an effective porosity of 0.25 based on estimates for sandy silts and clays (Freeze and Cherry, 1979), the average groundwater flow velocity in the aquifer was calculated to be 5.2×10^{-4} cm/sec (540 feet/year).

3.2.2.2 Zone of Capture

An estimate of the zone of capture was computed for the extraction well using a method described by Todd (1980). The following formula provides an estimate of the lateral radius of influence, perpendicular to the groundwater flow direction, within which an extraction well can capture contaminated groundwater:

$$b = \frac{Q}{4Ti}$$

where:
- b = Lateral Radius of Influence in feet
- Q = Pumping Rate in gallons per day (gpd)
- T = Transmissivity in gpd/ft
- i = Hydraulic Gradient in ft/ft.

Based on a pumping rate of 0.7 gpm, an average transmissivity of 560 gpd/ft, and a hydraulic gradient of 0.03 ft/ft, the radius of capture was calculated to be 15 feet.

3.2.2.3 Well Efficiency

Figure 14 of Appendix H is a distance-drawdown plot generated from the pumping test data. From this figure, the radius of influence for well E-1 was determined to be approximately 100 feet. The well efficiency for well E-1 was estimated by calculating the ratio of the theoretical drawdown of E-1 (1.8') to the actual drawdown in pumping well E-1 (6.4'). The well efficiency calculated using this ratio is 28%.

3.4 GEOCHEMICAL RESULTS

3.4.1 Soil Geochemistry

Selected soil samples obtained from borings MW-5 through MW-8 and E-1 were analyzed for TPH (as gasoline), and BTEX. In addition, the 5.5 foot BGL soil sample from MW-7 was analyzed for total lead. The Certified Analytical Results (CARs) are presented in Appendix D, and a summary of the data are presented on Table 6.

The PID measurements taken during the drilling operation provided qualitative data on the occurrence of total volatile organics in the boring soils. Soil borings MW-6 and MW-8 had the lowest measured levels. The highest PID measurements were collected from borings MW-5 and MW-7. The maximum reading in MW-5 was detected just above the groundwater surface, and the maximum reading from MW-7 was detected in the soil sample collected from 5 feet BGL (see Appendix C).

The chemical analyses of the soil samples generally confirm the qualitative PID readings. TPH (as gasoline) and/or BTEX compounds were detected in all borings except MW-8. In boring MW-7, xylenes at 0.06 ppm were the only hydrocarbons detected. The maximum concentration of TPH (as gasoline) and benzene were detected in the 15 foot BGL soil sample collected from MW-5 at 130 and 1.5 ppm, respectively (see Table 6).

Four quality assurance rinsate samples were collected during the drilling procedure, and analyzed for TPH (as gasoline) and BTEX. Analysis of the rinsate sample collected before drilling MW-7 detected 0.02 ppb xylenes. The first soil sample collected from MW-7 also contained detectable concentrations of xylenes. No other detections were found in the rinsate samples.

3.4.2 Groundwater Geochemistry

Groundwater samples were collected after the installation of each monitoring or extraction well, during the quarterly groundwater sampling events. Monitoring well MW-5 and E-1 were not sampled in September due to the presence of PSH and the extraction pump assembly, respectively. A summary of the analytical

techniques and results are presented on Table 2. The CARs are presented in Appendix D.

Groundwater analyses from monitoring well MW-3, located hydraulically downgradient from the underground storage tank complex, has consistently had the highest detections of TPH (as gasoline) and BTEX compounds, but the concentrations of TPH (as gasoline) and benzene have decreased from 24,000/2,400 ppb in December 1989 to 3,500/900 ppb in September 1990, respectively. Monitoring well MW-5 had TPH (as gasoline) detections of 28,000 ppb in May 1990 and phase separated hydrocarbons in the following sampling events (see Table 4). During the May sampling episode, ethylene dibromide (EDB) was detected in wells E-1 (0.03 ppb) and MW-5 (2.4 ppb). No concentrations of the analyzed parameters were detected in the rinsate samples collected during each sampling episode. Decontamination procedures are considered to be adequate. Sample concentrations are considered to be representative of site conditions. The TPH (as gasoline) concentrations detected in the groundwater are plotted on Figure 5. Benzene concentrations detected in the groundwater are plotted on Figure 6.

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 source, and determine the extent of contamination at the site. Five soil borings were drilled. Four borings were completed as 2-inch-diameter monitoring wells and one boring was completed as a 6-inch-diameter extraction well.

The geologic and hydrogeologic data generated in this investigation indicate that the site is underlain by low permeability sandy clays, with thin sand and gravel lenses dispersed in the clay. On September 25, 1990 survey, the groundwater table ranged from 107.41 to 112.08 feet above mean sea level (MSL). At the time of the survey, the groundwater was flowing to the south to southwest (see Figure 5), and the hydraulic gradient was approximately 0.034 ft/ft.

The aquifer parameters were calculated using pumping test data. The transmissivity of the aquifer was determined to be approximately 550 gpd/ft. Based on an effective aquifer thickness of 7 feet, the hydraulic conductivity in the aquifer was found to be approximately 4.3×10^{-3} cm/sec. The storage coefficient was calculated to be approximately 2.6×10^{-3}. Using these data and an effective porosity of 0.25, the groundwater velocity was calculated to be 5.2×10^{-4} cm/sec (540 feet/year).

Petroleum hydrocarbons were detected in soil samples collected from borings MW-5, MW-6, MW-7, and E-1. The soil sample collected from boring MW-5 had the highest concentration of TPH (as gasoline) in the 15 foot BGL sample, with a concentration of 130 ppm. Soil samples from boring MW-7 contained 0.06 ppm xylenes in the 5 foot BGL sample. No detections of petroleum contaminants were reported in boring MW-8.

Detectable concentrations of TPH (as gasoline) and BTEX have been found in the groundwater from wells MW-3, MW-4, MW-5 and E-1. The highest levels of contaminants at the site have been found in well MW-5. During the May 25, 1990 sampling event, 28,000 ppb TPH (as gasoline) and 920 ppb benzene were detected in the groundwater of MW-5. During the September 7, 1990 quarterly sampling event, 0.04 feet of PSH were found in MW-5 and the well was not

sampled. During the next water level survey, conducted on September 25, 1990, the thickness of PSH in MW-5 was measured at 1.3 feet. No detectable concentrations of chlorinated hydrocarbons were found in any of the groundwater samples analyzed by EPA method 624.

5.0 REFERENCES

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Table 1
WELL CONSTRUCTION
Chevron Service Station No. 9-8139

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-1	127.08	41.5	30.0	0-21.8	30.0-41.5	25-30	2	0.02
MW-2	125.98	31.5	30.0	0-23.0	NA	25-30	2	0.02
MW-3	126.77	30.0	25.5	0-12.5	25.5-30.0	15.5-25.5	2	0.02
MW-4	125.22	26.5	22.0	0-11.0	22.8-26.5	12-22	2	0.02
MW-5	125.85	30	23.7	0-13.0	25.5-30.0	14.3-23.7	2	0.02
MW-6	124.18	34	29.6	0-23.0	NA	24.6-29.6	2	0.02
MW-7	126.86	31.5	26.5	0-20.5	27.0-31.5	21.5-26.5	2	0.02
MW-8	123.61	34	31.5	0-20.5	31.5-34	21.5-30.5	2	0.02
E-1	124.95	31.5	29.5*	0-17.0	27.0-31.5	18.1-26.5	6	0.02

ft-MSL = Feet above mean sea level
ft-BGL = Feet below ground level
NA = Not applicable
I.D. = Inside diameter
* 3 foot sediment sump installed below screen interval, from 26.5 to 29.5 feet BGL

Table 2

GROUNDWATER ANALYSES AND ANALYTICAL TECHNIQUES

Chevron Service Station No. 9-8139

WELL DESIGNATION	SAMPLE DATE	SAMPLE NO.	TPH Gasoline	TPH Diesel	TOTAL OIL & GREASE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENES	Pb	TOTAL Cr	METALS Cd	Zn	ETHYLENE DIBROMIDE
MW-1	12/5/89	WS-1SL	ND	ND	ND	ND	ND	ND	ND	ND	ND	20	20	ND
	5/24/90	WS-1SL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	NA
	9/6/90	1WSSL	ND	NA	NA	ND	0.8	ND	0.5	NA	NA	NA	NA	ND
MW-2	12/5/89	WS-2SL	ND	ND	ND	ND	ND	ND	0.9	ND	ND	ND	10	ND
	5/24/90	WS-2SL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	NA
	9/6/90	2WSSL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND
MW-3	12/5/89	WS-3SL	24000	NA	NA	2400	1800	360	2600	NA	NA	NA	NA	ND
	5/24/90	WS-3SL	9000	NA	NA	2600	1700	250	1500	NA	NA	NA	NA	NA
	9/6/90	3WSSL	3500	NA	NA	900	550	110	460	NA	NA	NA	NA	ND
MW-4	12/5/89	WS-4SL	19000	NA	NA	390	1300	460	1800	NA	NA	NA	NA	ND
	5/24/90	WS-5SL	4500	NA	NA	210	440	140	480	NA	NA	NA	NA	NA
	9/6/90	4WSSL	6000	NA	NA	680	520	170	580	NA	NA	NA	NA	ND
MW-5	5/25/90	WS-6SL	28000	NA	NA	920	1100	460	1300	NA	NA	NA	NA	2.40
	9/7/90	NA	<- - - - - - - - - - - - - - 0.04 feet PSH ->											
MW-6	5/25/90	WS-7SL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND
	9/7/90	6WSSL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND
MW-7	5/25/90	WS-8SL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND
	9/7/90	7WSSL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND
	9/7/90	8WSSL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND
MW-8	9/7/90	9WSSL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND
E-1	5/25/90	WS-9SL	3900	NA	NA	260	430	64	340	NA	NA	NA	NA	0.03
RINSATE	12/5/89	RS-4SL	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
	5/24/90	RS-1SL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	NA
	9/7/90	1RSSL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA	ND
12/89	Detection Method		8015	8015	413.2	602	602	602	602	7420	7190	7130	7950	504
	Detection Limit		500	1000	5000	0.5	0.5	0.5	0.5	500	100	10	10	0.05
5/90	Detection Method		8015	NA	NA	602/624*	602/624*	602/624*	602/624*	NA	NA	NA	NA	504
	Detection Limit (p		50			0.5/2	0.5/3	0.5/3	0.5/3					0.02
9/90	Detection Method		8015	NA	NA	602	602	602	602	NA	NA	NA	NA	504
	Detection Limit (p		50			0.5	0.5	0.5	0.5					0.05

Groundwater chemistry values presented in parts per billion (ppb)
ND = Less than method detection limit
NA = No Analysis
PSH = Phase Separated Hydrocarbons

* MW-5, MW-6, MW-7 & EW-1 were analyzed for Volatile Organics using EPA Method 8240 (624) with no detections other than those shown

Table 3

WELL-HEAD SURVEY DATA

Chevron Service Station No. 9-8139

Well	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
E-1	127.29	124.95	4920	5103

ft-MSL: Feet above mean sea level
TOC: Top of casing
Survey conducted by Ruth and 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
MW-3 wellhead modified on 9/6/90

Table 4
GROUNDWATER ELEVATION DATA
Chevron Service Station No. 9-8139

Well	Date Sampled	TOC Elevation (ft-MSL)	Depth to Water (ft-BTOC)	PSH (ft)	Water Elevation (ft-MSL)
MW-1	3/23/90	127.09	12.92	ND	114.17
	9/6/90	127.09	14.68	ND	112.41
	9/25/90	127.09	15.01	ND	112.08
MW-2	3/23/90	125.98	12.40	ND	113.58
	9/6/90	125.98	14.85	ND	111.13
	9/25/90	125.98	14.80	ND	111.18
MW-3*	3/23/90	127.84	17.50	ND	110.34
	9/6/90	126.77	18.72	ND	108.05
	9/25/90	126.77	18.40	ND	108.37
MW-4	3/23/90	125.22	16.02	ND	109.20
	9/6/90	125.22	17.35	ND	107.87
	9/25/90	125.22	17.48	ND	107.74
MW-5	3/23/90	125.85	16.89	ND	108.96
	9/7/90	125.85	18.46	0.04	107.42**
	9/25/90	125.85	19.30	1.30	107.49**
MW-6	3/23/90	124.18	18.51	ND	105.67
	9/7/90	124.18	16.18	ND	108.00
	9/25/90	124.18	16.42	ND	107.76
MW-7	3/23/90	126.86	21.40	ND	105.46
	9/7/90	126.86	18.38	ND	108.48
	9/25/90	126.86	19.25	ND	107.61
MW-8	9/7/90	123.61	16.07	ND	107.54
	9/25/90	123.61	16.20	ND	107.41

TOC: Top of casing
ft-MSL: Feet above mean sea level
ft-BTOC: Feet below top of casing
ND: Not detected
* MW-3 wellhead modified and resurveyed on 9/6/90
** Water elevation corrected for floating product (see Section 3.2.1)

Table 5
HYDRAULIC TESTING SUMMARY
Chevron Service Station No. 9-8139

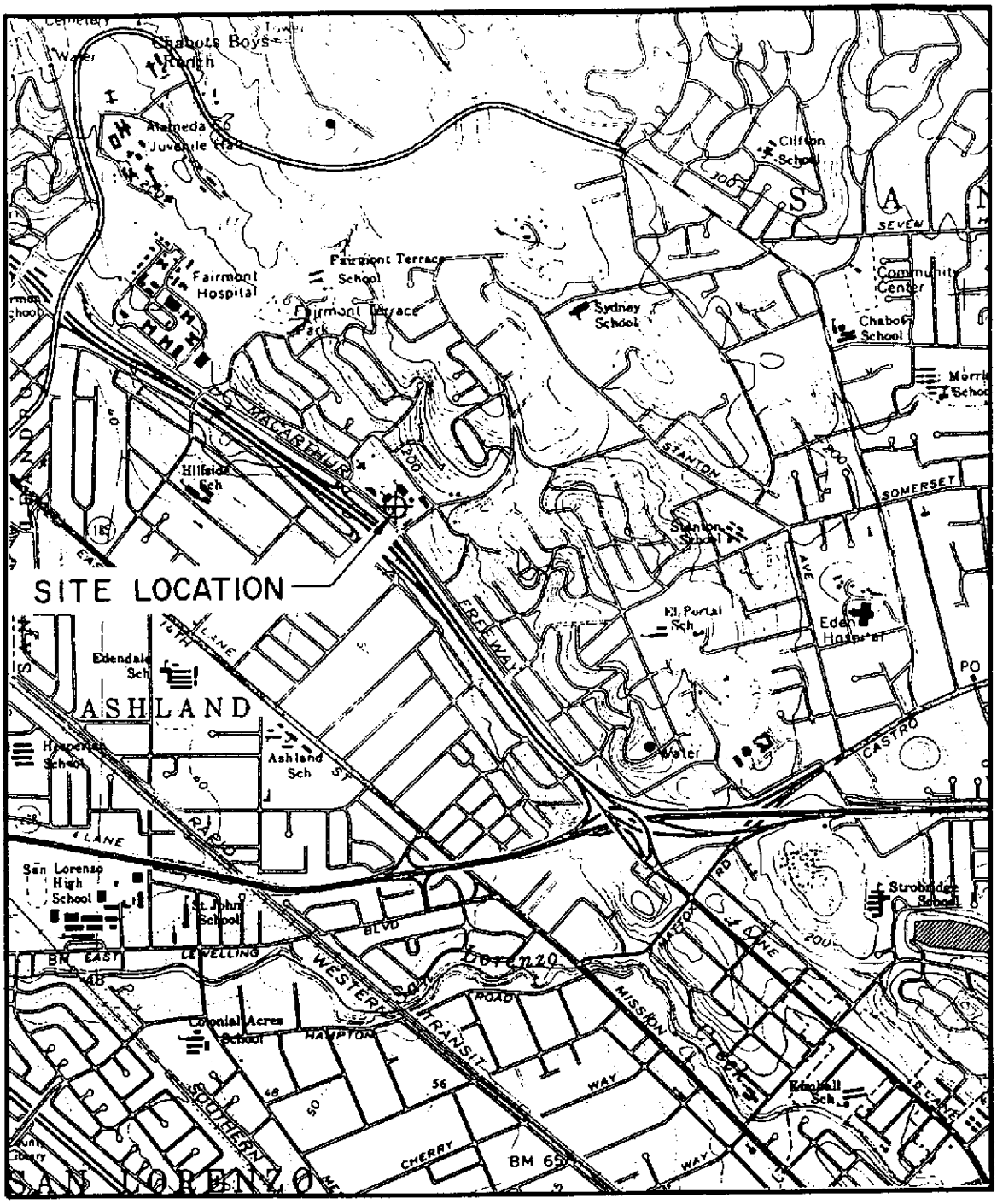
WELL	TEST	METHOD OF ANALYSIS	T (gpd/ft)	Aquifer Thickness (feet)	K (cm/sec)	S
E-1	Constant-Discharge	Theis	47	7	3.12E-04	
	Constant-Discharge	Jacob	67	7	4.50E-04	
	Recovery	Jacob	31	7	2.10E-04	
MW-3	Constant-Discharge	Theis	365	7	2.45E-03	4.40E-03
	Constant-Discharge	Jacob	430	7	2.80E-03	3.50E-03
	Recovery	Jacob	203	7	1.36E-03	
MW-5	Constant-Discharge	Theis	501	7	3.37E-03	2.88E-03
	Constant-Discharge	Jacob	684	7	4.61E-03	1.73E-03
	Recovery	Jacob	420	7	2.82E-03	
MW-7	Constant-Discharge	Theis	966	7	6.50E-03	1.85E-03
	Constant-Discharge	Jacob	1155	7	7.79E-03	1.09E-03
	Recovery	Jacob	1087	7	7.35E-03	
Geometric mean of MW-3, MW-5, and MW-7:			562		4.34E-03	2.58E-03

T: Transmissivity
K: Hydraulic Conductivity
S: Storativity (Dimensionless)
gpd/ft: Gallons per Day per Foot
cm/sec: Centimeters per Second

TABLE 6
SOIL ANALYSES AND ANALYTICAL TECHNIQUES
Chevron Service Station No. 9-8139

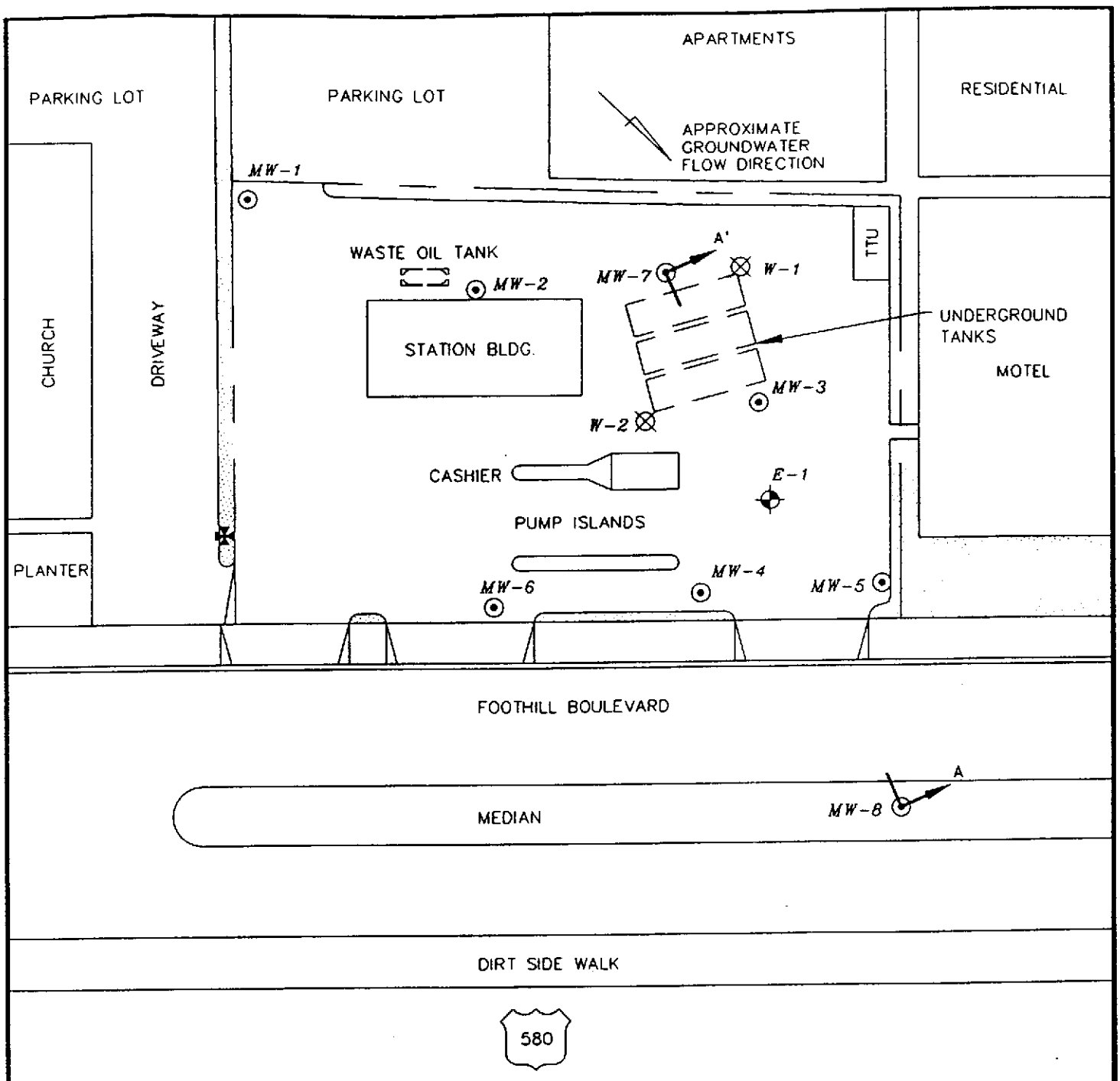
SOIL BORING	SAMPLE DEPTH	DATE SAMPLED	SAMPLE NO.	TPH Gasoline	TPH Diesel	TOTAL OIL & GREASE	BENZENE	TOLUENE	ETHYL-BENZENE	XYLENE	TOTAL METALS Pb	Cr	Cd	Zn
Detection Method				8015	8015	503E	8020	8020	8220	8020	7240	7190	7130	7950
Detection Limit (ppm)				1	10	20	0.05	0.05	0.05	0.05	10	0.20	0.20	0.20
MW-1	25	11/29/89	SS-5SL	ND	ND	20	ND	ND	ND	ND	20	50	1.30	31
MW-2	5	11/29/89	SS-9SL	ND	ND	ND	ND	ND	ND	ND	20	28	0.90	48
MW-2	25	11/29/89	SS-13SL	ND	ND	ND	ND	ND	ND	ND	20	33	1.10	32
MW-3	5	12/1/89	SS-20SL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
MW-3	15	12/1/89	SS-21SL	6	NA	NA	1.1	0.64	0.08	0.44	NA	NA	NA	NA
MW-3	20	12/1/89	SS-23SL	ND	NA	NA	0.14	ND	ND	ND	NA	NA	NA	NA
MW-4	10	11/30/89	SS-16SL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
MW-4	15	11/30/89	SS-17SL	24	NA	NA	0.29	3.1	3.3	16	NA	NA	NA	NA
	25	11/30/89	SS-19SL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
MW-5	10	5/17/90	SS-45SL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	15	5/17/90	SS-46SL	130	NA	NA	1.5	3	1.2	7.4	NA	NA	NA	NA
MW-6	10.5	5/14/90	SS-27SL	2	NA	NA	ND	ND	ND	0.16	NA	NA	NA	NA
	15.5	5/14/90	SS-28SL	5	NA	NA	ND	ND	ND	0.11	NA	NA	NA	NA
MW-7	5.5	5/15/90	SS-33SL	ND	NA	NA	ND	ND	ND	0.06	ND	NA	NA	NA
	10.5	5/15/90	SS-34-SL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
MW-8	25	8/30/90	SS-49SL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
EW-1	10.5	5/16/90	SS-40SL	ND	NA	NA	ND	ND	ND	ND	NA	NA	NA	NA
	15.5	5/16/90	SS-41-SL	37	NA	NA	0.69	2.8	0.76	4.2	NA	NA	NA	NA

Soil chemistry values presented in parts per million (ppm)
NA = No Analysis
ND = Less than method detection limit



NOTE: (MAP ADAPTED FROM USGS HAYWARD 7.5' QUADRANGLE

CHEMPRO **CHEMICAL PROCESSORS, INC.** **950-B GILMAN STREET** **BERKELEY, CALIFORNIA**	**SITE LOCATION MAP** Chevron Service Station #9-8139 16304 Foothill Boulevard San Leandro, California	FIGURE 1 1158



EXPLANATION

- EXTRACTION WELL
- GROUNDWATER MONITORING WELL
- OBSERVATION WELL
- BENCHMARK: RAILROAD SPIKE IN POWER POLE EL 123.23 [ALA. Co. DATUM]
- A' — A GEOLOGIC CROSS SECTION

N

0 20 40

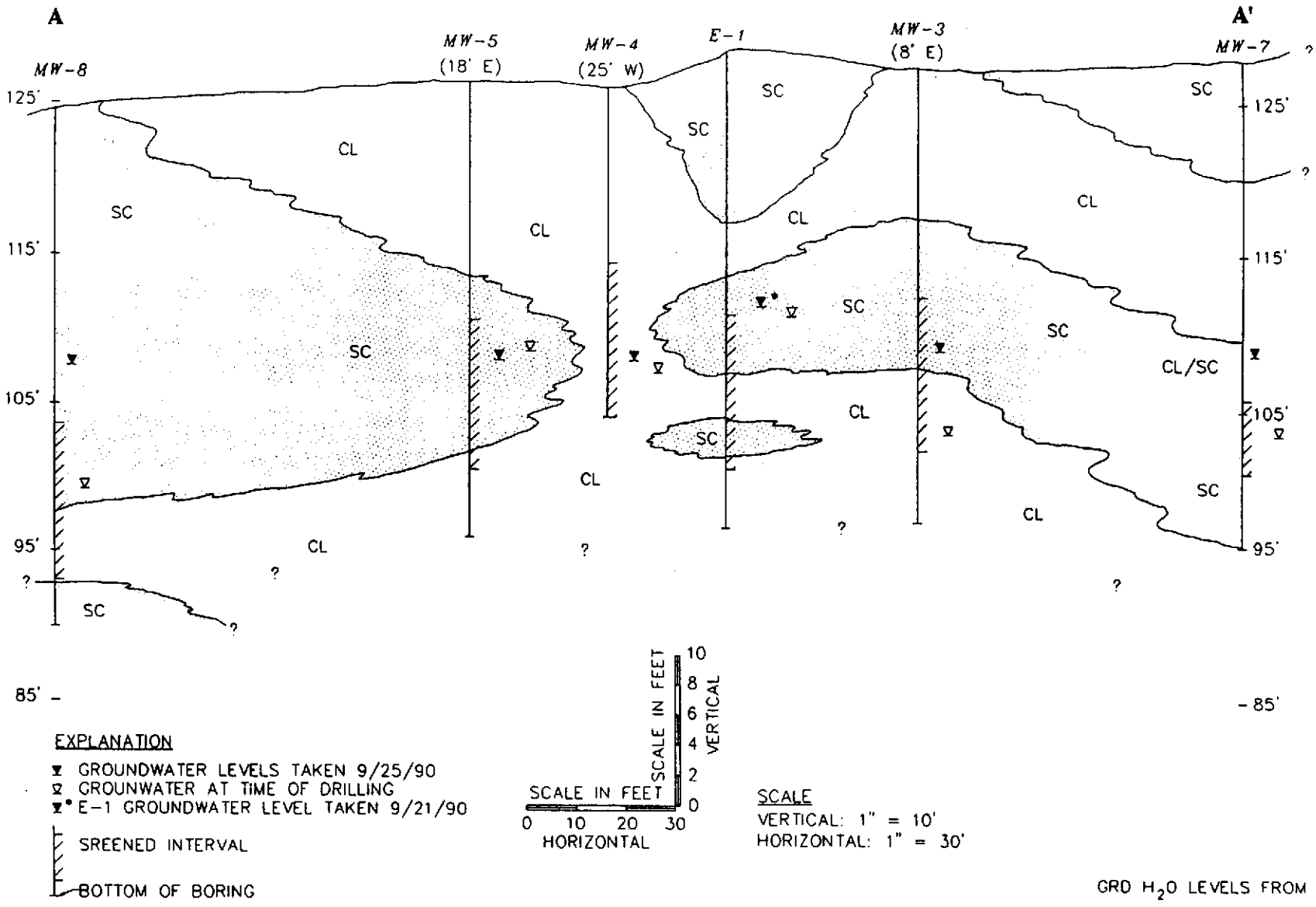
SCALE IN FEET

CHEMICAL PROCESSORS INC.
950 "B" Gilman Street
Berkeley, CA 94710

SITE PLAN AND VICINITY MAP
Chevron Service Station 9-8139
16304 Foothill Boulevard
San Leandro, California

FIGURE 2

PROJECT No. 1158



CHEMICAL PROCESSORS, INC.
950-B GILMAN STREET
BERKELEY, CALIFORNIA

GEOLOGIC CROSS SECTION A – A'

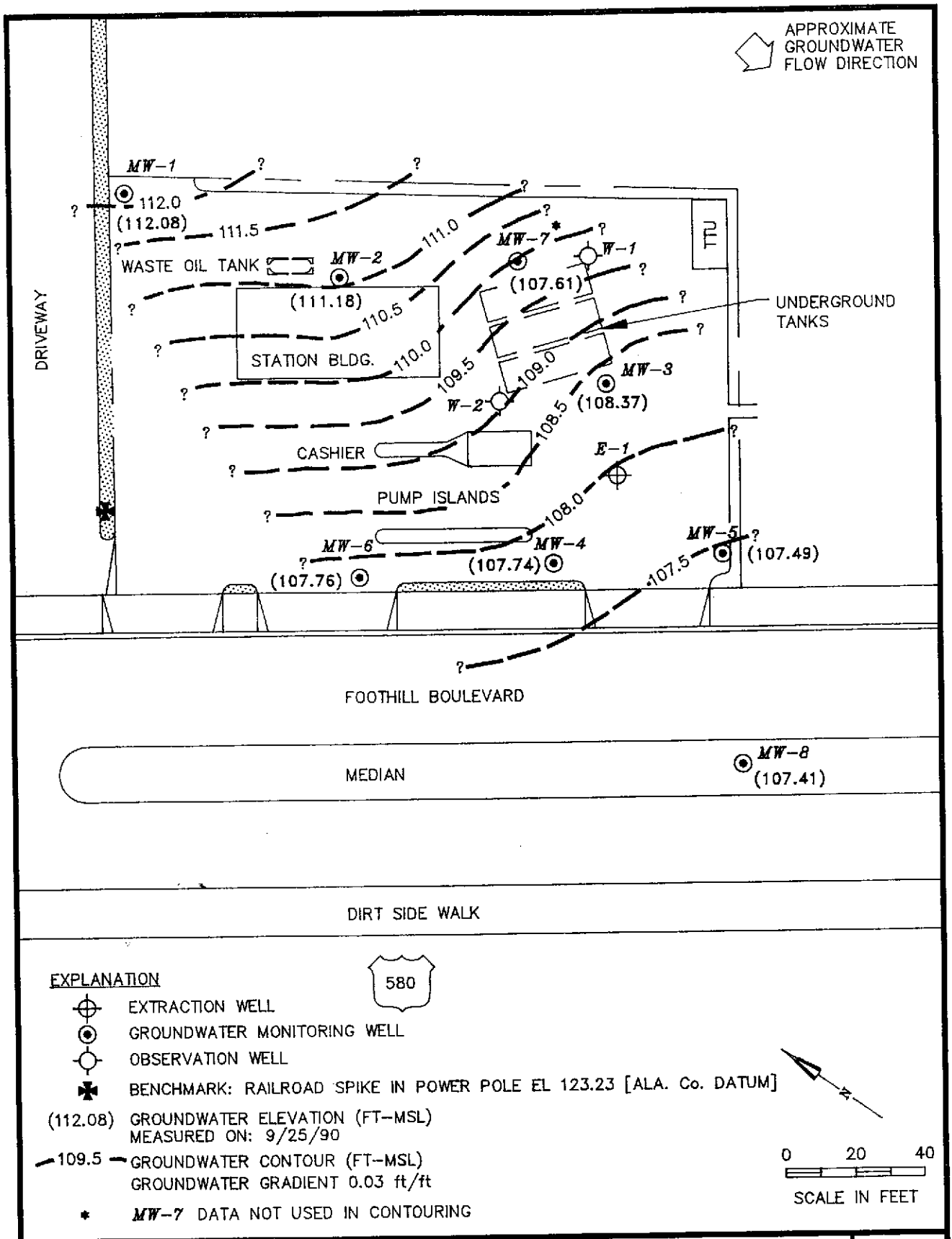
Chevron Service Station 9-8139

16304 Foothill Boulevard

San Leandro, California

FIGURE 3

PROJECT No. 1158

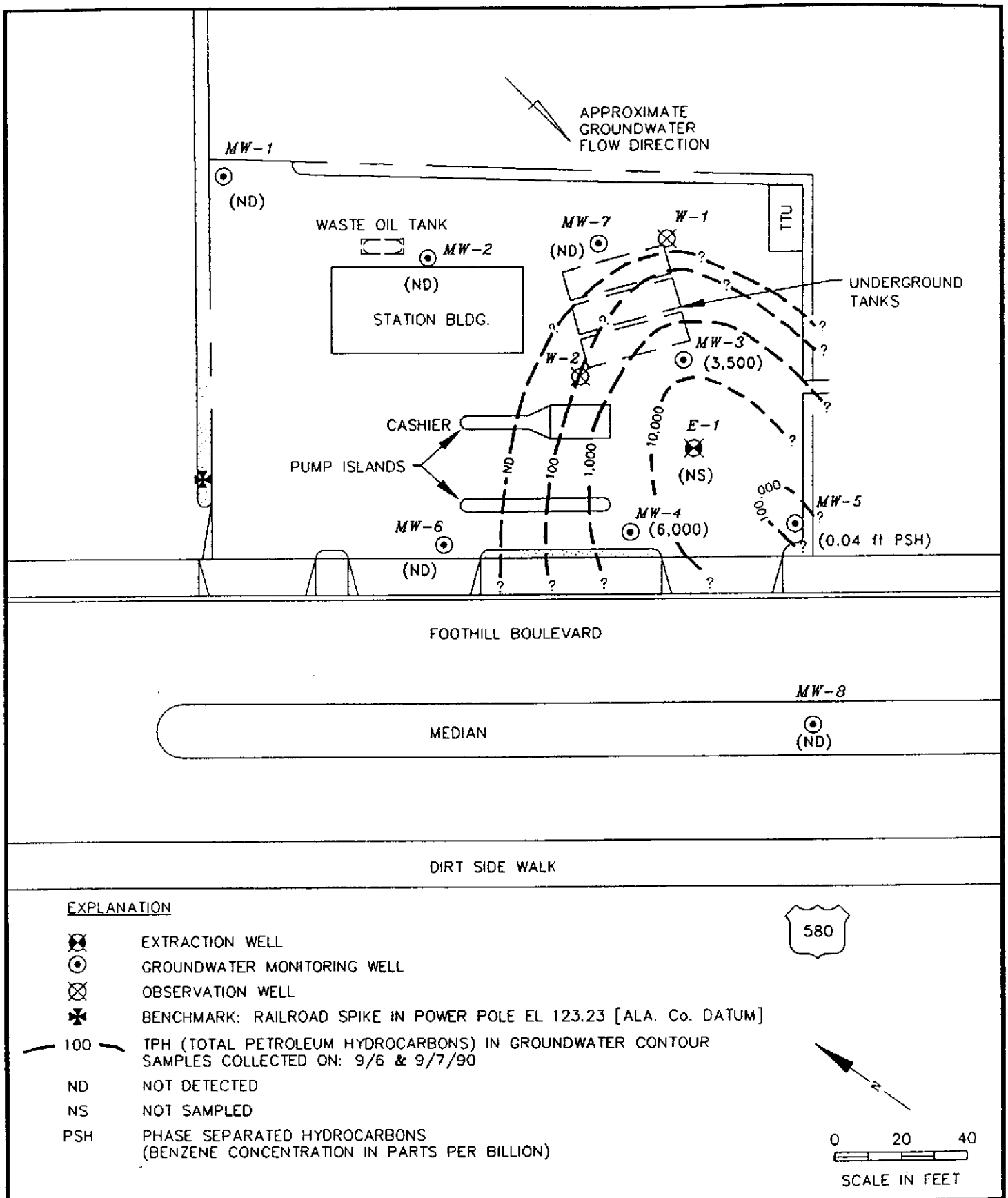


CHEMICAL PROCESSORS INC.
950 "B" Gilman Street
Berkeley, CA 94710

GROUNDWATER ELEVATION CONTOUR
Chevron Service Station No. 9-8139
16304 Foothill Boulevard
San Leandro, California

PROJECT No. 1158

FIGURE 4



EXPLANATION

- EXTRACTION WELL
- GROUNDWATER MONITORING WELL
- OBSERVATION WELL
- BENCHMARK: RAILROAD SPIKE IN POWER POLE EL 123.23 [ALA. Co. DATUM]
- 100 — TPH (TOTAL PETROLEUM HYDROCARBONS) IN GROUNDWATER CONTOUR SAMPLES COLLECTED ON: 9/6 & 9/7/90
- ND — NOT DETECTED
- NS — NOT SAMPLED
- PSH — PHASE SEPARATED HYDROCARBONS (BENZENE CONCENTRATION IN PARTS PER BILLION)

CHEMPRO

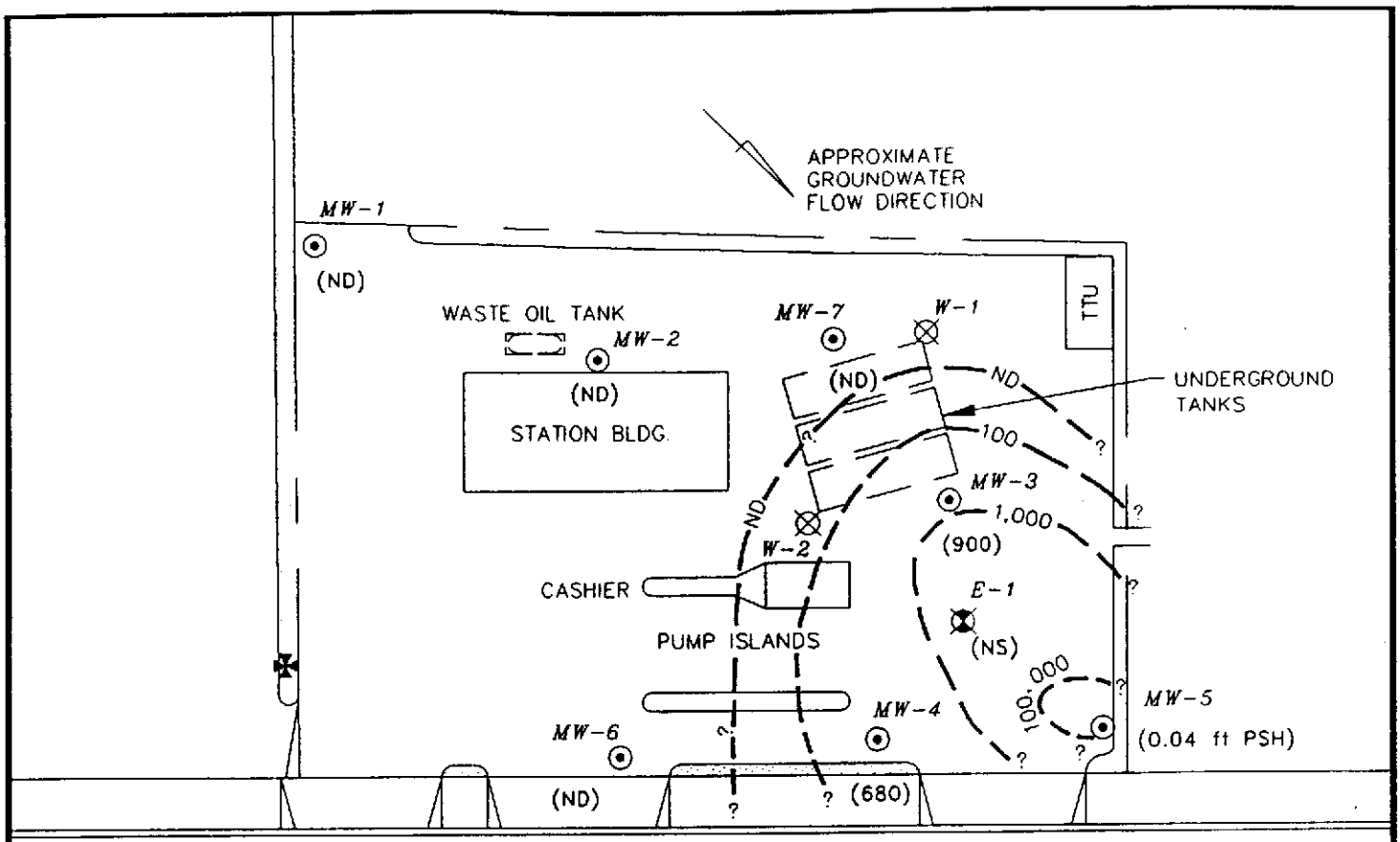
CHEMICAL PROCESSORS INC.
950 "B" Gilman Street
Berkeley, CA 94710

TPH ISOCONCENTRATION CONTOURS
Chevron Service Station 9-8139
16304 Foothill Boulevard
San Leandro, California

FIGURE 5

PROJECT No. 1158

JAU 9/21/90



EXPLANATION

- EXTRACTION WELL
- GROUNDWATER MONITORING WELL
- OBSERVATION WELL
- BENCHMARK: RAILROAD SPIKE IN POWER POLE EL 123.23 [ALA. Co. DATUM]
- 100 — BENZENE CONCENTRATION IN GROUNDWATER CONTOUR
  SAMPLES COLLECTED ON: 9/6 & 9/7/90
- ND — NOT DETECTED
- NS — NOT SAMPLED
- PSH — PHASE SEPARATED HYDROCARBONS
  (BENZENE CONCENTRATION IN PARTS PER BILLION)

580

N

0 20 40

SCALE IN FEET

CHEMICAL PROCESSORS INC.
950 "B" Gilman Street
Berkeley, CA 94710

BENZENE ISOCONCENTRATION CONTOURS
Chevron Service Station 9-8139
16304 Foothill Boulevard
San Leandro, California

FIGURE 6

PROJECT No. 1158

JAU 9/24/90

Appendix A

DECONTAMINATION PROCEDURES AND QUALITY ASSURANCE SAMPLING

Appendix A

DECONTAMINATION PROCEDURES
and
QUALITY ASSURANCE SAMPLING

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 service station 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
Pumps	Steam cleaned 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 service station tap. Arrowhead™ distilled water was used for rinsates. The water generated during

decontamination procedures was stored in 55-gallon drums onsite and was disposed of by a Chevron contractor.

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, rinsate samples were collected from the equipment used for sampling (split-spoon sampler or Teflon™ bailer). The rinsate samples were taken by: (1) trickling or rinsing distilled 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 rinsate 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 rinsate samples were taken.

Appendix B

GROUNDWATER SAMPLING AND ANALYSIS PROCEDURES

Appendix B

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 Arrowhead™ distilled 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 and will be disposed of by Chevron.

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 distilled water and then decanting that water into the sample vails. 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.

0.5 feet of floating hydrocarbon was encountered in well MW-5. Four casing volumes were purged from the well to evacuate the free product but the well was not sampled. Floating hydrocarbon was not encountered in any of the other wells on or offsite. 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. MW-2 was bailed dry after the evacuation of two casing volumes. This well was allowed to recover to within 80% of its static water level and sampled.

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. During the September sampling, the meter would not calibrate and samples were collected after four purge volumes were evacuated.

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 ready for removal, and Chempro will transport the drums off-site 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-3 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 cold packs until received by the laboratory. Cold packs 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

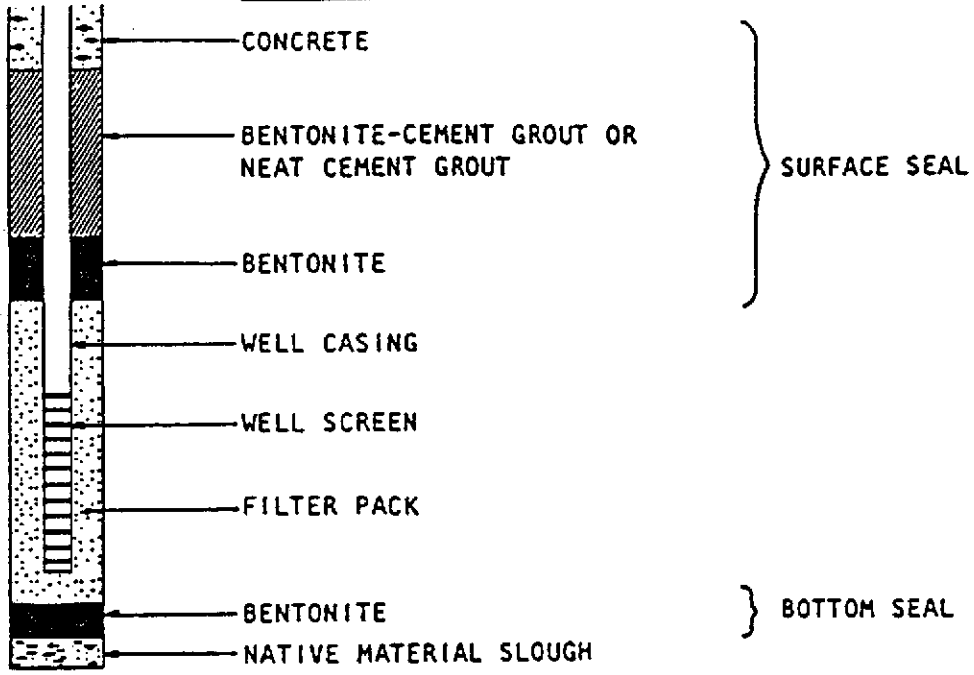
The Sampling and Analysis Chain-Of-Custody Record, initiated at the time of sampling, contains, but is not limited to, the well number, sample type, analytical request, date of sampling, and the name of the sampler. The record sheet was signed, timed, and dated by the sampler when transferring the samples.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

Appendix C

BORING LOGS, WELL CONSTRUCTION DETAILS, AND WELL INSTALLATION PERMIT

EXPLANATION OF SYMBOLS ON EXPLORATORY BORING LOGS

Well Details 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)

EXPLANATION OF SYMBOLS ON
EXPLORATORY BORING LOGS
(CONTINUED)

Ground-Water Level Column

DEPTH TO FIRST OBSERVED GROUND WATER

DEPTH TO STABILIZED GROUND WATER

Miscellaneous

2.5 YR 6/2 — Color as field checked to Munsell Soil Color Chart (1975 Edition)

PENETRATION — Blows required to drive sampler 1 foot into soil.
Standard drive hammer weight: 140 pounds.
Standard drop: 30 inches

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1158 — BORING NO. E-1

PROJECT NAME CHEVRON SERVICE STATION NO. 9-8139 — PAGE 1 OF 2

BY D. Maupin — DATE 5/17/90 — SURFACE ELEV. 127.29 ft.

PID (ppm)	POCKET PENETRO-METER ton/sq ft	BLOW CT. (blws/6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							ASPHALT.	
							FILL.	
54.8	3.2	NA					**CLAYEY SAND (SC)**, dark yellowish brown (10YR, 4/4); 40-50% moderate to high plasticity fines; 50-60% fine to coarse sand; trace fine gravel; worm borrows upper 4-8"; medium dense; damp; no product odor.	
21.7	3.2	NA		5			@ 5': 25-35% moderate to high plasticity fines; 50-60% fine to coarse sand; 10-20% fine gravel.	
47.6		NA					@ 6.5': thin lenses of high plasticity fines; some highly altered sandstone gravel.	
	1.3	NA					@ 8': dark yellowish brown (10YR, 3/6); 35-45% moderate to high plasticity fines; 55-65% fine to coarse sand; trace Mn-oxide stained fine gravel; damp; weak product odor.	
39.6	2.3	NA		10			@ 10': olive brown (2.5Y, 4/4); 25-35% moderate to high plasticity fines; 65-75% fine to coarse sand, subangular to subrounded; trace fine to medium gravel; organic odor.	
	3.5	NA					**SANDY CLAY (CL)**, mottled olive (5Y, 4/3) and dark yellowish brown (10YR, 4/6); 55-65% high plasticity fines; 25-35% fine to medium sand; 10-15% fine gravel; very stiff; damp; no product odor.	
	3.5	NA					@ 13': moderate product odor.	
405	2.2	NA		15			**CLAYEY SAND (SC)**, dark yellowish brown (10YR, 4/4); 20-30% moderate to high plasticity fines; 60-70% fine to coarse sand; 5-15% fine to coarse gravel; medium dense; damp; moderate to strong product odor.	
	1.5	NA	5-21-90 ▼					
295	3.0	NA	5-16-90 ▽				**GRAVELLY SAND (SP)**, light olive brown (2.5Y, 5/4); 10-20% moderate plasticity fines; 40-50% fine to coarse sand; 30-40% fine to coarse	
				20				

REMARKS

Boring was drilled to 31.5' using 6.5" diameter hollow-stem augers. Soil samples were collected from 3.5' to 31.5' using a 2.5" diameter Moss continuous sampler. Boring was redrilled with 12.25" diameter hollow-stem augers. A groundwater extraction well was installed using 6" diameter PVC casing (see attached well detail).

David C. Tight RG#4603 Exp Date: 6/91

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1158 BORING NO. E-1

PROJECT NAME CHEVRON SERVICE STATION NO. 9-8139 PAGE 2 OF 2

BY D. Maupin DATE 5/17/90 SURFACE ELEV. 127.29 ft.

PID (ppm)	POCKET PENETRO-METER ton/sq ft	BLOW CT. (blws/6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
61.5	1.1	NA					gravel, one quartz clast >2" diameter; medium dense; damp to moist; moderate to strong product odor.	
	4.1	NA					@ 17.5': graded to dark olive gray (5Y, 3/2); wet; strong product odor.	
352	2.8	NA					CLAYEY SAND (SC), abundant olive mottling; trace medium gravel; strong product odor.	
				25			@ 20': yellowish brown (10YR, 5/6); 25-35% moderate to high plasticity fines; 60-70% fine to coarse sand; 5-10% fine gravel; medium dense; damp to wet; no product odor.	
18.2	0.5	NA						
5.0	2.4	NA					SANDY CLAY (CL), yellowish brown (10YR, 5/6); 55-65% high plasticity fines; 30-40% fine to coarse sand; 5-10% fine gravel; very stiff to hard; moist; weak product odor.	
5.1	2.5	NA						
				30			CLAYEY SAND (SC), dark yellowish brown (10YR, 4/6); 25-35% moderate to high plasticity fines; 50-60% fine to coarse sand; 10-15% fine gravel, angular; loose; damp; weak product odor.	
	No	Recovery					@ 25': 10-20% low to moderate plasticity fines; 60-70% fine to coarse sand; 10-20% fine gravel; moist to wet; no product odor.	
							SANDY CLAY (CL), dark yellowish brown (10YR, 4/4); 55-65% high plasticity fines; 35-45% fine to coarse sand, rounded; trace fine gravel; very stiff; damp; no product odor.	
				35			@ 29': sandy lense; 50-60% high plasticity fines; 40-50% fine to coarse sand; trace fine gravel.	
							TERMINATED BORING AT 30' AND SAMPLED TO 31.5'.	
				40				

REMARKS

Boring was drilled to 31.5' using 6.5" diameter hollow-stem augers. Soil samples were collected from 3.5' to 31.5' using a 2.5" diameter Moss continuous sampler. Boring was redrilled with 12.25" diameter hollow-stem augers. A groundwater extraction well was installed using 6" diameter PVC casing (see attached well detail).

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1158 — BORING NO. MW-5

PROJECT NAME CHEVRON SERVICE STATION NO. 9-8139 — PAGE 1 OF 2

BY D. Maupin — DATE 5/17/90 — SURFACE ELEV. 126.12 ft.

PID (ppm)	POCKET PENETRO-METER ton/sq ft	BLOW CT. (blws/6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							ASPHALT. FILL.	
10.2	3.0	6 13 24		5			SANDY CLAY (CL), yellowish brown (10YR, 5/8); 50-60% moderate to high plasticity fines; 40-50% fine to coarse sand; trace very fine gravel; very stiff; damp; no product odor.	
15.5		5 8 11		10			@ 10': light olive brown (2.5Y, 5/4); 60-70% high plasticity fines; 30-40% fine to coarse sand; trace fine gravel; very stiff; damp; no product odor.	
4622		6 11 23	5-17-90	15			CLAYEY SAND (SC) , dark yellowish brown (10YR, 4/6); 30-40% moderate to high plasticity fines; 40-50% fine to coarse sand; 10-20% fine gravel; dense; damp; strong product odor. @ 17': 40-50% moderate to high plasticity fines; 50-60% fine to coarse sand; medium dense; strong product odor.	
3418	2.7	NA					@ 17.5-18.5': gravelly sand lense; 50-60% fine to coarse sand; 20-30% fine gravel.	
	2.5	NA	5-17-90	20			@ 18': olive gray (5Y, 4/2); medium dense; wet; strong product odor. @ 19.5': gray coated worm holes, dominantly vertical.	

REMARKS

Boring was drilled to 28.5' using 6.5" diameter hollow-stem augers. Soil samples were collected at 5' intervals with a 2" diameter modified California split-spoon sampler for the upper 16.5' of the boring. From 16.5' to 30' soil samples were collected using a 2.5" diameter Moss continuous sampler. A groundwater monitoring well was installed using 2" diameter PVC casing (see attached well detail).

David C. Tiglet RG#4603 Exp: 6/91

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1158 BORING NO. MW-5

PROJECT NAME CHEVRON SERVICE STATION NO. 9-8139 PAGE 2 OF 2

BY D. Maupin DATE 5/17/90 SURFACE ELEV. 126.12 ft.

PID (ppm)	POCKET PENETRO-METER ton/sq ft	BLOW CT. (blws/6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
37.2	2.5	NA					CLAYEY SAND (SC), continued. @ 20': yellowish brown (10YR, 5/6); 35-45% moderate to high plasticity fines; 40-50% fine to coarse sand; 10-15% fine to medium gravel; Mn-oxide staining in soil; medium dense; damp to moist; no product odor.	
		NA						
40.4		NA					@ 21.5': damp to moist, no product odor.	
				25				
40.7	1.5	NA					SANDY CLAY (CL), dark yellowish brown (10YR, 4/4); 65-75% high plasticity fines; 25-35% fine to coarse sand; trace fine gravel, subrounded to rounded; very stiff; moist; no product odor.	
	3.8	NA						
22.1	>4.0	NA					@ 28.5': hard; no product odor.	
				30			BORING TERMINATED AT 28.5' AND SAMPLED TO 30'.	
				35				
				40				

REMARKS

Boring was drilled to 28.5' using 6.5" diameter hollow-stem augers. Soil samples were collected at 5' intervals with a 2" diameter modified California split-spoon sampler for the upper 16.5' of the boring. From 16.5' to 30' soil samples were collected using a 2.5" diameter Moss continuous sampler. A groundwater monitoring well was installed using 2" diameter PVC casing (see attached well detail).

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1158 — BORING NO. MW-6

PROJECT NAME CHEVRON SERVICE STATION NO. 9-8139 — PAGE 1 OF 2

BY D. Maupin — DATE 5/14/90 — SURFACE ELEV. 124.83 ft.

PID (ppm)	POCKET PENETRO-METER ton/sq ft	BLOW CT. (blws/6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
		NA					ASPHALT. FILL: olive green; low plasticity fines, sand, and gravel. @ 1.5': black (5YR, 2.5/1); low plasticity fines, fine sand, and fine gravel; stiff; damp; slight organic odor.	
		NA						
22.8	2.5	4		5			SANDY CLAY (CL), very dark grayish brown (10YR, 3/2); 65-75% high plasticity fines; 15-20% fine sand; 10-15% fine gravel; stiff; damp; no product odor.	
		8						
		22						
		NA						
		NA					@ 8': dark brown (7.5YR, 3/4); Mn-oxide staining on sand and gravel grains.	
0.0	4.0	11		10			@ 10': hard; damp; no product odor.	
		17						
		26						
		NA					@ 11.5': olive brown (2.5Y, 4/4); 50-60% high plasticity fines; 30-40% fine to coarse sand; trace fine gravel; damp; no product odor.	
	1.5	NA						
222	2.5	8	5-16-90	15			CLAYEY SAND (SC), dark grayish brown (2.5Y, 4/2); 30-40% moderate to high plasticity fines; 60-70% fine to coarse sand; trace fine gravel; very dense; damp; no product odor.	
		19						
		32						
0.0	2.8	NA						
		NA					SANDY CLAY (CL), dark yellowish brown (10YR, 3/6); 50-60% high plsticity fines; 25-35% fine to coarse sand; 5-25% fine gravel; stiff; damp; no product odor.	
				20				

REMARKS

Boring was drilled to 30' using 6.5" diameter hollow-stem augers. Soil samples were collected at 5' intervals and from 30' to 34' with a 2" diameter modified California split-spoon sampler. Between 5' intervals, soil samples were collected with a 2.5" diameter Moss continuous sampler. A groundwater monitoring well was installed using 2" diameter PVC casing (see attached well detail).

David C. Tisdale RG#4603 Exp: 6/91

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1158 BORING NO. MW-6

PROJECT NAME CHEVRON SERVICE STATION NO. 9-8139 PAGE 2 OF 2

BY D. Maupin DATE 5/14/90 SURFACE ELEV. 124.83 ft.

PID (ppm)	POCKET PENETRO-METER ton/sq ft	BLOW CT. (blws/6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
0.0		6 10 21					@ 20': 60-70% high plasticity fines; 30-40% fine to medium sand; very stiff; damp; no product odor.	
0.0		NA					@ 21.5': sand grains Mn-oxide stained.	
0.0	4.0	NA	5-14-90 ▽				CLAYEY SAND (SC), yellowish brown (10YR, 5/8); 25-35% moderate to high plasticity fines; 50-60% fine to coarse sand; trace fine gravel; sand and gravel Mn-oxide stained; dense; damp; no product odor.	
0.0		5 15 18 NA		25			@ 25': dense; moist; no product odor. @ 26.5': 20-30% moderate to high plasticity fines; 50-60% fine to coarse sand; 20-30% fine to medium gravel; Fe- and Mn-oxide staining.	
	4.0	NA						
0.0	4.0	7 14 25 NA		30			SANDY CLAY (CL), dark yellowish brown (10YR, 4/4); 60-70% high plasticity fines; 20-30% fine to coarse sand; 5-10% fine gravel; stiff; damp; no product odor.	
	3.0	17 27 33		35			GRAVELLY CLAY (CL), yellowish brown (10yr, 5/4); 45-55% high plasticity fines; 20-30% fine to coarse sand; 25-30% fine to medium gravel; Fe- and Mn-oxide stained sand and gravel; hard, damp to wet; no product odor. BORING TERMINATED AT 30' AND SAMPLED TO 34'.	
				40				

REMARKS

Boring was drilled to 30' using 6.5" diameter hollow-stem augers. Soil samples were collected at 5' intervals and from 30' to 34' with a 2" diameter modified California split-spoon sampler. Between 5' intervals, soil samples were collected with a 2.5" diameter Moss continuous sampler. A groundwater monitoring well was installed using 2" diameter PVC casing (see attached well detail).

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1158 — BORING NO. MW-7

PROJECT NAME CHEVRON SERVICE STATION NO. 9-8139 — PAGE 1 OF 2

BY D. Maupin — DATE 5/15/90 — SURFACE ELEV. 127.47 ft.

PID (ppm)	POCKET PENETRO-METER ton/sq ft	BLOW CT. (blws/6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							ASPHALT. FILL: olive green; low plasticity fines, sand, and gravel.	
1155		18 32 44		5			CLAYEY SAND (SC), dark yellowish brown (10YR, 4/4); 30-40% moderate to high plasticity fines; 60-70% fine to coarse sand; very dense; damp; no product odor.	
339		8 12 15		10			SANDY CLAY (CL), mottled dark yellowish brown (10YR, 4/6) and olive (5Y, 4/4); 50-60% high plasticity fines; 35-45% fine to coarse sand; 5-10% fine gravel; very stiff; damp; no product odor.	
430		7 10 19		15			@ 15': yellowish brown (10YR, 5/4); 50-60% moderate to high plasticity fines; 40-50% fine to coarse sand; trace fine gravel.	
			5-16-90 ▼	20			INTERBEDDED SANDY CLAY AND CLAYEY SAND (CL/SC).	

REMARKS

Boring was drilled to 30' using 6.5" diameter hollow-stem augers. Soil samples were collected to 31.5' using a 2" diameter modified California split-spoon sampler. A groundwater monitoring well was installed using 2" diameter PVC casing (see attached well detail).

David C. Tyler RG#4603 Exp. 6/91

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1158 BORING NO. MW-7

PROJECT NAME CHEVRON SERVICE STATION NO. 9-8139 PAGE 2 OF 2

BY D. Maupin DATE 5/15/90 SURFACE ELEV. 127.47 ft.

PID (ppm)	POCHET PENETRO-METER ton/sq ft	BLOW CT. (blws/6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
114		6 16 17					**INTERBEDDED SANDY CLAY AND CLAYEY SAND (CL/SC)**, dark yellowish brown (10YR, 4/4) to yellowish brown (10YR, 5/8); CL: 50-60% moderate to high plasticity fines; 40-50% fine to coarse sand; trace fine gravel; SC: 30-40% moderate plasticity fines; 60-70% fine to coarse sand; trace fine gravel; very dense; damp; no product odor.	
1.9		10 21 32	▽ 5-15-90	25			**CLAYEY SAND (SC)**, dark yellowish brown (10YR, 3/4); 35-45% moderate to high plasticity fines; 55-65% fine to coarse sand; very dense; damp to wet; no product odor. @ 26.4': SANDY CLAY (CL), dark brown (10YR, 3/3); 60-70% high plasticity fines; 30-40% fine to coarse sand, angular grains, Mn-oxide staining; damp; no product odor.	
4.1		9 18 21		30			**CLAYEY SAND (SC)**, light olive brown (2.5Y, 5/6); 20-30% moderate plasticity fines; 70-80% fine to coarse sand; trace fine gravel; dense; damp; no product odor. **BORING TERMINATED AT 30' AND SAMPLED TO 31.5'.**	
				35				
				40				

REMARKS

Boring was drilled to 30' using 6.5" diameter hollow-stem augers. Soil samples were collected to 31.5' using a 2" diameter modified California split-spoon sampler. A groundwater monitoring well was installed using 2" diameter PVC casing (see attached well detail).

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1158 BORING NO. MW-8

PROJECT NAME CHEVRON SERVICE STATION NO. 9-8139 PAGE 1 OF 2

BY D. Maupin DATE 8/30/90 SURFACE ELEV. 124.25 ft.

PID (ppm)	POCKET PENETRO-METER ton/sq ft	BLOW CT. (blws/6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							FILL DIRT.	
13.8		7 14 19		5			CLAYEY SAND (SC), dark yellowish brown (10YR, 4/6); 30-40% moderate plasticity fines; 45-55% fine to coarse sand, angular; 5-15% fine gravel, angular; dense; damp; no product odor. @ 8.2-8.5': medium to coarse gravel lense.	
26.1		7 10 17		10			@ 10': 40-50% moderate plasticity fines; 50-60% fine to coarse sand, angular; trace gravel, angular. @ 12': 35-45% moderate plasticity fines; 5-10% fine gravel, subangular; some sand and gravel grains Fe- and Mn-oxide stained. @ 13': yellowish brown (10YR, 5/6); 35-45% low to moderate plasticity fines; 45-55% fine to coarse sand, angular; 5-15% fine to medium gravel, subangular; sand and gravel Fe- and Mn-oxide stained; some vertical plant rootlets.	
13.2		11 14 18	8-30-90	15			@ 15.2': 1"x 2" siliceous gravel clast; dense. @ 15.4': 30-40% moderate plasticity fines; 15-25% fine to medium gravel, subangular. @ 18': sand and gravel moderately Fe- and Mn-oxide stained.	
				20				

REMARKS

Boring was drilled to 32.5' using 8" diameter hollow-stem augers. Soil samples were collected at 5' intervals and from 32.5' to 34' using a 2" diameter modified California split-spoon sampler. From 6.5' to 32.5' the boring was continuously sampled between 5' intervals using a 2.5" diameter Moss sampler and a 1.5" diameter Std. Penetration sampler. A groundwater monitoring well was installed using 2" diameter PVC casing (see attached well detail).

David C. Tiglet RG#4603 Exp. 6/91

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1158 BORING NO. MW-8

PROJECT NAME CHEVRON SERVICE STATION NO. 9-8139 PAGE 2 OF 2

BY D. Maupin DATE 8/30/90 SURFACE ELEV. 124.25 ft.

PID (ppm)	POCKET PENETRO-METER ton/sq ft	BLOW CT. (blws/6")	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
17.3		3 6 10					CLAYEY SAND (SC), continued. @ 20.1-22': 40-50% high plasticity fines; 45-55% dominantly fine to coarse sand, angular; 5-10% fine gravel; damp to moist; medium dense. @ 22.3': some caliche nodules and stringers. @ 24': 30-40% high plasticity fines; 50-60% fine to coarse sand, angular; 10-20% fine gravel, subangular to subrounded; sand and gravel low to moderate Fe- and Mn-oxide stained; moist; no product odor.	
			8-30-90 ▽					
13.7		4 5 7		25			@ 25': wet. @ 26': SANDY CLAY (CL), strong brown (7.5yr, 4/6); 50-60% high plasticity fines; 40-50% fine to coarse sand, dominantly fine to medium; trace fine gravel; stiff; moist to wet; no product odor. @ 28.5': SILTY SAND (SM), dark yellowish brown (10YR, 4/4); 35-45% low to moderate plasticity fines; 55-65% fine to coarse sand, dominantly fine to medium; trace gravel; damp to moist; no product odor.	
11.2		8 12 16		30			@ 31': CLAYEY SAND (SC), yellowish brown (10YR, 5/8); 20-30% moderate to high plasticity fines; 60-70% fine to coarse sand; 5-15% fine gravel; wet; dense; no product odor. @ 32': damp; no product odor.	
0		9 18 22		35			BORING TERMINATED AT 32.5' AND SAMPLED TO 34'.	
				40				

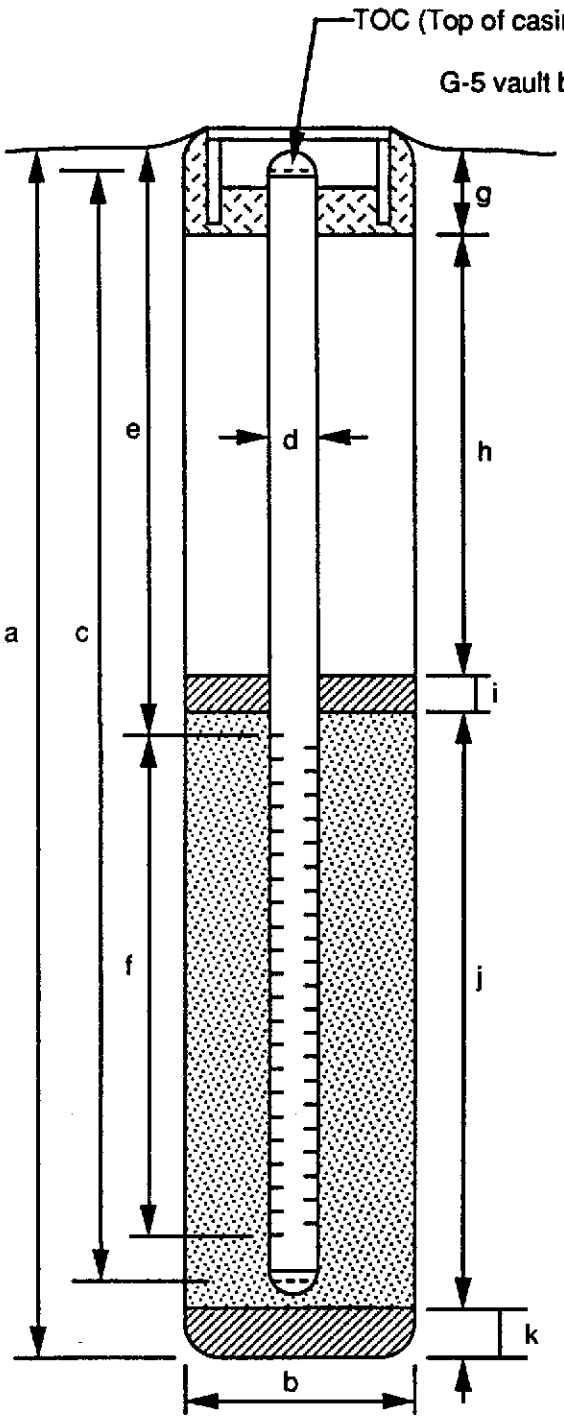
REMARKS

Boring was drilled to 32.5' using 8" diameter hollow-stem augers. Soil samples were collected at 5' intervals and from 32.5' to 34' using a 2" diameter modified California split-spoon sampler. From 6.5' to 32.5' the boring was continuously sampled between 5' intervals using a 2.5" diameter Moss sampler and a 1.5" diameter Std. Penetration sampler. A groundwater monitoring well was installed using 2" diameter PVC casing (see attached well detail).

WELL DETAILS

PROJECT NUMBER 1158
PROJECT NAME Chevron SS No. 9-8139
LOCATION 16304 Foothill Boulevard, San Leandro
WELL PERMIT NO. 90281

BORING / WELL NO. E-1
TOP OF CASING ELEV. 124.95'
GROUND SURFACE ELEV. 127.29'
DATUM MSL
INSTALLATION DATE 5-17-90



EXPLORATORY BORING

a. Total depth 31.5 ft.
b. Diameter 12.25 in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION

c. Total casing length * 27.9 ft.
Material Schedule 40 PVC
d. Diameter 6 in.
e. Depth to top perforations 18.1 ft.
f. Perforated length 8.4 ft.
Perforated interval from 18.1 to 26.5 ft.
Perforation type Machine Slotted PVC
Perforation size 0.020 inch
g. Surface seal 1.5 ft.
Material Concrete
h. Backfill 13.5 ft.
Material Bentonite-Cement Grout
i. Seal 2 ft.
Material Bentonite
j. Gravel pack 10 ft.
Gravel pack interval from 17 to 27 ft.
Material #3 Sand
k. Bottom seal/fill 4.5 ft.
Material Bentonite around PVC Sediment Sump *

* 3-foot sediment sump installed below the screened section (26.5 to 29.4 feet BGL).

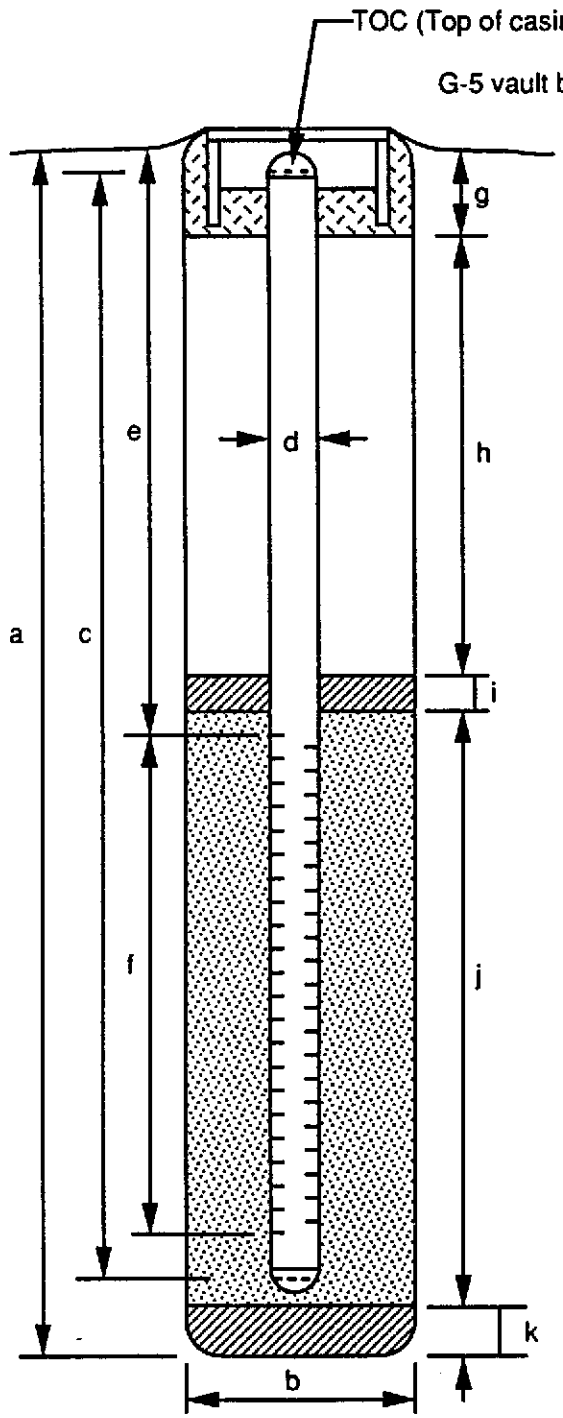
Form prepared by DLM

DCT

WELL DETAILS

PROJECT NUMBER 1158
PROJECT NAME Chevron SS No. 9-8139
LOCATION 16304 Foothill Boulevard, San Leandro
WELL PERMIT NO. 90281

BORING / WELL NO. MW-5
TOP OF CASING ELEV. 125.85'
GROUND SURFACE ELEV. 126.12'
DATUM MSL
INSTALLATION DATE 5-17-90



EXPLORATORY BORING

a. Total depth 30 ft.
b. Diameter 6.5 in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION

c. Total casing length 23.9 ft.
Material Schedule 40 PVC
d. Diameter 2 in.
e. Depth to top perforations 14.3 ft.
f. Perforated length 9.4 ft.
Perforated interval from 14.3 to 23.7 ft.
Perforation type Machine Slotted PVC
Perforation size 0.020 inch
g. Surface seal 1.5 ft.
Material Concrete
h. Backfill 9.5 ft.
Material Bentonite-Cement Grout
i. Seal 2 ft.
Material Bentonite
j. Gravel pack 12.5 ft.
Gravel pack interval from 13 to 25.5 ft.
Material #3 Sand
k. Bottom seal/fill 4.5 ft.
Material Bentonite

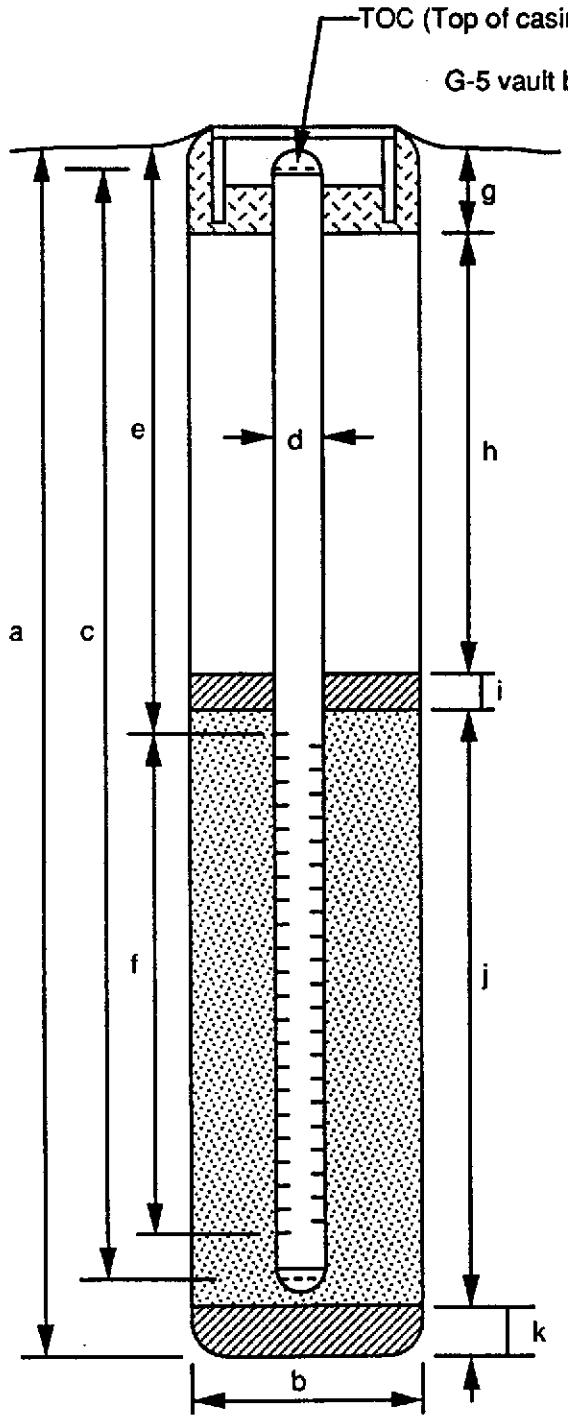
Form prepared by DLM

DcT

WELL DETAILS

PROJECT NUMBER 1158
PROJECT NAME Chevron SS No. 9-8139
LOCATION 16304 Foothill Boulevard, San Leandro
WELL PERMIT NO. 90281

BORING / WELL NO. MW-6
TOP OF CASING ELEV. 124.18'
GROUND SURFACE ELEV. 124.83'
DATUM MSL
INSTALLATION DATE 5-14-90



EXPLORATORY BORING

a. Total depth 34 ft.
b. Diameter 6.5 in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION

c. Total casing length 29.2 ft.
Material Schedule 40 PVC
d. Diameter 2 in.
e. Depth to top perforations 24.6 ft.
f. Perforated length 5 ft.
Perforated interval from 24.6 to 29.6 ft.
Perforation type Machine Slotted PVC
Perforation size 0.020 inch
g. Surface seal 1.5 ft.
Material Concrete
h. Backfill 19.5 ft.
Material Bentonite-Cement Grout
i. Seal 2 ft.
Material Bentonite
j. Gravel pack 11 ft.
Gravel pack interval from 23 to 34 ft.
Material #3 Sand
k. Bottom seal/fill -- ft.
Material None

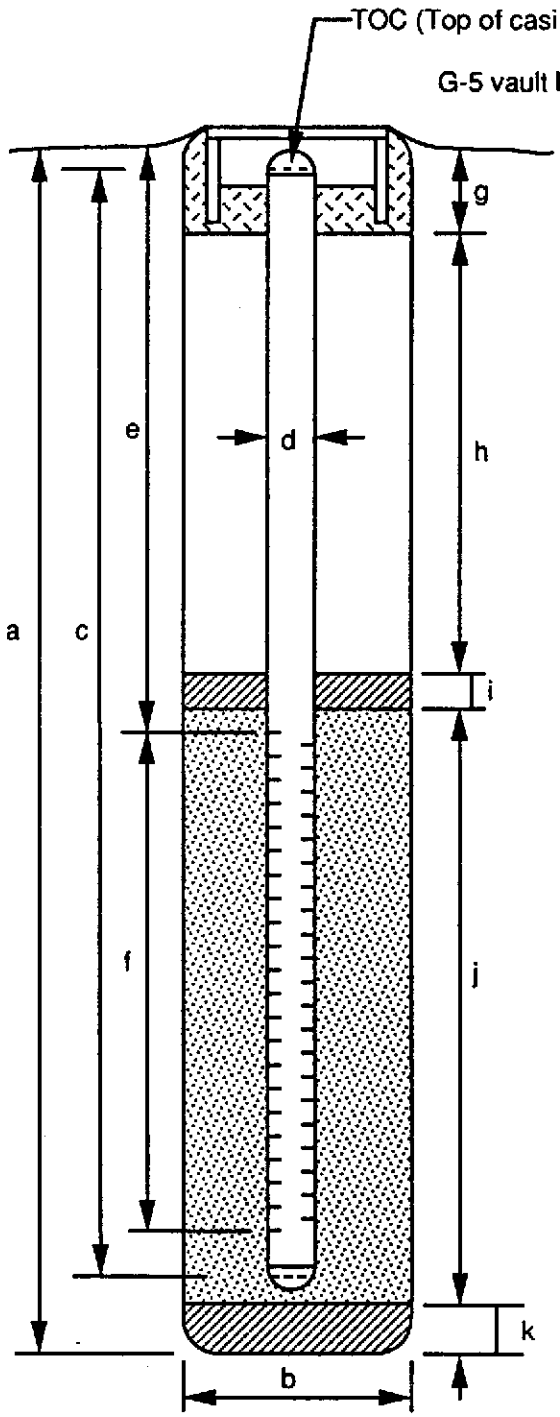
Form prepared by DLM

DCT

WELL DETAILS

PROJECT NUMBER 1158
PROJECT NAME Chevron SS No. 9-8139
LOCATION 16304 Foothill Boulevard, San Leandro
WELL PERMIT NO. 90281

BORING / WELL NO. MW-7
TOP OF CASING ELEV. 126.86'
GROUND SURFACE ELEV. 127.47'
DATUM MSL
INSTALLATION DATE 5-15-90



EXPLORATORY BORING

a. Total depth 31.5 ft.
b. Diameter 6.5 in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION

c. Total casing length 26 ft.
Material Schedule 40 PVC
d. Diameter 2 in.
e. Depth to top perforations 21.5 ft.
f. Perforated length 5 ft.
Perforated interval from 21.5 to 26.5 ft.
Perforation type Machine Slotted PVC
Perforation size 0.020 inch
g. Surface seal 1.5 ft.
Material Concrete
h. Backfill 17 ft.
Material Bentonite-Cement Grout
i. Seal 2 ft.
Material Bentonite
j. Gravel pack 6.5 ft.
Gravel pack interval from 20.5 to 27 ft.
Material #3 Sand
k. Bottom seal/fill 4.5 ft.
Material Bentonite

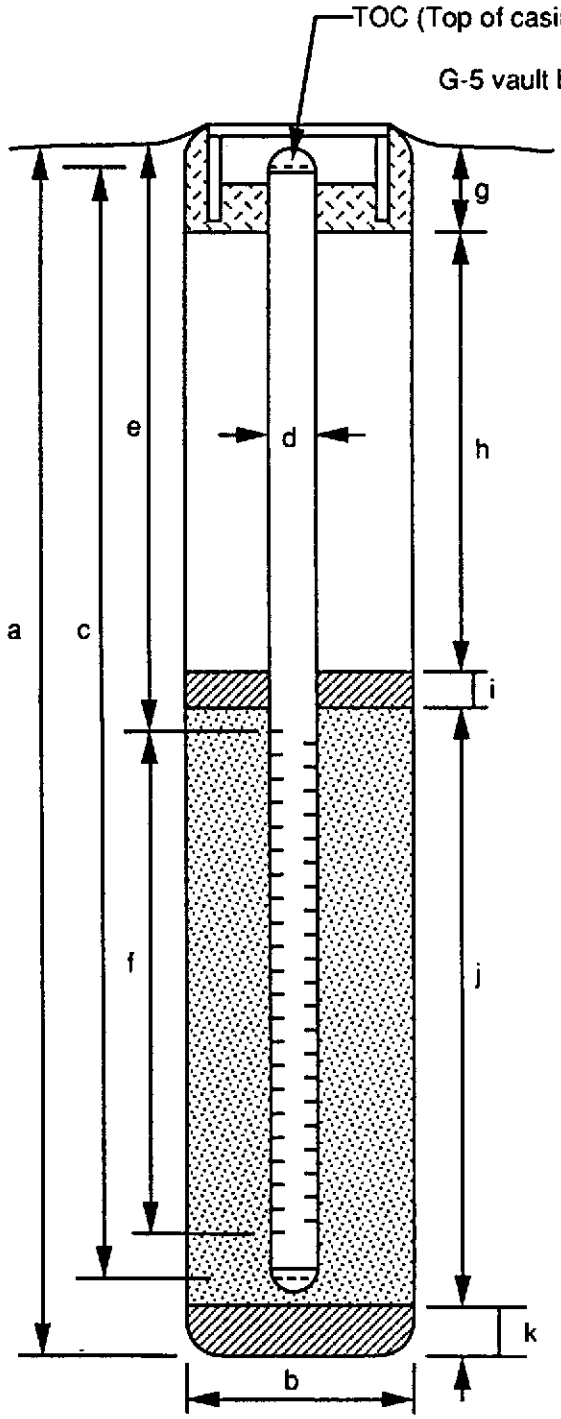
Form prepared by DLM

DCT

WELL DETAILS

PROJECT NUMBER 1158
PROJECT NAME Chevron SS No. 9-8139
LOCATION 16304 Foothill Boulevard, San Leandro
WELL PERMIT NO. 90519

BORING / WELL NO. MW-8
TOP OF CASING ELEV. 123.61'
GROUND SURFACE ELEV. 124.25'
DATUM MSL
INSTALLATION DATE 8-30-90



EXPLORATORY BORING

a. Total depth 34 ft.
b. Diameter 8 in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION

c. Total casing length 31 ft.
Material Schedule 40 PVC
d. Diameter 2 in.
e. Depth to top perforations 21.5 ft.
f. Perforated length 9 ft.
Perforated interval from 21.5 to 30.5 ft.
Perforation type Machine Slotted PVC
Perforation size 0.020 inch
g. Surface seal 1 ft.
Material Concrete
h. Backfill 16.5 ft.
Material Bentonite-Cement Grout
i. Seal 3 ft.
Material Bentonite
j. Gravel pack 11 ft.
Gravel pack interval from 20.5 to 31.5 ft.
Material #3 Sand
k. Bottom seal/fill 2.5 ft.
Material Bentonite

Form prepared by DLM

DCT

WELL INSTALLATION PERMITS

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 SERVICE STATION 9-8139, 16309 FOOTHILL BLVD., SAN LEANDRO, CALIFORNIA

CLIENT
Name CHEVRON U.S.A., INC. (WALT POSLUSZNY)
Address 2410 CAMINO RAMON Phone (415) 842-9040
City SAN RAMON, CA Zip 94583

APPLICANT
Name CHEMICAL PROCESSORS, INC. (CHEMPRO)
Address 950 B GILMAN ST Phone (415) 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. 519428

WELL PROJECTS *
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 45 ft.
Surface Seal Depth MAX. PRACTICAL ft. Number 4

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

ESTIMATED STARTING DATE 5-9-90
ESTIMATED COMPLETION DATE 5-16-90

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

APPLICANT'S SIGNATURE Kyle A. Flory Date 5-3-90

FOR OFFICE USE

PERMIT NUMBER 90281
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.

* Project to include a total of five monitoring wells, the fifth being of twelve inch drill hole diameter and six inch casing diameter. All of the holes are to be of similar maximum depth and surface seal depth.

Approved Todd N. Wendler Date 7 May 90

Todd N. Wendler

121989

ZONE 7 WATER RESOURCES MANAGEMENT

ALAMEDA COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
5997 PARKSIDE DRIVE ♦ PLEASANTON, CALIFORNIA 94568 ♦ (415) 484-2600

GROUNDWATER PROTECTION ORDINANCE PERMIT APPLICATION

FOR APPLICANT TO COMPLETE

FOR OFFICE USE

PERMIT NUMBER 90519
LOCATION NUMBER

(1) LOCATION OF PROJECT CHEVRON SERVICE STATION No. 9-8139, 16304 Foothill Blvd., San Leandro, CA.

(2) CLIENT
Name CHEVRON, U.S.A., Inc. (Walt Pasluszny)
Address 2410 Camino Ramon Phone (415) 842-9040
City San Ramon, CA. Zip 94583

(3) APPLICANT
Name CHEMICAL PROCESSORS, INC. (CHEMPRO)
Address 950 B Gilman St. Phone (415) 524-9332
City Berkeley, CA. Zip 94710

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

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

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

DRILLER'S LICENSE NO. 519428

WELL PROJECTS
Drill Hole Diameter 8 in. Maximum
Casing Diameter 2 in. Depth 45 ft.
Surface Seal Depth MAX PRACTICAL ft. Number 1

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

(7) ESTIMATED STARTING DATE 8-29-90
ESTIMATED COMPLETION DATE 8-29-90

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

APPLICANT'S SIGNATURE [signature] Date 8-24-90

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, irrigation, and monitoring wells unless a lesser depth is specially approved.

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 [signature] Date 27 Aug 90
Todd N. Wendler

21980

TOTAL P.02

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: DARRYL BUDMINE
P.O.BOX 1023
MARTINEZ, CA, 94553
Phone: 415-372-7222

Permit Number: ROC-901019
Issue Date: 8/15/1990
Expiration Date: 8/15/91
Permit Issue Receipt: 002629
Assessor Number:
Work Order Number: 81216

Job Site: 16304 FOOTHILL BLVD
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 ONE MONITORING WELL IN THE MEDIAN ISLAND AREA OF 16304 FOOTHILL BLVD FOR CHEVRON SERVICE STATION # 9-8139. ALL WELLS LOCATED IN THE PAVEMENT AREA SHALL HAVE A CONCRETE COVER. APPLICANT SHALL NOTIFY THE COUNTY INSPECTOR PRIOR TO SAMPLING OF WELL. ALL FLUIDS MUST BE COLLECTED AND DISCHARGED TO A HAZARDOUS LANDFILL AND ARE NOT TO BE DISPOSED OF IN THE GUTTER OR STORM DRAIN SYSTEM. THE BOND POSTED FOR THIS PERMIT WILL NOT BE RELEASED UNTIL THE WELLS HAVE BEEN PROPERLY DESTROYED. A SEPARETE PERMIT IS NEEDED FOR DESTROYING THE 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.

MISCELLANEOUS SPECIAL PROVISION NUMBERS:

A, B, C, K, R

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, 951 Turner Court, Hayward, Phone (415) 670-5421 or (415) 670-5500.

Other Required Permits: ZONE 7 WELL PERMIT
Bond Information: $3000, LETTER OF CREDIT #72241
Inspection Deposit: 30

By _____ Applicant Reviewed By: DJL
Work Completed: __/__/__
By _____ ALAMEDA COUNTY Inspector: _____

Where no maps or plats 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.

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

Appendix D

CERTIFIED ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY FORMS

SOIL AND GROUNDWATER DATA

SF 10962

Chain-of-Custody Record

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

Chevron Facility Number: Chevron SS-9-8139
Consultant Release Number: 2492270
Consultant Project Number: 1158
Consultant Name: Chempro
Address: 950 B Gilman St, Berkeley, CA
Fax Number: 415-524-7439
Project Contact (Name): Craig Schwyn
(Phone): 415-524-9372

Chevron Contact (Name): Walt Poslusny
(Phone): 415-842-9040
Laboratory Name: Superior Labs
Contract Number:
Samples Collected by (Name): Dennis Maupin
Collection Date: 8-30-90
Signature: Dennis Maupin

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Analyses To Be Performed: Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803			HOLD	Remarks
RS-11-SL		4	W	G		HCL	yes	X			X							
SS-45-SL		1	S	G			"										X	
SS-46-SL		1	S	G			"										X	
SS-47-SL		1	S	G			"										X	
SS-48-SL		1	S	G			"										X	
SS-49-SL		1	S	G			"	X			X							
SS-50-SL		1	S	G			"										X	
SS-51-SL		1	S	G			"										X	
Travel Blk.		1	S	G			"				X							

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Dennis Maupin	Chempro	8/31/90 10:45 am	Catherine Martinez	CHEMPRO	8/31/90 10:45
Catherine Martinez	CHEMPRO	8/31/90 10:50		Express Tr	8/31 1045
Bob Gillespie	Express-SS-1T	8-31-90 11:40	Received For Laboratory By (Signature)		Date/Time
			Cecilia G. Joaquin		8/31 1146

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

Printed in U.S.A.

MS-5136 (6-89)

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

CERTIFICATE OF ANALYSIS

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
Diesel by Modified EPA SW-846 Method 8015
Gasoline by Purge and Trap: EPA MEthod 8015/5030
ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

QA/QC INFORMATION
SET: 10962

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT

ug/L = part per billion (ppb)
mg/kg = part per million (ppm)

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

Modified EPA Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 1000ug/L
Daily Standard run at 200mg/L; %Diff Diesel = NA
MS/MSD Average Recovery = NA: Duplicate RPD = NA

8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 50ug/L
MInimum Quantitation Limit for Gasoline in Soil : 1mg/kg
Daily Standard run at 2mg/L; %Diff Gasoline = <15%
MS/MSD Average Recovery = 94%: Duplicate RPD = 2%

8020/BTXE
Minimum Quantitation Limit in Water: 0.50ug/L
Minimum Quantitation Limit in Soil : 0.05mg/kg
Daily Standard run at 20ug/L; %Diff 8020 = <15%
MS/MSD Average Recovery = 94%: Duplicate RPD = 3%

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

SUPERIOR ANALYTICAL LABORATORY, INC.

1555 BURKE, UNIT I · SAN FRANCISCO, CA 94124 · PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10962
CLIENT: Chempro
CLIENT JOB NO.: 1158

DATE RECEIVED: 08/31/90
DATE REPORTED: 09/09/90

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
10962- 1	RS-11-SL	08/30/90	09/07/90
10962- 2	SS-45-SL	08/30/90	/ /
10962- 3	SS-46-SL	08/30/90	/ /
10962- 4	SS-47-SL	08/30/90	/ /
10962- 5	SS-48-SL	08/30/90	/ /
10962- 6	SS-49-SL	08/30/90	09/07/90
10962- 7	SS-50-SL	08/30/90	/ /
10962- 8	SS-51-SL	08/30/90	/ /
10962- 9	TRAVEL BLANK	08/30/90	09/07/90

Laboratory Number:	10962 1	10962 2	10962 3	10962 4	10962 5
ANALYTE LIST	Amounts/Quantitation Limits (ug/L)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<50	NA	NA	NA	NA
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	ND<0.5	NA	NA	NA	NA
TOLUENE:	ND<0.5	NA	NA	NA	NA
ETHYL BENZENE:	ND<0.5	NA	NA	NA	NA
XYLENES:	ND<0.5	NA	NA	NA	NA

Laboratory Number:	10962 6	10962 7	10962 8	10962 9
ANALYTE LIST	Amounts/Quantitation Limits (mg/kg)/(ug/L)			
OIL AND GREASE:	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<1	NA	NA	NA
TPH/DIESEL RANGE:	NA	NA	NA	NA
BENZENE:	ND<0.05	NA	NA	ND<0.5
TOLUENE:	ND<0.05	NA	NA	ND<0.5
ETHYL BENZENE:	ND<0.05	NA	NA	ND<0.5
XYLENES:	ND<0.05	NA	NA	ND<0.5

80871 9R

Chain-of-Custody Record

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

Chevron Facility Number: Chevron SS 9-8139
Consultant Release Number: 2490850
Consultant Project Number: 1158
Consultant Name: Chemical Processors, Inc
Address: 950 B. Gilman St., Berkeley, CA.
Fax Number: 415-524-7439
Project Contact (Name): Craig Schuyn
(Phone): 415-524-9372

Chevron Contact (Name): Walt Posluszny
(Phone): 415-842-9040
Laboratory Name: Superior Labs.
Contract Number:
Samples Collected by (Name): Dennis Maupin
Collection Date: ~~5-16-90~~ 5-17-90
Signature: Dennis Maupin

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Analyses To Be Performed: Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803			HOLD	Remarks
RS-10-SL		4	W	G			X	X			X							
SS-44-SL		1	S	G			X										X	
SS-45-SL		1	S	G			X	X			X							
SS-46-SL		1	S	G			X	X			X							
SS-47-SL		1	S	G			X										X	
SS-48-SL		1	S	G			X										X	
SS-49-SL		1	S	G			X										X	

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
Craig Schuyn	Chemproc	5-18-90 11:42a	[illegible]	Express-it	5-18-90 11:47
Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
[illegible]	Express-it	5/18 1:15			
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time
			[illegible]		5/18/90

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

Printed in U.S.A.

MS-5136 (6-89)

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

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
Diesel by Modified EPA SW-846 Method 8015
Gasoline by Purge and Trap: EPA MEthod 8015/5030
ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

QA/QC INFORMATION
SET: 80879

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:
Duplicate RPD NA
Minimum Detection Limit in Water: 5000ug/L

Modified EPA Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 1000ug/L
Daily Standard run at 200mg/L; RPD Diesel = NA
MS/MSD Average Recovery = NA: Duplicate RPD = NA

8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 50ug/L
Daily Standard run at 2mg/L; RPD Gasoline = 7%
MS/MSD Average Recovery = 116%: Duplicate RPD = 4%

8020/BTXE
Minimum Quantitation Limit in Water: 0.50ug/L
Daily Standard run at 20ug/L; RPD = <15%
MS/MSD Average Recovery = 104%: Duplicate RPD = <8%

Richard Srna, Ph.D.
Labortory Manager

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

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 80879
CLIENT: Chempro
CLIENT JOB NO.: 1158

DATE RECEIVED: 05/18/90
DATE REPORTED: 05/25/90

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
80879- 1	RS-10-SL 4 VOA'S	05/17/90	05/24/90
80879- 2	SS-44-SL	05/17/90	/ /
80879- 3	SS-45-SL	05/17/90	05/23/90
80879- 4	SS-46-SL	05/17/90	05/23/90
80879- 5	SS-47-SL	05/17/90	/ /
80879- 6	SS-48-SL	05/17/90	/ /
80879- 7	SS-49-SL	05/17/90	/ /

Laboratory Number:	80879 1	80879 2	80879 3	80879 4	80879 5
ANALYTE LIST	Amounts/Quantitation Limits (mg/Kg)(ug/L)*				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<50*	NA	ND<1	130	NA
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	ND<0.5*	NA	ND<0.05	1.5	NA
TOLUENE:	ND<0.5*	NA	ND<0.05	3.0	NA
ETHYL BENZENE:	ND<0.5*	NA	ND<0.05	1.2	NA
XYLENES:	ND<0.5*	NA	ND<0.05	7.4	NA

Laboratory Number:	80879 6	80879 7
ANALYTE LIST	Amounts/Quantitation Limits (mg/kg)	
OIL AND GREASE:	NA	NA
TPH/GASOLINE RANGE:	NA	NA
TPH/DIESEL RANGE:	NA	NA
BENZENE:	NA	NA
TOLUENE:	NA	NA
ETHYL BENZENE:	NA	NA
XYLENES:	NA	NA

Chain-of-Custody Record

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

Chevron Facility Number: Chevron SS 9-8139
Consultant Release Number: 2490850
Consultant Project Number: 1158
Consultant Name: Chempro
Address: 950 B Gilman, Berkeley, CA.
Fax Number: 415-524-7439
Project Contact (Name): Craig Schwyn
(Phone): 415-524-9372

Chevron Contact (Name): Walt Posluszny
(Phone): 415-842-9040
Laboratory Name: Superior
Contract Number:
Samples Collected by (Name): Dennis Maupin
Collection Date: 5-15-90
Signature: Dennis J. Maupin

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803	Hold			Remarks
RS-6-SL		2	W	G		None	Y	X										
RS-7-SL		2	W	G		None	Y				X							
SS-33-SL		1	S	G		"	Y	X			X		X					
SS-34-SL		1	S	G		"	Y	X			X							
SS-35-SL		1	S	G		"	Y	X			X							
SS-36-SL		1	S	G		"	Y								X			
SS-37-SL		1	S	G		"	Y								X			
SS-38-SL		1	S	G		"	Y								X			

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	Turn Around Time (Circle Choice)
Dennis J. Maupin	Chempro	5/17/90	John Dempsey	EXPRESS IT	5/17/90	24 Hrs
John Dempsey	EXPRESS IT	5/17/90	Received By (Signature)	Organization	Date/Time	48 Hrs
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time	5 Days
					5/17/90 1600	(10 Days)

Chain-of-Custody Record

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

Chevron Facility Number (Chevron SS #9-8139
Consultant Release Number 2490850
Consultant Project Number 1158
Consultant Name Chemical Processors, Inc.
Address 1250 B Gilman St., Berkeley, CA.
Fax Number 415-524-7439
Project Contact (Name) Craig Schwyn
(Phone) 415-524-9372

Chevron Contact (Name) Walt Poslusznay
(Phone) 415-842-9040
Laboratory Name Sapere
Contract Number
Samples Collected by (Name) Dennis Maupin
Collection Date 5-14-90
Signature Dennis Maupin

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803	Hold			Remarks
SS-26-SL		1	S	G			✓								X			
SS-27-SL		1	S	G			✓	X			X							
SS-28-SL		1	S	G			✓	X			X							
RS-4-SL		2	W	G			✓	X										
SR-5-SL		2	W	G			✓				X							
SS-29-SL		1	S	G			✓								X			
SS-30-SL		1	S	G			✓								X			
SS-31-SL		1	S	G			✓								X			
SS-32-SL		1	S	G			✓								X			
Travel Blk		1	W	G							X							

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	Turn Around Time (Circle Choice)
Dennis Maupin	[redacted]	5/17/90	John L. Kopczynski	EXPRESS IT	5/17/90	24 Hrs
John L. Kopczynski	EXPRESS IT	5/17/90	Received By (Signature)	Organization	Date/Time	48 Hrs
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time	5 Days
					5/17/90 (600)	10 Days

Chain-of-Custody Record

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

Chevron Facility Number: Chevron SS #-8139
Consultant Release Number: 2490850
Consultant Project Number: 1158
Consultant Name: Chempro
Address: 950 B Gilman St, Berkeley, CA.
Fax Number: 415-524-~~9372~~ 7439
Project Contact (Name): Craig Schwyn
(Phone): 415-524-9372

Chevron Contact (Name): Walt Posluszny
(Phone): 415-842-9040
Laboratory Name:
Contract Number: Superior
Samples Collected by (Name): Dennis Maupin
Collection Date: 5-16-90
Signature: Dennis J. Maupin

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Analyses To Be Performed: Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803	Hold			Remarks
RS-8-SL		2	W	G			Y	X										
RS-9-SL		2	W	G			Y				X							
SS-39-SL		1	S	G			Y								X			
SS-40-SL		1	S	G			Y	X			X							
SS-41-SL		1	S	G			Y	X			X							
SS-42-SL		1	S	G			Y								X			
SS-43-SL		1	S	G			Y								X			
~~SS-44-SL~~		~~1~~	~~S~~	~~G~~			~~Y~~								~~X~~			

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	Turn Around Time (Circle Choice)
Dennis Maupin	Chempro	5/17/90	John Dayerring	EXPRESS IT	5/17/90	24 Hrs
John Dayerring	EXPRESS IT	5/17/90				48 Hrs
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time	5 Days
					5/17/90 1600	(10 Days)

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

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10697
CLIENT: Chempro
CLIENT JOB NO.: 1158

DATE RECEIVED: 05/17/90
DATE REPORTED: 05/29/90

ANALYSIS FOR TOTAL LEAD
by EPA Method 7420

LAB #	Sample Identification	Concentration (mg/kg) Lead
20	SS-33-SL	ND<5

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

QAQC Summary:
Spike Recovery =94%
Duplicate RPD = <1%

Richard Srna, Ph.D.
Laboratory Director

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

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
Diesel by Modified EPA SW-846 Method 8015
Gasoline by Purge and Trap: EPA MEthod 8015/5030
ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

QA/QC INFORMATION
SET: 10697

NA = ANALYSIS NOT REQUESTED
ND = ANALYSIS NOT DETECTED ABOVE QUANTITATION LIMIT

ug/L = part per billion (ppb) in water
mg/kg = parts per million (ppm) in soil

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

Modified EPA Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 1000ug/L
Daily Standard run at 200mg/L; RPD Diesel = NA
MS/MSD Average Recovery = NA: Duplicate RPD = NA

8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 500ug/L
Daily Standard run at 2mg/L; RPD Gasoline = <15%
MS/MSD Average Recovery = 81%: Duplicate RPD = 2%

8020/BTXE
Minimum Quantitation Limit in Water: 0.50ug/L
Daily Standard run at 20ug/L; RPD = <15%
MS/MSD Average Recovery = 93%: Duplicate RPD = <14%

Richard Srna, Ph.D.
Labortory Manager

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

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10697
CLIENT: Chempro
CLIENT JOB NO.: 1158

DATE RECEIVED: 05/17/90
DATE REPORTED: 05/26/90

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
10697-21	SS-34-SL	05/16/90	05/24/90
10697-22	SS-35-SL	05/16/90	05/25/90
10697-23	SS-36-SL	05/16/90	/ /
10697-24	SS-37-SL	05/16/90	/ /
10697-25	SS-38-SL	05/16/90	/ /

Laboratory Number:	10697 21	10697 22	10697 23	10697 24	10697 25
ANALYTE LIST	Amounts/Quantitation Limits (mg/kg)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<1	ND<1	NA	NA	NA
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	ND<0.05	ND<0.05	NA	NA	NA
TOLUENE:	ND<0.05	ND<0.05	NA	NA	NA
ETHYL BENZENE:	ND<0.05	ND<0.05	NA	NA	NA
XYLENES:	ND<0.05	ND<0.05	NA	NA	NA

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

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10697
CLIENT: Chempro
CLIENT JOB NO.: 1158

DATE RECEIVED: 05/17/90
DATE REPORTED: 05/26/90

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
10697-11	RS-4-SL	05/16/90	05/24/90
10697-12	SR-5-SL	05/16/90	05/24/90
10697-13	SS-29-SL	05/16/90	/ /
10697-14	SS-30-SL	05/16/90	/ /
10697-15	SS-31-SL	05/16/90	/ /
10697-16	SS-32-SL	05/16/90	/ /
10697-17	TRAVEL BLANK	05/16/90	05/24/90
10697-18	RS-6-SL	05/16/90	05/25/90
10697-19	RS-7-SL	05/16/90	05/25/90
10697-20	SS-33-SL	05/16/90	05/24/90

Laboratory Number:	10697 11	10697 12	10697 13	10697 14	10697 15
ANALYTE LIST	Amounts/Quantitation Limits (ug/l)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<50	NA	NA	NA	NA
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	NA	ND<0.5	NA	NA	NA
TOLUENE:	NA	ND<0.5	NA	NA	NA
ETHYL BENZENE:	NA	ND<0.5	NA	NA	NA
XYLENES:	NA	ND<0.5	NA	NA	NA

Laboratory Number:	10697 16	10697 17	10697 18	10697 19	10697 20
ANALYTE LIST	Amounts/Quantitation Limits (ug/l) (*=mg/kg)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	NA	ND<50	ND<50	NA	ND<1 *
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	NA	ND<0.5	NA	ND<0.5	ND<0.05*
TOLUENE:	NA	ND<0.5	NA	ND<0.5	ND<0.05*
ETHYL BENZENE:	NA	ND<0.5	NA	ND<0.5	ND<0.05*
XYLENES:	NA	ND<0.5	NA	2	0.06 *

SUPERIOR ANALYTICAL LABORATORY, INC.

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

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10697
CLIENT: Chempro
CLIENT JOB NO.: 1158

DATE RECEIVED: 05/17/90
DATE REPORTED: 05/26/90

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
10697- 1	RS-8-SL	05/16/90	05/23/90
10697- 2	RS-9-SL	05/16/90	05/25/90
10697- 3	SS-39-SL	05/16/90	/ /
10697- 4	SS-40-SL	05/16/90	05/24/90
10697- 5	SS-41-SL	05/16/90	05/24/90
10697- 6	SS-42-SL	05/16/90	/ /
10697- 7	SS-43-SL	05/16/90	/ /
10697- 8	SS-26-SL	05/16/90	/ /
10697- 9	SS-27-SL	05/16/90	05/24/90
10697-10	SS-28-SL	05/16/90	05/24/90

Laboratory Number:	10697 1	10697 2	10697 3	10697 4	10697 5
ANALYTE LIST	Amounts/Quantitation Limits (ug/L)(*=mg/kg)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<50	NA	NA	ND<1 *	37 *
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	NA	ND<0.5	NA	ND<0.05*	0.69*
TOLUENE:	NA	ND<0.5	NA	ND<0.05*	2.8 *
ETHYL BENZENE:	NA	ND<0.5	NA	ND<0.05*	0.76*
XYLENES:	NA	ND<0.5	NA	ND<0.05*	4.2 *

Laboratory Number:	10697 6	10697 7	10697 8	10697 9	10697 10
ANALYTE LIST	Amounts/Quantitation Limits (mg/kg)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	NA	NA	NA	2	5
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	NA	NA	NA	ND<0.05	ND<0.05
TOLUENE:	NA	NA	NA	ND<0.05	ND<0.05
ETHYL BENZENE:	NA	NA	NA	ND<0.05	ND<0.05
XYLENES:	NA	NA	NA	0.16	0.11

GROUNDWATER DATA

SUPERIOR ANALYTICAL LABORATORY, INC.

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

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10707
CLIENT: Chempro
CLIENT JOB NO.: 1158

DATE RECEIVED: 05/24/90
DATE REPORTED: 06/05/90

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
10707- 1	WS-1SL	05/24/90	05/31/90
10707- 2	WS-2SL	05/24/90	05/31/90
10707- 3	WS-3SL	05/24/90	06/01/90
10707- 4	WS-4SL	05/24/90	06/04/90
10707- 5	WS-5SL	05/24/90	05/31/90
10707- 6	RS-1SL	05/24/90	05/31/90

Laboratory Number:	10707 1	10707 2	10707 3	10707 4	10707 5
ANALYTE LIST	Amounts/Quantitation Limits (ug/L)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<50	ND<50	9000	10000	4500
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	ND<0.5	ND<0.5	2600	2600	210
TOLUENE:	ND<0.5	ND<0.5	1700	1800	440
ETHYL BENZENE:	ND<0.5	ND<0.5	250	260	140
XYLENES:	ND<0.5	ND<0.5	1500	1600	480

Laboratory Number:	10707 6
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 ANALYTICAL LABORATORY, INC.
1555 BURKE, UNIT I • SAN FRANCISCO, CA 94124 • PHONE (415) 647-2081

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10714
CLIENT: Chempro
CLIENT JOB NO.: 1158

DATE RECEIVED: 05/30/90
DATE REPORTED: 06/13/90

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
10714- 1	WS-6SL	05/25/90	06/05/90
10714- 2	WS-7SL	05/25/90	06/05/90
10714- 3	WS-8SL	05/25/90	06/05/90
10714- 4	WS-9SL	05/25/90	06/05/90
10714- 5	TRAVEL BLANK	05/25/90	06/05/90

Laboratory Number:	10714 1	10714 2	10714 3	10714 4	10714 5
ANALYTE LIST	Amounts/Quantitation Limits (ug/L)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	28000	ND<50	ND<50	3900	NA
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	NA	NA	NA	NA	ND<0.5
TOLUENE:	NA	NA	NA	NA	ND<0.5
ETHYL BENZENE:	NA	NA	NA	NA	ND<0.5
XYLENES:	NA	NA	NA	NA	ND<0.5

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

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10714
CLIENT: Chempro
CLIENT JOB NO.: 1158

DATE RECEIVED: 05/30/90
DATE REPORTED: 06/19/90

ANALYSIS FOR ETHYLENE DIBROMIDE
by EPA Method 504

LAB #	Sample Identification	Concentration (ug/L)
1	WS-6SL	2.4
2	WS-7SL	ND<0.02
3	WS-8SL	ND<0.02
4	WS-9SL	0.03

ug/L - parts per billion (ppb)

Minimum Detection Limit for EDB in water = 0.02 ug/l

Subcontracted to Kennedy/Jenks/Chilton DHS #113.

Richard Srna, Ph.D.
Laboratory Director

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

CERTIFICATE OF ANALYSIS

LABORATORY NO. 10714-1
CLIENT: Chempro

DATE RECEIVED: 05/30/90
DATE REPORTED: 06/13/90
JOB NO. 1158

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
by Gas Chromatography/ Mass Spectrometry

SAMPLE: WS-6SL

Compound	ug/l	Compound	ug/l
Chloromethane	ND<10	Cis-1,3-Dichloropropene	ND<3
Bromomethane	ND<10	Trichloroethene	ND<3
Vinyl Chloride	ND<10	Dibromochloromethane	ND<3
Chloroethane	ND<10	1,1,2-Trichloroethane	ND<3
Methylene Chloride	ND<10	Benzene (MDL = ND<2)	920
Acetone	ND<10	Trans-1,3-Dichloropropene	ND<3
Carbon disulfide	ND<3	2-Chloroethyl vinyl ether	ND<3
Trichlorofluoromethane	ND<3	Bromoform	ND<3
1,1-Dichloroethene	ND<3	4-Methyl-2-Pentanone	ND<10
1,1-Dichloroethane	ND<3	2-Hexanone	ND<10
1,2-Dichloroethene (total)	ND<3	Tetrachloroethene	ND<3
Chloroform	ND<3	1,1,2,2-Tetrachloroethane	ND<3
1,2-Dichloroethane	ND<3	Toluene (MDL = ND<3)	1100
2-Butanone	ND<20	Chlorobenzene	ND<3
1,1,1-Trichloroethane	ND<3	Ethylbenzene (MDL = ND<3)	460
Carbon Tetrachloride	ND<3	Styrene	ND<3
Vinyl Acetate	ND<10	Total Xylenes (MDL = ND<3)	1300
Bromodichloromethane	ND<3	1,3-Dichlorobenzene	ND<3
1,2-Dichloropropane	ND<3	1,2&1,4-Dichlorobenzenes	ND<3

ug/l = part per billion (ppb)
QC DATA:

Surrogate Recoveries		QC Limits water	QC Limits soil
1,2-DCA-d4.....	89%%	76-114	81-117
Toluene-d8.....	96%%	88-110	81-140
Bromofluorobenzene.....	95%%	86-115	74-121

comments:

Richard Srna, Ph.D.
Laboratory Director

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

CERTIFICATE OF ANALYSIS

LABORATORY NO. 10714-2
CLIENT: Chempro

DATE RECEIVED: 05/30/90
DATE REPORTED: 06/13/90
JOB NO. 1158

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
by Gas Chromatography/ Mass Spectrometry

SAMPLE: WS-7SL

Compound	ug/l	Compound	ug/l
Chloromethane	ND<10	Cis-1,3-Dichloropropene	ND<3
Bromomethane	ND<10	Trichloroethene	ND<3
Vinyl Chloride	ND<10	Dibromochloromethane	ND<3
Chloroethane	ND<10	1,1,2-Trichloroethane	ND<3
Methylene Chloride	ND<10	Benzene	ND<2
Acetone	ND<10	Trans-1,3-Dichloropropene	ND<3
Carbon disulfide	ND<3	2-Chloroethyl vinyl ether	ND<3
Trichlorofluoromethane	ND<3	Bromoform	ND<3
1,1-Dichloroethene	ND<3	4-Methyl-2-Pentanone	ND<10
1,1-Dichloroethane	ND<3	2-Hexanone	ND<10
1,2-Dichloroethene (total)	ND<3	Tetrachloroethene	ND<3
Chloroform	ND<3	1,1,2,2-Tetrachloroethane	ND<3
1,2-Dichloroethane	ND<3	Toluene	ND<3
2-Butanone	ND<20	Chlorobenzene	ND<3
1,1,1-Trichloroethane	ND<3	Ethylbenzene	ND<3
Carbon Tetrachloride	ND<3	Styrene	ND<3
Vinyl Acetate	ND<10	Total Xylenes	ND<3
Bromodichloromethane	ND<3	1,3-Dichlorobenzene	ND<3
1,2-Dichloropropane	ND<3	1,2&1,4-Dichlorobenzenes	ND<3

ug/l = part per billion (ppb)
QC DATA:

Surrogate Recoveries		QC Limits water	QC Limits soil
1,2-DCA-d4.....	92%%	76-114	81-117
Toluene-d8.....	94%%	88-110	81-140
Bromofluorobenzene.....	91%%	86-115	74-121

comments:

Richard Srna, Ph.D.
Laboratory Director

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

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

LABORATORY NO. 10714-3
CLIENT: Chempro

DATE RECEIVED: 05/30/90
DATE REPORTED: 06/13/90
JOB NO. 1158

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
by Gas Chromatography/ Mass Spectrometry

SAMPLE: WS-8SL

Compound	ug/l	Compound	ug/l
Chloromethane	ND<10	Cis-1,3-Dichloropropene	ND<3
Bromomethane	ND<10	Trichloroethene	ND<3
Vinyl Chloride	ND<10	Dibromochloromethane	ND<3
Chloroethane	ND<10	1,1,2-Trichloroethane	ND<3
Methylene Chloride	ND<10	Benzene	ND<2
Acetone	ND<10	Trans-1,3-Dichloropropene	ND<3
Carbon disulfide	ND<3	2-Chloroethyl vinyl ether	ND<3
Trichlorofluoromethane	ND<3	Bromoform	ND<3
1,1-Dichloroethene	ND<3	4-Methyl-2-Pentanone	ND<10
1,1-Dichloroethane	ND<3	2-Hexanone	ND<10
1,2-Dichloroethene (total)	ND<3	Tetrachloroethene	ND<3
Chloroform	ND<3	1,1,2,2-Tetrachloroethane	ND<3
1,2-Dichloroethane	ND<3	Toluene	ND<3
2-Butanone	ND<20	Chlorobenzene	ND<3
1,1,1-Trichloroethane	ND<3	Ethylbenzene	ND<3
Carbon Tetrachloride	ND<3	Styrene	ND<3
Vinyl Acetate	ND<10	Total Xylenes	ND<3
Bromodichloromethane	ND<3	1,3-Dichlorobenzene	ND<3
1,2-Dichloropropane	ND<3	1,2&1,4-Dichlorobenzenes	ND<3

ug/l = part per billion (ppb)
QC DATA:

Surrogate Recoveries		QC Limits water	QC Limits soil
1,2-DCA-d4.....	87%%	76-114	81-117
Toluene-d8.....	102%	88-110	81-140
Bromofluorobenzene.....	93%%	86-115	74-121

comments:

Richard Srna, Ph.D.
Laboratory Director

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

CERTIFICATE OF ANALYSIS

LABORATORY NO. 10714-4
CLIENT: Chempro

DATE RECEIVED: 05/30/90
DATE REPORTED: 06/13/90
JOB NO. 1158

EPA SW-846 METHOD 8240 - VOLATILE ORGANICS
by Gas Chromatography/ Mass Spectrometry

SAMPLE: WS-9SL

Compound	ug/l	Compound	ug/l
Chloromethane	ND<10	Cis-1,3-Dichloropropene	ND<3
Bromomethane	ND<10	Trichloroethene	ND<3
Vinyl Chloride	ND<10	Dibromochloromethane	ND<3
Chloroethane	ND<10	1,1,2-Trichloroethane	ND<3
Methylene Chloride	ND<10	Benzene (MDL = ND<2)	260
Acetone	ND<10	Trans-1,3-Dichloropropene	ND<3
Carbon disulfide	ND<3	2-Chloroethyl vinyl ether	ND<3
Trichlorofluoromethane	ND<3	Bromoform	ND<3
1,1-Dichloroethene	ND<3	4-Methyl-2-Pentanone	ND<10
1,1-Dichloroethane	ND<3	2-Hexanone	ND<10
1,2-Dichloroethene (total)	ND<3	Tetrachloroethene	ND<3
Chloroform	ND<3	1,1,2,2-Tetrachloroethane	ND<3
1,2-Dichloroethane	ND<3	Toluene (MDL = ND<3)	430
2-Butanone	ND<20	Chlorobenzene	ND<3
1,1,1-Trichloroethane	ND<3	Ethylbenzene (MDL = ND<3)	64
Carbon Tetrachloride	ND<3	Styrene	ND<3
Vinyl Acetate	ND<10	Total Xylenes (MDL = ND<3)	340
Bromodichloromethane	ND<3	1,3-Dichlorobenzene	ND<3
1,2-Dichloropropane	ND<3	1,2&1,4-Dichlorobenzenes	ND<3

ug/l = part per billion (ppb)
QC DATA:

Surrogate Recoveries		QC Limits water	QC Limits soil
1,2-DCA-d4.....	87%%	76-114	81-117
Toluene-d8.....	93%%	88-110	81-140
Bromofluorobenzene.....	91%%	86-115	74-121

comments:

Richard Srna, Ph.D.
Laboratory Director

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

CERTIFICATE OF ANALYSIS

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
Diesel by Modified EPA SW-846 Method 8015
Gasoline by Purge and Trap: EPA MEthod 8015/5030
ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

QA/QC INFORMATION
SET: 10714

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:
Duplicate RPD NA
Minimum Detection Limit in Water: 5000ug/L

Modified EPA Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 1000ug/L
Daily Standard run at 200mg/L; RPD Diesel = NA
MS/MSD Average Recovery = NA: Duplicate RPD = NA

8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 50ug/L
Daily Standard run at 2mg/L; %Diff Gasoline = <15
MS/MSD Average Recovery = 99%: Duplicate RPD = 8%

8020/BTXE
Minimum Quantitation Limit in Water: 0.50ug/L
Daily Standard run at 20ug/L; %Diff 8020 = <15
MS/MSD Average Recovery =93 %: Duplicate RPD = 1%

Richard Srna, Ph.D.
Laboratory Director

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

CERTIFICATE OF ANALYSIS

ANALYSIS FOR TOTAL PETROLEUM HYDROCARBONS
Diesel by Modified EPA SW-846 Method 8015
Gasoline by Purge and Trap: EPA MEthod 8015/5030
ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

QA/QC INFORMATION
SET: 10707

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:
Duplicate RPD NA
Minimum Detection Limit in Water: 5000ug/L

Modified EPA Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 1000ug/L
Daily Standard run at 200mg/L; RPD Diesel = NA
MS/MSD Average Recovery = NA: Duplicate RPD = NA

8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 50ug/L
Daily Standard run at 2mg/L; RPD Gasoline = ND<1%
MS/MSD Average Recovery = 73%: Duplicate RPD = 13%

8020/BTXE
Minimum Quantitation Limit in Water: 0.50ug/L
Daily Standard run at 20ug/L; RPD = <15%
MS/MSD Average Recovery = 104%: Duplicate RPD = 5%

Richard Srna, Ph.D.
Laboratory Director

SA# 10707

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
Consultant Release Number 240850 Consultant Project Number 1158
Consultant Name Chempro
Address 950 B Gilman St, Berkeley
Fax Number 524-7439
Project Contact (Name) Felicia Kein / Craig Schuyler
(Phone) 524-9372

Chevron Contact (Name) WALT POSLUSZNY
(Phone) 842-9040
Laboratory Name Superior
Contract Number
Samples Collected by (Name) BParis
Collection Date 5/24/90
Signature Bill Paris

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803				Remarks
								Analyses To Be Performed										
WS-1SL		3	W	G		HCl	✓	X										5-DAY
WS-2SL		6	W	G		HCl	✓	X			X							
WS-3SL		6	W	G		HCl	✓	X			X							
WS-4SL		6	W	G		HCl	✓	X			X							
WS-5SL		6	W	G		HCl	✓	X			X							
ES-1SL		6	W	G		HCl	✓	X			X							

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time	Turn Around Time (Circle Choice)
Kevin Elliott	Chempro	5/24/90 15:30		Express-17	5/24/90 1530	24 Hrs
	Express 17	5/24/90 1610	Received By (Signature)	Organization	Date/Time	48 Hrs
Relinquished By (Signature)	Organization	Date/Time	Received For Laboratory By (Signature)		Date/Time	5 Days
				5/24/90	4:10	10 Days

SA# 10714

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
Consultant Release Number: 2490850
Consultant Project Number: 1658
Consultant Name: Chempro
Address: 950 B Gilman St, Berkeley
Fax Number: 524-7439
Project Contact (Name): Felicia Kein
(Phone): 524-9372

Chevron Contact (Name): Walt Poslusznу
(Phone):
Laboratory Name: Superior
Contract Number:
Samples Collected by (Name): BParis
Collection Date: 5/25/90
Signature: Bill Paris

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Analyses To Be Performed: Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803				Remarks
WS-6SL		9	W	G		HCl	✓	X				X		X				
WS-7SL		9	W	G			✓	X				X		X				
WS-8SL		9	W	G			✓	X				X		X				
WS-9SL		9	W	G		↓	✓	X				X		X				
Trip Blk		2	W								X							

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
[signature]	Chempro	5/25/90	[signature]	Express - 17	1530
Ken Brown	Exp 1153 LT	5/30/90			
			Received For Laboratory By (Signature): [signature]		5/30 Date/Time 8:00

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

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

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10993
CLIENT: Chempro
CLIENT JOB NO.: 1158

DATE RECEIVED: 09/10/90
DATE REPORTED: 09/18/90

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
10993- 1	ITBSL	09/06/90	09/14/90
10993- 2	IWSSL	09/06/90	09/14/90
10993- 3	2WSSL	09/06/90	09/14/90
10993- 4	3WSSL	09/06/90	09/14/90
10993- 5	4WSSL	09/06/90	09/14/90
10993- 6	2TBSL	09/07/90	09/14/90
10993- 8	6WSSL	09/07/90	09/14/90
10993- 9	IRSSL	09/07/90	09/14/90
10993-10	7WSSL	09/07/90	09/14/90
10993-11	8WSSL	09/07/90	09/14/90

Laboratory Number:	10993 1	10993 2	10993 3	10993 4	10993 5
ANALYTE LIST	Amounts/Quantitation Limits (ug/L)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<50	ND<50	ND<50	3500	6000
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	ND<0.5	ND<0.5	ND<0.5	900	680
TOLUENE:	ND<0.5	0.8	ND<0.5	550	520
ETHYL BENZENE:	ND<0.5	ND<0.5	ND<0.5	110	170
XYLENES:	ND<0.5	0.5	ND<0.5	460	580

Laboratory Number:	10993 6	10993 8	10993 9	10993 10	10993 11
ANALYTE LIST	Amounts/Quantitation Limits (ug/L)				
OIL AND GREASE:	NA	NA	NA	NA	NA
TPH/GASOLINE RANGE:	ND<50	ND<50	ND<50	ND<50	ND<50
TPH/DIESEL RANGE:	NA	NA	NA	NA	NA
BENZENE:	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
TOLUENE:	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
ETHYL BENZENE:	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5
XYLENES:	ND<0.5	ND<0.5	ND<0.5	ND<0.5	ND<0.5

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

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10993
CLIENT: Chempro
CLIENT JOB NO.: 1158

DATE RECEIVED: 09/10/90
DATE REPORTED: 09/18/90

Lab Number	Customer Sample Identification	Date Sampled	Date Analyzed
10993-12	9WSSL	09/07/90	09/14/90

Laboratory Number: 10993
12

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

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
Diesel by Modified EPA SW-846 Method 8015
Gasoline by Purge and Trap: EPA MEthod 8015/5030
ANALYSIS FOR BENZENE, TOLUENE, ETHYL BENZENE & XYLENES
by EPA SW-846 Methods 5030 and 8020

QA/QC INFORMATION
SET: 10993

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:
Duplicate RPD NA
Minimum Detection Limit in Water: 5000ug/L

Modified EPA Method 8015 for Extractable Hydrocarbons:
Minimum Quantitation Limit for Diesel in Water: 1000ug/L
Daily Standard run at 200mg/L; %Diff Diesel = NA
MS/MSD Average Recovery = NA: Duplicate RPD = NA

8015/5030 Total Purgable Petroleum Hydrocarbons:
Minimum Quantitation Limit for Gasoline in Water: 50ug/L
Daily Standard run at 2mg/L; %Diff Gasoline = <15%
MS/MSD Average Recovery = 90%: Duplicate RPD = 1

8020/BTXE
Minimum Quantitation Limit in Water: 0.50ug/L
Daily Standard run at 20ug/L; %Diff 8020 = <15%
MS/MSD Average Recovery = 93%: Duplicate RPD = 7

Richard Srna, Ph.D.
Laboratory Director

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

CERTIFICATE OF ANALYSIS

LABORATORY NO.: 10993
CLIENT: Chempro
CLIENT JOB NO.: 1158

DATE RECEIVED: 09/10/90
DATE REPORTED: 09/18/90

ANALYSIS FOR ETHYLENE DIBROMIDE
by EPA Method 504

LAB #	Sample Identification	Concentration (ug/L)
2	IWSSL	ND<0.05
3	2WSSL	ND<0.05
4	3WSSL	ND<0.05
5	4WSSL	ND<0.05
8	6WSSL	ND<0.05
10	7WSSL	ND<0.05
11	8WSSL	ND<0.05
12	9WSSL	ND<0.05

ug/L - parts per billion (ppb)

Minimum Detection Limit for EDB in water = 0.05 ug/l

QAQC Summary: MS/MSD average recovery = 90 %
RPD = 2 %

Richard Srna, Ph.D.
Laboratory Director

Chain-of-Custody Record

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

Chevron Facility Number: 9-8139
Consultant Release Number: 2492270
Consultant Project Number: 1158
Consultant Name: Chempro
Address: 950 'B' Gilman St., Berkeley, Ca
Fax Number: (415) 524-7439
Project Contact (Name): Felicia Rein
(Phone): (415) 524-9372

Chevron Contact (Name): Walt Posluzny
(Phone): (415) 842-9040
Laboratory Name: Superior
Contract Number:
Samples Collected by (Name): D.D.L.
Collection Date: 9/6/90 & 9/7/90
Signature:

Sample Number	Lab Number	Number of Containers	Matrix S = Soil W = Water A = Air C = Charcoal	Type G = Grab C = Composite	Time	Sample Preservation	Iced	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline	Modified EPA 8015 Total Petro. Hydrocarb. as Gasoline + Diesel	503 Oil and Grease	Arom. Volatiles - BTXE Soil: 8020/Wtr.: 602	Arom. Volatiles - BTXE Soil: 8240/Wtr.: 624	Total Lead DHS-Luft	EDB DHS-AB 1803				Remarks
TBSL		1	W	G	8:30	HCL	Y	X			X							
WSSL		6	W	G	3:45	HCL/None	Y	X			X			X				
2WSSL		6	W	G	4:10	HCL/None	Y	X			X			X				
3WSSL		6	W	G	4:20	HCL/None	Y	X			X			X				
4WSSL		6	W	G	5:00	HCL/None	Y	X			X			X				
	Samples for 9/7/1990																	
2TBSL		1	W	G	10:30	HCL	Y	X			X							
~~5WSSL~~	(DAL)	~~6~~	~~W~~	~~G~~	N/A	~~HCL/None~~	~~Y~~	~~X~~	(DHL)		~~X~~	(DAL)		~~X~~		(No Sample)		Free Product
6WSSL		6	W	G	2:45	HCL/None	Y	X			X			X				
RSSL		4	W	G	1:48	HCL	Y	X			X							
7WSSL		6	W	G	3:00	HCL/None	Y	X			X			X				
8WSSL		6	W	G	3:30	HCL/None	Y	X			X			X				
9WSSL		6	W	G	2:00	HCL/None	Y	X			X			X				

Relinquished By (Signature)	Organization	Date/Time	Received By (Signature)	Organization	Date/Time
	Chempro	9/6/90 5:4		Chempro	9-6-90 5:40p
	Chempro	9-7-90, 8am		Chempro	9-7-1990
	CHEMPRO		Received for Laboratory By (Signature): 678 (COURIER)		9-10-90 1247

Turn Around Time (Circle Choice): 24 Hrs, 48 Hrs, 5 Days, 10 Days

Cecilia G Joaquin 9-10-90 5:00PM

Printed in U.S.A. MS-5136 (8-89)

Appendix E

PARTICLE SIEVE ANALYSIS

GRAIN SIZE DISTRIBUTION

EMCON ASSOCIATES

PROJECT NAME CHEVRON PROJECT NO 1123 DATE 5/29/90

SAMPLE NO. E1 DEPTH 20 FT TESTED BY R MICHAEL

SAMPLE DESCRIPTION SANDY CLAY

MOISTURE CONTENT DETERMINATION

CUP NUMBER ER

CUP + WET SOIL 637.5 (gms)

CUP + DRY SOIL 530.76 (gms)

WEIGHT OF CUP 175.93 (gms)

WEIGHT OF MOISTURE _____ (gms)

WEIGHT OF DRY SOIL _____ (gms)

MOISTURE CONTENT 27.9 (%)

CL

WET WEIGHT TOTAL SAMPLE _____ (gms)

DRY WEIGHT TOTAL SAMPLE

$= \frac{\text{WET WEIGHT TOTAL SAMPLE}}{1 + (\text{MOISTURE CONTENT})} = 360.83$ (gms)

SIEVE SIZE (U.S. STANDARD)	PARTICLE DIAMETER		WEIGHT RETAINED (gms)	ACCUMULATED WGT. RETAINED (gms)	WEIGHT PASSING (gms)	PERCENT PASSING
	INCH	MILLIMETER				
5"						
3"	3.0	76.2				
1½"	1.5	38.1				
¾"	0.742	18.85				
⅜"	0.371	9.42				
#4	0.185	4.699		360.83		100
#8	0.093	2.362	4.92	355.91		98.6
#16	0.046	1.168	7.54	348.37		96.6
#30	0.0232	0.589	11.76	336.61		93.3
#50	0.0116	0.295	13.38	323.23		89.6
#100	0.0058	0.147	16.77	306.46		84.9
#200	0.0029	0.074	19.23	287.23		79.6
#270	0.0021	0.053				
PAN						
WEIGHT WASHED THROUGH #200						
TOTAL						

WEIGHT WASHED THROUGH #200

NUMBER OF PAN _____

WEIGHT PAN + DRY SOIL _____ (gms)

WEIGHT OF PAN _____ (gms)

WEIGHT DRY SOIL _____ (gms)

CLASSIF. SYMB.	CL				
SAMPLE NO.	E-1				
DEPTH IN FT.	2.0'				
BORING NO.					

emcon associates

GRADATION TEST RESULTS

Project Name: [illegible]

Tested By: [illegible]

Checked By: [illegible]

Project No.: [illegible]

Date: [illegible]

PLATE No. [illegible]

SIEVE ANALYSIS — CLEAR SQUARE OPENINGS — U.S. STANDARD SERIES

HYDROMETER ANALYSIS — TIME READINGS

PERCENT PASSING

DIAMETER OF PARTICLE IN MILLIMETERS

COBBLES	GRAVEL		SAND			SILT (NON-PLASTIC) TO CLAY (PLASTIC)
	COARSE	FINE	COARSE	MEDIUM	FINE	

GRAIN SIZE DISTRIBUTION

EMCON ASSOCIATES

PROJECT NAME CHEVRON PROJECT NO 1153 DATE 5/24/90

SAMPLE NO. E1 DEPTH 25 ft TESTED BY R MIRAC

SAMPLE DESCRIPTION CANYON CUT, CLAYEY SAND, BROWN

SC

MOISTURE CONTENT DETERMINATION

CUP NUMBER 500

CUP + WET SOIL 662.3 (gms)

CUP + DRY SOIL 544.99 (gms)

WEIGHT OF CUP 124.28 (gms)

WEIGHT OF MOISTURE _____ (gms)

WEIGHT OF DRY SOIL _____ (gms)

MOISTURE CONTENT 27.9 (%)

WET WEIGHT TOTAL SAMPLE _____ (gms)

DRY WEIGHT TOTAL SAMPLE

= WET WEIGHT TOTAL SAMPLE / 1 + (MOISTURE CONTENT) = 420.71 (gms)

SIEVE SIZE (U.S. STANDARD)	PARTICLE DIAMETER		WEIGHT RETAINED (gms)	ACCUMULATED WGT RETAINED (gms)	WEIGHT PASSING (gms)	PERCENT PASSING
	INCH	MILLIMETER				
5"						
3"	3.0	76.2				
1½"	1.5	38.1				
¾"	0.742	18.85				
⅜"	0.371	9.42		420.71		100
#4	0.185	4.699	26.46	394.25		93.7
#8	0.093	2.362	32.94	361.31		85.9
#16	0.046	1.168	33.84	327.47		77.8
#30	0.0232	0.589	35.96	291.51		69.3
#50	0.0116	0.295	36.18	255.33		60.7
#100	0.0058	0.147	36.68	218.65		52.0
#200	0.0029	0.074	30.68	187.97		44.7
#270	0.0021	0.053				
PAN						
WEIGHT WASHED THROUGH #200						
TOTAL						

WEIGHT WASHED THROUGH #200

NUMBER OF PAN _____

WEIGHT PAN + DRY SOIL _____ (gms)

WEIGHT OF PAN _____ (gms)

WEIGHT DRY SOIL _____ (gms)

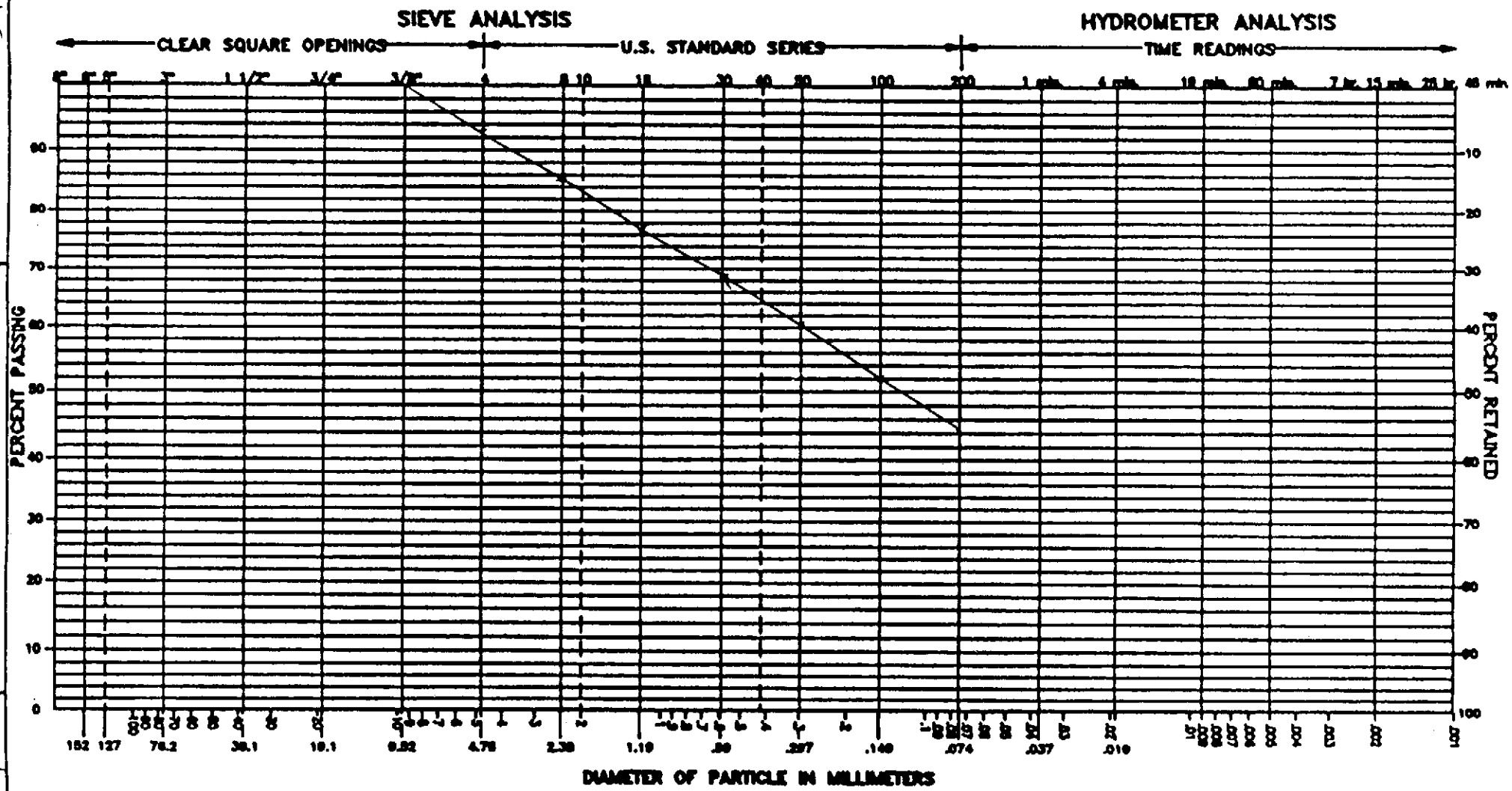
GRADATION TEST RESULTS

CLASSIF. SYMB.	SC				
SAMPLE NO.	E-1				
DEPTH IN FT.	25'				
BORING NO.					

Tested By: A. Tovar

Checked By:

Date: 6/11/90



COBBLES	GRAVEL		SAND			SILT (NON-PLASTIC) TO CLAY (PLASTIC)
	COARSE	FINE	COARSE	MEDIUM	FINE	

Appendix F

EXPLORATORY BORING, SOIL SAMPLING, AND WELL INSTALLATION PROCEDURES

Appendix F

Exploratory Boring, Soil Sampling, and Well Installation Procedures

EXPLORATORY BORING

Before the exploratory borings were drilled at Chevron Service Station No. 9-8139, a number of actions were taken: drilling permits were obtained, and Cruz Brothers, an underground utility locating service from Milpitas, California located the underground utilities at the site. Underground Service Alert (USA) was also contacted to schedule visits to the site by public and private utility companies. Each company located its utilities with the aid of maps.

Exploratory borings were drilled by B & F Drilling Inc., of Rancho Cordova, California, with a Mobile B-61 drill rig. Eight-inch outer-diameter (OD) hollow-stem augers (HSA) were used in the borings be converted to groundwater monitor wells. Twelve-inch OD HSA were used in the boring completed as an extraction well. The augers were steam-cleaned before each boring was drilled, and the water was contained in 55-gallon drums.

SOIL SAMPLING

Analysis of the soil samples collected during drilling permitted evaluation of the geochemistry and stratigraphy of the soil beneath the site. The soil was sampled by means of (1) an 18-inch-long, modified-California split-spoon sampler fitted with 2-inch-diameter brass liners, which was driven into undisturbed soil beyond the tip of the auger, (2) a 1.5-inch-diameter standard penetrometer or (3) a 2.5-inch-diameter by 2-foot-long Moss sampler (see the boring log notes presented in Appendix C). The split-spoon sampler and standard penetrometer was driven with a 140-pound hammer, and the 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. Soil samples were classified and logged according to the Unified Soil Classification

System, and the work was supervised by a California State-registered geologist in compliance with regulatory standards.

Soil samples were selected for chemical analysis using a photoionization device (PID). At each five foot sample interval the PID was used to determine the relative concentrations of volatile hydrocarbons. The samples were selected for analysis where (1) the PID reading first detects a reading above the background level, (2) at the point above this interval where the PID reading is negligible, (3) at the first point below the contaminated interval where the reading PID reading is 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.

Samples selected for chemical analysis were sealed inside the brass liners with aluminum foil and polypropylene end-caps, and wrapped with tape. The soil samples were then labeled, and stored in refrigerated coolers pending shipment to the Chevron-approved laboratory. At the time of sampling, each sample is logged on a chain-of-custody record which accompanies the sample to the laboratory.

Soil-sampling equipment was steam-cleaned between each boring and washed in an Alconox solution and rinsed in distilled water between each sampling point. The rinse water was drummed and stored on site for disposal by Chevron. Once empty, the drums will be reconditioned at a facility of Chevron's choice.

Drill cuttings were placed in drums and temporarily stored on site. Drill cuttings will be disposed of at a facility of Chevron's choice, based on analyses of the soil samples collected during drilling.

WELL INSTALLATION

Groundwater Monitor Well Installation

The exploratory borings converted to groundwater monitor wells were extended to varying depths into groundwater (see Appendix C). Care was taken to prevent cross-communication between distinct hydraulic zones.

Monitoring wells were constructed with 2-inch-diameter, flush-threaded, PVC casing inside the boring. No solvent cements were used on the casing. The schedule 40 PVC casing was screened with 0.020-inch machine-slotted screens, which extends across the saturated interval to as much as 25 feet above first-encountered groundwater. 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. 3 sand to approximately 2 feet above the top of the screened interval. A minimum of 3 foot of bentonite seal was placed above the sandpack. The bentonite pellets were placed by pouring the pellets through the annular space between the PVC well pipe and the inside of the hollow stem augers. The bentonite pellets were then hydrated with distilled water at a one-to-one bentonite/water ratio. The bentonite seal was capped with neat cement.

A water-tight locking was set on the PVC pipe. The PVC well pipe was covered with a traffic-rated vault box which was set in concrete to protect the well. 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 prepared.

Extraction Well Installation

The exploratory boring converted to an extraction well was extended to a depth of approximately 31.5 feet below ground level (BGL). Care was taken to prevent cross-communication between distinct hydraulic zones.

The extraction well was constructed with 6-inch-diameter, flush-threaded, PVC casing inside the boring. No solvent cements were used on the casing. The casing was screened with 0.020-inch machine-slotted screen. 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. 3 sand to approximately 2 feet above the top of the screened interval. A minimum of 2 feet of bentonite plugs the space above the sandpack, and a neat cement was grouted to the surface.

A traffic-rated vault box with a locking device was set in concrete to protect the well. Well tags was affixed to the casing for identification.

Groundwater Monitoring and Extraction Well Development

The groundwater monitoring and extraction wells were developed by surging, swabbing, and bailing, or by submersible-pump water evacuation, until a non-turbid discharge was obtained. All development equipment was steam-cleaned between wells. During well development the pH, electrical conductivity, and temperature were monitored to determine when water-quality conditions were stable. The water purged during monitor well development was contained in 55-gallon drums, and temporarily stored onsite pending disposal by Chevron. Once empty, the drums will be reconditioned at a facility of Chevron's choice.

Appendix G

WELL DEVELOPMENT AND GROUNDWATER SAMPLE DATA SHEETS

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: WS-1SL

CLIENT: Chevron 9-8139 DATE: 5/24/90

LOCATION: San Leandro SAMPLE POINT DESIGNATION: MW-1

SAMPLER: B Paris

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch ___ 4 inch ___ 6 inch ___ OTHER _____

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): 2.42

DEPTH OF WELL (feet): 27.10 ACTUAL PURGE VOL. (gal.): 10

DEPTH TO WATER (feet): 12.92

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
1013	2.5	9.62	4.40	66.1		
1023	4	10.06	5.36	67.7		DRY
1227		10.15	5.39	68.4		

ODOR: _____

PURGE METHOD

___2" BLADDER PUMP ___BAILER (Teflon) ___WELL WIZARD ___DEDICATED

___SUBMERSIBLE PUMP X BAILER (PVC) ___CENTRIFUGAL PUMP ___OTHER _____

___PERISTALTIC PUMP ___DIPPER ___PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

___2" BLADDER PUMP X BAILER (Teflon) ___WELL WIZARD ___DEDICATED

___SURFACE SAMPLER ___BAILER (PVC) ___DIPPER ___OTHER _____

___PERISTALTIC PUMP ___SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: Went Dry after 4 gallons; waited until it recharged 80% and Sampled With Bail at Sampling time was 14.36.

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: WS-2SL

CLIENT: Chevron 9-8139 DATE: 5/24/90

LOCATION: San Leandro SAMPLE POINT DESIGNATION: MW-2

SAMPLER: BPeris

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch ___ 4 inch ___ 6 inch ___ OTHER _____

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): 2.90

DEPTH OF WELL (feet): 29.51 ACTUAL PURGE VOL. (gal.): 12

DEPTH TO WATER (feet): 12.40

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
1036	3	9.35	7.79	66.2		
1046	6	8.10	7.24	64.7		
1056	9	8.02	7.53	65.2		
1104	12	7.96	7.47	65.1		

ODOR: _____

PURGE METHOD

___ 2" BLADDER PUMP ___ BAILER (Teflon) ___ WELL WIZARD ___ DEDICATED

___ SUBMERSIBLE PUMP X BAILER (PVC) ___ CENTRIFUGAL PUMP ___ OTHER _____

___ PERISTALTIC PUMP ___ DIPPER ___ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

___ 2" BLADDER PUMP X BAILER (Teflon) ___ WELL WIZARD ___ DEDICATED

___ SURFACE SAMPLER ___ BAILER (PVC) ___ DIPPER ___ OTHER _____

___ PERISTALTIC PUMP ___ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: _____

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158
CLIENT: Chevron 9-8139
LOCATION: San Leandro
SAMPLER: BParis

SAMPLE ID.: WS-3SL
DATE: 5/24/90
SAMPLE POINT DESIGNATION: MW-3

GROUND-WATER X
OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER _____
CASING ELEVATION (feet/MSL): _____
DEPTH OF WELL (feet): 25.32
DEPTH TO WATER (feet): 17.50

CALCULATED PURGE VOL. (gal.): 1.35
ACTUAL PURGE VOL. (gal.): 6

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
1135	1.5	8.03	7.51	70.0		
1140	3.0	8.19	6.39	68.3		
1145	4.5	8.28	6.38	66.4		
1151	6.0	8.07	6.39	66.9		

ODOR: _____

PURGE METHOD

__ 2" BLADDER PUMP
__ SUBMERSIBLE PUMP
__ PERISTALTIC PUMP
__ BAILER (Teflon)
X BAILER (PVC)
__ DIPPER
__ WELL WIZARD
__ CENTRIFUGAL PUMP
__ PNEUMATIC DISPLACEMENT PUMP
__ DEDICATED
__ OTHER _____

SAMPLE METHOD

__ 2" BLADDER PUMP
__ SURFACE SAMPLER
__ PERISTALTIC PUMP
X BAILER (Teflon)
__ BAILER (PVC)
__ SUBMERSIBLE PUMP
__ WELL WIZARD
__ DIPPER
__ DEDICATED
__ OTHER _____

WELL INTEGRITY: _____

REMARKS: _____

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1154 SAMPLE ID.: RS-1SL

CLIENT: 9-4139 DATE: 5/24/90

LOCATION: San Leandro SAMPLE POINT DESIGNATION: MW-3

SAMPLER: BParis

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER _____

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): NA

DEPTH OF WELL (feet): NA ACTUAL PURGE VOL. (gal.): NA

DEPTH TO WATER (feet): NA

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
			NA			

ODOR: _____

PURGE METHOD

__2" BLADDER PUMP __BAILER (Teflon) __WELL WIZARD __DEDICATED

__SUBMERSIBLE PUMP __BAILER (PVC) __CENTRIFUGAL PUMP __OTHER _____

__PERISTALTIC PUMP __DIPPER __PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__2" BLADDER PUMP X BAILER (Teflon) __WELL WIZARD __DEDICATED

__SURFACE SAMPLER __BAILER (PVC) __DIPPER __OTHER _____

__PERISTALTIC PUMP __SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: _____

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: WS-4SL

CLIENT: Chevron 9-8139 DATE: 5/24/90

LOCATION: San Leandro SAMPLE POINT DESIGNATION: MW-3 Dup

SAMPLER: BParis

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch ___ 4 inch ___ 6 inch ___ OTHER _____

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): NA

DEPTH OF WELL (feet): 25.32 ACTUAL PURGE VOL. (gal.): NA

DEPTH TO WATER (feet): 17.50

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
			NA			

ODOR: _____

PURGE METHOD

___2" BLADDER PUMP ___BAILER (Teflon) ___WELL WIZARD ___DEDICATED

___SUBMERSIBLE PUMP X BAILER (PVC) ___CENTRIFUGAL PUMP ___OTHER _____

___PERISTALTIC PUMP ___DIPPER ___PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

___2" BLADDER PUMP X BAILER (Teflon) ___WELL WIZARD ___DEDICATED

___SURFACE SAMPLER ___BAILER (PVC) ___DIPPER ___OTHER _____

___PERISTALTIC PUMP ___SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: _____

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: WS-SSL

CLIENT: Chevron 9-8159 DATE: 5/24/90

LOCATION: San Leandro SAMPLE POINT DESIGNATION: MW-4

SAMPLER: BParis

GROUND-WATER X OTHER (NR)

CASING DIAMETER: 2 inch X 3 inch 4 inch 6 inch OTHER

CASING ELEVATION (feet/MSL): CALCULATED PURGE VOL. (gal.): .44

DEPTH OF WELL (feet): 21.55 ACTUAL PURGE VOL. (gal.): 4

DEPTH TO WATER (feet): 16.02

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
1251	1	9.05	12.12	69.3		
1256	2	9.42	10.44	67.1		
1259	3	9.13	10.11	66.6		
1308	4	8.62	10.03	70.1		

ODOR:

PURGE METHOD

___2" BLADDER PUMP ___BAILER (Teflon) ___WELL WIZARD ___DEDICATED

___SUBMERSIBLE PUMP X BAILER (PVC) ___CENTRIFUGAL PUMP ___OTHER

___PERISTALTIC PUMP ___DIPPER ___PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

___2" BLADDER PUMP X BAILER (Teflon) ___WELL WIZARD ___DEDICATED

___SURFACE SAMPLER ___BAILER (PVC) ___DIPPER ___OTHER

___PERISTALTIC PUMP ___SUBMERSIBLE PUMP

WELL INTEGRITY:

REMARKS:

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: WS-6SL

CLIENT: Chevron 9-8139 DATE: 5/24/90

LOCATION: San Leandro SAMPLE POINT DESIGNATION: MW-5

SAMPLER: BParis

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch ___ 4 inch ___ 6 inch ___ OTHER _____

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): 1.36

DEPTH OF WELL (feet): 24.91 ACTUAL PURGE VOL. (gal.): 6

DEPTH TO WATER (feet): 16.89

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
1340	1.5	7.84	11.15	66.4		
1345	3.0	7.47	12.42	71.4		
1349	4.5	7.48	12.69	74.4		
1354	6.0	7.44	12.75	75.2		

ODOR: _____

PURGE METHOD

___ 2" BLADDER PUMP ___ BAILER (Teflon) ___ WELL WIZARD ___ DEDICATED

___ SUBMERSIBLE PUMP X BAILER (PVC) ___ CENTRIFUGAL PUMP ___ OTHER _____

___ PERISTALTIC PUMP ___ DIPPER ___ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

___ 2" BLADDER PUMP X BAILER (Teflon) ___ WELL WIZARD ___ DEDICATED

___ SURFACE SAMPLER ___ BAILER (PVC) ___ DIPPER ___ OTHER _____

___ PERISTALTIC PUMP ___ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: _____

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: WS-7SL

CLIENT: Chevron 9-8139 DATE: 5/25/90

LOCATION: San Leandro SAMPLE POINT DESIGNATION: MW-6

SAMPLER: BParis

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER _____

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): 1.78

DEPTH OF WELL (feet): 29.0 ACTUAL PURGE VOL. (gal.): 8

DEPTH TO WATER (feet): 18.51

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
826	2	7.70	6.79	64.7		
831	4	7.39	6.38	62.3		
837	6	7.50	6.34	60.5		
843	8	7.46	6.34	60.6		

ODOR: _____

PURGE METHOD

__ 2" BLADDER PUMP __ BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SUBMERSIBLE PUMP X BAILER (PVC) __ CENTRIFUGAL PUMP __ OTHER _____

__ PERISTALTIC PUMP __ DIPPER __ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__ 2" BLADDER PUMP X BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SURFACE SAMPLER __ BAILER (PVC) __ DIPPER __ OTHER _____

__ PERISTALTIC PUMP __ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: _____

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: WS-8SL

CLIENT: Chevron 9-8139 DATE: 5/25/90

LOCATION: San Leandro SAMPLE POINT DESIGNATION: MW-7

SAMPLER: BParis

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch ___ 4 inch ___ 6 inch ___ OTHER _____

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): .71

DEPTH OF WELL (feet): 25.62 ACTUAL PURGE VOL. (gal.): 3

DEPTH TO WATER (feet): 21.40

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
909	.75	7.85	7.28	64.2		
912	1.5	7.68	7.43	63.9		
915	2.25	7.52	7.45	63.6		
917	3.0	7.54	7.55	62.9		

ODOR: _____

PURGE METHOD

___2" BLADDER PUMP ___BAILER (Teflon) ___WELL WIZARD ___DEDICATED

___SUBMERSIBLE PUMP X BAILER (PVC) ___CENTRIFUGAL PUMP ___OTHER _____

___PERISTALTIC PUMP ___DIPPER ___PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

___2" BLADDER PUMP X BAILER (Teflon) ___WELL WIZARD ___DEDICATED

___SURFACE SAMPLER ___BAILER (PVC) ___DIPPER ___OTHER _____

___PERISTALTIC PUMP ___SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: _____

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: WS-95L

CLIENT: Chevron 9-8139 DATE: 5/25/90

LOCATION: San Leandro SAMPLE POINT DESIGNATION: E-1

SAMPLER: BParis

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch__ 3 inch__ 4 inch__ 6 inch X OTHER _____

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): 14.79

DEPTH OF WELL (feet): 28.87 ACTUAL PURGE VOL. (gal.): 60

DEPTH TO WATER (feet): 19.01

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
939	15	766	731	64.9		
945	30	749	767	61.8		
957	45	761	715	62.1		
1015	60	780	731	63.5		

ODOR: _____

PURGE METHOD

__2" BLADDER PUMP __BAILER (Teflon) __WELL WIZARD __DEDICATED

X SUBMERSIBLE PUMP (Grundfos) __BAILER (PVC) __CENTRIFUGAL PUMP __OTHER _____

__PERISTALTIC PUMP __DIPPER __PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__2" BLADDER PUMP X BAILER (Teflon) __WELL WIZARD __DEDICATED

__SURFACE SAMPLER __BAILER (PVC) __DIPPER __OTHER _____

__PERISTALTIC PUMP __SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: _____

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: 1 W S SC

CLIENT: CHEVRON 9-8139 DATE: 9/6/90

LOCATION: SAN LEANDRO SAMPLE POINT DESIGNATION: MW-1

SAMPLER: O.D. LAMB

GROUND-WATER X OTHER (NR)

CASING DIAMETER: 2 inch X 3 inch 4 inch 6 inch OTHER CONVERSION FACTOR: .17

CASING ELEVATION (feet/MSL): CALCULATED PURGE VOL. (gal.): 2.15 / 4 vol

DEPTH OF WELL (feet): 27.35' ACTUAL PURGE VOL. (gal.): 2.15 / 4 vol

DEPTH TO WATER (feet): 14.68'

length of H_2O column: 12.67

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
1200	2.15	N/A	N/A	NA	Fairly CLEAR	
	4.30	* →	Purged dry	After 4 gl.		
	6.45					CHUNKY
	8.60					SEDIMENTS

ODOR: NONE

PURGE METHOD

___ 2" BLADDER PUMP ___ BAILER (Teflon) ___ WELL WIZARD ___ DEDICATED

___ SUBMERSIBLE PUMP X BAILER (PVC) ___ CENTRIFUGAL PUMP ___ OTHER

___ PERISTALTIC PUMP ___ DIPPER ___ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

___ 2" BLADDER PUMP X BAILER (Teflon) ___ WELL WIZARD ___ DEDICATED

___ SURFACE SAMPLER ___ BAILER (PVC) ___ DIPPER ___ OTHER

___ PERISTALTIC PUMP ___ SUBMERSIBLE PUMP

WELL INTEGRITY:

REMARKS:

* ph meter probe too dirty to calibrate. Tried cleaning w/ HCL and TSP; still not able to calibrate. New probe needed

* purged well dry after 4 gal (26.0'): let MW-1 recover 9/90. Sampled at 16.0' (3.45 gal)

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: 2 WS SL

CLIENT: CHEVRON 9-8139 DATE: 9/6/90

LOCATION: SAN LEANDRO SAMPLE POINT DESIGNATION: MW-2

SAMPLER: O.A. LAMB

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER CONVERSION FACTOR: .17

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): 2.6 @ 4 vol

DEPTH OF WELL (feet): 30.10' ACTUAL PURGE VOL. (gal.): 2.6/4 vol.

DEPTH TO WATER (feet): 14.85'

length of H_2O column: 15.25'

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
1115	2.6	N/A	→		H.brn/CLEAR	
	5.2					
	7.8					
	10.4					

ODOR: NONE

PURGE METHOD

__ 2" BLADDER PUMP __ BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SUBMERSIBLE PUMP X BAILER (PVC) __ CENTRIFUGAL PUMP __ OTHER _____

__ PERISTALTIC PUMP __ DIPPER __ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__ 2" BLADDER PUMP X BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SURFACE SAMPLER __ BAILER (PVC) __ DIPPER __ OTHER _____

__ PERISTALTIC PUMP __ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: * NEED NEW pH METER PROBE

LET WELL RECOVER till Depth to H_2O WAS 17.5' THEN SAMPLED

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: 3 WS SC

CLIENT: CHEVRON 9-8139 DATE: 9/6/90

LOCATION: SAN LEANDRO SAMPLE POINT DESIGNATION: MW-3

SAMPLER: O.D. LAMB

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER CONVERSION FACTOR: .17

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): 1.14 @ 4/6/1

DEPTH OF WELL (feet): 25.45 ACTUAL PURGE VOL. (gal.): 1.5 / 4 vol

DEPTH TO WATER (feet): 18.72

length of H_2O column: 6.73

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
215	1.5	N/A	N/A	N/A	H. BROWN	
	3.0					
	4.5					
	6.0					

ODOR: Medium odor

PURGE METHOD

__ 2" BLADDER PUMP __ BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SUBMERSIBLE PUMP X BAILER (PVC) __ CENTRIFUGAL PUMP __ OTHER _____

__ PERISTALTIC PUMP __ DIPPER __ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__ 2" BLADDER PUMP X BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SURFACE SAMPLER __ BAILER (PVC) __ DIPPER __ OTHER _____

__ PERISTALTIC PUMP __ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: * Well purged dry at 5 gl. 1st well recovery 80% Samples at 4:20 @ (18.85')

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: 4 WS SC

CLIENT: Chevron 9-8139 DATE: 9/6/90

LOCATION: San Leandro SAMPLE POINT DESIGNATION: MW-4

SAMPLER: O.A. LAMB

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER CONVERSION FACTOR: .17

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): 7.9 @ 4 vol.

DEPTH OF WELL (feet): 22.00' ACTUAL PURGE VOL. (gal.): 1

DEPTH TO WATER (feet): 17.35'

length of H_2O column: 4.65'

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
300	1	N/A	N/A	N/A	Fairly Clear	
	2					
	3	(X)				
	4					

ODOR: Slight ODOR

PURGE METHOD

__ 2" BLADDER PUMP __ BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SUBMERSIBLE PUMP X BAILER (PVC) __ CENTRIFUGAL PUMP __ OTHER _____

__ PERISTALTIC PUMP __ DIPPER

__ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__ 2" BLADDER PUMP X BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SURFACE SAMPLER __ BAILER (PVC) __ DIPPER __ OTHER _____

__ PERISTALTIC PUMP __ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: * NOTE: Well purged dry after @ 3.5 gl. Sample when recovery reaches 1828 (500pm)

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: DLM MW-5 WS SL

CLIENT: CHEVRON 9-8139 DATE: 9-7-1990

LOCATION: SAN LEANDRO SAMPLE POINT DESIGNATION: MW5

SAMPLER: D.A. LAMB

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER CONVERSION FACTOR: .17

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): .8738 gal

DEPTH OF WELL (feet): 23.60' ACTUAL PURGE VOL. (gal.): 1.0 gal

DEPTH TO WATER (feet): 18.46'

length of H_2O column: 5.14

5.14
.17
.8738

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
1240	1		→	Free Product	v. lt. tan	
	2					
	3					
1302	4					

ODOR: Heavy odor

PURGE METHOD

__ 2" BLADDER PUMP __ BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SUBMERSIBLE PUMP X BAILER (PVC) __ CENTRIFUGAL PUMP __ OTHER _____

__ PERISTALTIC PUMP __ DIPPER __ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__ 2" BLADDER PUMP X BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SURFACE SAMPLER __ BAILER (PVC) __ DIPPER __ OTHER _____

__ PERISTALTIC PUMP __ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: Note: ~1/2" free floating product in well; bailed 4 well volumes to remove free product; did not sample.

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: 6 WS 52

CLIENT: CHEVRON 9-8139 DATE: 9/7/1990

LOCATION: SAN LEANDRO SAMPLE POINT DESIGNATION: MW-6

SAMPLER: O.D. LAMB

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER CONVERSION FACTOR: .17

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): 2.14'

DEPTH OF WELL (feet): 28.82 ACTUAL PURGE VOL. (gal.): 2.25'

DEPTH TO WATER (feet): 16.18'

length of H_2O column: 12.64'

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
130	2.25'	N/A			lt. tan	
135	4.50					
140	6.75					
145	9.00					

ODOR: NONE

PURGE METHOD

__ 2" BLADDER PUMP __ BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SUBMERSIBLE PUMP X BAILER (PVC) __ CENTRIFUGAL PUMP __ OTHER _____

__ PERISTALTIC PUMP __ DIPPER __ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__ 2" BLADDER PUMP X BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SURFACE SAMPLER __ BAILER (PVC) __ DIPPER __ OTHER _____

__ PERISTALTIC PUMP __ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: * ph meter not functioning properly. Let well recover until depth to H_2O is 18.71' before sampling. Bailed 4 volumes for a total of (9) gallons

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: 7 WS SL

CLIENT: CHEVRON 9-8139 DATE: 9/7/1990

LOCATION: SAN LEANDRO SAMPLE POINT DESIGNATION: MW-6 (Duplicate)

SAMPLER: D.A. LAMB

GROUND-WATER X OTHER (NR)

CASING DIAMETER: 2 inch X 3 inch 4 inch 6 inch OTHER CONVERSION FACTOR: .17

CASING ELEVATION (feet/MSL): CALCULATED PURGE VOL. (gal.):

DEPTH OF WELL (feet): ACTUAL PURGE VOL. (gal.):

DEPTH TO WATER (feet):

length of H_2O column:

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
		N/A				

ODOR:

PURGE METHOD

___2" BLADDER PUMP ___BAILER (Teflon) ___WELL WIZARD ___DEDICATED

___SUBMERSIBLE PUMP X BAILER (PVC) ___CENTRIFUGAL PUMP ___OTHER

___PERISTALTIC PUMP ___DIPPER ___PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

___2" BLADDER PUMP X BAILER (Teflon) ___WELL WIZARD ___DEDICATED

___SURFACE SAMPLER ___BAILER (PVC) ___DIPPER ___OTHER

___PERISTALTIC PUMP ___SUBMERSIBLE PUMP

WELL INTEGRITY:

REMARKS:

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: 8 WS SL

CLIENT: CHEVRON 9-8139 DATE: 9/7/1990

LOCATION: SAN LEANDRO SAMPLE POINT DESIGNATION: MW-7

SAMPLER: O.D. LAMB

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER CONVERSION FACTOR: .17

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): 1.28

DEPTH OF WELL (feet): 25.90 ACTUAL PURGE VOL. (gal.): 1.3

DEPTH TO WATER (feet): 18.38

length of H_2O column: 7.52

7.5
x .17
1.278

1.02
(80% of ab

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
2pm	1.3		N/A		H brn	
2:05	2.6					
2:10	3.9					
2:15	4.2 gal					

ODOR: NONE

PURGE METHOD

__ 2" BLADDER PUMP __ BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SUBMERSIBLE PUMP X BAILER (PVC) __ CENTRIFUGAL PUMP __ OTHER _____

__ PERISTALTIC PUMP __ DIPPER __ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__ 2" BLADDER PUMP X BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SURFACE SAMPLER __ BAILER (PVC) __ DIPPER __ OTHER _____

__ PERISTALTIC PUMP __ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: purged 4 volumes for total of 4.2 gal

* (ph meter screwed; well just purged)

- well recovering slow between purges

- well should recover to @ least 19.88' before sampling

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: DH MW-9 WS SL

CLIENT: CHEVRON 9-8139 DATE: 9/7/1990

LOCATION: SAN LEANDRO SAMPLE POINT DESIGNATION: MW-8

SAMPLER: O.A. LAMB

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER CONVERSION FACTOR: .17

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): 2.5

DEPTH OF WELL (feet): 30.65' ACTUAL PURGE VOL. (gal.): 5.0 gal/VOC

DEPTH TO WATER (feet): 16.07'

length of H_2O column: 15.58'

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
11:00	2.5 ~~5.0~~	~~7~~ 9.5	.90	78.3		
11:20	5.0 ~~10.0~~	7.3	.79	72.3		
11:25	7.5 ~~15.0~~	~~7.85~~	.79	72.5		
11:30	10.0 ~~20.0~~	8.3	.80	71.8		
11:35	12.5 ~~25.0~~	10.55	~~2.21~~ TK 2.11	72.3		
11:40	15.0	11.3	2.21 AR 2.21	72.5		
11:45	17.5	11.8	4.05	73.5		
ODOR: 11:50	20.0	10.72	4.27 4.80	73.0 ~~71.7~~		
11:55	22.5 ~~25.0~~	—	PURGE METHOD 6.41	73.1		

__ 2" BLADDER PUMP __ BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SUBMERSIBLE PUMP X BAILER (PVC) __ CENTRIFUGAL PUMP __ OTHER _____

__ PERISTALTIC PUMP __ DIPPER

__ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__ 2" BLADDER PUMP X BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SURFACE SAMPLER __ BAILER (PVC) __ DIPPER __ OTHER _____

__ PERISTALTIC PUMP __ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: PH NOT WORKING

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: 1 RS SL

CLIENT: CHEVRON 9-8139 DATE: 9/7/1990

LOCATION: SAN LEANDRO SAMPLE POINT DESIGNATION: N/A

SAMPLER: O.D. LAMB

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER CONVERSION FACTOR: .17

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): _____

DEPTH OF WELL (feet): _____ ACTUAL PURGE VOL. (gal.): _____

DEPTH TO WATER (feet): _____

length of H_2O column:

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
		N/A				

ODOR: _____

PURGE METHOD

__ 2" BLADDER PUMP __ BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SUBMERSIBLE PUMP X BAILER (PVC) __ CENTRIFUGAL PUMP __ OTHER _____

__ PERISTALTIC PUMP __ DIPPER

__ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__ 2" BLADDER PUMP X BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SURFACE SAMPLER __ BAILER (PVC) __ DIPPER __ OTHER _____

__ PERISTALTIC PUMP __ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: _____

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: 1 TB SL

CLIENT: CHEVRON 9-8139 DATE: 9-6-1990

LOCATION: SAN LEANDRO SAMPLE POINT DESIGNATION: N/A

SAMPLER: O.A. LAMB

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER CONVERSION FACTOR: .17

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): _____

DEPTH OF WELL (feet): _____ ACTUAL PURGE VOL. (gal.): _____

DEPTH TO WATER (feet): _____

length of H_2O column:

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
	N/A					

ODOR: _____

PURGE METHOD

__ 2" BLADDER PUMP __ BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SUBMERSIBLE PUMP X BAILER (PVC) __ CENTRIFUGAL PUMP __ OTHER _____

__ PERISTALTIC PUMP __ DIPPER __ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__ 2" BLADDER PUMP X BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SURFACE SAMPLER __ BAILER (PVC) __ DIPPER __ OTHER _____

__ PERISTALTIC PUMP __ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: _____

WATER SAMPLE FIELD DATA SHEET

PROJECT NO.: 1158 SAMPLE ID.: Z TB SL

CLIENT: CHEVRON 9-8139 DATE: 9-7-1990

LOCATION: SAN LEANDRO SAMPLE POINT DESIGNATION: N/A

SAMPLER: D.A. LAMB

GROUND-WATER X OTHER (NR) _____

CASING DIAMETER: 2 inch X 3 inch __ 4 inch __ 6 inch __ OTHER CONVERSION FACTOR: .17

CASING ELEVATION (feet/MSL): _____ CALCULATED PURGE VOL. (gal.): _____

DEPTH OF WELL (feet): _____ ACTUAL PURGE VOL. (gal.): _____

DEPTH TO WATER (feet): _____

length of H_2O column:

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
		N/A				

ODOR: _____

PURGE METHOD

__ 2" BLADDER PUMP __ BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SUBMERSIBLE PUMP X BAILER (PVC) __ CENTRIFUGAL PUMP __ OTHER _____

__ PERISTALTIC PUMP __ DIPPER __ PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD

__ 2" BLADDER PUMP X BAILER (Teflon) __ WELL WIZARD __ DEDICATED

__ SURFACE SAMPLER __ BAILER (PVC) __ DIPPER __ OTHER _____

__ PERISTALTIC PUMP __ SUBMERSIBLE PUMP

WELL INTEGRITY: _____

REMARKS: _____

WATER SAMPLE FIELD DATA SHEET

SM = measured from Surveyor's Mark

bottom of Sump 31.05 - .5' = 30.54'

PROJECT NO.: 1158 SAMPLE ID.: WELL DEVLPMT.

CLIENT: Chevron SS 9-8139 DATE: 9-6-90

LOCATION: 16304 Foothill Bl, San Leandro SAMPLE POINT DESIGNATION: MW-6

SAMPLER: DLM

GROUND-WATER 16.44' (SM) OTHER (NR) (Casing: 5' BGL to surveyor's mark)

CASING DIAMETER: 2 inch X 3 inch ___ 4 inch ___ 6 inch ___ OTHER ___

CASING ELEVATION (feet/MSL): ___ CALCULATED PURGE VOL. (gal.): 2.82 gal

DEPTH OF WELL (feet): 30.75 (SM) ACTUAL PURGE VOL. (gal.): ___

DEPTH TO WATER (feet): 16.44 (SM)

30.54' - 16.44' = 14.1'

14.1 x .2 = 2.82

2.8 x 4 = 11.2

4 well vol. =

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
10:30a	0.	Swabbed well & began		began pumping with well wizard		
2:30	15					
4:30p	55 gal		water level = 16.25' (SM)			
7-90 2:15p	0	began swabbing		@ 2:25 began bailing (dvlpmt.)		
	40 gal	finished bailing;		water cloudy		
		lgt. brn; no sheen or free product				

Note: water level in well did not decrease during development

ODOR: None.

PURGE METHOD

___ 2" BLADDER PUMP	X BAILER (Teflon)	___ WELL WIZARD	___ DEDICATED
___ SUBMERSIBLE PUMP	___ BAILER (PVC)	___ CENTRIFUGAL PUMP	___ OTHER ___
___ PERISTALTIC PUMP	___ DIPPER	X PNEUMATIC DISPLACEMENT PUMP	

NA SAMPLE METHOD

___ 2" BLADDER PUMP	___ BAILER (Teflon)	___ WELL WIZARD	___ DEDICATED
___ SURFACE SAMPLER	___ BAILER (PVC)	___ DIPPER	___ OTHER ___
___ PERISTALTIC PUMP	___ SUBMERSIBLE PUMP		

WELL INTEGRITY: ___

REMARKS: * 9-7-90: in morning - we bailed 10 well vol's, ~25 gal with a 2.5 gal well vol. (See separate data sheet) and sampled well. @ 2:15 pm - swabbed MW-8 again, and began bailing to further develope the well.

WATER SAMPLE FIELD DATA SHEET

SM = Measured from "Surveyor's Mark"

Bottom of Screen 31.05 - .5 = 30.54'

PROJECT NO.: 1158 SAMPLE ID.: WELL DEVLPMT

CLIENT: Kaiser SS 9-8139 DATE: 9-6-90

LOCATION: 16304 Foothill Bl, San Leandro SAMPLE POINT DESIGNATION: MW-6

SAMPLER: DLM

GROUND-WATER 16.44' (SM) OTHER (NR) (Casing: 5' BGL to surveyor's mark)

CASING DIAMETER: 2 inch X 3 inch__ 4 inch__ 6 inch__ OTHER

CASING ELEVATION (feet/MSL): CALCULATED PURGE VOL. (gal.): 2.82 gal.

DEPTH OF WELL (feet): 30.75 (SM) ACTUAL PURGE VOL. (gal.):

DEPTH TO WATER (feet): 16.44 (SM)

30.54 - 16.44 = 14.1

14.1 x .2 = 2.82

7 x 2.9 = 4 well vol. =

FIELD MEASUREMENTS

TIME	VOLUME (gal.)	PH (units)	E.C. (umhos/cm @ 25°C)	TEMPERATURE (°F)	COLOR (visual)	OTHER
10:30a	0,	Swabbed well & began		began pumping	with well wizard	
2:30	15					
4:30p	55 gal		water level = 16.25' (SM)			
9-7-90 2:15p	0	began swabbing		@ 2:25 began	bailing (dvlpmt.)	
	40 gal	finished bailing;		water turbid		
		lgt. brn; fine v. fine sand				

Note: water level in well did not decrease during development.

ODOR: None.

PURGE METHOD

__2" BLADDER PUMP X BAILER (Teflon) __WELL WIZARD __DEDICATED

__SUBMERSIBLE PUMP __BAILER (PVC) __CENTRIFUGAL PUMP __OTHER

__PERISTALTIC PUMP __DIPPER X PNEUMATIC DISPLACEMENT PUMP

SAMPLE METHOD (NA)

__2" BLADDER PUMP __BAILER (Teflon) __WELL WIZARD __DEDICATED

__SURFACE SAMPLER __BAILER (PVC) __DIPPER __OTHER

__PERISTALTIC PUMP __SUBMERSIBLE PUMP

WELL INTEGRITY:

REMARKS: * 9-7-90: in morning - we bailed 10 well vol's, ~25 gal with a 2.5 gal well vol. (See separate data sheet) and sampled well. @ 2:15 pm - swabbed MW-8 again, and began bailing to further develope the well.

Appendix H

HYDRAULIC TESTING PROCEDURES AND TEST PLOTS

Appendix H

Hydraulic testing was performed at the site from May 29 through June 1, 1990. The tests were conducted to determine the transmissivity, hydraulic conductivity, and storage coefficient of the aquifer beneath the site. In addition, the hydraulic parameters of the aquifer were used to evaluate the approximate zone of capture for the aquifer.

The hydraulic testing consisted of four parts: (1) baseline water-level survey, (2) step-drawdown test, (3) constant-discharge pumping test, and (4) water-level recovery test. Extraction well E-1 was used as the pumping well and monitor wells MW-3, MW-5 and MW-7 were used as observation wells (see Figure 2). Water levels were monitored with pressure transducers, and checked with a water-level sounder. The monitoring equipment used to record data during the tests consisted of In-Situ, Inc.™ (In-Situ) electric pressure transducers and an In-Situ Hermit® SE 2000 datalogger. A 4-inch-diameter Grundfos™ submersible pump was set near the bottom of extraction well E-1 to conduct the test. All equipment was steam cleaned before and after the test. The discharge water from well E-1 was pumped into a Baker Tank™ for onsite storage.

The baseline water-level survey was conducted to record normal fluctuations in the water level beneath the site. The transducer/datalogger equipment was setup on Tuesday, May 29, and the water level was monitored for 48 hours. The datalogger was stored inside the service station shop for safety. On Tuesday, June 5, the data was reviewed, and it was observed that a passing storm front had altered the diurnal groundwater level fluctuations.

The step-drawdown test was conducted to determine the optimum pumping rate to be used during the constant-discharge pumping test. During the step-drawdown test, water from extraction well E-1 was pumped at steps of 1/2 and 1 gallon per minute (gpm). The depth-to-water data versus time was recorded and plotted in the field to determine the maximum pumping rate that could be sustained in well E-1 without dewatering the well during the subsequent constant-discharge pumping test.

A 5-hour constant-discharge test was conducted at a pumping rate of 0.7 gpm. The water level changes were monitored with pressure transducers in extraction well E-1 and monitor wells MW-3, MW-5, and MW-7. After pumping the well for 5 hours, the pump was turned off, and the water-level recovery was monitored. The water level was monitored until the level in well E-1 returned to static water level.

Depth-to-water information versus time during the constant-discharge and recovery test were plotted for wells E-1, MW-3, MW-5, and MW-7. Two methods of analysis were used to analyze the data. The drawdown and water-level recovery data were analyzed using a method described by Cooper and Jacob (1946), and the drawdown data were also analyzed using a method described by Theis (1935). The late-time test data was used in the analyses to minimize the effects of casing storage. The aquifer test plots are presented in this Appendix.

RESULTS

The results of the constant-discharge and water-level recovery tests indicate that the transmissivity of the aquifer is approximately 300 gallons per day per foot (gpd/ft).

Based on an effective aquifer thickness of 7 feet, the hydraulic conductivity in the aquifer was found to be approximately 2×10^{-3} cm/sec. The storage coefficient was calculated to be approximately 2.6×10^{-3}. The results from the aquifer test analysis are presented on Table 5.

Aquifer Testing

INTRODUCTION

The general procedures for hydraulic testing of aquifers and water-bearing zones are contained in this appendix. The procedures provide for consistent and reproducible testing methods. They are designed to produce data necessary to define the hydraulic characteristics of the aquifer and a consistent analytical approach to quantification of aquifer characteristics.

PUMPING TESTS

In general pumping tests consist of four parts: (1) baseline water-level measurements, (2) step-discharge pumping, (3) constant-discharge pumping, and (4) water-level recovery. The best results are obtained from a test in which the observation wells are located in the same water-bearing zone as the one being pumped. The pumping well should be of sufficient diameter to accommodate a constant-discharge pump and monitoring equipment. The monitoring equipment will consist of electric transducers and will be monitored by an In Situ Hermit^{R} Datalogger. To run the pump, a generator or permanent power source of at least 210 volts is required. All equipment is steam cleaned before and after testing. Discharge water that is pumped from the well will be contained in a Baker Tank™, and disposed of by Chevron.

Baseline Water-Level Survey

Before testing, baseline water levels in the pumping and observation wells are obtained. It is ideal to set up transducers in each well and obtain readings during a 24-hour period before testing. The baseline survey will record diurnal and other water-level trends which are used to compare with water level changes obtained during testing.

Step Discharge Testing

A step-discharge test is conducted to determine the well's efficiency and an appropriate sustainable pumping rate for the constant discharge test. During a step-discharge test, water from the well is pumped at increasing discharge rates over several time periods. The water level in the pumping well is monitored and recorded in the field with a pressure transducer/datalogger system and an electric sounder. The depth to water data is plotted versus time to determine the optimum pumping rate for a constant discharge pumping test. Each step is conducted until the drawdown within the well is relative stable.

Constant Discharge Test

During a constant discharge test, ground water is pumped from the test well at a constant rate determined from the step-discharge test. The pumping rate is dependent on the hydraulic properties of the test zone and length of time the well will be pumped. The optimum test stresses the water-bearing zone without dewatering the well during testing. In most cases it is important to pump the well long enough to overcome borehole storage effects, and to observe drawdown in an adjacent observation well. Tests are generally run for 4 to 24 hours of pumping.

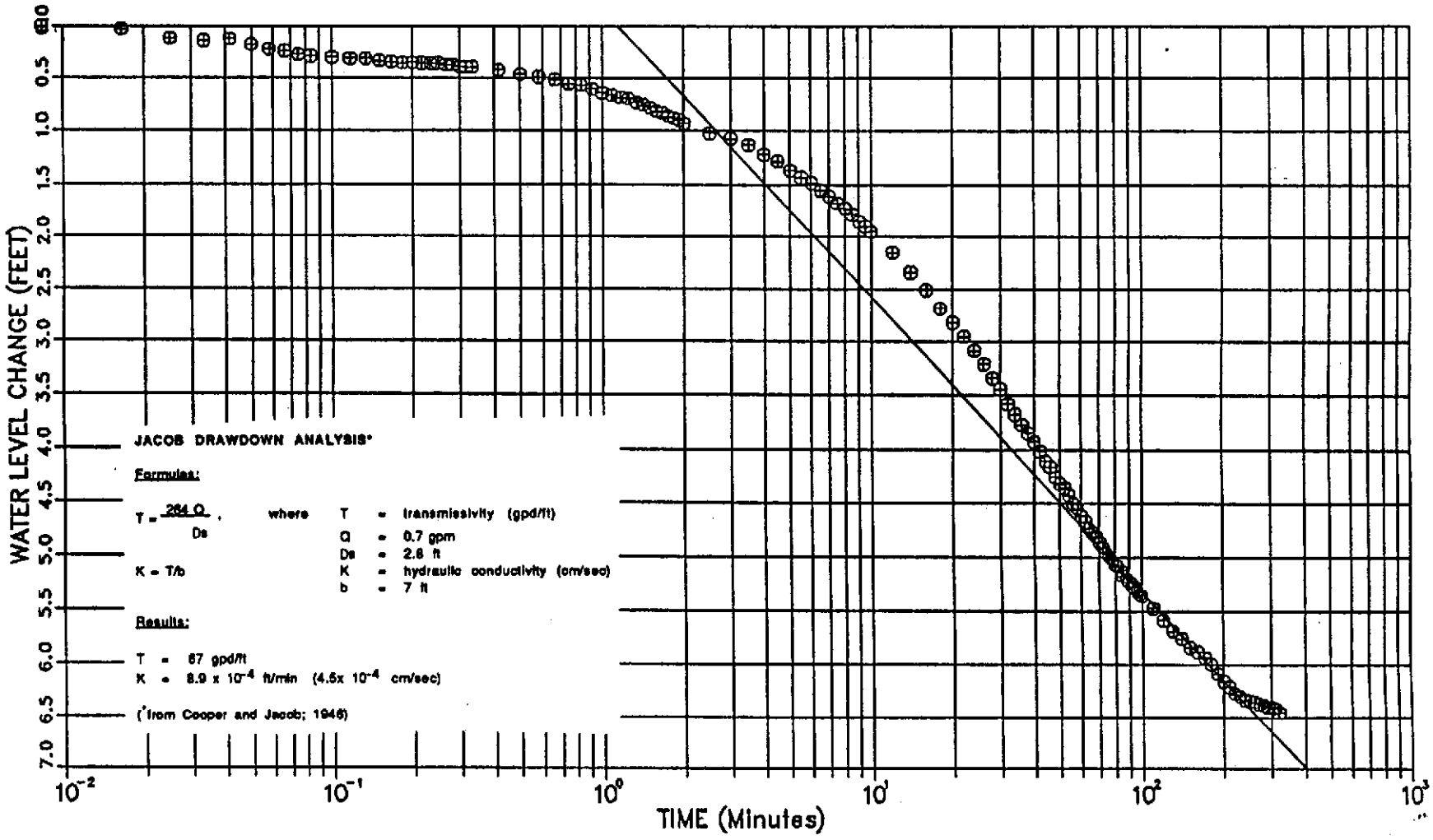
Water Level Recovery Test

After pumping has ceased, recovery is monitored while the water level in the well returns to a static level, or until the water level has returned to 90 percent of the static level. Drawdown and recovery are monitored during the test with a pressure transducer and electric well sounder.

Analytical Methods

There are many different methods (eg, Jacob, 1963; Theis, 1935; Boulton, 1963) used to analyze pumping test results. The method used is dependent on the type of aquifer being tested (confined, unconfined, or leaky). Depth-to-water information is plotted for all wells monitored during testing versus time.

Drawdown and recovery data are used for the analysis. In general, several methods are used to get the best analysis of each test. Depending on the test design and results, it will be possible to calculate hydraulic parameters including transmissivity, storativity, hydraulic conductivity, and radius of influence.



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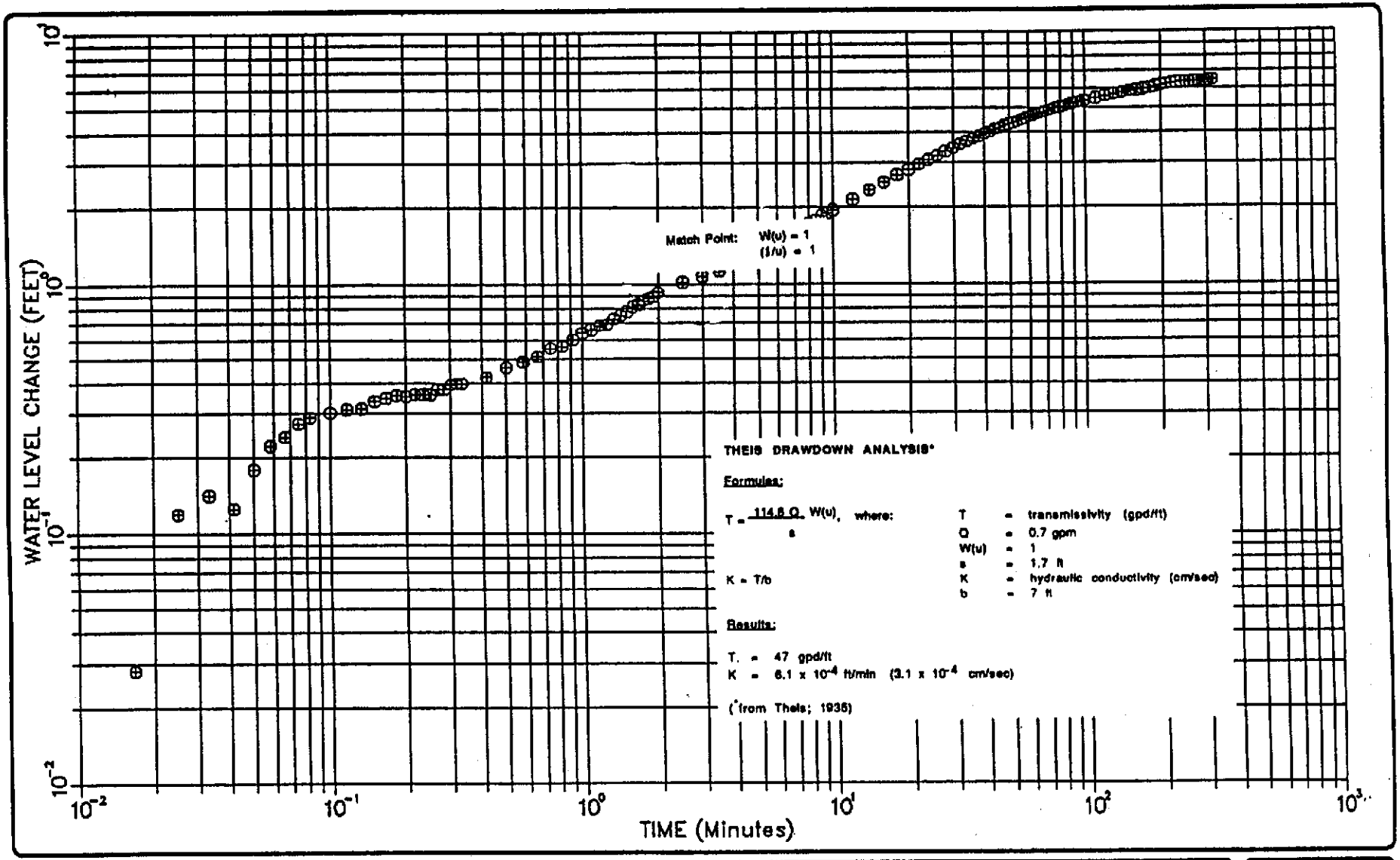
CHEVRON SERVICE STATION #9-8139
16304 FOOTHILL BLVD.
SAN LEANDRO, CALIFORNIA

E-1 CONSTANT DISCHARGE TEST: WELL E-1 DATA

Figure 1

PROJECT NO. 1158



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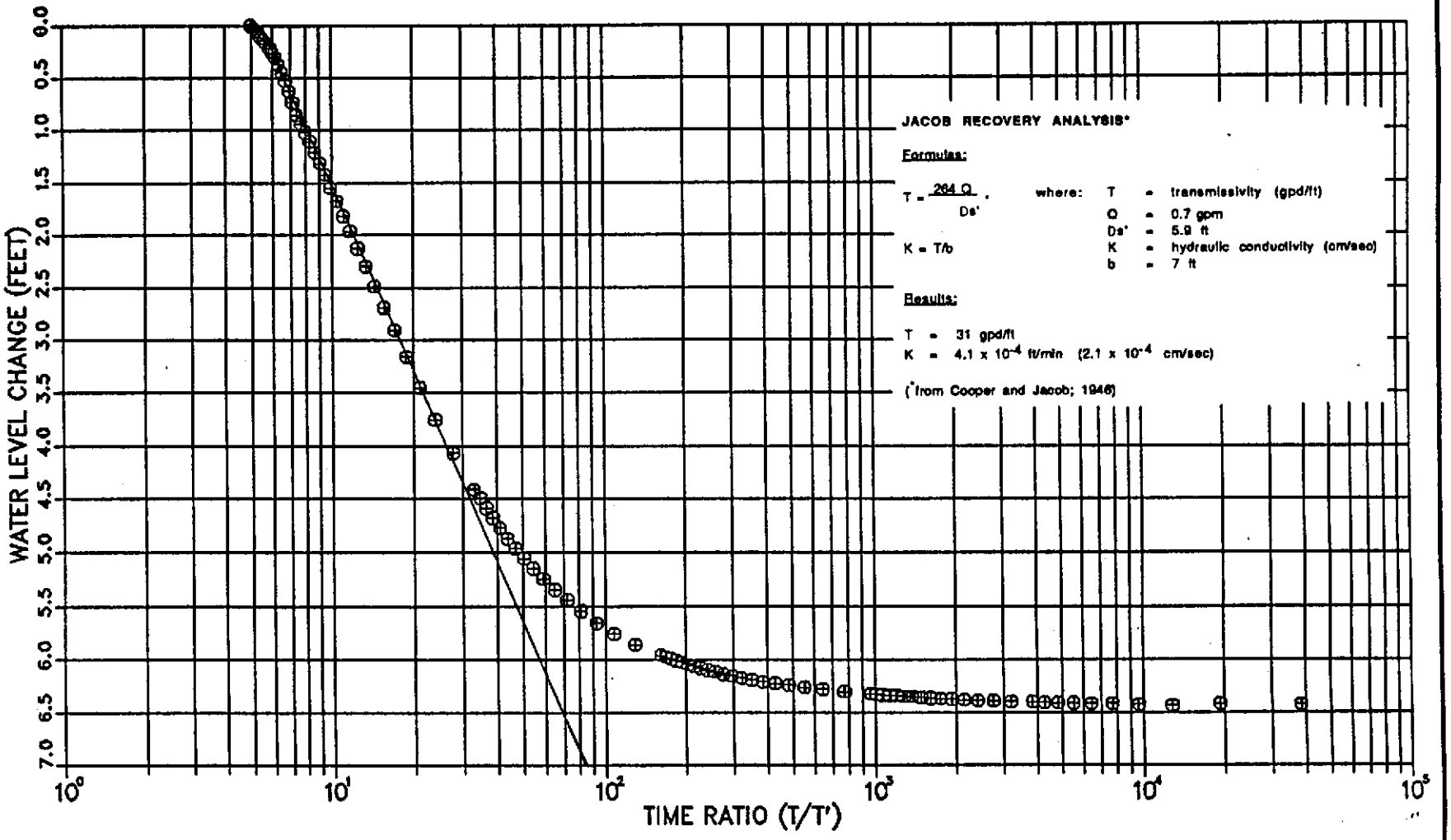
E-1 CONSTANT DISCHARGE TEST: WELL E-1 DATA

Figure 2

PROJECT NO. 1158



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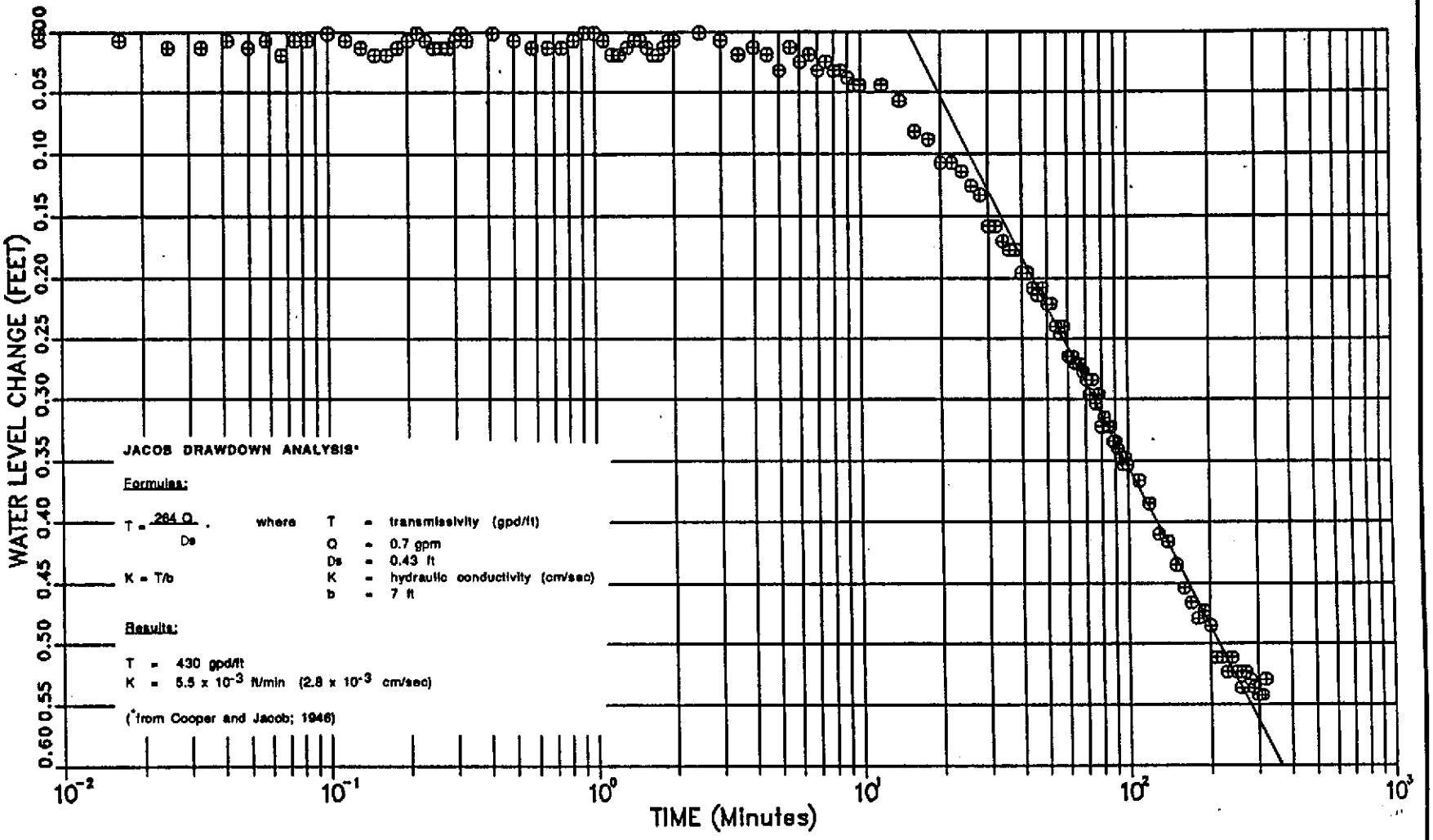
E-1 RECOVERY TEST: WELL E1 DATA

Figure 3

PROJECT NO. 1158



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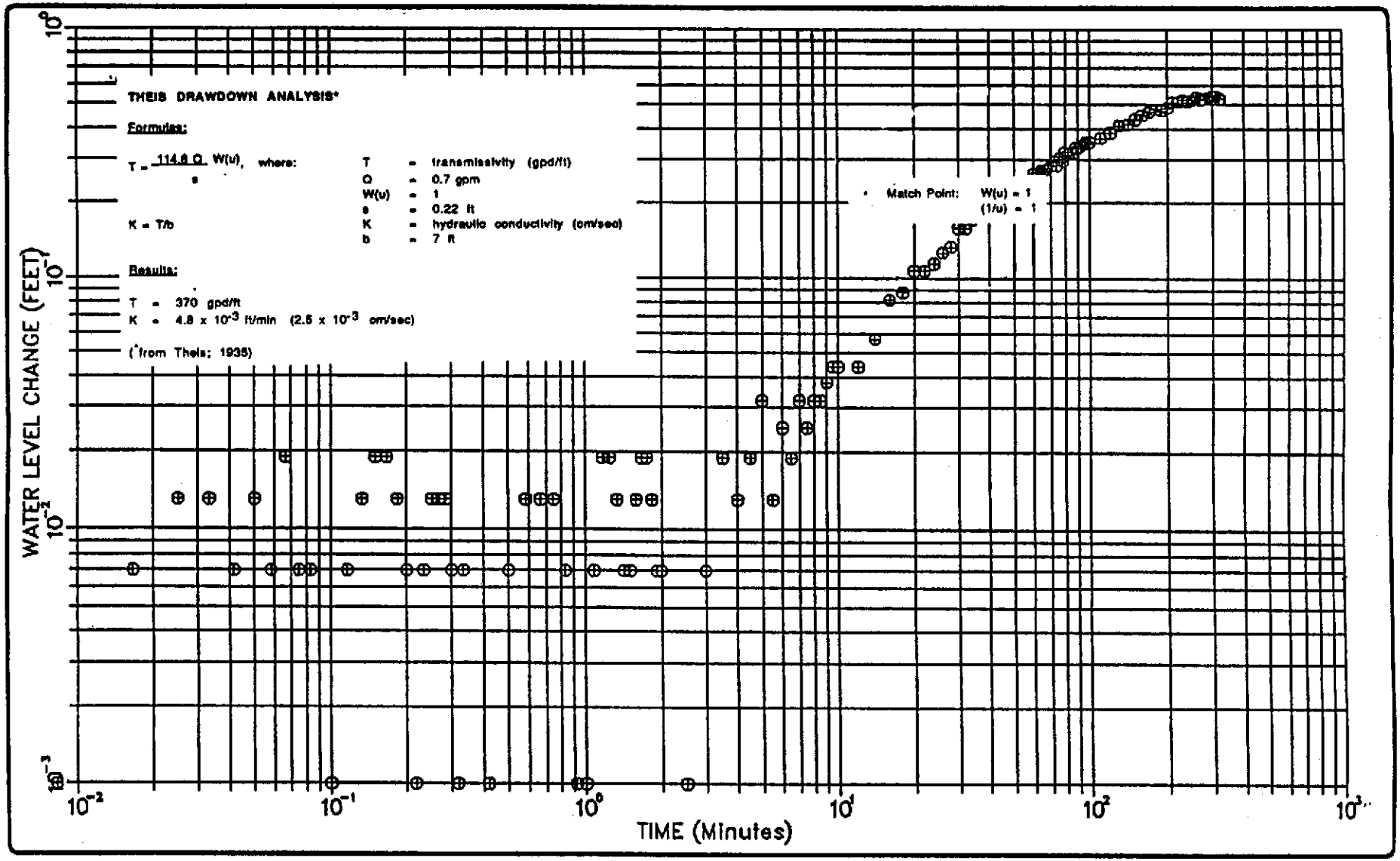
SAN LEANDRO, CALIFORNIA

E-1 CONSTANT DISCHARGE TEST: WELL 3 DATA

Figure .
4

PROJECT NO.
1158



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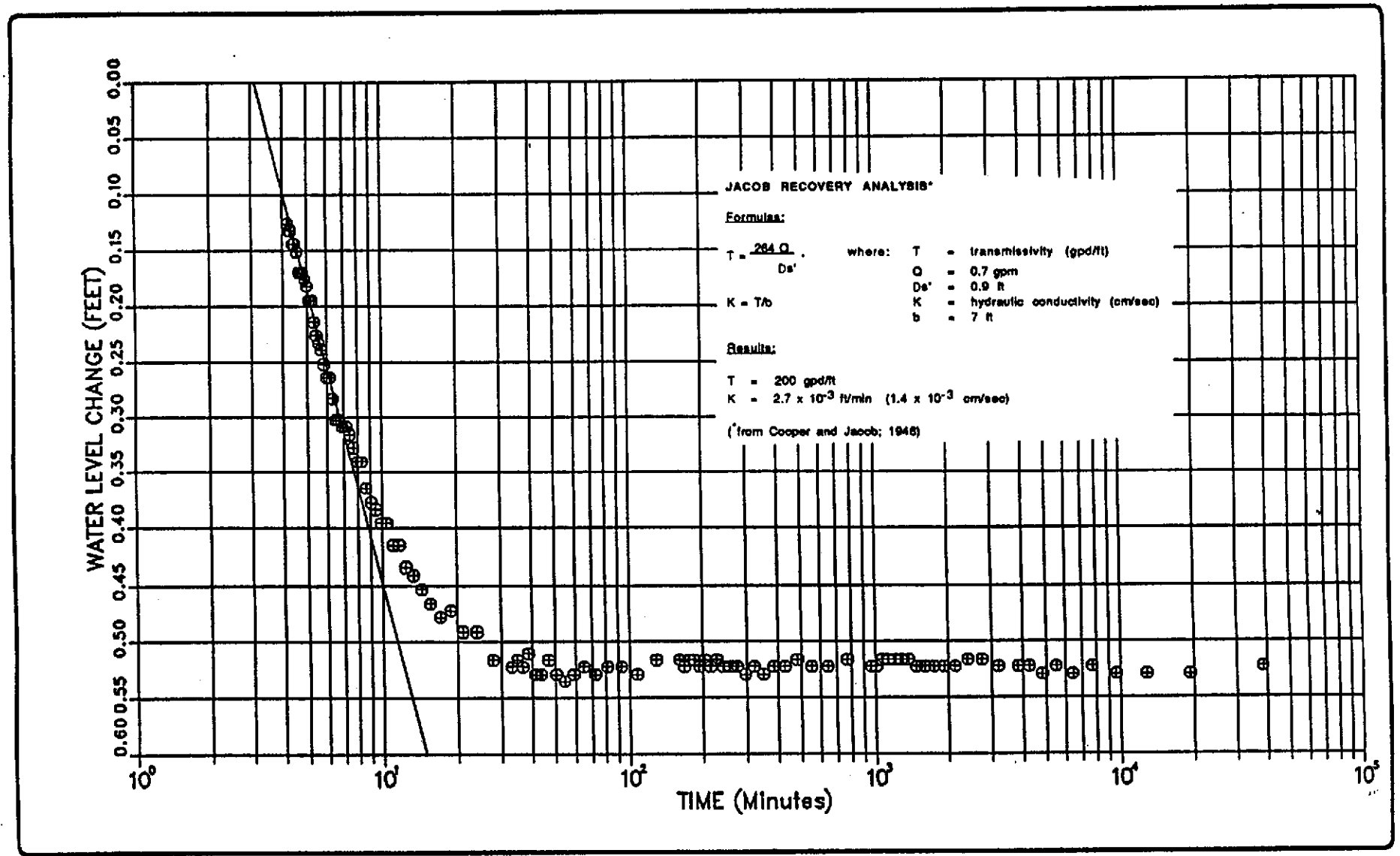
E-1 CONSTANT DISCHARGE TEST: WELL 3 DATA

Figure .
5
PROJECT NO.
1158



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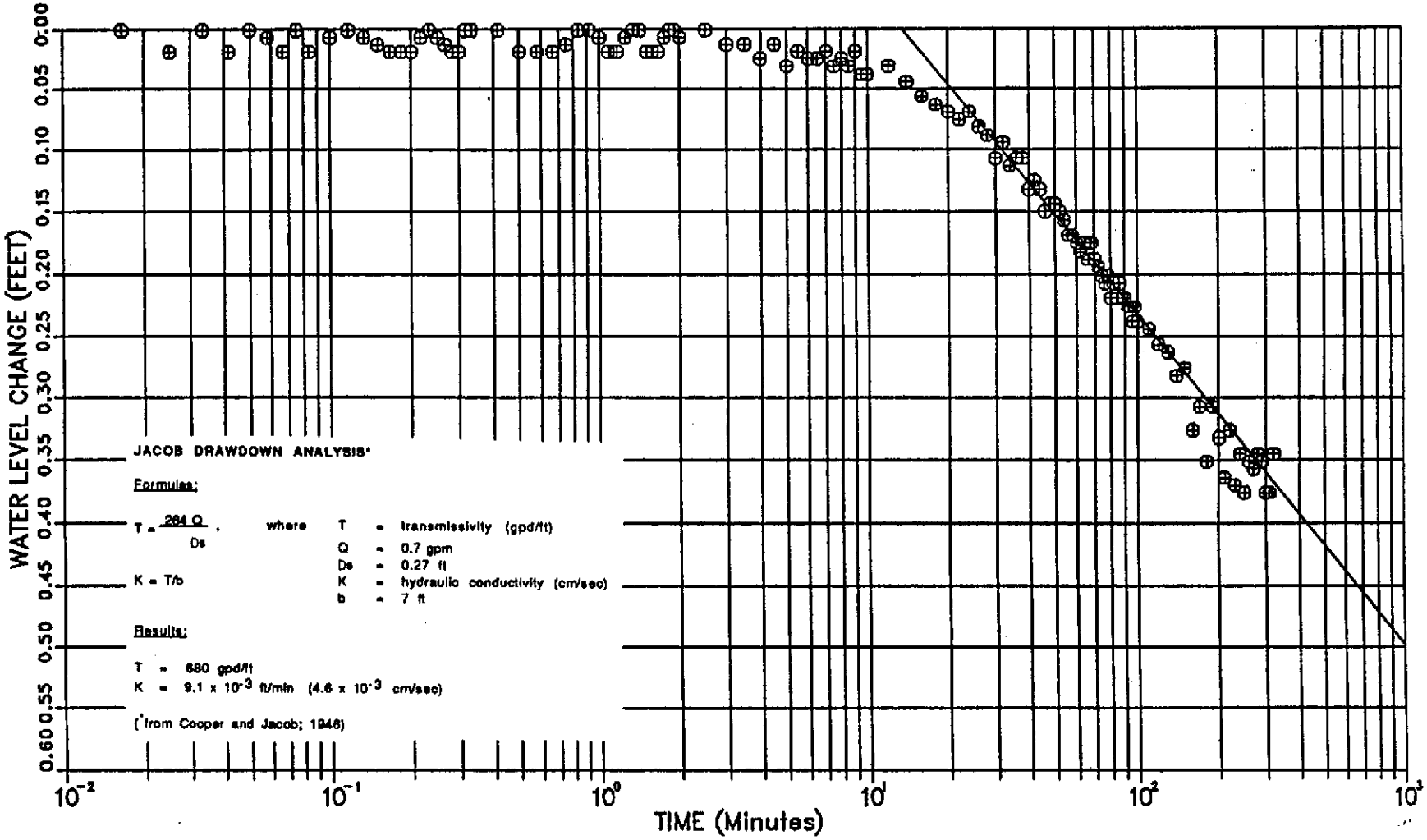
CHEVRON SERVICE STATION #9-8139
16304 FOOTHILL BLVD.
SAN LEANDRO, CALIFORNIA

E-1 RECOVERY TEST: WELL 3 DATA

Figure 6

PROJECT NO. 1158



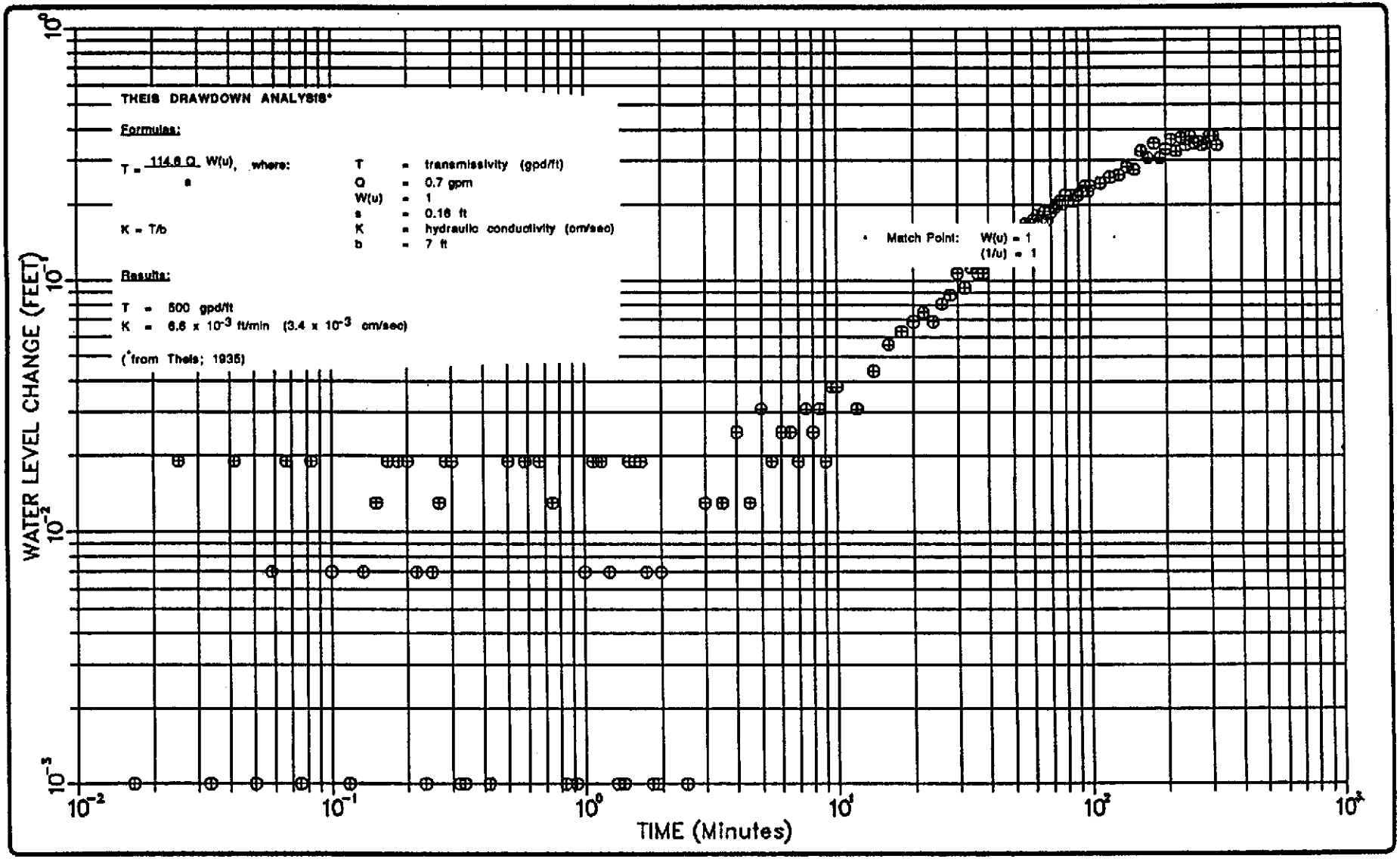
CHEMICAL PROCESSORS, INC.
950-B GILMAN STREET
BERKELEY, CALIFORNIA.

CHEVRON SERVICE STATION #9-8139
16304 FOOTHILL BLVD.
SAN LEANDRO, CALIFORNIA

E-1CONSTANT DISCHARGE TEST: WELL 5 DATA

Figure 7

PROJECT NO. 1158

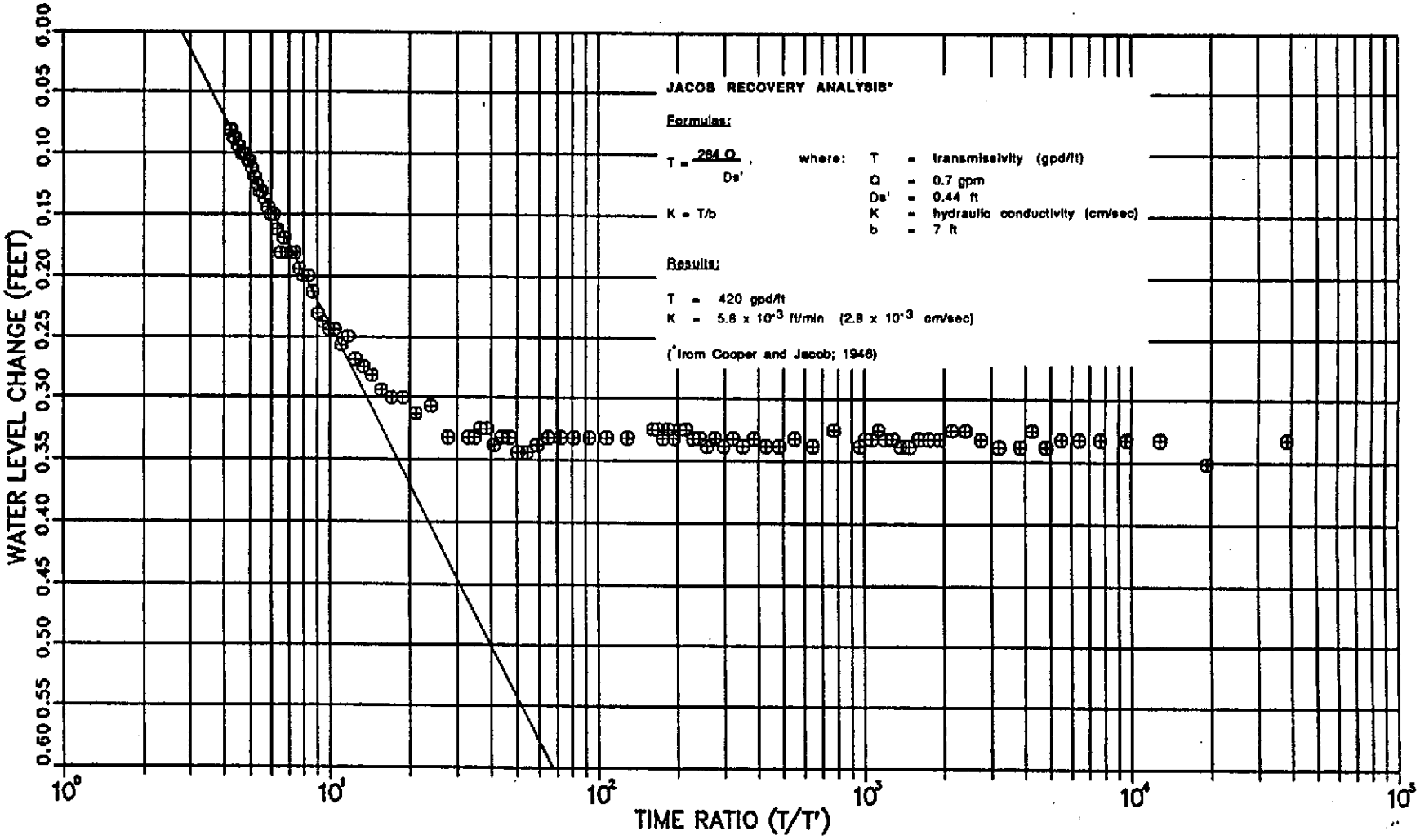


CHEMICAL PROCESSORS, INC.
950-B GILMAN STREET
BERKELEY, CALIFORNIA.

CHEVRON SERVICE STATION #9-8139
16304 FOOTHILL BLVD.
SAN LEANDRO, CALIFORNIA

E-1CONSTANT DISCHARGE TEST: WELL 5 DATA

Figure.
8
PROJECT NO.
1158



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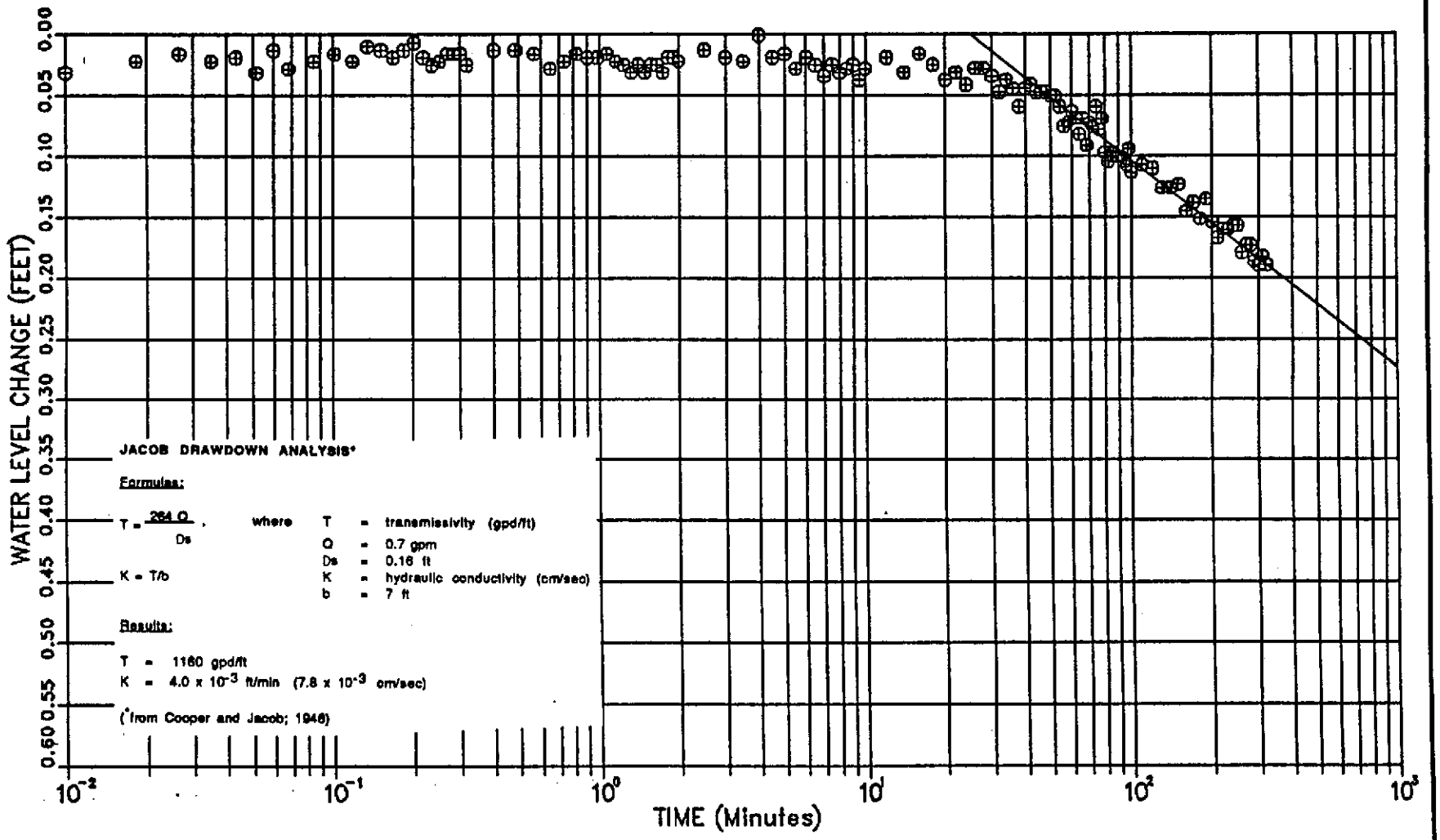
BERKELEY, CALIFORNIA.

CHEVRON SERVICE STATION #9-8139
16304 FOOTHILL BLVD
SAN LEANDRO, CALIFORNIA

E-1 RECOVERY TEST: WELL 5 DATA

Figure.
9

PROJECT NO.
1158



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BERKELEY, CALIFORNIA.

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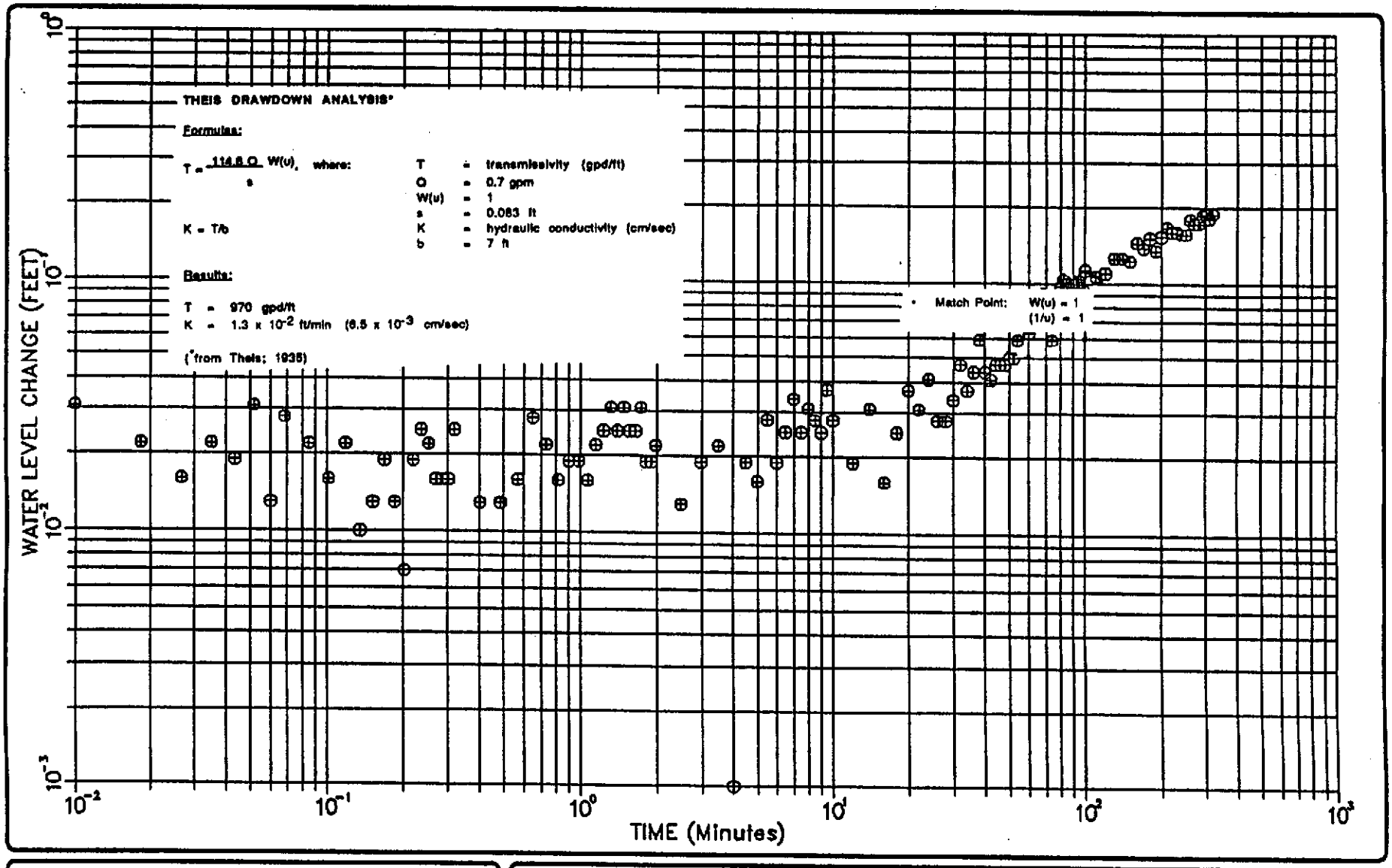
CHEVRON SERVICE STATION #9-8139
16304 FOOTHILL BLVD.
SAN LEANDRO, CALIFORNIA

E-1 CONSTANT DISCHARGE TEST: WELL 7 DATA

Figure
10
PROJECT NO.
1158



CHEMICAL PROCESSORS, INC.
950-8 GILMAN STREET
BERKELEY, CALIFORNIA.

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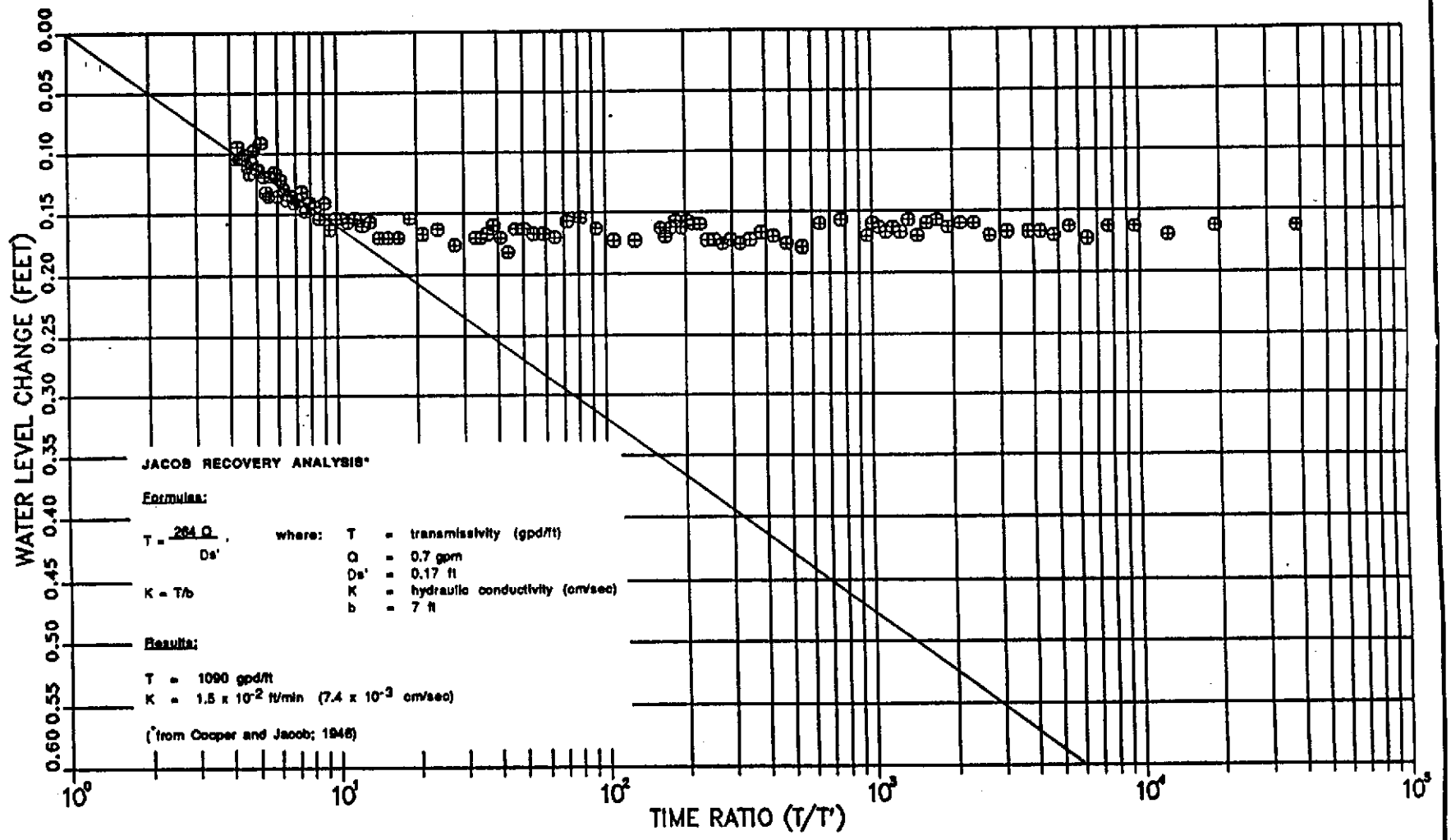
CHEVRON SERVICE STATION #9-8139
16304 FOOTHILL BLVD.
SAN LEANDRO, CALIFORNIA

E-1 CONSTANT DISCHARGE TEST: WELL 7 DATA

Figure
11

PROJECT NO.
1158



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BERKELEY, CALIFORNIA.

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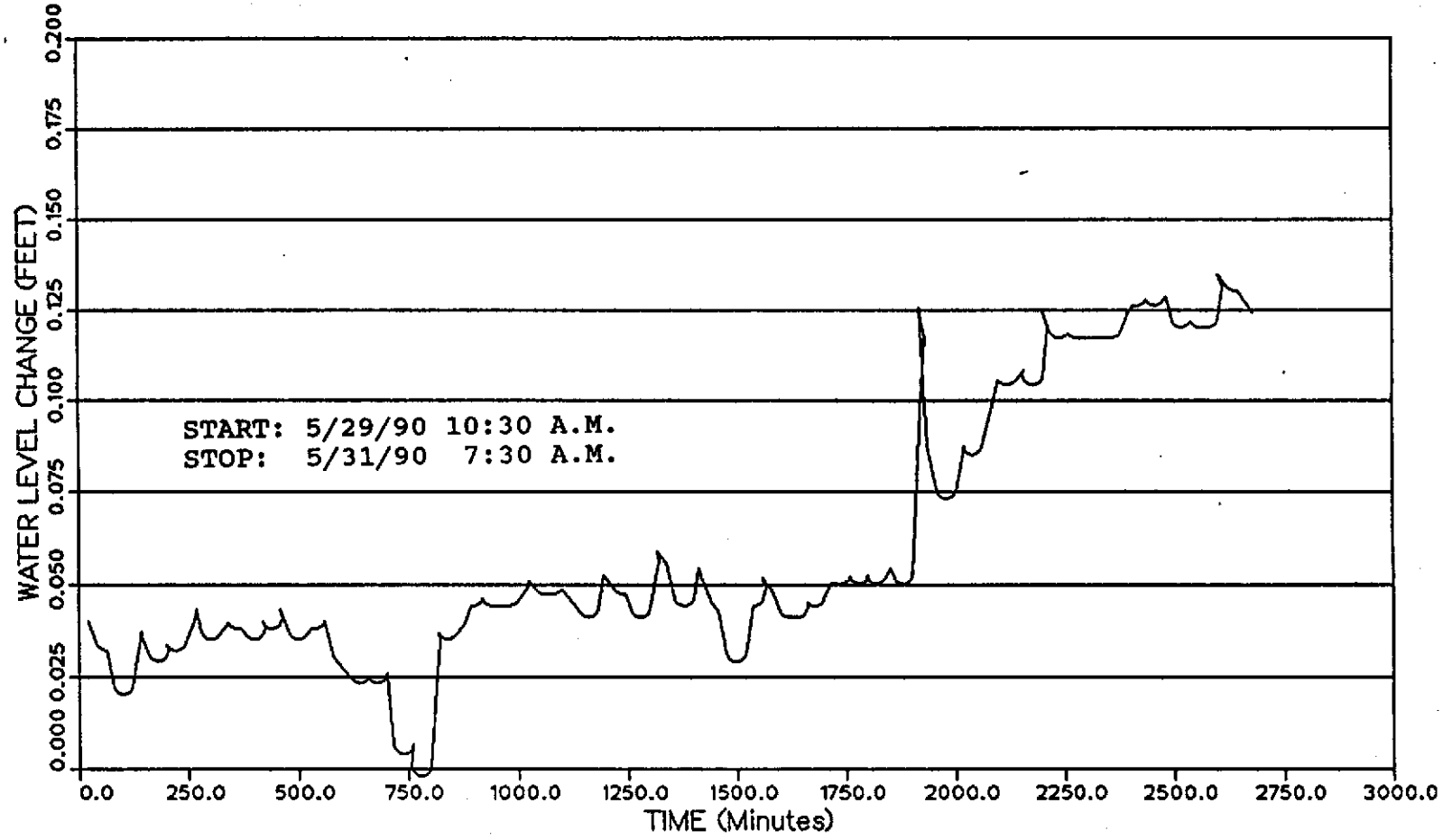
CHEVRON SERVICE STATION #9-8139
16304 FOOTHILL BLVD
SAN LEANDRO, CALIFORNIA

E-1 RECOVERY TEST: WELL 7 DATA

Figure 12

PROJECT NO. 1158



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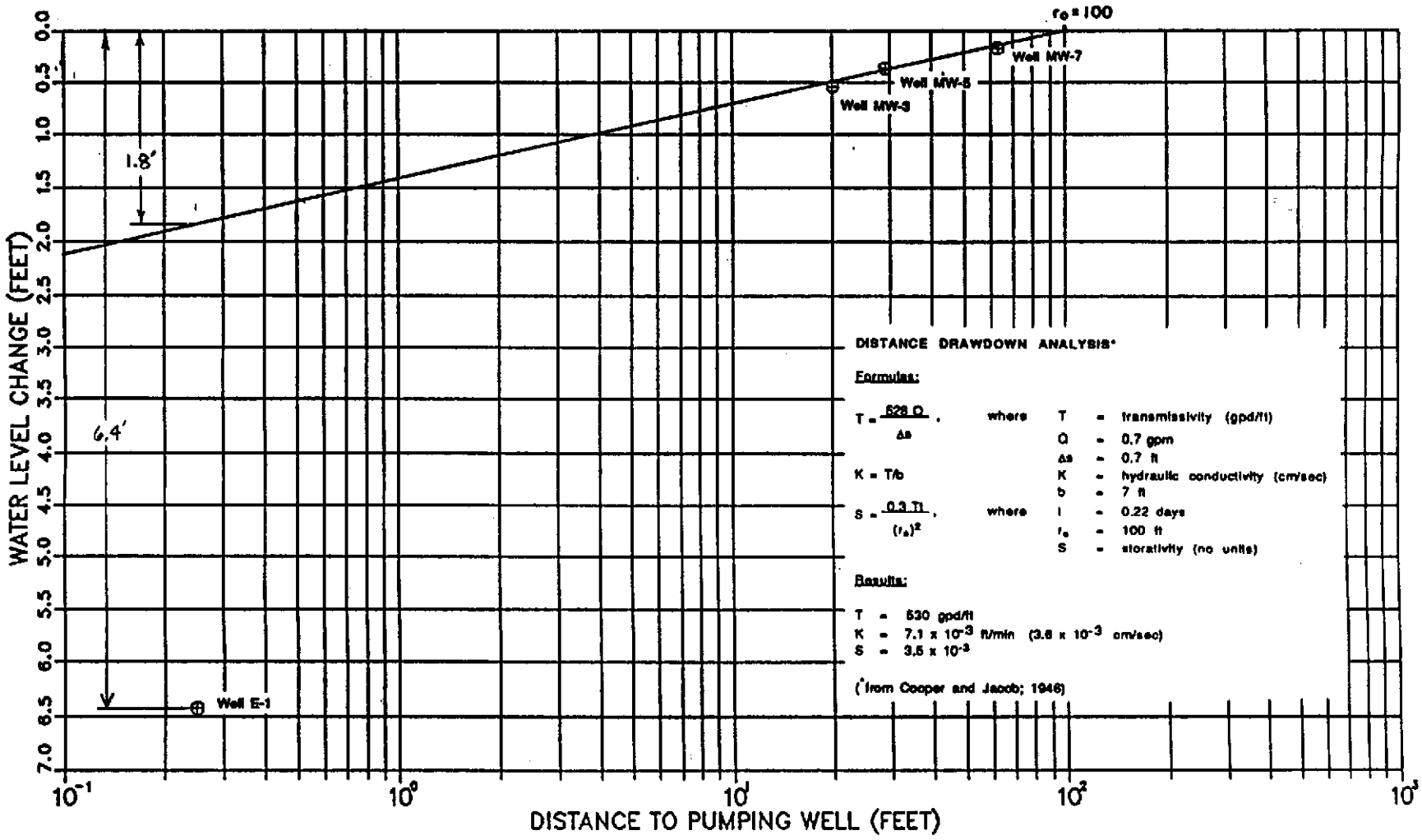
BERKELEY, CALIFORNIA.

CHEVRON SERVICE STATION #9-8139
16304 FOOTHILL BLVD.
SAN LEANDRO, CALIFORNIA

WELL E-1 BAROMETRIC DATA

Figure
13

PROJECT NO.
1158



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16304 FOOTHILL BLVD
SAN LEANDRO, CALIFORNIA

DISTANCE DRAWDOWN DATA

Figure
14

PROJECT NO.
1158

Drawdown

Calculates drawdown over time at one distance from the pumping well

Enter data in the boxes below:—

Pumping rate (gpm)	T(gpd/ft)	r(ft)	Storage coeff	Hydraulic Gradient
0.5	300	0.25	0.0023	0.05

Output:

Time (days)		u	W(u)	Drawdown (ft)
10 minutes	0	*1.29E-04*	*8.37839*	1.6
30 minutes	0	*4.30E-05*	*9.47692*	1.8
1 hour	0	*2.15E-05*	*10.17005*	1.9
6 hours	0	*3.58E-06*	*11.96179*	2.3
12 hours	1	*1.79E-06*	*12.65493*	2.4
1 day	1	*8.96E-07*	*13.34808*	2.5
1 week	7	*1.28E-07*	*15.29399*	2.9
1 month	30	*2.99E-08*	*16.74928*	3.2
	90	*9.96E-09*	*17.84789*	3.4
6 months	200	*4.48E-09*	*18.64640*	3.6
1 year	365	*2.45E-09*	*19.24798*	3.7
	400	*2.24E-09*	*19.33954*	3.7

Zone of Capture Calculation:

b (lateral radius of influence) = Q/4Ti

Q =	0.5	gpm,	or...	720 gpd
T =	300	gpd/ft		
i =	0.05	ft/ft		
therefore b =	**12**	**ft**		

Drawdown

Calculates drawdown over time at one distance from the pumping well

Enter data in the boxes below:—

Pumping rate (gpm)	T(gpd/ft)	r(ft)	Storage coeff	Hydraulic Gradient
1	300	0.25	0.0023	0.05

Output:

Time (days)		u	W(u)	Drawdown (ft)
10 minutes	0	*1.29E-04*	*8.37839*	3.2
30 minutes	0	*4.30E-05*	*9.47692*	3.6
1 hour	0	*2.15E-05*	*10.17005*	3.9
6 hours	0	*3.58E-06*	*11.96179*	4.6
12 hours	1	*1.79E-06*	*12.65493*	4.8
1 day	1	*8.96E-07*	*13.34808*	5.1
1 week	7	*1.28E-07*	*15.29399*	5.8
1 month	30	*2.99E-08*	*16.74928*	6.4
	90	*9.96E-09*	*17.84789*	6.8
6 months	200	*4.48E-09*	*18.64640*	7.1
1 year	365	*2.45E-09*	*19.24798*	7.4
	400	*2.24E-09*	*19.33954*	7.4

Zone of Capture Calculation:

b (lateral radius of influence) = Q/4Ti

Q =	1	gpm,	or...	1440 gpd
T =	300	gpd/ft		
I =	0.05	ft/ft		
therefore b =	**24**	**ft**		

SE2000
Environmental Logger
06/05 09:02

Unit# 142 Test 4

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4
Type	Level (F)	Level (F)	Level (F)	Level (F)
Mode	Surface	Surface	Surface	Surface
I.D.	E-1	MW-3	MW-5	MW-7
Reference	0.000	0.000	0.000	0.000
SG	1.000	1.000	1.000	1.000
Linearity	0.000	0.000	0.000	0.000
Scale factor	10.062	20.055	19.953	10.032
Offset	0.016	-0.062	0.015	-0.020
Delay mSEC	50.000	50.000	50.000	50.000

Step 1 06/01 14:20:27

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4
0.0000	-6.417	-0.529	-0.351	-0.163
0.0083	-6.426	-0.522	-0.332	-0.163
0.0166	-6.420	-0.529	-0.351	-0.163
0.0250	-6.436	-0.529	-0.332	-0.170
0.0333	-6.426	-0.529	-0.332	-0.163
0.0416	-6.417	-0.522	-0.332	-0.163
0.0500	-6.417	-0.529	-0.332	-0.173
0.0583	-6.414	-0.522	-0.332	-0.163
0.0666	-6.411	-0.529	-0.338	-0.170
0.0750	-6.408	-0.522	-0.325	-0.167
0.0833	-6.401	-0.522	-0.338	-0.167
0.1000	-6.398	-0.522	-0.338	-0.167
0.1166	-6.392	-0.516	-0.332	-0.170
0.1333	-6.389	-0.516	-0.325	-0.160
0.1500	-6.382	-0.522	-0.325	-0.160
0.1666	-6.376	-0.522	-0.332	-0.163
0.1833	-6.373	-0.522	-0.332	-0.157
0.2000	-6.366	-0.522	-0.332	-0.160
0.2166	-6.357	-0.522	-0.338	-0.170
0.2333	-6.351	-0.516	-0.338	-0.157
0.2500	-6.347	-0.516	-0.332	-0.167
0.2666	-6.341	-0.516	-0.332	-0.163
0.2833	-6.338	-0.516	-0.325	-0.167
0.3000	-6.335	-0.516	-0.332	-0.163
0.3166	-6.328	-0.522	-0.332	-0.160
0.3333	-6.322	-0.522	-0.338	-0.170
0.4166	-6.303	-0.516	-0.325	-0.157
0.5000	-6.278	-0.522	-0.338	-0.160
0.5833	-6.262	-0.522	-0.332	-0.179
0.6666	-6.240	-0.516	-0.338	-0.176
0.7500	-6.224	-0.522	-0.338	-0.170
0.8333	-6.208	-0.522	-0.332	-0.167
0.9166	-6.189	-0.529	-0.338	-0.173
1.0000	-6.170	-0.522	-0.332	-0.176
1.0833	-6.151	-0.529	-0.338	-0.173
1.1666	-6.136	-0.522	-0.332	-0.176

1.2500	-6.114	-0.522	-0.338	-0.173
1.3333	-6.098	-0.522	-0.332	-0.173
1.4166	-6.076	-0.516	-0.332	-0.160
1.5000	-6.060	-0.522	-0.325	-0.160
1.5833	-6.041	-0.516	-0.325	-0.157
1.6666	-6.022	-0.522	-0.332	-0.163
1.7500	-6.006	-0.516	-0.325	-0.157
1.8333	-5.987	-0.516	-0.332	-0.163
1.9166	-5.974	-0.522	-0.325	-0.170
2.0000	-5.955	-0.516	-0.325	-0.163
2.5000	-5.854	-0.516	-0.332	-0.173
3.0000	-5.753	-0.529	-0.332	-0.173
3.5000	-5.652	-0.522	-0.332	-0.163
4.0000	-5.541	-0.522	-0.332	-0.154
4.5000	-5.440	-0.529	-0.332	-0.157
5.0000	-5.342	-0.522	-0.332	-0.170
5.5000	-5.241	-0.529	-0.338	-0.167
6.0000	-5.143	-0.535	-0.344	-0.167
6.5000	-5.051	-0.529	-0.344	-0.163
7.0000	-4.960	-0.516	-0.332	-0.163
7.5000	-4.868	-0.529	-0.332	-0.182
8.0000	-4.770	-0.529	-0.338	-0.170
8.5000	-4.678	-0.510	-0.325	-0.160
9.0000	-4.587	-0.522	-0.325	-0.167
9.5000	-4.492	-0.516	-0.332	-0.170
10.0000	-4.413	-0.522	-0.332	-0.170
12.0000	-4.065	-0.516	-0.332	-0.176
14.0000	-3.752	-0.491	-0.307	-0.163
16.0000	-3.455	-0.491	-0.313	-0.167
18.0000	-3.161	-0.472	-0.300	-0.154
20.0000	-2.908	-0.478	-0.300	-0.170
22.0000	-2.693	-0.466	-0.294	-0.170
24.0000	-2.491	-0.453	-0.282	-0.170
26.0000	-2.298	-0.441	-0.275	-0.157
28.0000	-2.127	-0.434	-0.269	-0.160
30.0000	-1.966	-0.415	-0.250	-0.154
32.0000	-1.820	-0.415	-0.257	-0.157
34.0000	-1.672	-0.396	-0.244	-0.154
36.0000	-1.549	-0.396	-0.244	-0.154
38.0000	-1.419	-0.384	-0.238	-0.163
40.0000	-1.308	-0.378	-0.231	-0.141
42.0000	-1.207	-0.365	-0.213	-0.154
44.0000	-1.100	-0.340	-0.200	-0.144
46.0000	-1.014	-0.340	-0.200	-0.141
48.0000	-0.932	-0.327	-0.194	-0.148
50.0000	-0.853	-0.315	-0.181	-0.132
52.0000	-0.730	-0.308	-0.181	-0.138
54.0000	-0.622	-0.308	-0.181	-0.141
56.0000	-0.521	-0.302	-0.169	-0.135
58.0000	-0.445	-0.302	-0.181	-0.138
60.0000	-0.373	-0.283	-0.162	-0.129
62.0000	-0.303	-0.264	-0.150	-0.122
64.0000	-0.259	-0.264	-0.150	-0.135
66.0000	-0.211	-0.252	-0.144	-0.116
68.0000	-0.170	-0.239	-0.137	-0.119
70.0000	-0.142	-0.233	-0.131	-0.135
72.0000	-0.113	-0.226	-0.131	-0.132
74.0000	-0.082	-0.214	-0.125	-0.119
76.0000	-0.047	-0.195	-0.119	-0.091
78.0000	-0.025	-0.195	-0.112	-0.113

80.0000	-0.003	-0.182	-0.106	-0.113
82.0000	0.012	-0.176	-0.106	-0.097
84.0000	0.022	-0.170	-0.100	-0.107
86.0000	0.031	-0.170	-0.100	-0.116
88.0000	0.044	-0.170	-0.100	-0.110
90.0000	0.053	-0.151	-0.094	-0.100
92.0000	0.066	-0.144	-0.094	-0.104
94.0000	0.075	-0.144	-0.087	-0.104
96.0000	0.082	-0.132	-0.087	-0.104
98.0000	0.088	-0.132	-0.081	-0.094
100.000	0.098	-0.126	-0.081	-0.104

END

SE2000
Environmental Logger
06/05 08:57

Unit# 142 Test 4

Setups:	INPUT 1	INPUT 2	INPUT 3	INPUT 4
Type	Level (F)	Level (F)	Level (F)	Level (F)
Mode	Surface	Surface	Surface	Surface
I.D.	E-1	MW-3	MW-5	MW-7
Reference	0.000	0.000	0.000	0.000
SG	1.000	1.000	1.000	1.000
Linearity	0.000	0.000	0.000	0.000
Scale factor	10.062	20.055	19.953	10.032
Offset	0.016	-0.062	0.015	-0.020
Delay mSEC	50.000	50.000	50.000	50.000

Step 0 06/01 09:00:21

Elapsed Time	INPUT 1	INPUT 2	INPUT 3	INPUT 4
0.0000	0.028	0.006	0.018	0.000
0.0083	0.031	0.006	0.018	0.000
0.0166	0.003	0.000	0.012	-0.003
0.0250	-0.088	-0.006	-0.006	-0.012
0.0333	-0.110	-0.006	0.012	-0.003
0.0416	-0.094	0.000	-0.006	0.003
0.0500	-0.148	-0.006	0.012	-0.003
0.0583	-0.192	0.000	0.006	0.000
0.0666	-0.211	-0.012	-0.006	-0.012
0.0750	-0.243	0.000	0.012	0.006
0.0833	-0.259	0.000	-0.006	-0.009
0.1000	-0.271	0.006	0.006	-0.003
0.1166	-0.281	0.000	0.012	0.003
0.1333	-0.284	-0.006	0.006	-0.003
0.1500	-0.306	-0.012	0.000	0.009
0.1666	-0.316	-0.012	-0.006	0.006
0.1833	-0.325	-0.006	-0.006	0.000
0.2000	-0.322	0.000	-0.006	0.006
0.2166	-0.328	0.006	0.006	0.012
0.2333	-0.328	0.000	0.012	0.000
0.2500	-0.328	-0.006	0.006	-0.006
0.2666	-0.344	-0.006	0.000	-0.003
0.2833	-0.347	-0.006	-0.006	0.003
0.3000	-0.363	0.000	-0.006	0.003
0.3166	-0.366	0.006	0.012	0.003
0.3333	-0.366	0.000	0.012	-0.006
0.4166	-0.392	0.006	0.012	0.006
0.5000	-0.433	0.000	-0.006	0.006
0.5833	-0.458	-0.006	-0.006	0.003
0.6666	-0.483	-0.006	-0.006	-0.009
0.7500	-0.524	-0.006	0.000	-0.003
0.8333	-0.534	0.000	0.012	0.003
0.9166	-0.572	0.006	0.012	0.000
1.0000	-0.610	0.006	0.006	0.000
1.0833	-0.629	0.000	-0.006	0.003
1.1666	-0.654	-0.012	-0.006	-0.003

1.2500	-0.663	-0.012	0.006	-0.006
1.3333	-0.698	-0.006	0.012	-0.012
1.4166	-0.723	0.000	0.012	-0.006
1.5000	-0.749	0.000	-0.006	-0.012
1.5833	-0.784	-0.006	-0.006	-0.006
1.6666	-0.799	-0.012	-0.006	-0.006
1.7500	-0.831	-0.012	0.006	-0.012
1.8333	-0.850	-0.006	0.012	0.000
1.9166	-0.866	0.000	0.012	0.000
2.0000	-0.897	0.000	0.006	-0.003
2.5000	-0.986	0.006	0.012	0.006
3.0000	-1.040	0.000	0.000	0.000
3.5000	-1.096	-0.012	0.000	-0.003
4.0000	-1.185	-0.006	-0.012	0.018
4.5000	-1.248	-0.012	0.000	0.000
5.0000	-1.334	-0.025	-0.018	0.003
5.5000	-1.400	-0.006	-0.006	-0.009
6.0000	-1.451	-0.018	-0.012	0.000
6.5000	-1.520	-0.012	-0.012	-0.006
7.0000	-1.580	-0.025	-0.006	-0.015
7.5000	-1.647	-0.018	-0.018	-0.006
8.0000	-1.694	-0.025	-0.012	-0.012
8.5000	-1.751	-0.025	-0.018	-0.009
9.0000	-1.820	-0.031	-0.006	-0.006
9.5000	-1.868	-0.037	-0.025	-0.018
10.0000	-1.922	-0.037	-0.025	-0.009
12.0000	-2.121	-0.037	-0.018	0.000
14.0000	-2.314	-0.050	-0.031	-0.012
16.0000	-2.484	-0.075	-0.043	0.003
18.0000	-2.655	-0.081	-0.050	-0.006
20.0000	-2.791	-0.100	-0.056	-0.018
22.0000	-2.927	-0.100	-0.062	-0.012
24.0000	-3.057	-0.107	-0.056	-0.022
26.0000	-3.180	-0.119	-0.068	-0.009
28.0000	-3.309	-0.126	-0.075	-0.009
30.0000	-3.414	-0.151	-0.094	-0.015
32.0000	-3.547	-0.151	-0.081	-0.028
34.0000	-3.645	-0.163	-0.100	-0.018
36.0000	-3.739	-0.170	-0.094	-0.025
38.0000	-3.815	-0.170	-0.094	-0.040
40.0000	-3.897	-0.189	-0.119	-0.025
42.0000	-3.983	-0.189	-0.112	-0.022
44.0000	-4.074	-0.201	-0.119	-0.028
46.0000	-4.128	-0.207	-0.137	-0.028
48.0000	-4.223	-0.201	-0.131	-0.028
50.0000	-4.286	-0.214	-0.131	-0.031
52.0000	-4.321	-0.214	-0.137	-0.031
54.0000	-4.394	-0.233	-0.144	-0.040
56.0000	-4.473	-0.239	-0.156	-0.056
58.0000	-4.514	-0.233	-0.156	-0.053
60.0000	-4.587	-0.258	-0.162	-0.044
62.0000	-4.637	-0.258	-0.169	-0.050
64.0000	-4.700	-0.264	-0.162	-0.063
66.0000	-4.738	-0.264	-0.175	-0.050
68.0000	-4.773	-0.270	-0.162	-0.072
70.0000	-4.824	-0.277	-0.175	-0.053
72.0000	-4.871	-0.289	-0.181	-0.056
74.0000	-4.919	-0.277	-0.188	-0.040
76.0000	-4.956	-0.296	-0.194	-0.059
78.0000	-4.988	-0.289	-0.188	-0.050

80.0000	-5.029	-0.315	-0.206	-0.078
82.0000	-5.051	-0.308	-0.194	-0.085
84.0000	-5.086	-0.315	-0.206	-0.081
86.0000	-5.140	-0.315	-0.194	-0.078
88.0000	-5.165	-0.327	-0.206	-0.081
90.0000	-5.194	-0.327	-0.206	-0.081
92.0000	-5.235	-0.333	-0.213	-0.081
94.0000	-5.241	-0.340	-0.213	-0.085
96.0000	-5.282	-0.346	-0.225	-0.088
98.0000	-5.314	-0.340	-0.213	-0.075
100.000	-5.326	-0.346	-0.225	-0.094
110.000	-5.443	-0.359	-0.231	-0.088
120.000	-5.554	-0.378	-0.244	-0.091
130.000	-5.655	-0.403	-0.250	-0.107
140.000	-5.725	-0.409	-0.269	-0.107
150.000	-5.807	-0.428	-0.263	-0.104
160.000	-5.848	-0.447	-0.313	-0.126
170.000	-5.899	-0.459	-0.294	-0.119
180.000	-5.965	-0.472	-0.338	-0.132
190.000	-6.053	-0.466	-0.294	-0.116
200.000	-6.126	-0.478	-0.319	-0.135
210.000	-6.174	-0.504	-0.351	-0.148
220.000	-6.240	-0.504	-0.313	-0.141
230.000	-6.268	-0.516	-0.357	-0.141
240.000	-6.303	-0.504	-0.332	-0.138
250.000	-6.313	-0.516	-0.363	-0.138
260.000	-6.316	-0.529	-0.338	-0.160
270.000	-6.344	-0.516	-0.344	-0.154
280.000	-6.354	-0.522	-0.332	-0.154
290.000	-6.376	-0.529	-0.338	-0.167
300.000	-6.366	-0.535	-0.363	-0.170
310.000	-6.385	-0.535	-0.363	-0.163
320.000	-6.426	-0.522	-0.332	-0.170

END