

Site Conceptual Model

For:

**Former Chevron Station 9-0260
21995 Foothill Boulevard
Hayward, California**



Submitted to:

**Mr. Scott Seery
Alameda County Health Care Services Agency
Alameda, California**

January 30, 2004

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SITE CONCEPTUAL MODEL

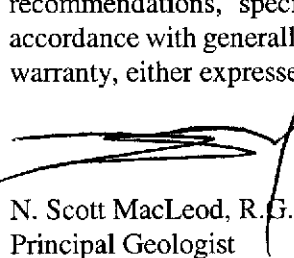
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Prepared by:

Cambria Environmental Technology, Inc.
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All work performed by Cambria Environmental Technology, Inc. for this project was conducted under my supervision. To the best of my knowledge, the data contained herein are true and accurate and satisfy the scope of work prescribed by the client for this project. The data, findings, recommendations, specifications or professional opinions presented herein were prepared in accordance with generally accepted professional engineering and geologic practice. We make no other warranty, either expressed or implied.


N. Scott MacLeod, R.G.
Principal Geologist



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1. OBJECTIVES

Cambria Environmental Technology, Inc. (Cambria) prepared this Site Conceptual Model (SCM) on behalf of ChevronTexaco for the site referenced above. Our objective is to review and present available site data, identify potential data gaps, recommend work to address the data gaps, and make other recommendations that will shorten the time to case closure. A summary of previous work and our conclusions and recommendations are presented below.



2. SITE BACKGROUND

The site is a former Chevron gasoline service station located on the western corner of the intersection of Foothill Blvd and Rex Road in Hayward, California. The Alameda County Assessor's Office identified Chevron Products Company as the current record fee title owner of the site.

Local topography is flat and the site is about 100 ft above mean sea level (Figure 1). The site is currently fenced and undeveloped. Commercial properties are located north, east and south of the site. Residential properties are located west (down-gradient) of the site. There are 15 groundwater monitoring wells associated with the site that are sampled quarterly to semi-annually. There are also 18 extraction wells, one nested piezometer well, and three vapor sampling probe locations associated with the site (Figure 2).

2.1. Environmental History

1985 Purchase: Chevron bought the land and facilities at this site from USA Petroleum Corporation in 1985. Three wells (MW-1 through MW-3) were installed in the tank backfill when it was purchased. It is not known exactly when the wells were installed or who installed them. These wells were not used for groundwater monitoring, and were removed in 1996.

1985 UST and Piping Replacement: In 1985, Chevron discovered a leak in one of the USTs. All USTs were removed and replaced with double-walled fiberglass USTs. No records of subsurface conditions encountered at the time are available.

1987 Soil Vapor Contaminant Assessment: EA Engineering conducted a vapor investigation in 1987 to assess the distribution of volatile hydrocarbons in the subsurface. The highest hydrocarbon vapor

concentrations were detected on the southeast side of the USTs. Data from this assessment are included in Appendix A.



January 1988 Subsurface Investigation: Weiss Associates installed wells MW-4 through MW-7 and drilled borings B-6, B-8, B-9 and B-10 to assess subsurface soil conditions and determine whether hydrocarbons had impacted groundwater. The wells and borings were drilled near the USTs and in other locations across the site. Hydrocarbons were detected in soil from all borings, with the highest concentrations detected nearest the USTs (up to 9,900 mg/kg TPHg). The soil samples were not analyzed for benzene, toluene, ethylbenzene or xylenes. Site maps are included in Appendix B. Soil analytical data are included in Appendix C. Groundwater analytical data is included in Appendix D. Boring logs are included in Appendix E.

October 1988 Phase II Investigation: Weiss Associates drilled four soil borings and completed three of them as wells MW-8 through MW-10 to assess the extent of hydrocarbons across Rex Road southeast of the site and across Foothill Boulevard northeast of the site.

June 1989 Phase III Investigation: Weiss Associates installed wells MW-11 and MW-12 at the down-gradient property line and MW-13 down- and cross-gradient of the site to assess hydrocarbon concentrations in groundwater migrating from the site. Hydrocarbons were detected in soil from all three wells, with the highest concentrations detected at the capillary fringe at about 10 feet below grade (fbg).

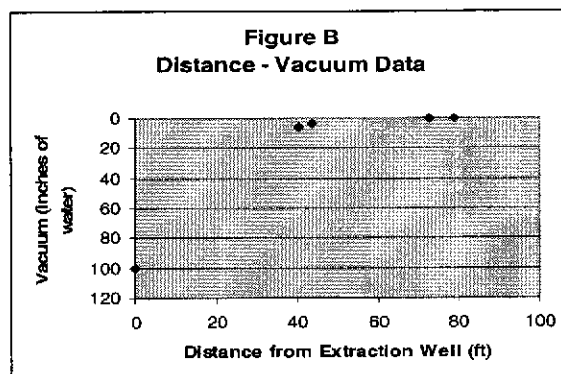
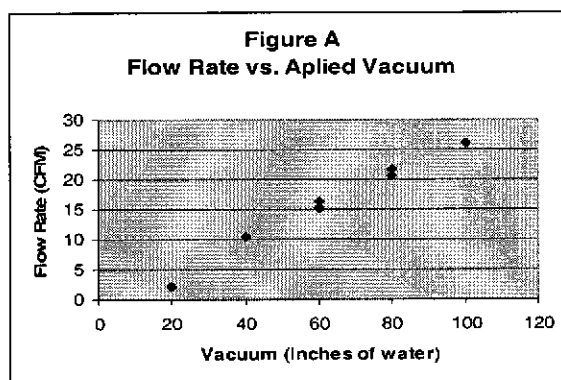
August 1990 Subsurface Investigation: Weiss Associates installed wells MW-14 through MW-16 farther down-gradient of the site for plume definition. Hydrocarbons were detected in soil and groundwater from all three wells.

1991 Groundwater Extraction System Installation: Weiss Associates coordinated the design, permitting and installation of a groundwater extraction system to remediate groundwater beneath the site. An ultraviolet-hydrogen peroxide reactor was used to remediate extracted groundwater. The system was started on August 23, 1991. Effluent samples from the treatment system contained up to 0.86 mg/L arsenic, which exceeded the 0.1 mg/L discharge limit. Weiss added an activated alumina vessel to the system that initially removed the arsenic; however, after about a month the arsenic concentrations in the effluent once again exceeded the 0.1 mg/L arsenic discharge limit. The arsenic was suspected to be from pesticide use at an apricot orchard formerly located on and near the property.

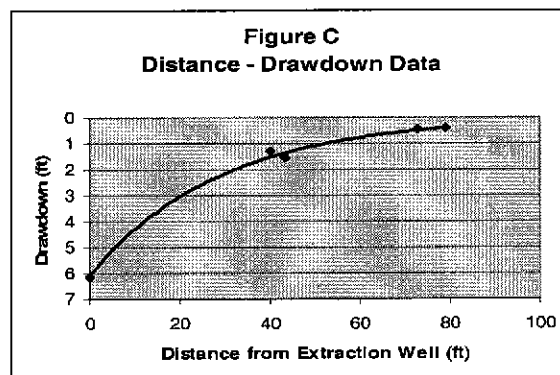
1992 Groundwater Remediation System Upgrade: Beginning in June 1992, Geraghty & Miller assumed operation of the groundwater extraction system and operated it using a bioreactor and aqueous-phase carbon to treat extracted groundwater. Remediation system operational data are included in Appendix F.

August 1992 Subsurface Investigation: Weiss Associates installed well MW-17 on the west side of San Lorenzo Creek and installed piezometer P-1 on the east side of San Lorenzo Creek to further define the extent of hydrocarbons in groundwater and assess the affect the creek may exhibit on groundwater flow. Hydrocarbons were detected in soil during installation of piezometer P-1, but no hydrocarbons were detected in soil from well MW-17. No hydrocarbons were detected in groundwater from well MW-17. Well MW-17 had a higher potentiometric surface than both piezometer P-1 and the creek water surface. Therefore, Weiss concluded that groundwater on the west side of San Lorenzo Creek flowed eastward toward the creek. This would make San Lorenzo Creek a hydraulic barrier to westward groundwater flow from the site.

June 1993 Soil Vapor and Groundwater Extraction Tests: Geraghty & Miller (G&M) performed concurrent soil vapor and groundwater extraction tests to determine soil vapor and groundwater production rates. G&M used a 5-hp positive displacement blower for the soil vapor extraction test and an electric submersible pump for the groundwater extraction test. The test was run on well MW-12. Induced vacuum was measured in wells MW-1, MW-5, MW-8 and MW-11. Near the end of the test, well MW-12 was flowing up to 26 cfm at 100 inches of water applied vacuum. Flow rates at different applied vacuums are shown on Figure A. Vacuum data from adjacent monitoring wells indicate about a 40 ft radius of vacuum influence (Figure B). The highest hydrocarbon vapor concentration detected was 44,000 parts per million by volume (ppmv). G&M also measured oxygen (14% to 15%), carbon dioxide (2.6% to 4.4 %) and methane (0.63% to 0.85%) concentrations in extracted vapors. These concentrations indicate that biologic activity is



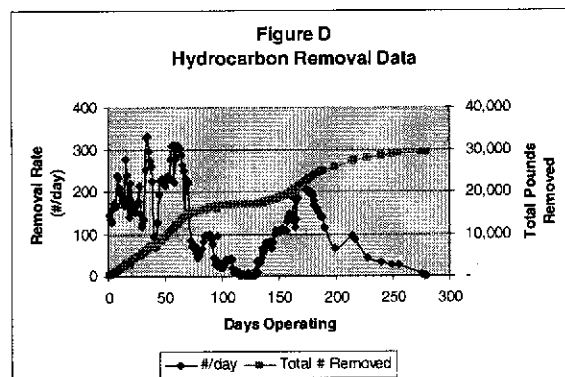
occurring and the methane indicates the biologic activity is likely anaerobic. G&M operated an electric submersible groundwater extraction pump during the SVE test to dewater the formation. The distance-drawdown curve based on drawdown measured in the wells after about 400 minutes of operation indicates a large cone of depression around the extraction well at a 1.5 gallon per minute extraction rate (Figure C). Test data are included in Appendix G.



October 1996 Station Demolition: In October 1996, all station facilities, including the USTs and product lines, were removed. Nearly 1,000 gallons of water and non-aqueous-phase liquid hydrocarbons (NAPL) were pumped from the tank excavation and disposed of offsite. Records indicate that pea gravel and soil overburden was placed back into the tank excavation. Hydrocarbons were detected in all soil samples analyzed beneath the tanks and dispensers, at a maximum of 3,700 mg/kg TPHg, 4.2 mg/kg benzene and 110 mg/kg MTBE.

July 1997 Extraction and Monitoring Well Installation: In July 1997, Terra Vac installed extraction wells DVE-1 through DVE-16 and groundwater monitoring well MW-18. The extraction wells were constructed in the shallow, lower permeability sediments with well depths ranging from about 10 to 15 feet. Monitoring well MW-18 was installed about 100 ft down-gradient of the site in Rex Road as an intermediate well.

October 1997 Two-Phase Extraction System Installation and Operation: In October 1997, Terra Vac installed and started a two-phase extraction (TPE) remediation system. The system used a 600 SCFM Retox thermal oxidizer. During operations, the TPE system removed an estimated 30,800 pounds of hydrocarbons. As indicated in Figure D, vapor-phase hydrocarbon removal rates during the first 60 days of operation ranged from about 100 to 250 pounds per day. Removal rates increased after about 130 days after wells DVE-17, DVE-18 and DVE-19 were installed and added to the system.



Hydrocarbon removal rates after 250 days dropped to below 3 pounds per day. Terra Vac operated the system through approximately June 2002. Operational data are included in Appendix H.

July 1997 RBCA: In July 1997, Terra Vac submitted a revised risk-based corrective action (RBCA) analysis with the risk-based site specific target levels for benzene of 190 ug/L benzene in groundwater and 0.46 mg/kg benzene in soil based on a 10^{-5} risk. Benzene was the only constituent analyzed that exceeded target risk levels. Spreadsheets from the risk assessment are included in Appendix I. As discussed in Section 7 below, these risk values were more conservative than current guidance from the Regional Water Quality Control Board – San Francisco Bay Region.¹



August 1997 Well Survey: Gettler-Ryan conducted a survey of water wells in the site vicinity. Two domestic wells were located in the ½ mile search radius. No municipal water supply wells were identified. Well survey data are included in Appendix J.

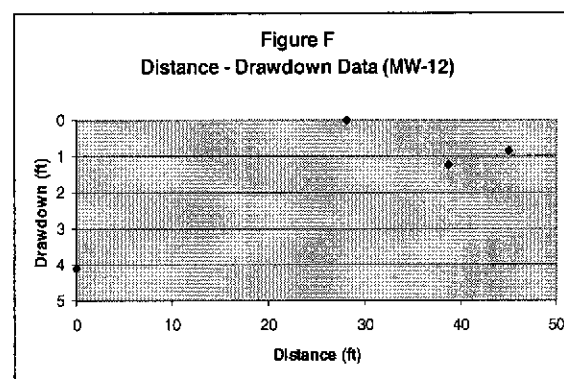
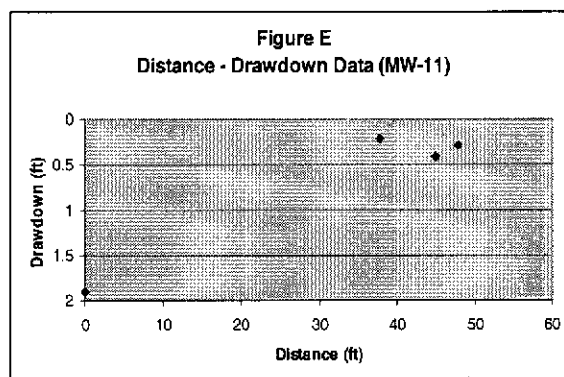
Attachment

December 2000 Well Installation: In December 2002, Delta Environmental Consultants (Delta) installed temporary wells TMP-1 and TMP-2 for an upcoming dual-phase extraction (DPE) test. The wells were logged continuously using a Macro-Core soil sampler. Headspace analyses of soil samples indicated a hydrocarbon smear zone from 15.0 to 22.5 fbg in well TMP-1 and from 17.5 to 22.5 fbg in TMP-2.

¹ California Regional Water Quality Control Board's *Application of Risk-Based Screening Levels and Decision Making to Sites With Impacted Soil and Groundwater*, Volume 1, Summary Tier 1 Lookup Tables, Interim Final July 2003

December 2000 Dual-Phase Extraction Pilot

Testing: In December 2002, Delta conducted a DPE pilot test using wells MW-4, MW-11 and MW-12 as extraction wells. Groundwater was extracted using a 1/3 hp electric submersible pump and vapors were extracted and treated using a 25 hp liquid ring pump and 350 scfm thermal oxidizer. Initial extraction from well MW-4 indicated a likely short-circuit between the well and the former tank backfill immediately adjacent to the well. Therefore, wells MW-11 and MW-12 were also tested. Well MW-11 produced 171 scfm at a vacuum of 11 to 14 inches of mercury. Figures E and F present distance-drawdown data for wells MW-11 and MW-12. The sustained groundwater extraction rate was about 1.7 to 1.8 gpm. Full test results are included in Appendix K.



July 2003 Vapor Probe Installation: In July 2003, Cambria installed soil vapor probes VP-1 through VP-3 on the down-gradient property line to assess the vertical profile of vapor concentrations above the area of highest known residual hydrocarbon impact. The probes were constructed with three one-foot screened PVC probes placed in sand intervals from 3.0-4.5, 8.0-9.5, and 12.0-13.5 fbg and separated with a bentonite slurry. TPHg vapors collected during this sampling event ranged from 53,000 to 160,000 $\mu\text{g}/\text{m}^3$, increasing in concentration with depth in all three vapor probes. Benzene vapors collected during this investigation ranged from 13 to 54 $\mu\text{g}/\text{m}^3$. The only detection of MTBE vapors collected during this investigation was 95 $\mu\text{g}/\text{m}^3$ from vapor probe VP-2 at 12.5 fbg. Analytical data are presented in Appendix L. Another round of vapor sampling is scheduled for the first quarter of 2004.

2003 Risk Assessment: Senior Toxicologist Michelle Amaral of ChevronTexaco Energy Research and Technology Company (CRTC) reviewed the vapor analytical data and estimated potential risk under a residential development scenario. The total estimated cancer risks for adult and child residents were 2×10^{-9} and 1×10^{-9} , respectively. Based on the National Contingency Plan (NCP), EPA's regulations for the evaluation of risk at Superfund sites, the cancer risk range is from 10^{-4} to 10^{-6} .

Following the approach used by the USEPA given the inherent higher dose estimates for children, non-cancer hazards were only estimated for child residents. The total Hazard Quotient or Hazard Index (HI) for child residents was estimated at 7×10^{-5} (non-cancer hazard). An HI above 1 is considered to be of potential concern. Therefore, the risk assessment indicates that no cancer or non-cancer risk guidelines are exceeded at the site. The complete risk analysis is presented in Appendix M.

3. IDENTIFIED RELEASES

The only specific identified release resulted from a leaking UST discovered and replaced in 1985. However, based on the distribution of hydrocarbons in soil and groundwater, the dispensers also appear to have been likely release points.

4. SITE CONDITIONS

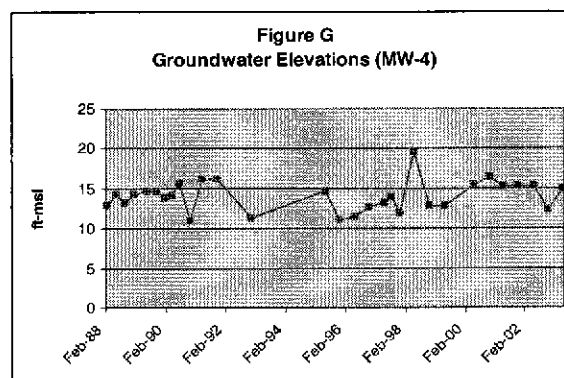
The site geology, hydrogeology and hydrocarbon distribution are discussed below.

4.1. Site Geology

Unconsolidated sediments beneath the site and site vicinity consist primarily of clayey silts and silty clays to an approximate depth of 15 fbg. Ranging from approximately 15 fbg to 20 fbg is a several foot thick sand unit, which is underlain by silts and clays to the maximum depth explored. Subsurface lithology is consistent as far away as well MW-18. Starting at well MW-18, the sand unit becomes thicker and extends as deep as 44.5 fbg. This sand layer is likely the preferential pathway for down-gradient groundwater migration. Cross-sections are presented in Figure 3 and 4.

4.2. Site Hydrogeology

As indicated in Figure G, groundwater averages about 15 fbg, with several feet of fluctuation annually. Groundwater historically flows toward the southwest at an average gradient of 0.03. Groundwater elevation contour maps are presented in Appendix N.



Based on subsurface lithology and groundwater potentiometric surface data, we estimate a groundwater flow velocity (v) of 0.1 to 1 ft/day assuming a hydraulic conductivity (K) of 1 to 10 ft/day, hydraulic gradient (i) of 0.03 and a porosity (n) of 0.3 ($v=Ki/n$).

4.3. Monitoring Well Construction

To date, 18 groundwater monitoring wells, one piezometer well, 19 extraction wells and 3 vapor probes have been installed on or near the site. Most wells are approximately 20 ft deep with about 10 to 12 ft well screens. Well construction details, including the current sampling schedule and well status, are included in Table 1.

4.4. Hydrocarbon Distribution in Soil

Based on soil sampling from previous investigations, it appears that the highest hydrocarbon concentrations are near the former dispensers and tanks. The majority of hydrocarbon mass is in soil between about 10 and 20 fbg. Hydrocarbons in this capillary fringe are detected as far away as down-gradient well MW-16 and piezometer P-1. Hydrocarbon distribution maps for TPHg and benzene in soil are presented on Figures 5 and 6. We did not contour MTBE distribution because there is little MTBE data available for soil and because there is minimal impact of MTBE on groundwater.

4.5. Hydrocarbon Distribution in Groundwater

The highest hydrocarbon concentrations in groundwater are detected near and down-gradient of the former USTs. As indicated on Figures 7, 8, and 9, TPHg, benzene and MTBE extend as far as down-gradient well MW-16.

4.6. NAPL Source and Distribution

NAPL has historically been detected in wells MW-5, MW-7, MW-8, MW-9, MW-11, MW-12 and MW-13. The greatest measured NAPL thickness was 1.06 ft in well MW-7 in June 1993. No NAPL has been detected in any well since February 1997.

4.7. Hydrocarbon Concentration Trends in Groundwater

To determine concentration trends and compound half-lives, we analyzed concentration trends in wells MW-4, MW-11, MW-12, MW-16 and MW-18. We chose these wells because they illustrate hydrocarbon concentration reductions occurring in or near the source areas identified at the sites (wells MW-4, MW-11 and MW-12), as well as at the cross-gradient (well MW-18) and down-gradient (MW-16) plume perimeter.

Trends were assessed following the example process used by the RWQCB-Lahontan. Specifically, we plotted concentrations over time starting from the point that hydrocarbon concentrations generally peaked in wells. We then applied a first order exponential trend line to the data set and determined the equation for the trend line ($y = b e^{ax}$, where y = concentration, x = time, and a and b are specific constants). This equation expresses a first order concentration decay rate. The "equation" function in Excel is then used to determine the constants a and b . Solving the equation for x ($x = \ln(y/b)/a$) lets us determine concentrations at specific times. We also determined compound half-lives using the equation: half-life = $-\ln(2)/a$ (where a is the constant determined above).

Table A - Concentration Trend Analysis Summary Data

Well	Analyte	Maximum Concentration Detected (ug/l)	Water Quality Objective*	Estimated Year to Reach WQO	Estimated Half-Life (days)	Estimated Concentration in 10 Years (ug/l)	Estimated Concentration in 20 Years (ug/l)
MW-4	TPHg	1,300,000	100 ug/l	2097	3,466	22,077	10,635
	Benzene	45,000	1 ug/l	2045	1,386	290	47
	MTBE	290,000	5 ug/l	2003	173	<0.5	<0.5
MW-11	TPHg	340,000	100 ug/l	2022	990	380	29
	Benzene	36,000	1 ug/l	2029	990	52	4
	MTBE	6,900	5 ug/l	2003	267	<0.5	<0.5
MW-12	TPHg	2,400,000	100 ug/l	2097	3,466	21,317	10,267
	Benzene	53,000	1 ug/l	2081	2,310	1722	516
	MTBE	69,000	5 ug/l	2009	315	<5	<5
MW-13	TPHg	120,000	100 ug/l	2017	866	93	<50
	Benzene	12,000	1 ug/l	2012	578	<5	<5
MW-16	TPHg	62,000	100 ug/l	2043	1,733	3,316	769
	Benzene	11,000	1 ug/l	2050	1,733	189	44
	MTBE	450	5 ug/l	2002	289	<1	<1

* = Used ESLs for case where groundwater is a potential source of drinking water

As indicated in Table A, the only analyte predicted to be below WQOs in 10 years is MTBE. Both TPHg and benzene have predicted times to WQOs of up to 93 years. The TPHg and benzene half-lives range from 1.6 to 9.5 years. The full analysis including graphs is included in Appendix O.

5. PREFERENTIAL PATHWAY ANALYSIS

It appears that hydrocarbons are migrating primarily in the sandy zone at about 15 fbg. No utility survey has been conducted. However, based on the plume depth and location, it is unlikely that the plume would preferentially migrate along utility corridors.



6. SENSITIVE RECEPTORS

Gettler-Ryan identified 2 domestic wells within ½ mile of the site based on a Department of Water Resources file review. One of the wells is 1/3 mile south of the site (cross-gradient) and is unlikely to be impacted. The other domestic well is about ¼ mile down-gradient of the site on the west side of San Lorenzo Creek (a hydraulic divide) and is also unlikely to be impacted.

A well search presented in Weiss's 1988 Phase II Report with a ¾-mile radius identified 23 wells. Six of these wells were on Gettler-Ryan's list. No known municipal wells were identified in this search. Three domestic wells were identified, two of which were also found in Gettler-Ryan's well search results. The third domestic well identified in Weiss's report is located just over ½ mile west-southwest of the site. This well is also west of San Lorenzo Creek and far beyond any potential impact from the subject site. Well survey lists of local wells and locations from Gettler-Ryan's and Weiss's well searches are included in Appendix J. The adjacent property owner indicated that there was a water well on her property that was not identified by the DWR files. Therefore, there may be additional wells in the site vicinity that are not currently identified.

San Lorenzo Creek is approximately 600 ft southwest (down-gradient) of the site. Based on the hydrocarbon plume extent, it is possible that the plume extends to San Lorenzo Creek.

6.1. Shallow and Deep Groundwater Use

Based on the well survey results, there does not appear to be any significant use of shallow or deep groundwater in the region. The presence of arsenic will likely preclude use of shallow groundwater.

7. RISK ASSESSMENT

7.1. Site Conceptual Exposure Model (Current and Future Uses)



Terra Vac submitted a revised Tier 1-2 risk assessment in July 1997. The assessment assumed an exposure model consisting of volatilization of hydrocarbons from soil and groundwater to indoor air in residential buildings at the site. Benzene was the only compound that exceeded the site-specific target levels (SSTLs) of 190 ug/L in groundwater and 0.46 mg/kg in soil. For reference, the California Regional Water Quality Control Board's *Application of Risk-Based Screening Levels and Decision Making to Sites With Impacted Soil and Groundwater*, Volume 1, Summary Tier I Lookup Tables, Interim Final July 2003, indicate environmental screening levels of 1,900 ug/l benzene in groundwater (for low to moderate permeability soils) and 0.18 mg/kg in soil. Therefore, benzene concentrations in groundwater are only slightly higher (2 to 3 times) than the environmental screening level (ESL) while benzene concentrations in soil are up to two orders of magnitude above the ESL.

The October 29, 2003 risk assessment conducted on the vapor samples from probes on the down-gradient property line indicate that vapors from soil and/or groundwater pose a 1×10^{-9} risk for children under the residential development scenario. Based on the EPA's guidelines for the evaluation of risk at Superfund sites, the acceptable range is from 10^{-4} to 10^{-6} . Therefore, the risk at the site is well below regulatory guidelines. Following the approach used by the USEPA given the inherent higher dose estimates for children, non-cancer hazards were only estimated for child residents. The total Hazard Quotient or Hazard Index (HI) for child residents was estimated at 7×10^{-5} (non-cancer hazard). An HI above 1 is considered to be of potential concern. Therefore, the HI is also below regulatory guidelines. The complete risk analysis is presented in Appendix M.

8. REMEDIAL ACTIONS TAKEN

As discussed above, two stages of site remediation have occurred at the site. The first was operation of a groundwater extraction system. The second was operation of a dual-phase extraction system. As discussed below, neither remedial effort had a significant effect on water quality.

8.1. Area Remediated

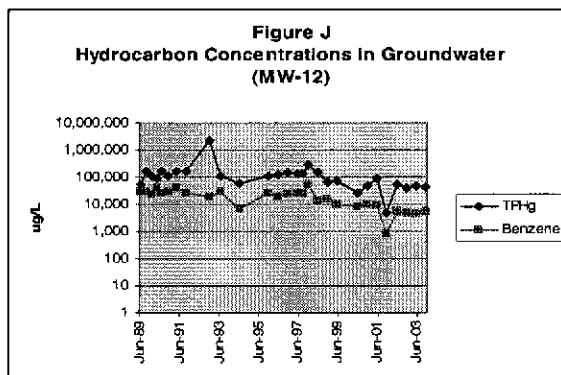
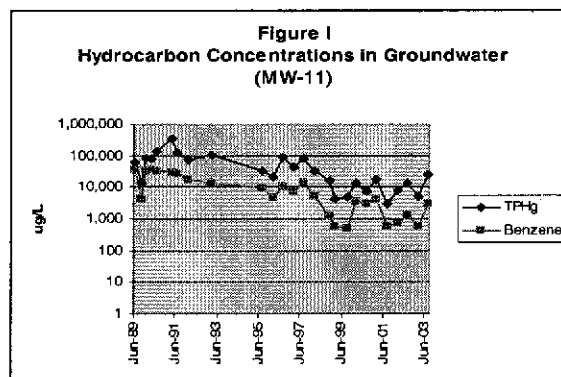
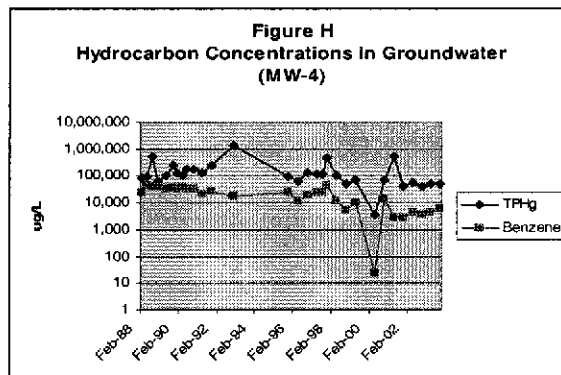
Both remedial efforts targeted hydrocarbon source areas on site. The earlier groundwater extraction system used existing wells. The later dual-phase system used 19 wells constructed specifically for remediation of the low permeability soils above the sand unit. The dual-phase system included several wells installed south of the site in Rex Road, but was primarily designed to remediate hydrocarbons on site.

8.2. Remediation Effectiveness

As indicated in Figures H, I and J, hydrocarbon concentrations in source area wells MW-4, MW-11 and MW-12 have decreased over the last 15 years. However, the rate of decrease does not appear to have been affected appreciably by the remedial efforts. Despite the remedial efforts, hydrocarbon concentration trends indicate that it will take 20 to 93 years to reach water quality objectives.

8.2.1. Groundwater Extraction System

The groundwater extraction system was unlikely to affect water quality because there was measurable NAPL in the subsurface and a groundwater extraction remedial approach is ill-designed for NAPL remediation. Groundwater extraction to remediate NAPL is dissolution limited (i.e. hydrocarbons dissolve from NAPL to groundwater at a slow rate). Therefore, it is unlikely that continued groundwater extraction would improve water quality.



8.2.2. DPE System

The dual-phase extraction system could have been successful if it were designed differently. The soil analytical data collected during extraction well installation indicated that the highest hydrocarbon concentrations were detected at 14 to 15 fbg at the interface between the overlying low permeability silts and clays and the underlying sand unit. However, the wells were intentionally constructed several feet above the sand unit to minimize water production. Therefore, the wells were not constructed to remediate the most highly impacted soil. Instead, the system remediated soils above approximately 12 fbg. Any future remedial efforts need to target the sand unit to increase the likelihood of success.



9. CONCLUSIONS AND RECOMMENDATIONS

9.1. Identified Data Gaps

There are several data gaps that can be addressed. These include:

- The current hydrocarbon concentrations in soil on the site have not been determined following previous remedial efforts. Several borings could be drilled to determine the current distribution of hydrocarbons and assess whether shallower soils were adequately remediated by the Terra Vac dual-phase extraction system.
- The extent of hydrocarbons in soil and groundwater northwest and southeast of the site can be further defined. This could be accomplished by one to two wells on either side of the plume.
- The distribution of hydrocarbons in the intermediate portion of the plume down-gradient of the site can be further defined. This could be accomplished by one to two transects of borings perpendicular to the long axis of the plume. Wells could be installed afterward in key locations to monitor hydrocarbon concentrations mid-plume.
- Although soil vapor sampling and risk analysis on site indicates that hydrocarbon concentrations do not exceed risk thresholds, this needs to be confirmed for properties down-gradient of the site. This could be accomplished by installing vapor sampling points near the wells installed to monitor hydrocarbon concentrations mid-plume.
- The distal extent of the hydrocarbon plume can be further defined. This could be accomplished by additional borings to define the extent of the plume and select wells installed based on the plume dimensions.

- The vertical extent of hydrocarbons can be further defined. This could be accomplished by one well at the down-gradient property line installed in deeper sediments. This well should be drilled using a cased upper section to prevent downward hydrocarbon migration.
- The DWR well information may not be complete. A door-to-door well survey is needed.
- Because of the potential for hydrocarbons to migrate to the down-gradient creek, water samples should be collected to assess whether the creek is impacted. A 3 point sampling program (up-gradient, source area, down-gradient) sampling program should allow us to assess whether there is any impact to the creek.



This data, along with the existing risk analyses, can be used to more accurately assess hydrocarbon plume behavior and potential risks.

9.2. Groundwater Monitoring Program

Recommended modifications to the current well sampling program are included in Table 1.

9.3. Additional Remediation

In addition to the investigation tasks discussed above, it is likely that a third remedial effort will be required to accelerate natural attenuation of the residual hydrocarbons and eventual site closure. This remedial effort should target hydrocarbons in and around the underlying sand unit. Recent remedial pilot testing by Delta indicates that the water production needed to dewater the sand is not excessive and, therefore, it may be possible to dewater the sand and allow vapor extraction of residual hydrocarbons.

Additional aquifer testing (two-phase extraction) may be needed to evaluate how well we can dewater the sand unit needed to target the residual hydrocarbon mass at and below the water table.

9.4. Remediation Objectives

As indicated above, vapor-phase compound concentrations are several orders of magnitude below risk screening levels. Therefore, risk to human health is not a remediation driver at this site. The primary remediation driver is to remediate the site to the point that natural attenuation processes will result in

meeting water quality objectives in a reasonable time frame (10 to 20 years). To meet this objective, the remediation system will be designed to remove residual volatile hydrocarbon mass including NAPL that currently resides at and below the water table. The determination of when this volatile mass has been sufficiently removed will be based upon hydrocarbon mass removal rates in the soil vapor stream. Once the mass removal rates are low and asymptotic (less than about 5 pounds per day), the system will be cycled on and off several times to confirm that the remediation has reached the point of diminished returns and can be shut down. Following remediation, the site will need to be monitored to document that remedial efforts have accelerated hydrocarbon attenuation from current background conditions.



9.5. Meeting with Agency

Prior to recommending a specific remedial approach and design, the remediation goals need to be confirmed by the ACEH. We recommend meeting after this site conceptual model has been reviewed to confirm cleanup standards as well as to identify other issues the ACEH may have that need to be addressed. A workplan can then be submitted to address these data gaps followed by a Corrective Action Plan based on the investigation findings.

10. REFERENCES

Delta Environmental Consultants, September 18, 2002, *Request for Shut-down of Dual Vacuum Extraction System*, 4 pages plus attachments.

Delta Environmental Consultants, February 20, 2003, *Dual-Phase Extraction Pilot Testing Results Report*, 8 pages plus attachments.



EA Engineering, Science, and Technology, Inc., December 1987, *Report of Soil Vapor Contaminant Assessment*, 11 pages plus attachments.

Geraghty & Miller, November 10, 1993, *Results of Soil-Vapor Extraction Pilot Test and Preliminary Design of a Soil-Vapor Extraction System*, 11 pages plus attachments.

Gettler-Ryan, December 19, 2003, *Fourth Quarter Event of November 24 and 24, 2003*, 1 page plus attachments.

Terra Vac, July 18, 1997, *Addendum to the Interim Remediation Work Plan*, 2 pages plus attachments.

Terra Vac, September 29, 1997, *Drilling Report*, 3 pages plus attachments.

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Weiss Associates, September 17, 1992, *Subsurface Investigation*, 8 pages plus attachments.

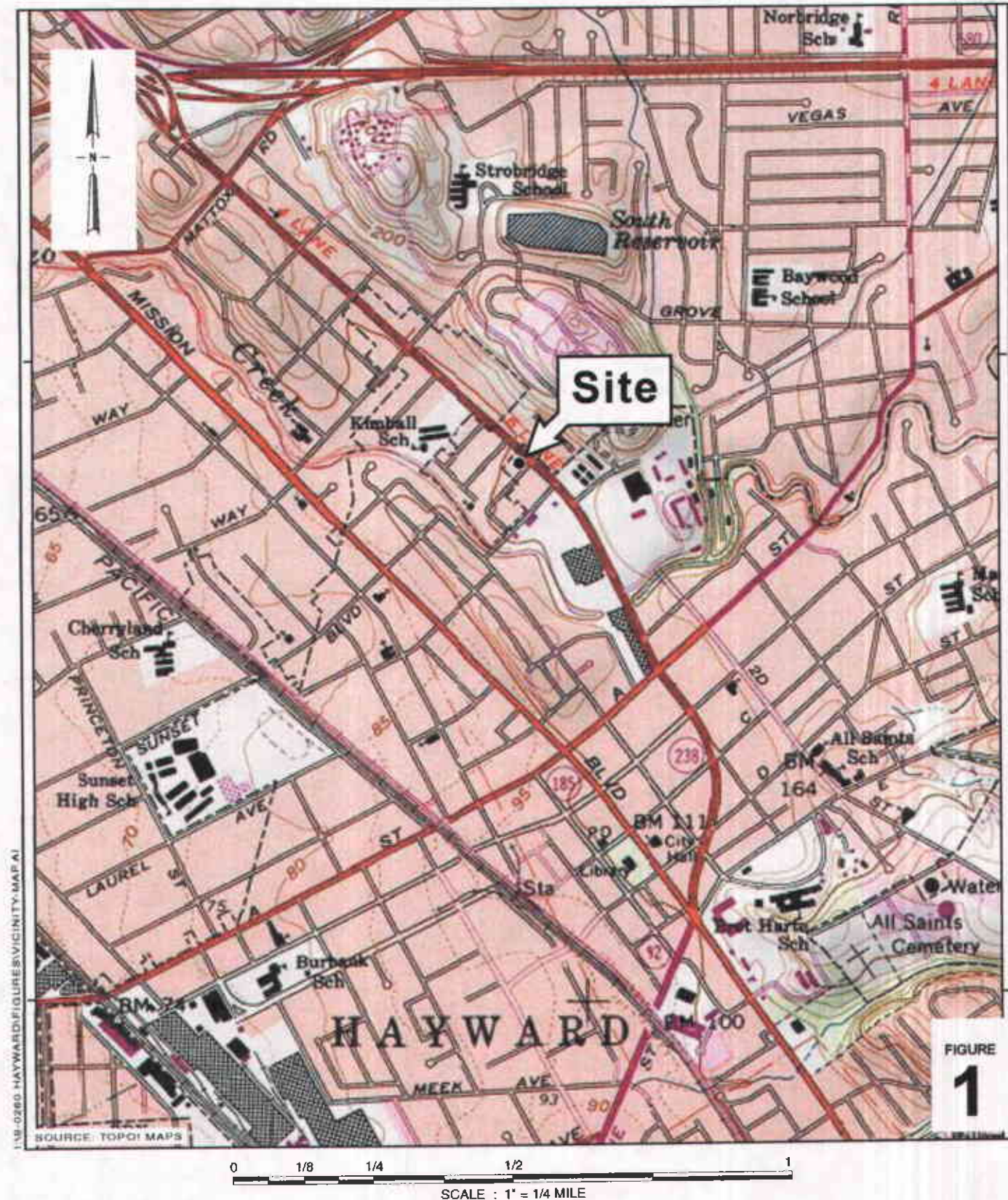
Weiss Associates, March 31, 1988, *Untitled letter report*, 5 pages plus attachments.

Weiss Associates, August 8, 1989, *Subsurface Investigation Phase III*, 14 pages plus attachments.

Weiss Associates, October 24, 1992, *Subsurface Investigation Phase IV*, 16 pages plus attachments.

Weiss Associates, March 19, 1992, Letter regarding arsenic in groundwater, 3 pages.





Former Chevron Station 9-0260

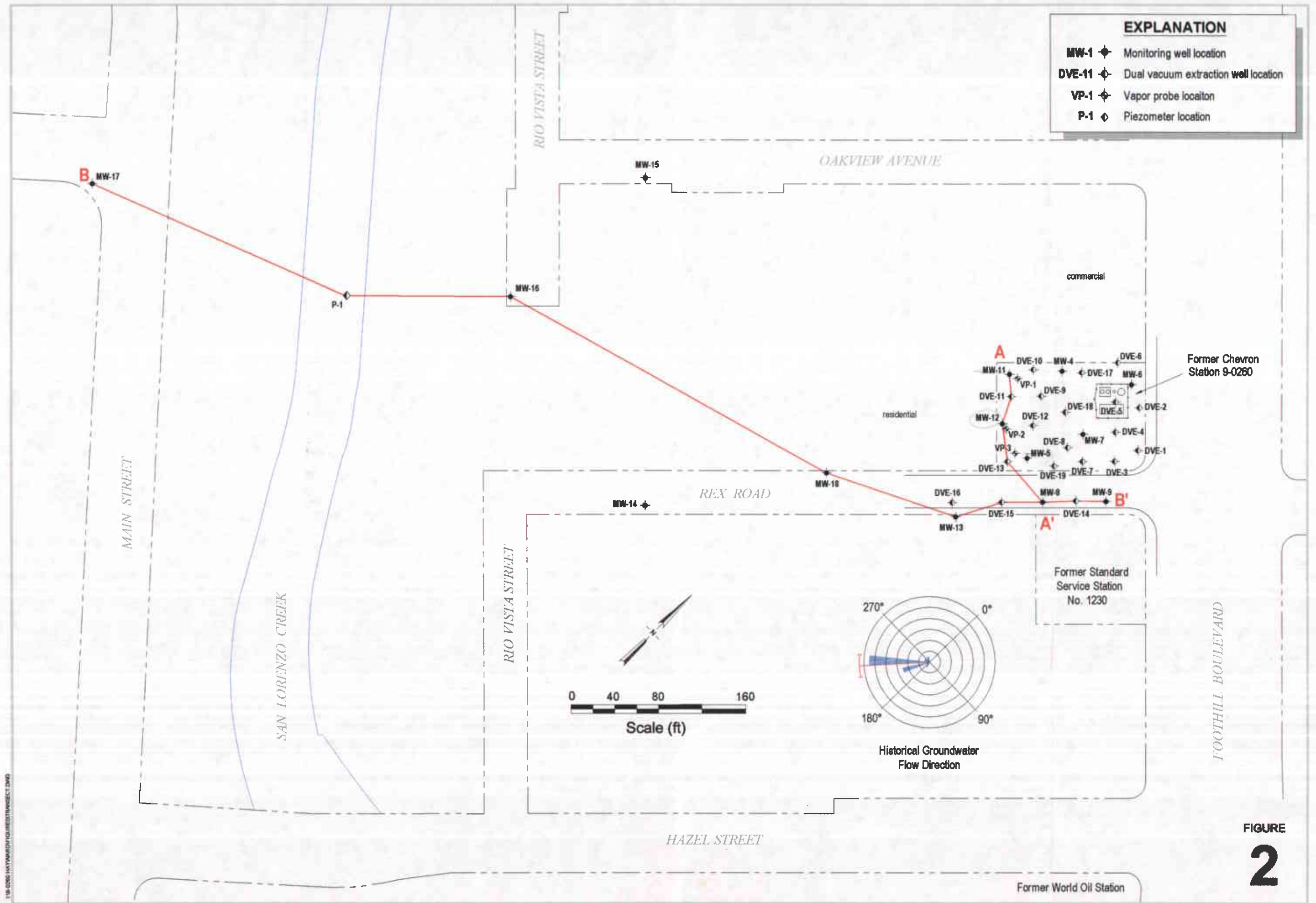
21995 Foothill Boulevard

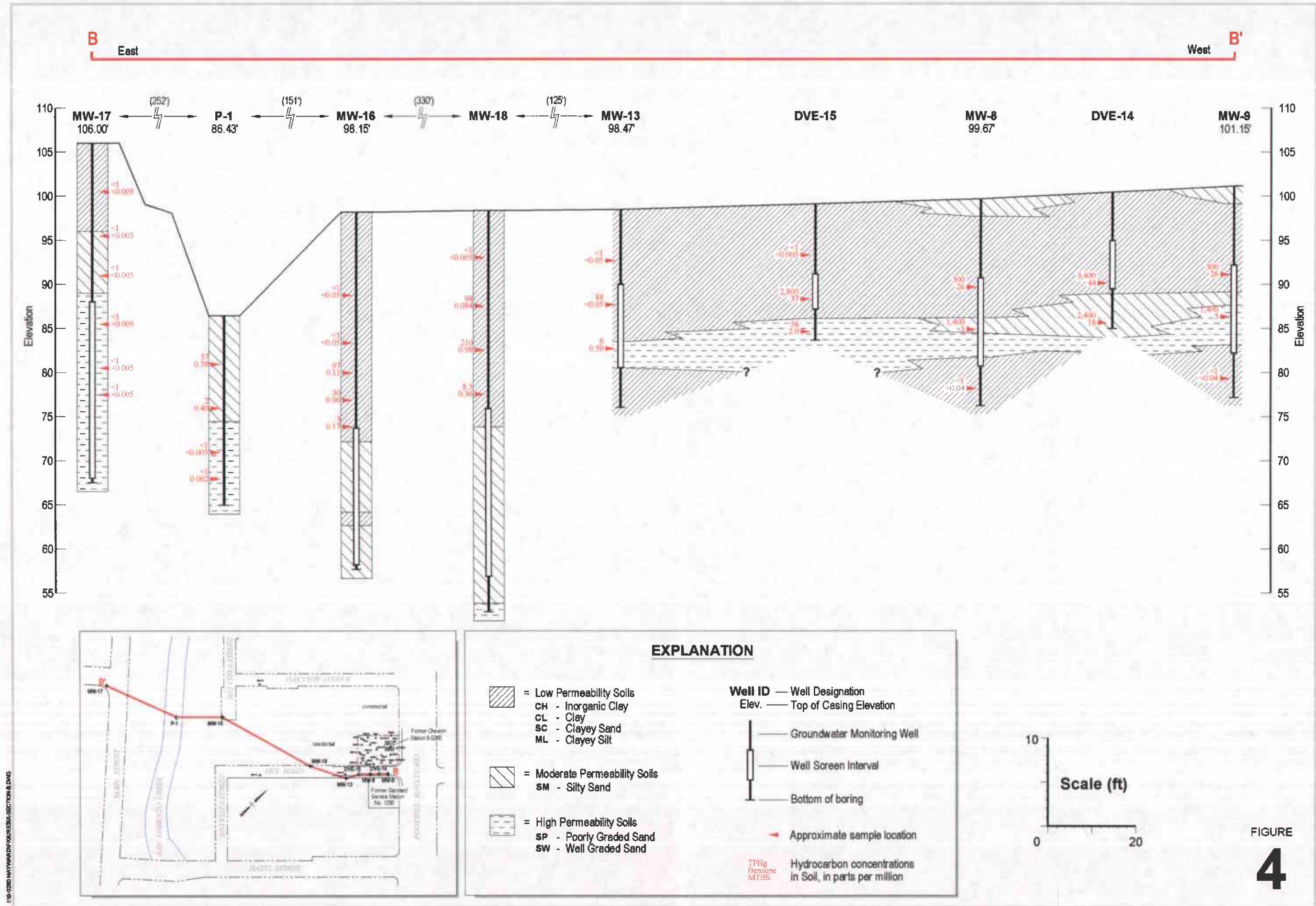
Hayward, California



C A M B R I A

Vicinity Map





MAIN STREET

EXPLANATION

- MW-1 ◆ Monitoring well location
- DVE-11 ◆ Dual vacuum extraction well location
- VP-1 ◆ Vapor probe location
- P-1 ◆ Piezometer location
- 100 ——— TPHg concentration contour
- Well ID
TPHg
- Maximum TPHg concentration in soil in parts per million (ppm)

RIO VISTA STREET

OAKVIEW AVENUE

MW-16
87

MW-15
3

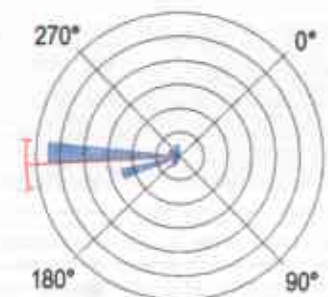
SAN LORENZO CREEK
ACCESS ROAD

P-1
27

REX ROAD



0 40 80 160
Scale (ft)



RIO VISTA STREET

HAZEL STREET

FOOTHILL BOULEVARD

Former Chevron Station 9-0260

Former Standard Service Station No. 1230

Former World Oil Station



Maximum TPHg Concentrations
in Soil

C A M B R I A

Former Chevron Station 9-0260
21995 Foothill Boulevard
Hayward, California

FIGURE
5

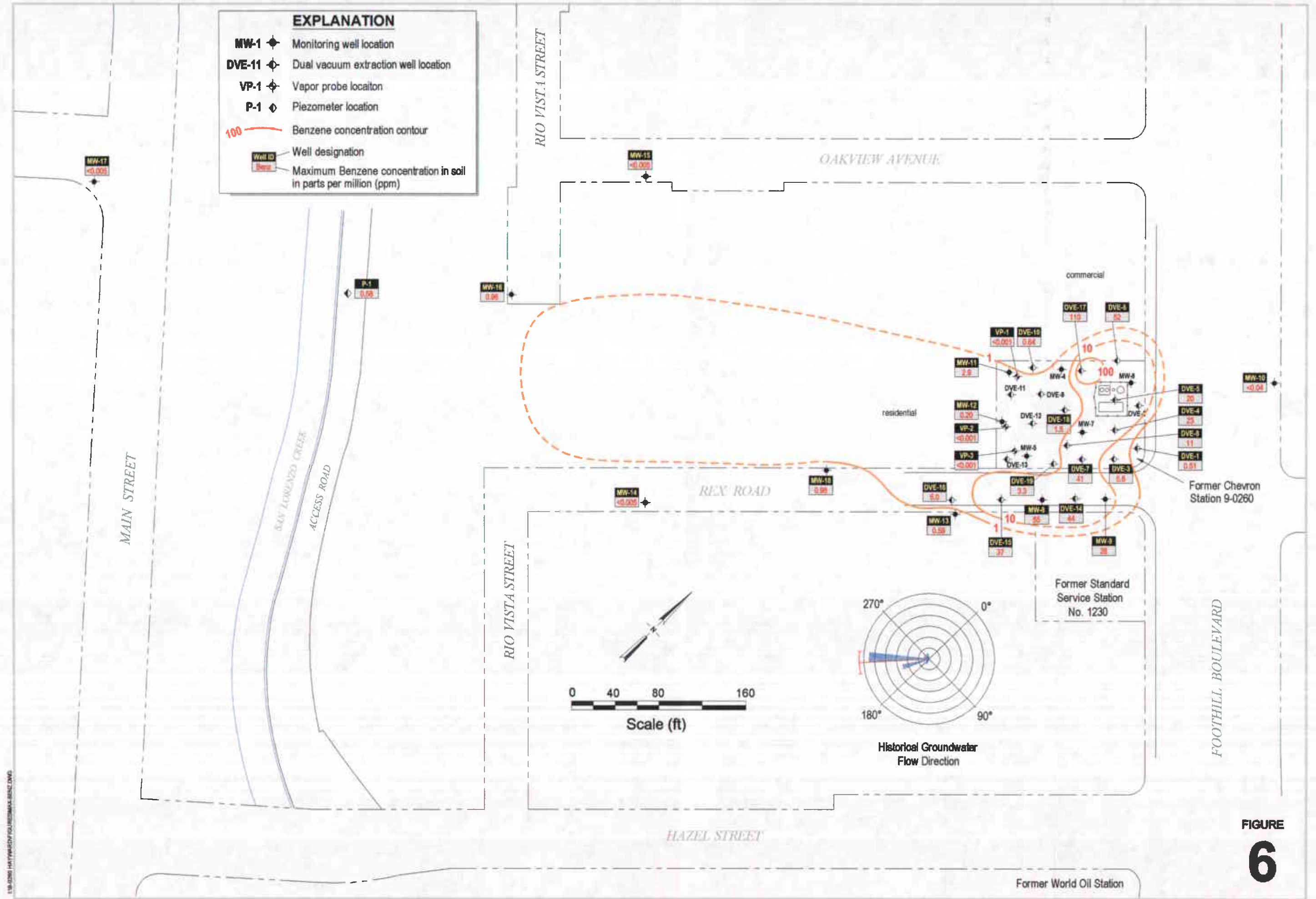


FIGURE
6



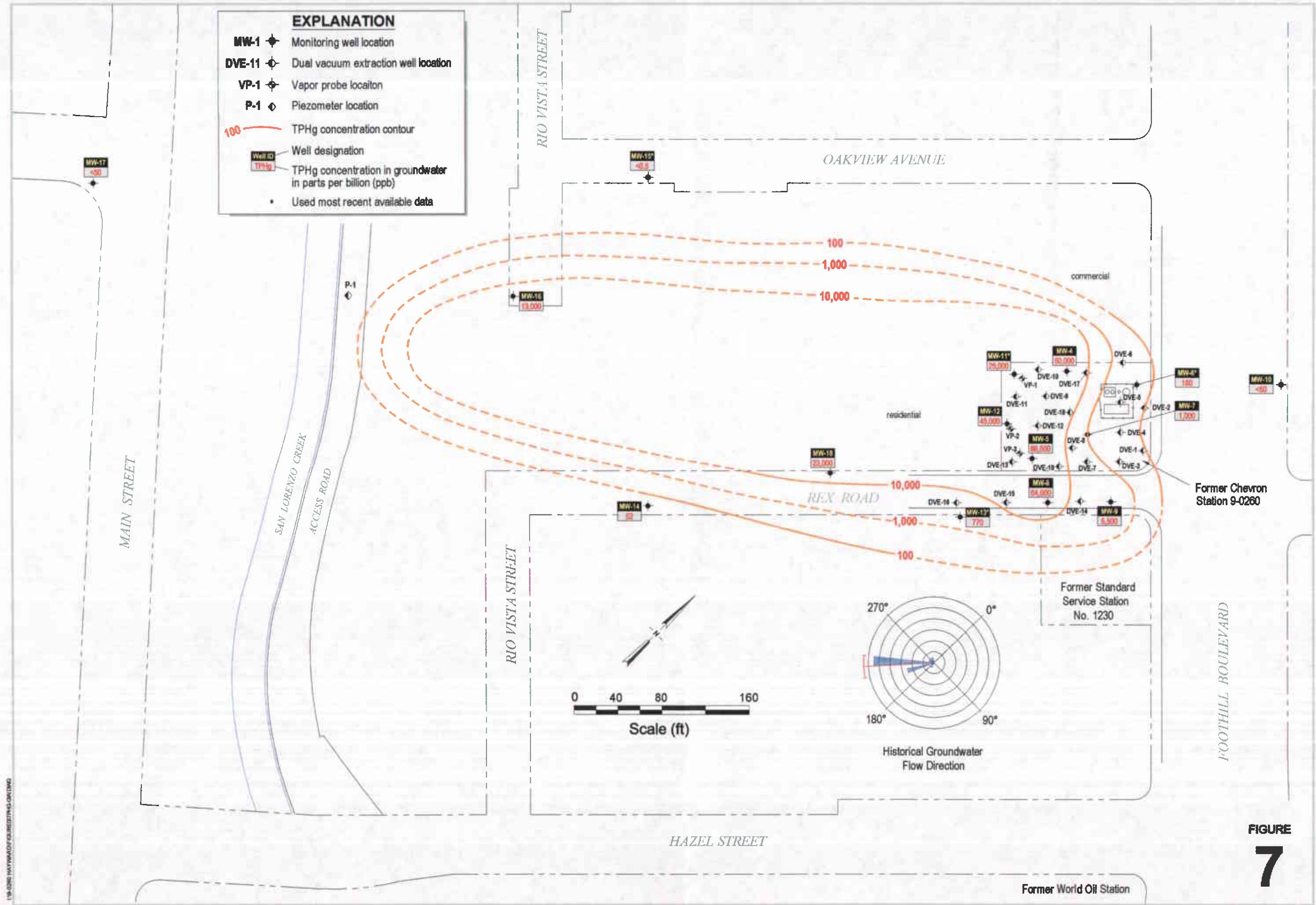
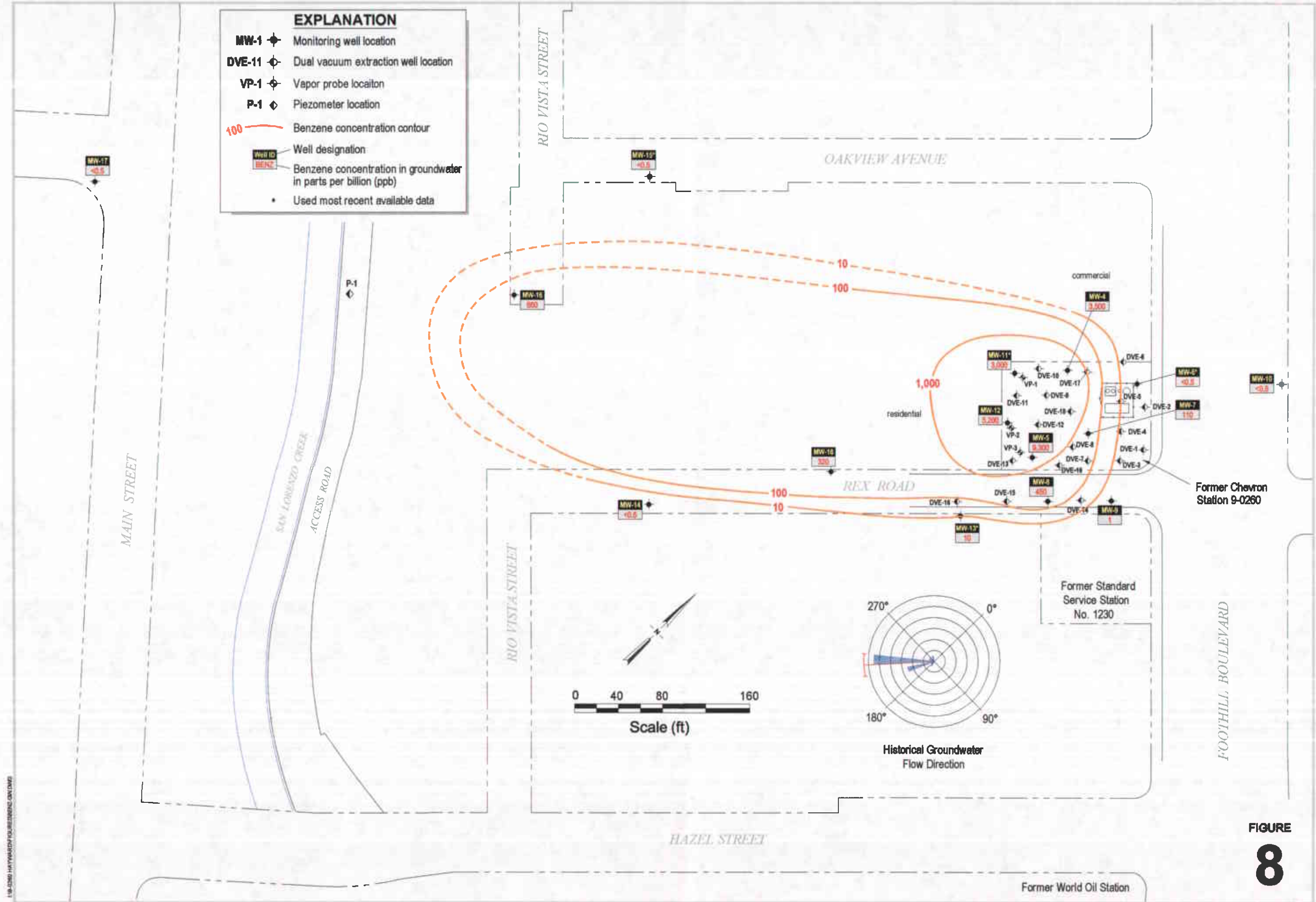


FIGURE
7



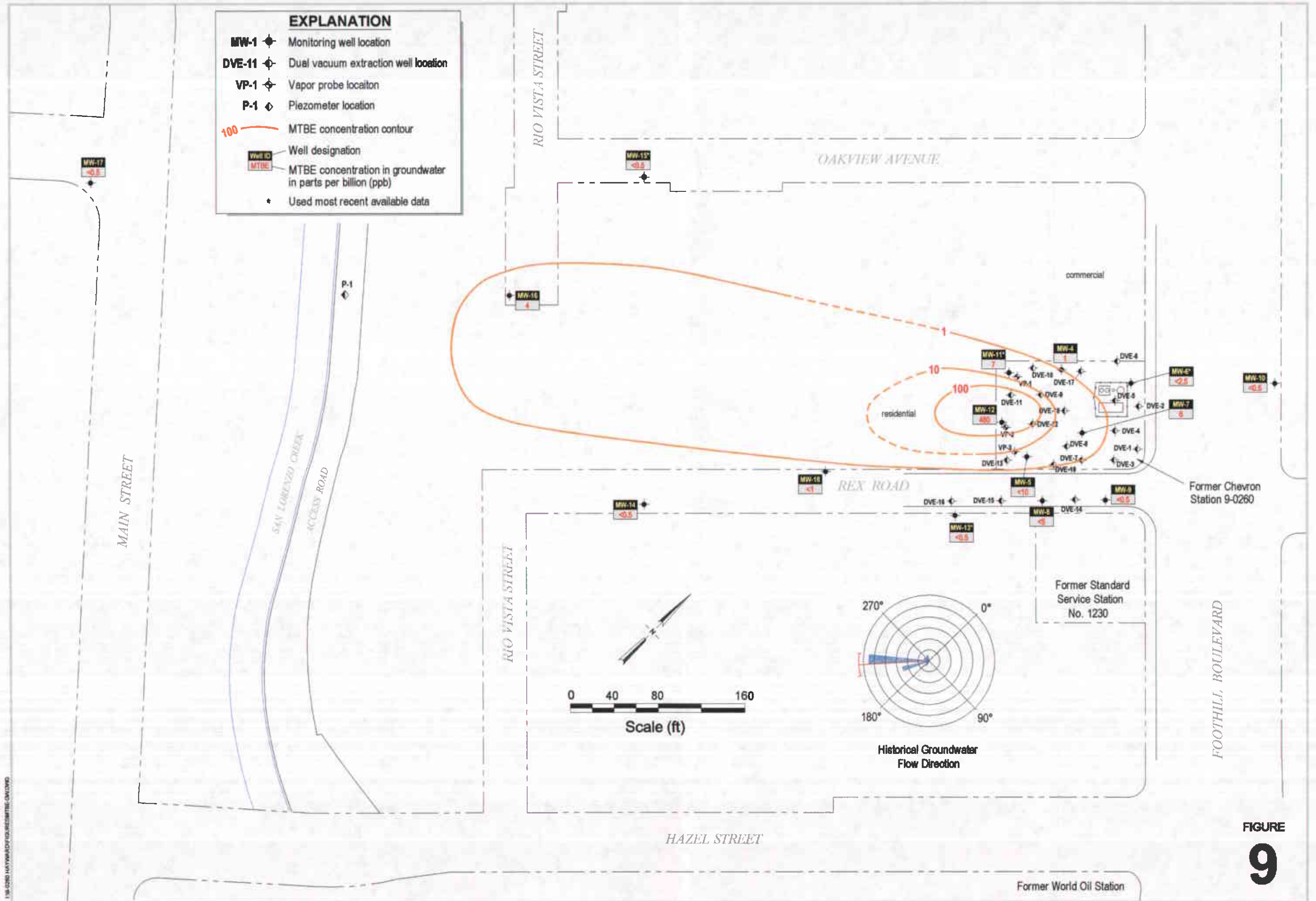


Table 1 Well Construction Data and Recommended Sampling Plan, Former Station 9-0260, 21995 Foothill Boulevard, Hayward, California

Well	Top of Casing Elevation (ft msl)	Diameter (in)	Total Depth (ft)	Screen Interval (fbg)	Status	Current Sampling Schedule	Quarter Sampled	Recommended Sampling Schedule	Comments
MW-1	N/A				Destroyed				
MW-2	N/A				Destroyed				
MW-3	N/A				Destroyed				
MW-4	100.73	4	22	6-22	Active	Semi-Annually	2nd and 4th qtrs	No change	
MW-5	99.97	4	19	6-19	Active	Semi-Annually	2nd and 4th qtrs	No change	
MW-6	101.43	4	17	6-17	Active	Semi-Annually	1st and 3rd qtrs	2nd and 4th qtrs	
MW-7	Not Surveyed	4	17.5	6-17.5	Active	Semi-Annually	2nd and 4th qtrs	No change	
MW-8	99.67	4	19	9.5-19	Active	Semi-Annually	2nd and 4th qtrs	No change	
MW-9	101.15	4	19	9-19	Active	Semi-Annually	2nd and 4th qtrs	No change	
MW-10	102.36	4	27	17-27	Active	Quarterly	all qtrs	Annually (2nd qtr)	Clean, up-gradient well
MW-11	99.57	4	20	10-20	Active	Semi-Annually	1st and 3rd qtrs	2nd and 4th qtrs	
MW-12	99.22	4	20	10-20	Active	Semi-Annually	2nd and 4th qtrs	No change	
MW-13	98.47	4	18	8-18	Active	Semi-Annually	1st and 3rd qtrs	2nd and 4th qtrs	
MW-14	99.68	2	41	23-41	Active	Quarterly	all qtrs	Semi (2nd and 4th qtrs)	Low concentration down-gradient well
MW-15	96.06	2	22.5	16.5-22.5	Active	Quarterly	all qtrs	Annually (2nd qtr)	Clean cross and down-gradient well
MW-16	98.15	2	39.5	24.5-39.5	Active	Quarterly	all qtrs	Semi (2nd and 4th qtrs)	Stable concentrations for 10 years
MW-17	106.00	2	37	18-37	Active	Quarterly	all qtrs	Annually (2nd qtr)	No hydrocarbons ever detected, well is located across San Lorenzo Creek
MW-18	Not Surveyed	4	25	15-25	Active	Quarterly	all qtrs	Annually (2nd qtr)	Down-gradient well with decreasing concentrations for 6 years
P-1	86.43	1	21	16-21	Active	not sampled		No change	

ft = feet

fbg = ft below grade

msl = mean sea level

in = inches

C A M B R I A



ATTACHMENT A
Soil Vapor Survey Data

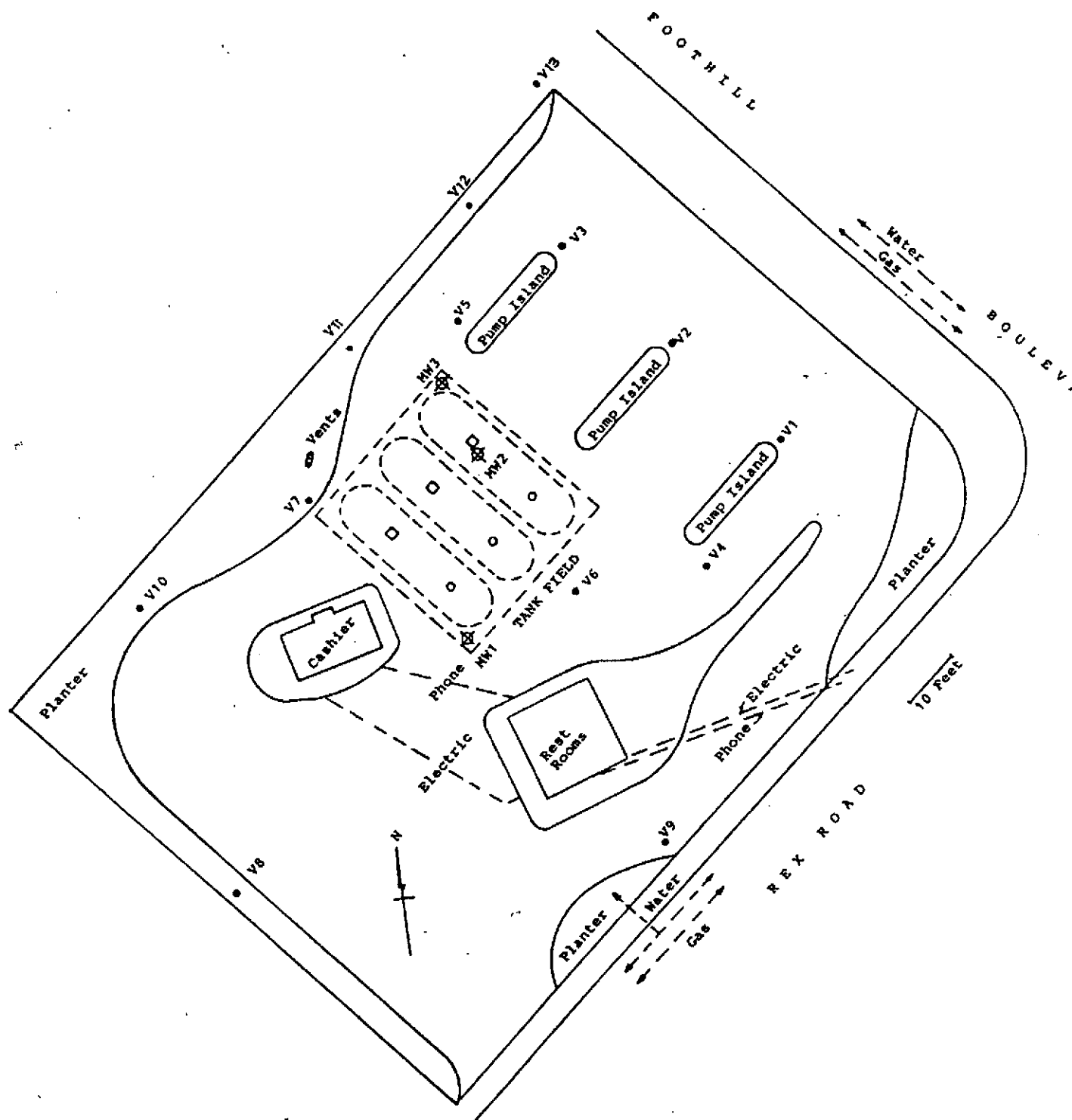


Figure 4. Locations of station facilities, monitoring wells and SVCA sample points at Chevron SS 9-0260, Hayward, California.

TABLE 2 CONCENTRATIONS OF HYDROCARBON CONSTITUENTS IN SOIL VAPOR AT CHEVRON SERVICE STATION 9-0260, FOOTHILL BOULEVARD AND REX ROAD, HAYWARD CALIFORNIA, 1 AND 23 DECEMBER 1987

Sample Location ^b	Depth (ft)	Peaks Prior to Benzene (ppm) ^a	Benzene (ppm)	Toluene (ppm)	Total Detected Hydrocarbons (ppm) ^a
MW1	-	5-10	<1	<5	10
MW2	-	20	<1	<5	30
MW3	-	<1	<1	<1	<1
V1	3	<2	<1	<5	5
V2	3	<1	<1	<1	<1
V3	2	60	5-10	10	100
V4	2	<1	<1	<1	<1
V5/A	3	<1	<1	1-5	1-5
V5/B	5.5	<1	<1	1	1
V5/C	8	<1	<1	1	1
V6/A	3	2,550	550	300	4,300
V6/B	5.5	40	30	20	130
V6/C	8	1,200	200	160	1,900
V7/A	3	<1	<1	<1	<1
V7/B	5.5	150	15	20	200
V7/C	8	30	<1	<1	30
V8	3	<1	<1	<1	<1
V9	3	<5	<1	<1	<5
V10	5.5	<1	<1	<1	<1
V11/A	3	<1	<1	<1	<1
V11/B	8	<1	<1	<1	<1
V12/A	3	25	<1	1	30
V12/B	5.5	20	<1	<1	20
V13	3	<1	<1	<1	<1

BLANK DATA

Date	Test Time	Peaks Prior to Benzene (ppm) ^a	Benzene (ppm)	Toluene (ppm)
1 Dec	1105	<0.1	<0.1	<0.1
1 Dec	1215	<0.1	<0.1	<0.1
23 Dec	1030	<0.1	<0.1	<0.1

PERCENTAGE OF STANDARD RECOVERED

Date	Test Time	Standard	
		Benzene	Toluene
1 Dec	1129	100	100
1 Dec	1224	107	109
1 Dec	1549	114	112
23 Dec	1133	100	100

a. Quantification based on Volt-sec:ppm ratio for benzene (see text).

b. Sampling of points V5, V11, V12, and V13 was completed on 23 December 1987.

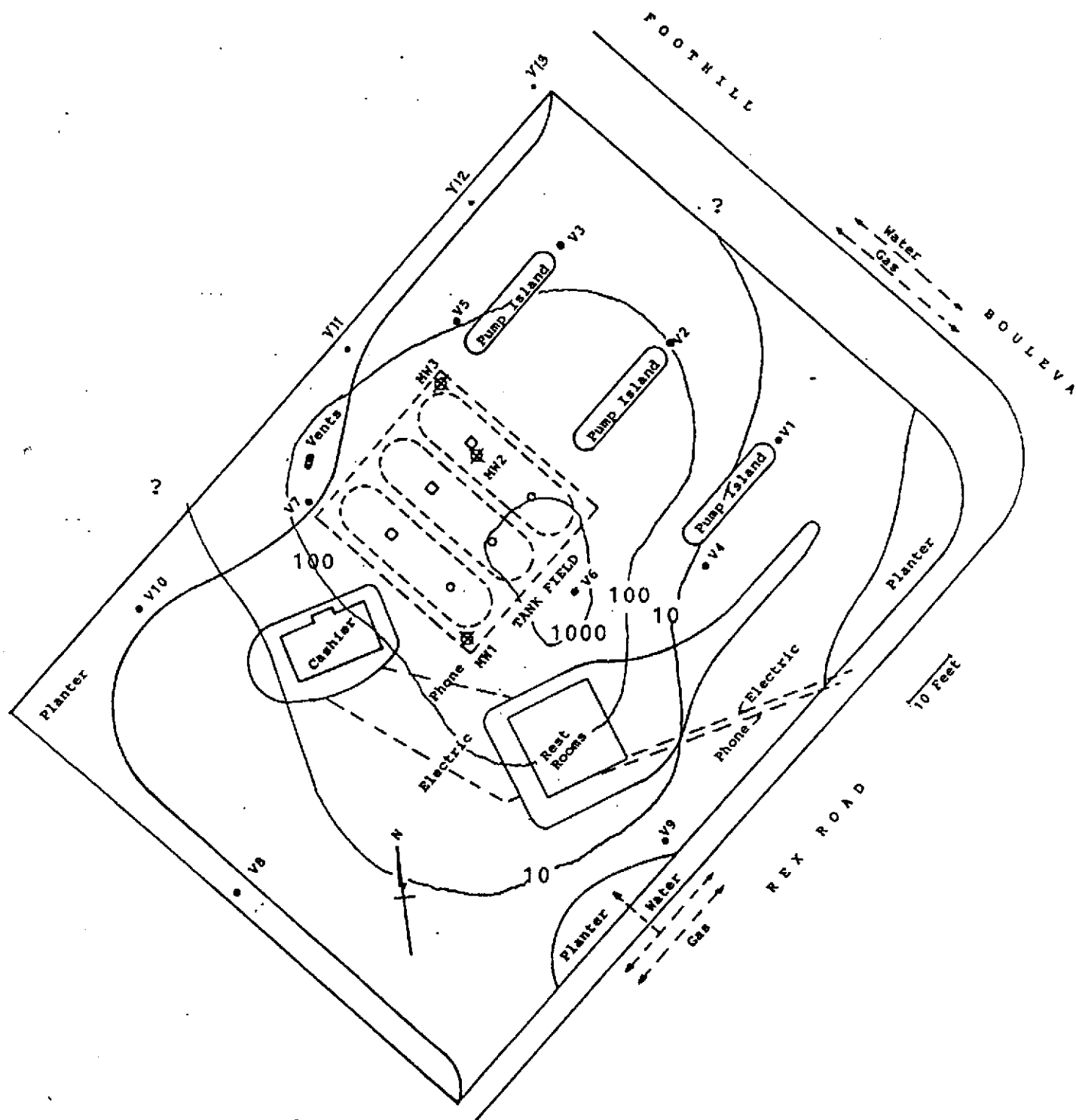


Figure 5. Isoconcentration (ppm) contours of compounds which elute prior to benzene in the shallow soil gas at Chevron SS 9-0260, Hayward, California.

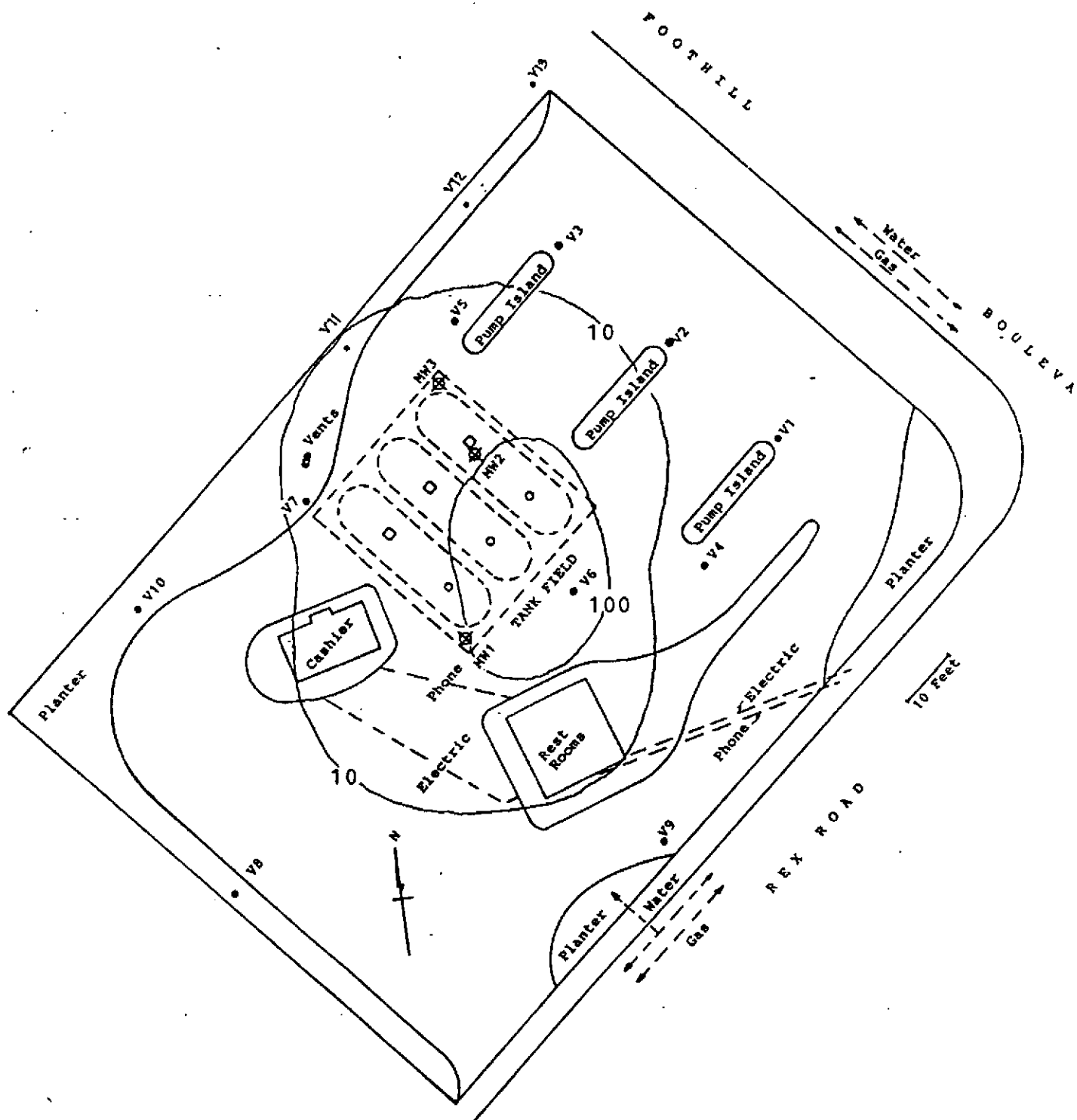


Figure 6. Isoconcentration (ppm) contours of benzene in the shallow soil gas at Chevron SS 9-0260, Hayward, California.

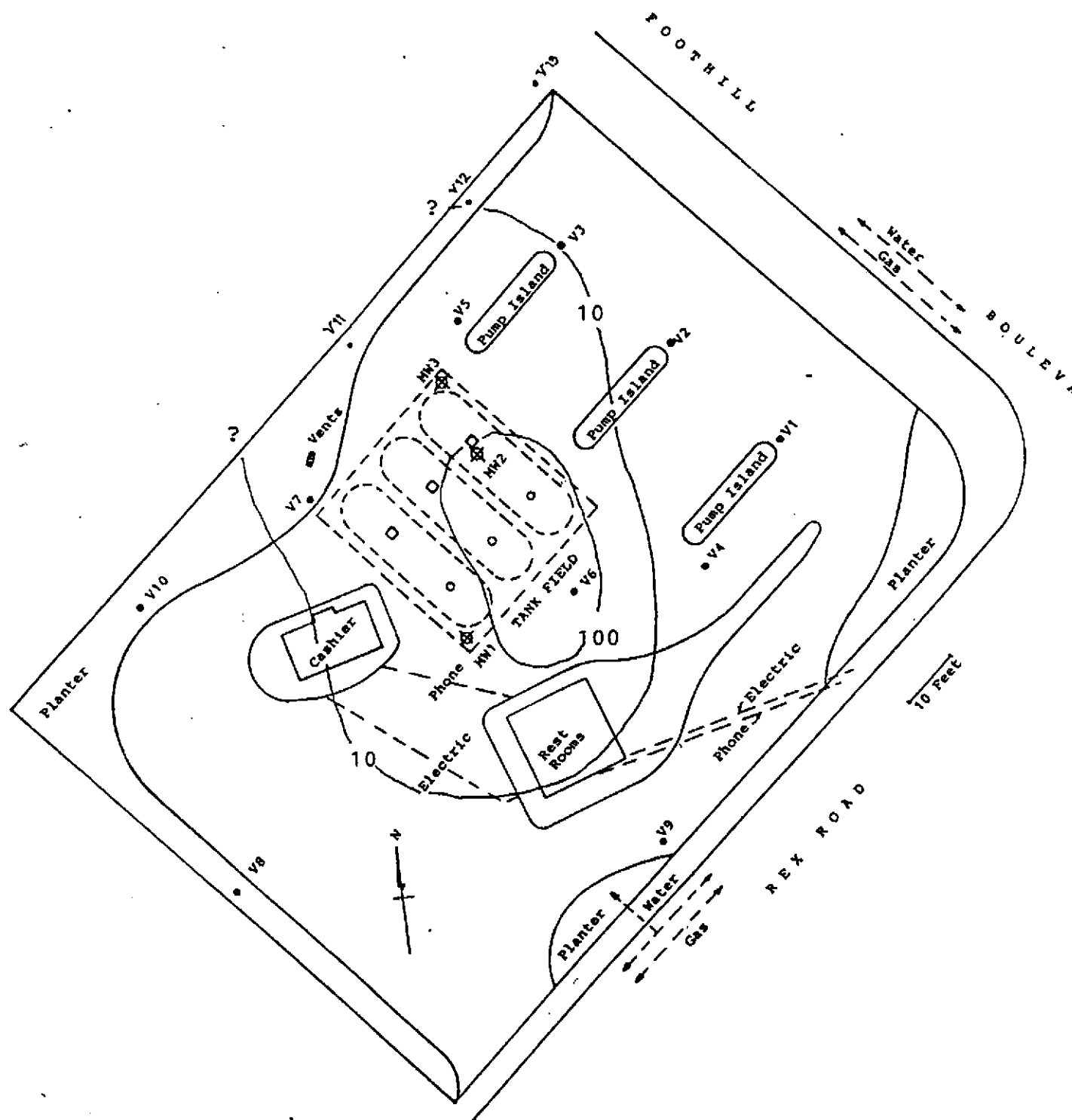


Figure 7. Isoconcentration (ppm) contours of toluene in the shallow soil gas at Chevron SS 9-0260, Hayward, California.

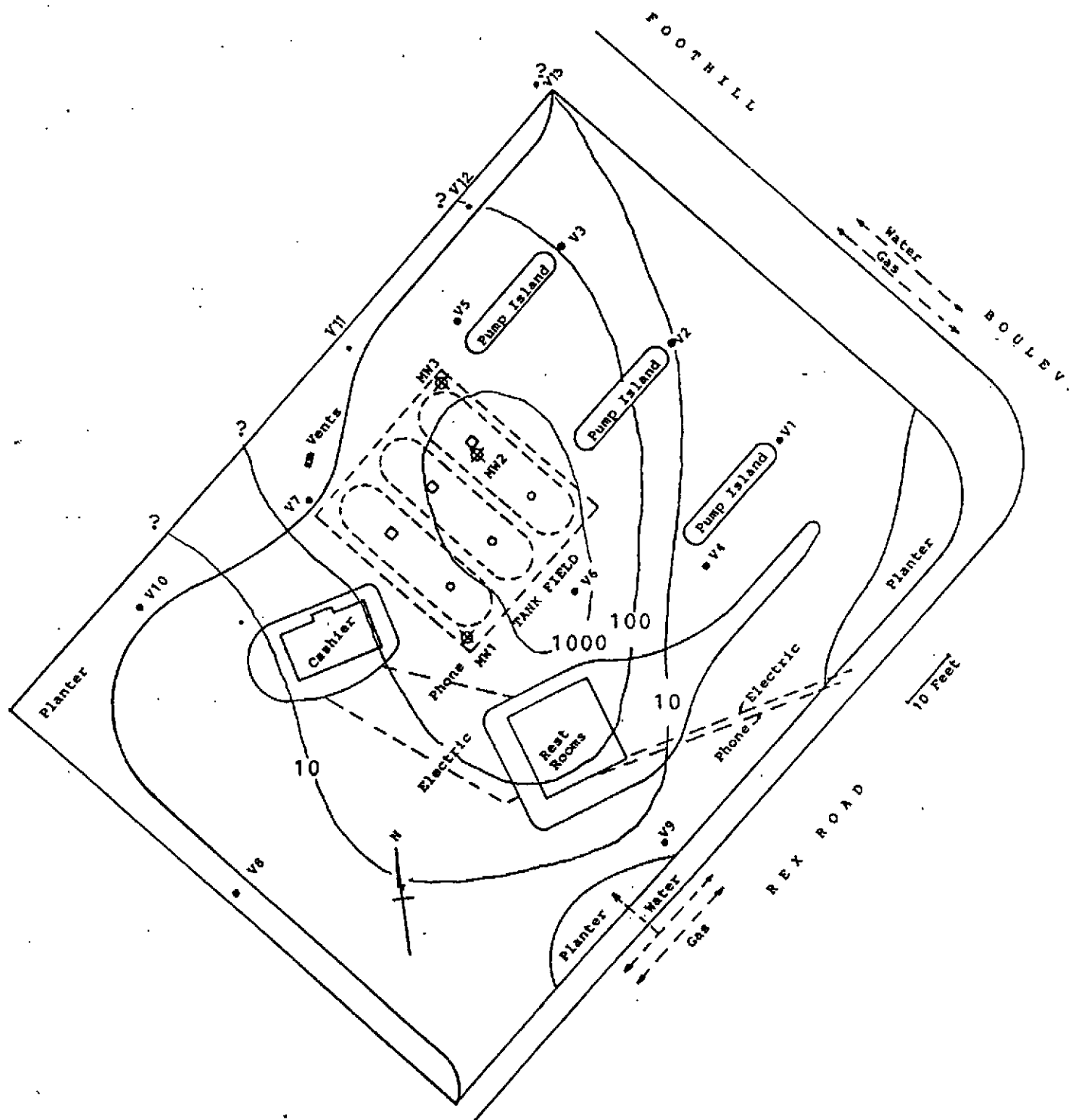


Figure 8. Isoconcentration (ppm) contours of total volatile hydrocarbons in the shallow soil gas at Chevron SS 9-0260, Hayward, California.

C A M B R I A



ATTACHMENT B

Site Maps

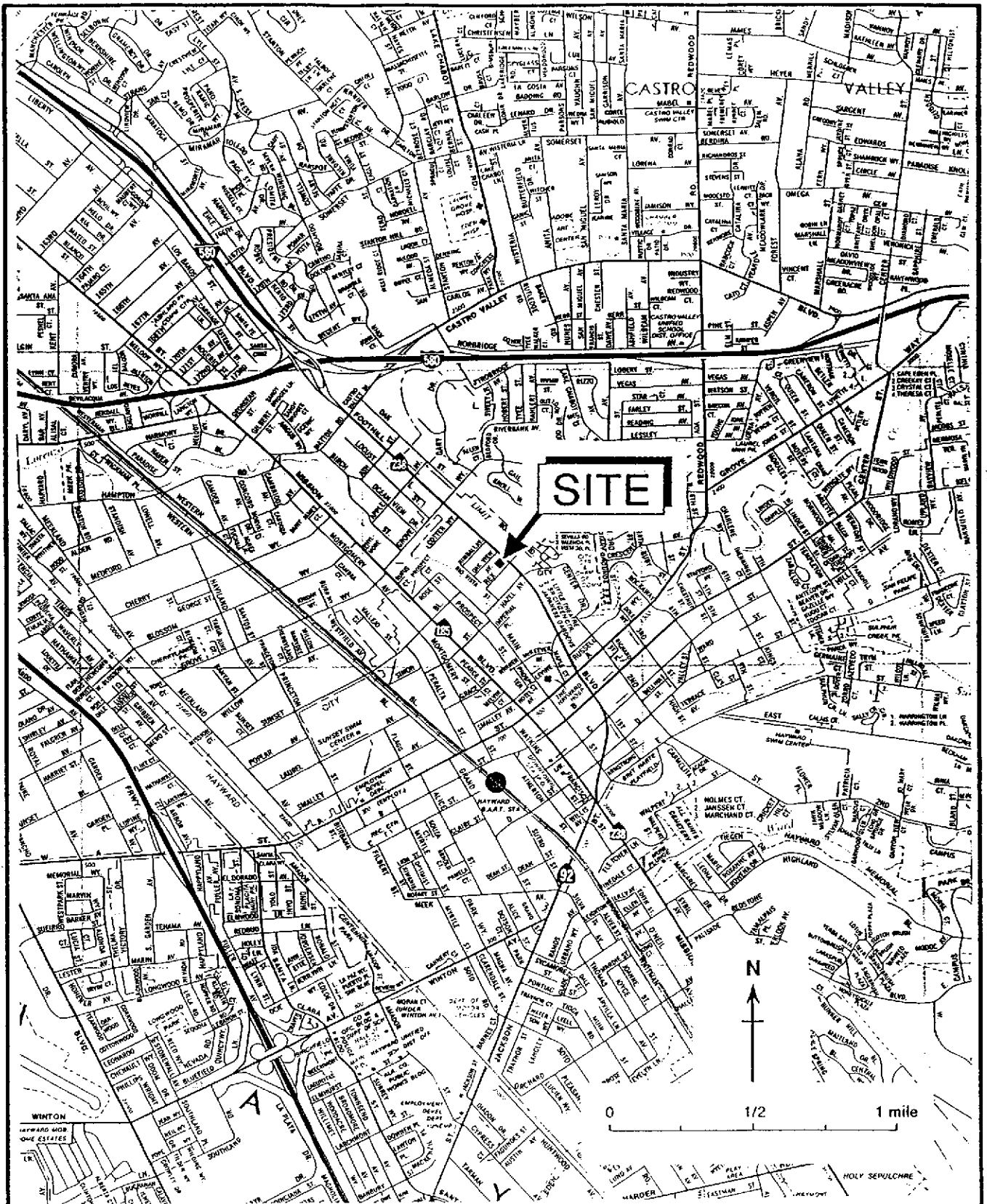
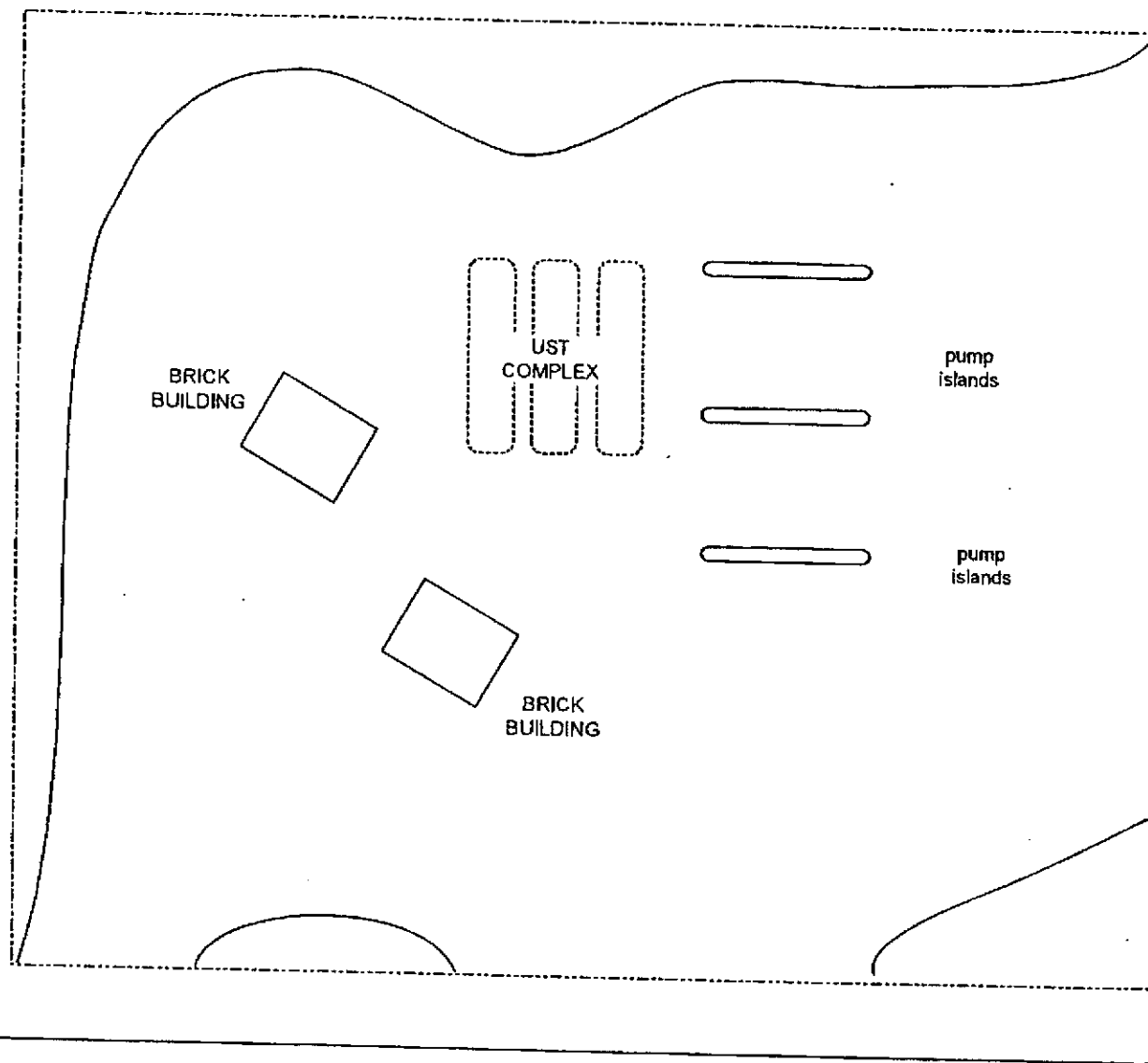


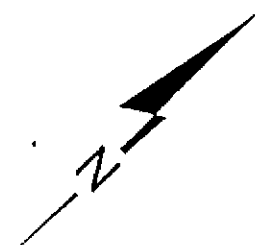
Figure 1. Site Location Map - Chevron Service Station #90260, 21995 Foothill Blvd., Hayward, California



EXPLANATION

UST Underground Storage Tank

FOOTHILL BOULEVARD



NOTE:
DRAWING APPROXIMATE SCALE IS
1 INCH TO 30 FEET

SITE PLAN

Chevron Service Station No. 9-0260
21995 Foothill Boulevard-
Hayward, California



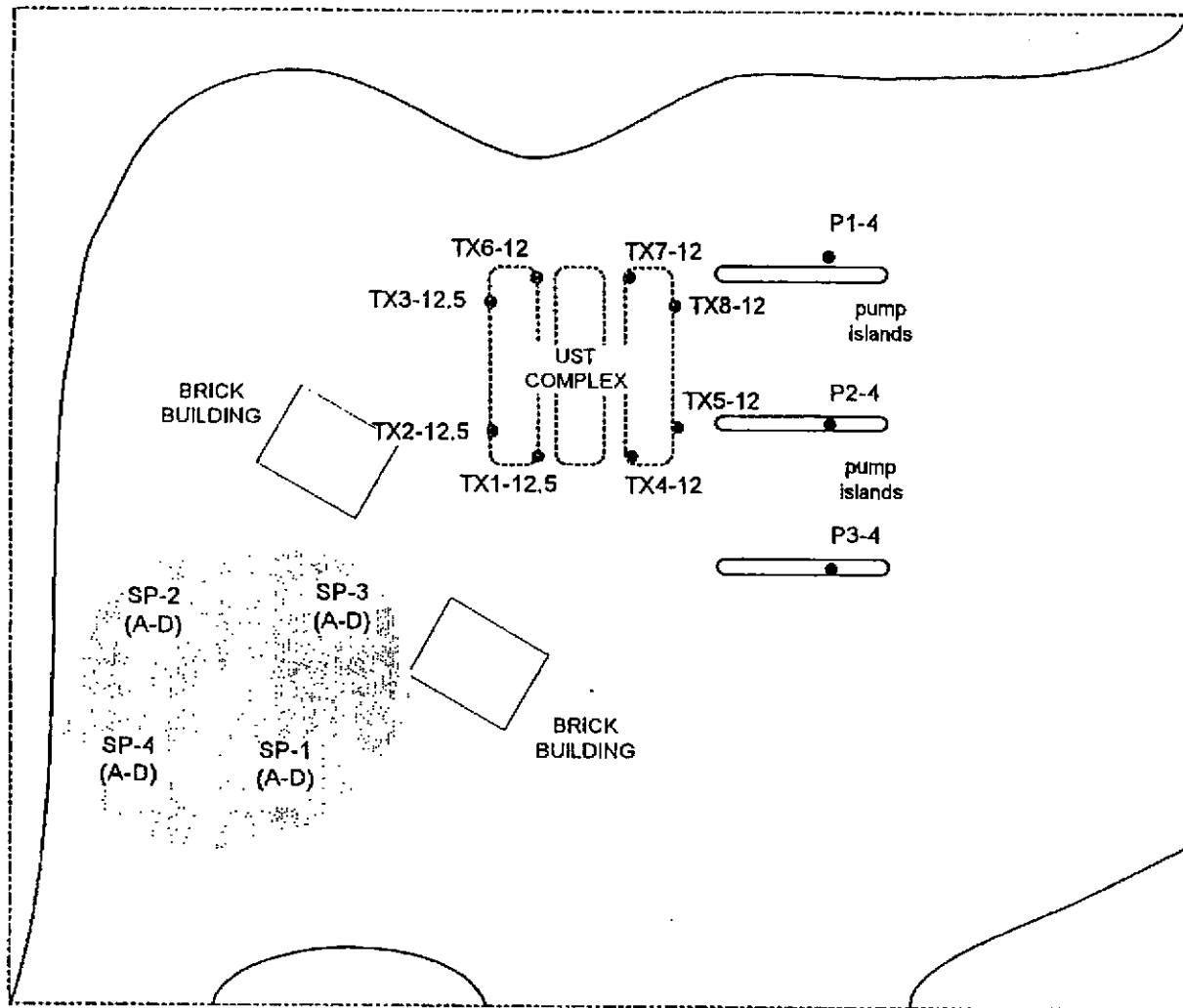
**Touchstone
Developments**
Environmental Management

FIGURE

1

EXPLANATION

- UST Underground Storage Tank
- Underground product piping
- TX-1' Soil sample location and ID
- SP-1 Soil Stockpile location



FOOTHILL BOULEVARD

NOTE:
DRAWING APPROXIMATE SCALE IS
1 INCH TO 30 FEET

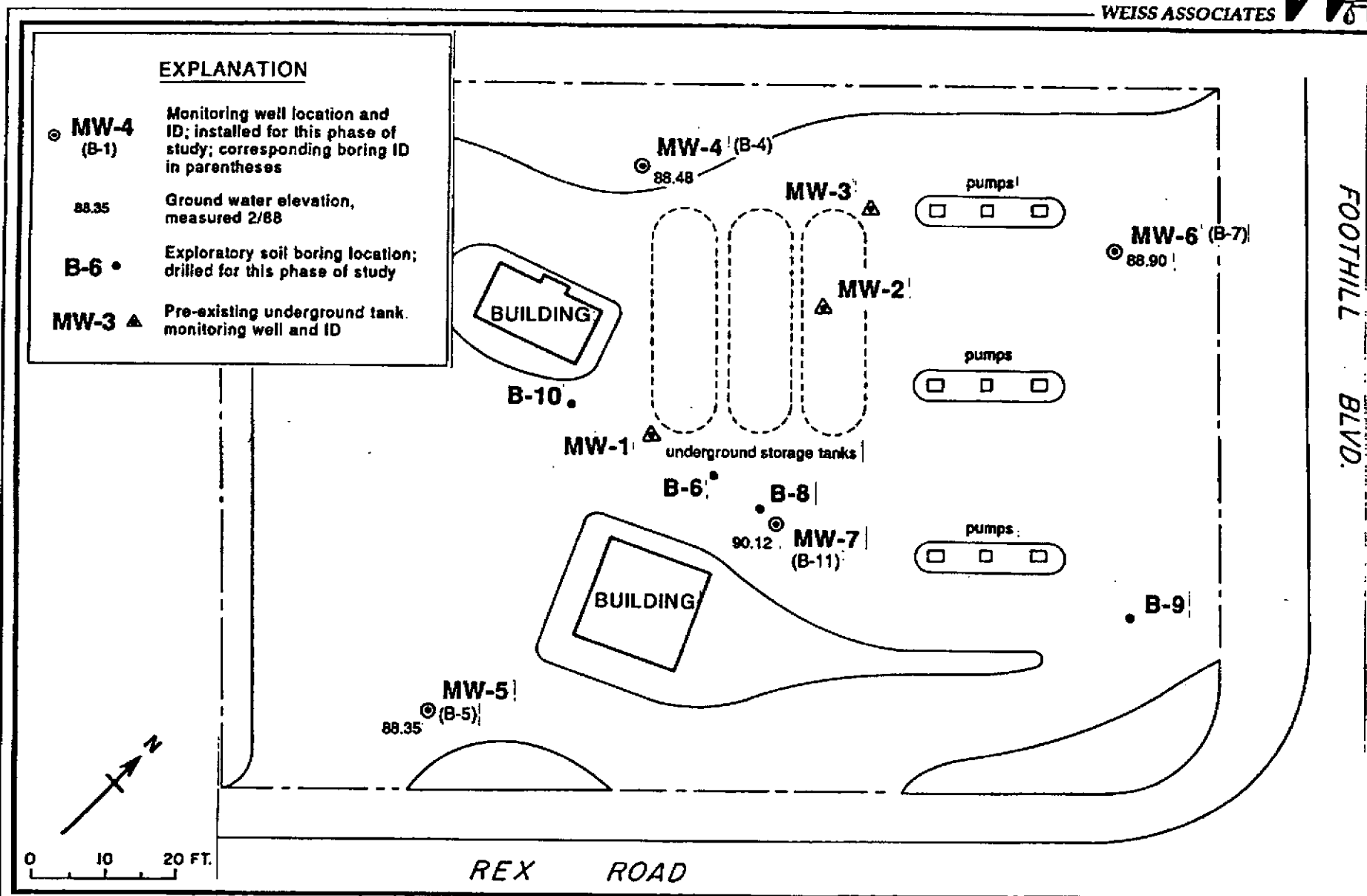


Figure 2. Monitoring Well and Soil Boring Locations - Chevron Service Station #90260, Hayward, California

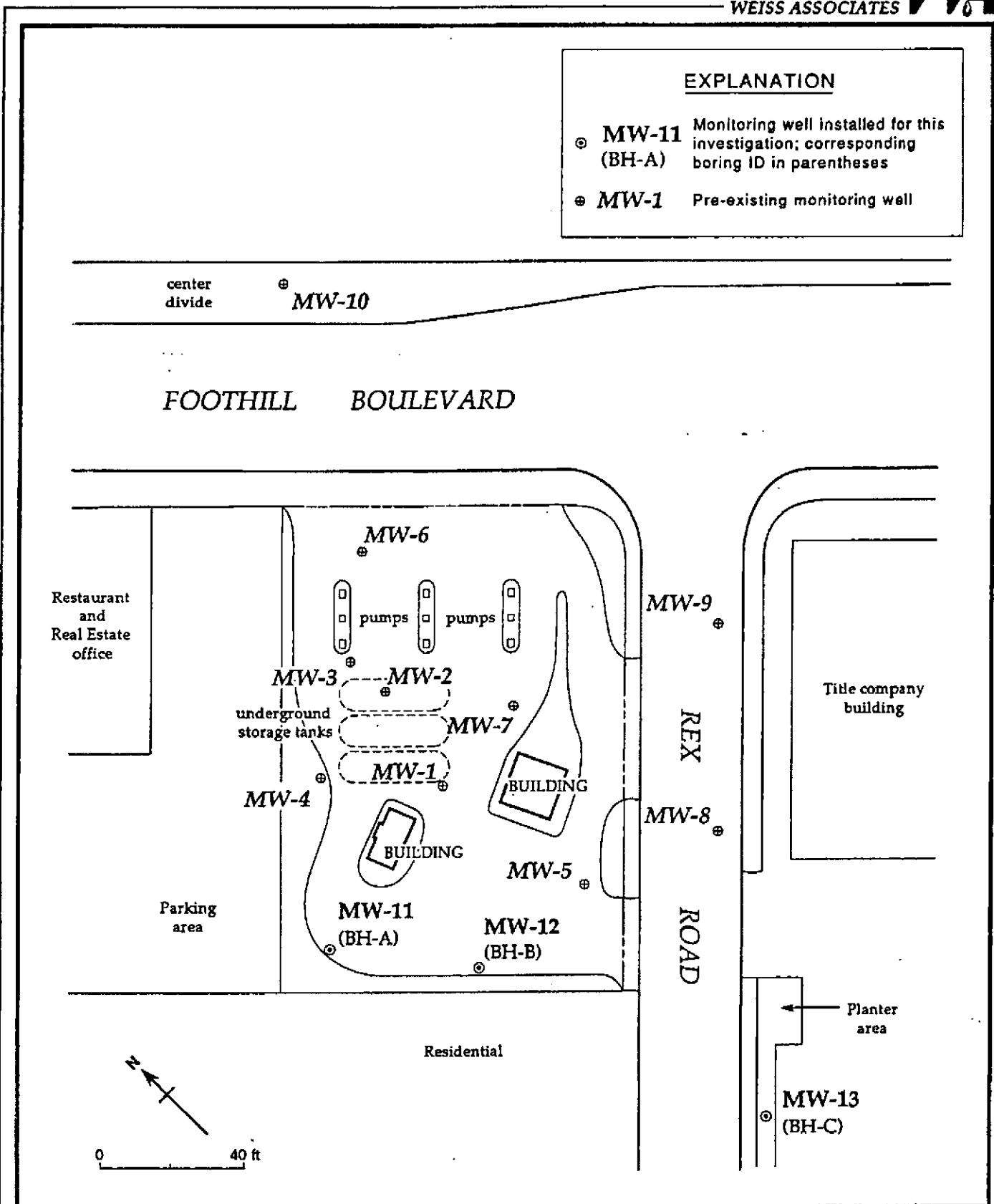


Figure 2. Monitoring Well Locations - Chevron Service Station #90260, Hayward, California

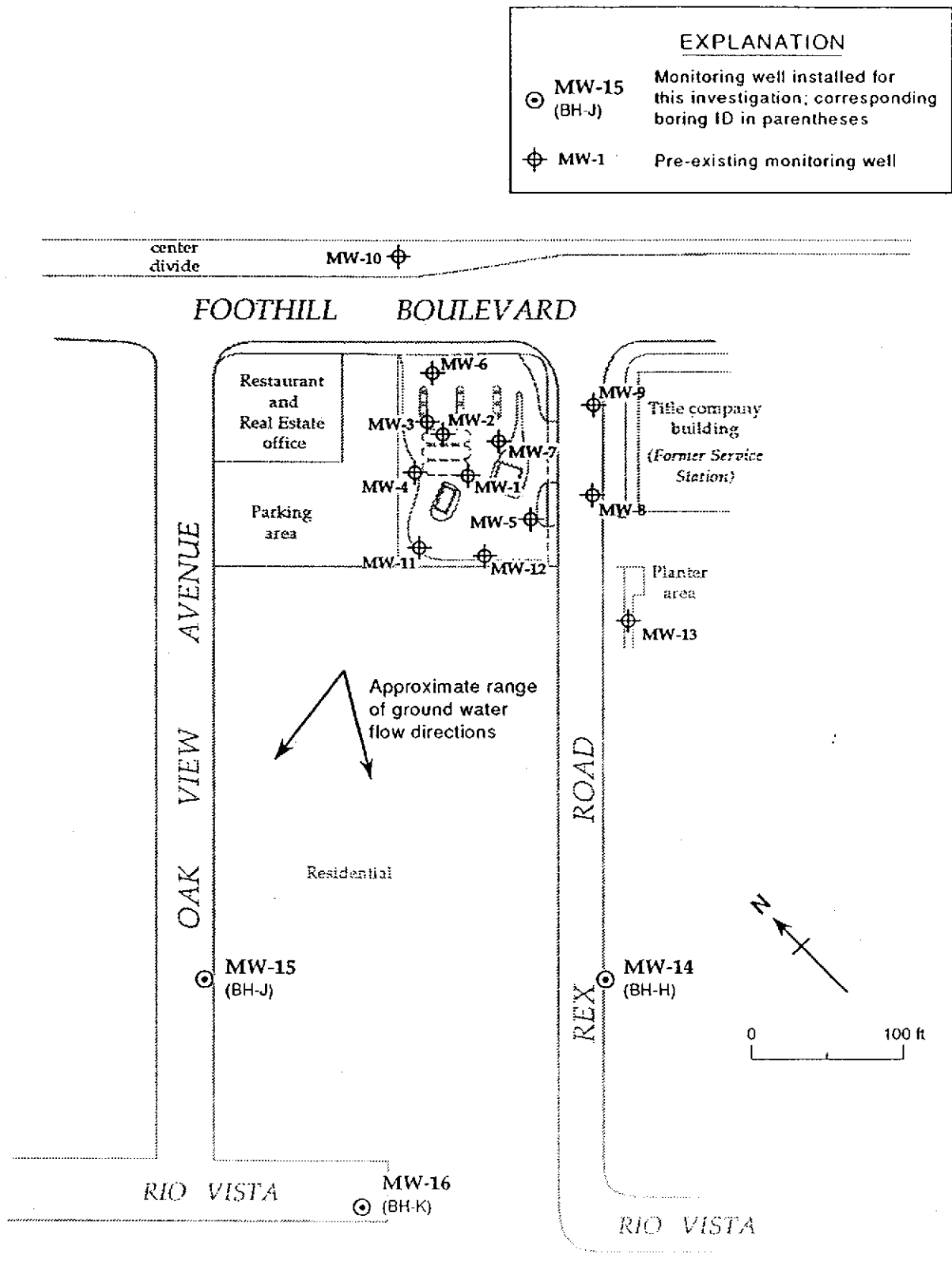
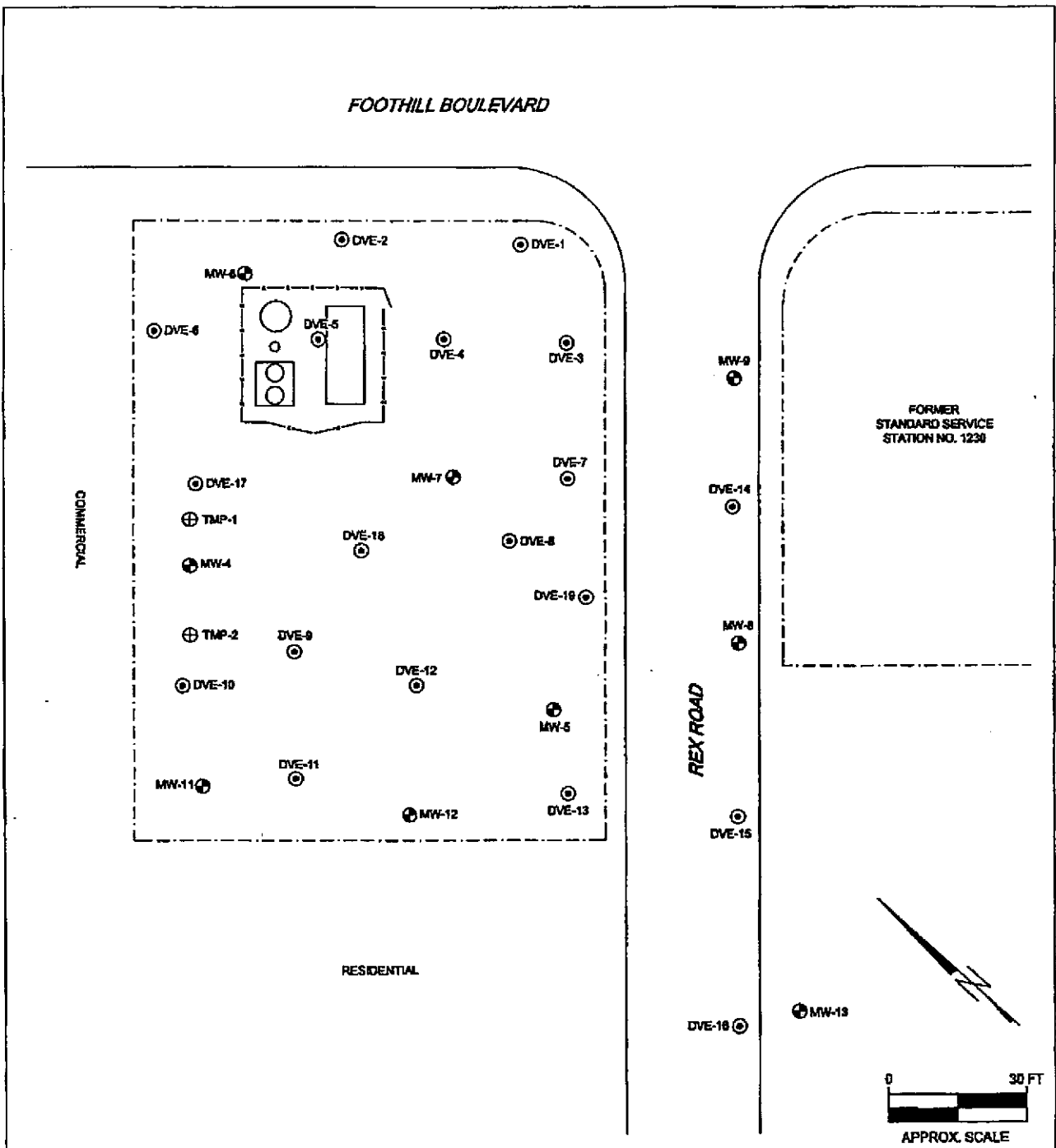


Figure 2. Monitoring Well and Soil Boring Locations - Chevron Service Station #9-0260, 21995 Foothill Boulevard, Hayward, California



LEGEND:

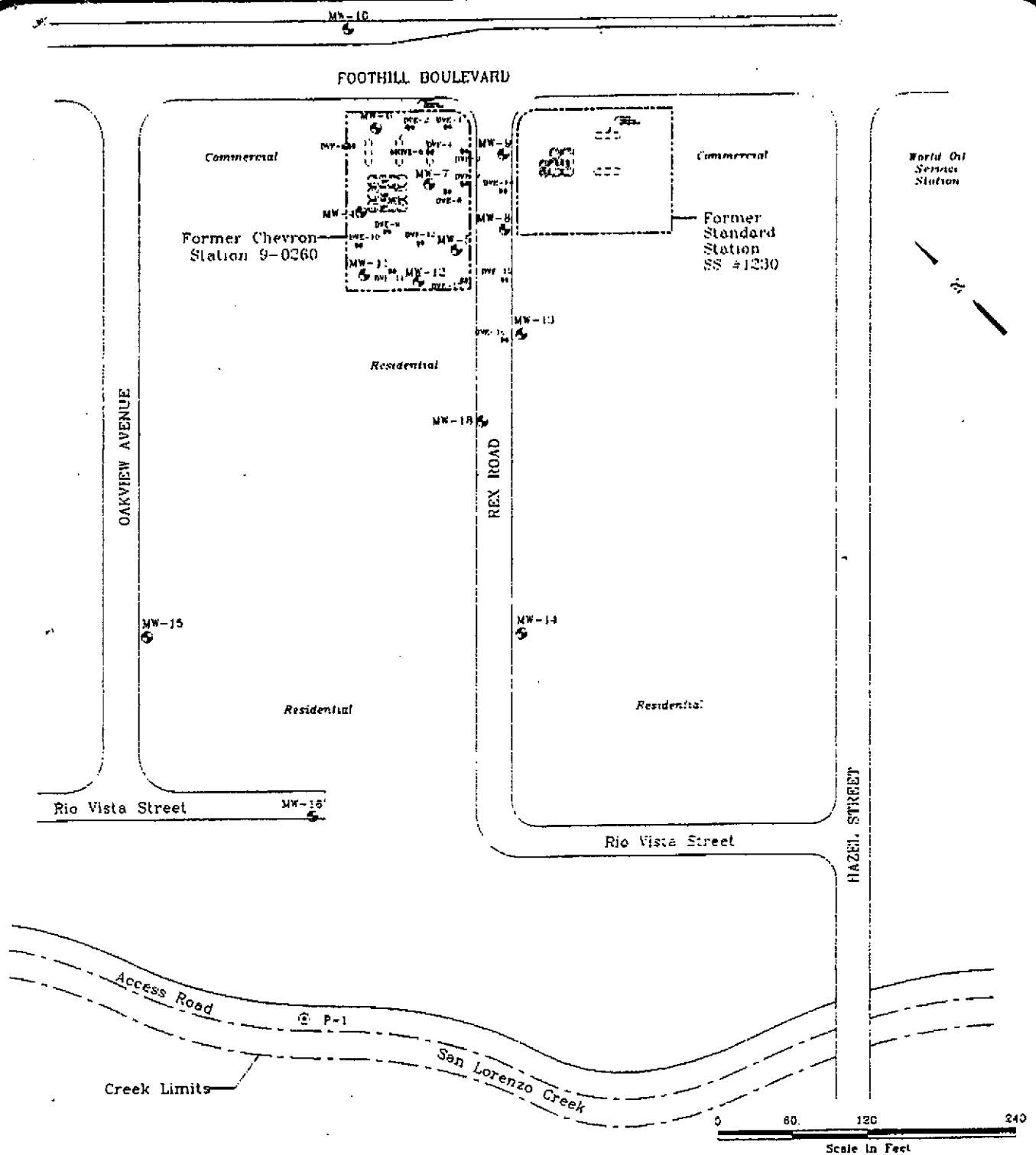
- ⊕ MW-17 MONITORING WELL LOCATION
- ⊙ DVE-16 DUAL VACUUM EXTRACTION WELL LOCATION
- ⊕ TMP-1 TEMPORARY MONITORING WELL LOCATION

FIGURE 2
SITE MAP

FORMER CHEVRON STATION NO. 9-0260
21995 FOOTHILL BOULEVARD
HAYWARD, CA.

PROJECT NO. DG90-260	DRAWN BY M.L. 11/6/02
FILE NO. DG90260D	PREPARED BY W.S.
REVISION NO. 1	REVIEWED BY





- MW-17
- SUNSET BLVD.
- MAIN STREET
- MW-17 = Groundwater Monitoring Well
Note: Well MW-18 is proposed for this Work Plan
 - P-1 = Piezometer
 - DVE-16 = Dual Vacuum Extraction Well

Note: Base map adopted from Weiss Associates, Figure 3, titled "TPH-G Concentrations in Groundwater - December 3, 1992", dated January 27, 1993.

Extended Site Plan
Former Chevron Station 9-0260
21995 Foothill Boulevard
Hayward, California

Project	30-0236	Drown	JLN
Date	5/13/97	Revision	
Scale	1"=120'	Checked	

TERRA
VAC

1851 Alvarado Street
San Leandro, CA 94577
(510) 351-8900 Fax: (510) 351-8901

Figure
3

C A M B R I A



ATTACHMENT C
Analytical Results for Soil

TABLE A
UST AND PIPING
SAMPLING SUMMARY

Chevron Service Station No. 9-0260
21995 Foothill Boulevard
Hayward, California

UST SAMPLING RESULTS (results in parts per million)

SAMPLE ID	DEPTH	DATE	TPH - Gasoline	Benzene	Toluene	Ethyl- benzene	Xylene	MTBE	Total Lead	% Moisture	TOC	Porosity
TX1	12.5	7-Oct-96	250	0.44	2.0	3.2	16	12	7.7	18	570	CAR *
TX2	12.5	7-Oct-96	770	1.8	5.4	10	54	24	8.0	na	na	na
TX3	12.5	7-Oct-96	430	1.1	1.4	7.1	27	8.1	6.7	na	na	na
TX4	12	7-Oct-96	420	1.1	0.78	1.9	12	32	5.8	na	na	na
TX5	12	7-Oct-96	480	1.5	6.5	4.2	23	110	11	na	na	na
TX6	12	7-Oct-96	990	1.4	9.1	9.9	65	28	5.9	na	na	na
TX7	12	7-Oct-96	520	1.3	3.0	5.6	28	79	7.1	na	na	na
TX8	12	7-Oct-96	560	2.7	16	6.7	36	64	6.5	18	330	CAR *

PRODUCT PIPING TRENCH SAMPLING RESULTS (results in parts per million)

SAMPLE ID	DEPTH	DATE	TPH - Gasoline	Benzene	Toluene	Ethyl- benzene	Xylene	MTBE	Total Lead
P1	4	7-Oct-96	1100	4.3	3.2	19	95	13	9.3
P2	4	7-Oct-96	3700	2.5	12	55	180	19	9.6
P3	4	7-Oct-96	380	ND < .25	1.7	4.6	9.3	ND < 1.2	9.4

TPH-Gasoline = Total Petroleum Hydrocarbons calculated as Gasoline

UST = Underground Storage Tank

ND = Not detected at or above the laboratory detection limits. SEE LAB REPORTS FOR DETECTION LIMITS

na = Analysis not requested

MTBE = Methyl Butyl Ether

TOC = Total Organic Carbon



TABLE 2 - Analytic Results, Chevron SS #90260, Hayward, California

Sample ID	Sample Depth (ft)	Sample Type	TFHC ←-----	Benzene	Ethylbenzene ppm	Toluene -----	Xylenes ----->
B-4 (MW-4)	10	soil	<10	na	na	na	na
	16	soil	5,600	na	na	na	na
	21	soil	50	na	na	na	na
	25	soil	<10	na	na	na	na
B-5 (MW-5)	6	soil	<10	na	na	na	na
	10	soil	820	na	na	na	na
	19.5	soil	850	na	na	na	na
	24	soil	<10	na	na	na	na
B-6	4.5	soil	740	na	na	na	na
B-7 (MW-6)	5.3	soil	<10	na	na	na	na
	9.5	soil	28	na	na	na	na
	14.7	soil	670	na	na	na	na
	19	soil	150	na	na	na	na
B-8	5	soil	12	na	na	na	na
B-9	7.7	soil	<10	na	na	na	na
	9.5	soil	140	na	na	na	na
B-10	4	soil	<10	na	na	na	na
	10	soil	320	na	na	na	na
B-11 (MW-7)	5	soil	930	na	na	na	na
	9.7	soil	<10	na	na	na	na
	15.5	soil	9,900	na	na	na	na
	22.5	soil	<10	na	na	na	na
MW-4		water	88	24	1.7	19	10
MW-5		water	80	16	2.6	15	16
MW-6		water	53	1.5	2.1	4.4	14
MW-7		water	81	34	2.4	36	16

TABLE 1. Analytic Results for Soil - Chevron Service Station #90260, Hayward, California

Soil Boring	Sample Depth (ft)	Date Sampled	Analytic Lab	Analytic Method	Sat/ Unsat	TPH-G	B	E	T	X
						<-----parts per million----->				
BH-A (MW-8)	10	10-17-88	Clayton	8015/8020	Unsat	780	15	1	58	140
	14.8	10-17-88	Clayton	8015/8020	Sat	1,100	55	43	160	290
	21.5	10-17-88	Clayton	8015/8020	Sat	<1	0.23	0.13	0.05	0.16
BH-B (MW-9)	10	10-17-88	Clayton	8015/8020	Unsat	300	26	38	120	190
	14.8	10-17-88	Clayton	8015/8020	Sat	1,400	5	56	11	280
	21.8	10-17-88	Clayton	8015/8020	Sat	<1	<0.04	<0.03	<0.02	<0.04
BH-C (MW-10)	20.5	10-18-88	Clayton	8015/8020	Unsat	<1	<0.04	<0.03	<0.02	<0.04
	25.5	10-18-88	Clayton	8015/8020	Sat	<1	<0.04	<0.03	<0.02	<0.04

Abbreviations:

TPH-G = Total Petroleum Hydrocarbons as Gasoline
 B = Benzene
 E = Ethylbenzene
 T = Toluene
 X = Xylenes
 <n = Not detected at detection limit of n ppm
 Sat = Saturated soil sample
 Unsat = Unsaturated soil sample

Analytic Laboratory:

Clayton = Clayton Environmental Consultants, Pleasanton, California

Analytic Methods:

8015 = EPA Method 8015, Non-Halogenated Volatile Organics
 8020 = EPA Method 8020, Aromatic Volatile Organics

Source: Phase II Subsurface Investigation Report for Chevron Service Station #90260, prepared by Weiss Associates, December 14, 1988

TABLE 1. Analytic Results for Soil - Chevron Service Station #90260, Hayward, California

Soil Boring (Well ID)	Sample Depth	Date Sampled (ft)	Analytic Lab	Analytic Method	Sat/ Unsat	TPPH	B	E	T	X
<----- parts per million (mg/kg) ----->										
BH-A	5.8	06-06-89	SUP	8015/8020	Unsat	<1	<0.05	<0.05	<0.05	<0.05
(MW-11)	10.8	06-06-89	SUP	8015/8020	Unsat	<1	<0.05	<0.05	<0.05	<0.05
	15.8	06-06-89	SUP	8015/8020	Sat	11	1.1	0.12	0.11	0.65
	20.5	06-06-89	SUP	8015/8020	Sat	8	2.9	0.15	1.1	0.58
BH-B	5.8	06-07-89	SUP	8015/8020	Unsat	<1	<0.05	<0.05	<0.05	<0.05
(MW-12)	10.8	06-07-89	SUP	8015/8020	Unsat	360	0.20	1.8	1.6	11
	15.5	06-07-89	SUP	8015/8020	Sat	58	0.20	0.30	0.18	1.7
BH-C	5.8	06-06-89	SUP	8015/8020	Unsat	<1	<0.05	<0.05	<0.05	<0.05
(MW-13)	10.8	06-06-89	SUP	8015/8020	Unsat	88	<0.05	0.16	0.15	2.5
	15.8	06-06-89	SUP	8015/8020	Sat	6	0.59	0.09	0.82	0.43

Abbreviations:

TPPH = Total Purgeable Petroleum Hydrocarbons
 B = Benzene
 E = Ethylbenzene
 T = Toluene
 X = Xylenes
 <n = Not detected at detection limit of n ppm
 Sat = Saturated soil sample
 Unsat = Unsaturated soil sample

Analytic Laboratory:

SUP = Superior Analytic Laboratory, Inc.,
 San Francisco, California

Analytic Methods:

8015 = EPA Method 8015, Non-Halogenated Volatile Organics
 8020 = EPA Method 8020, Aromatic Volatile Organics

TABLE 1. Analytic Results for Soil - Chevron Service Station #9-0260, 21995 Foothill Boulevard, Hayward, California

Sample ID	Sample Depth	Date Sampled	Analytical Laboratory	Analytic Method	Sat/ Unsat	TPH-G	B	E	T	X
						<-----parts per million (mg/kg)----->				
BH-H	14.3	8/15/90	SAL	8015/8020	Unsat	<1	<0.05	<0.05	<0.05	<0.05
(MW-14)	17.3	8/15/90	SAL	8015/8020	Unsat	<1	<0.05	<0.05	<0.05	<0.05
	19.8	8/15/90	SAL	8015/8020	Unsat	<1	<0.05	<0.05	<0.05	<0.05
	22.8	8/15/90	SAL	8015/8020	Sat	110	<0.05	<0.05	0.15	0.12
BH-J	10.3	8/16/90	SAL	8015/8020	Unsat	<1	<0.05	<0.05	<0.05	<0.05
(MW-15)	17.8	8/16/90	SAL	8015/8020	Sat	3	<0.05	<0.05	<0.05	0.09
	20.3	8/16/90	SAL	8015/8020	Sat	<1	<0.05	<0.05	<0.05	<0.05
BH-K	9.4	8/16/90	SAL	8015/8020	Unsat	<1	<0.05	<0.05	<0.05	<0.05
(MW-16)	14.8	8/16/90	SAL	8015/8020	Unsat	<1	<0.05	<0.05	<0.05	<0.05
	18.2	8/16/90	SAL	8015/8020	Unsat	97	0.11	0.46	0.22	3.0
	21.3	8/16/90	SAL	8015/8020	Sat	30	0.96	0.39	2.1	2.5
	24.3	8/16/90	SAL	8015/8020	Sat	3	0.17	<0.05	<0.05	<0.05

Abbreviations:

Sat/Unsat = Saturated or unsaturated soil sample
 TPH-G = Total Petroleum Hydrocarbons as Gasoline
 B = Benzene
 E = Ethylbenzene
 T = Toluene
 X = Xylenes
 <n = Not detected at detection limit of n ppb

Analytic Laboratory:

SAL = Superior Analytical Laboratory,
 San Francisco, California

Analytic Method:

8015 = Modified EPA Method 8015 for TPH-G
 8020 = EPA Method 8020 for BETX

casing and borehole wall, to about 1 ft above the well screen. About 1 ft of bentonite pellets were used to separate the sand pack from the sanitary surface seal of Portland type I and II cement mixed with 3-5 percent by volume bentonite powder. The well heads are secured with locking well plugs and are protected by flush-mounted watertight vaults.

On August 23, 1990, WA Environmental Technician David Charles developed the wells by surge block agitation and airlift evacuation. About 10 to 75 gallons of water was removed from each well during development. The estimated yield during airlift evacuation was 0.5 to 1.0 gallon per minute from each well. New dedicated PVC bailers were installed in the wells for future ground water purging and sampling.

Table 3. Analytic Results for Soil - Chevron Service Station #9-0260, 21995 Foothill Boulevard, Hayward, California

Boring ID (Well/Piezometer ID)	Sample Depth (ft)	Approximate Ground Water Depth (ft)	TPH-G	B	E	T	X
-----parts per million (mg/kg)-----							
BH-T (NW-17)	5.5	24	<1	<0.005	<0.005	<0.005	<0.005
	10.5		<1	<0.005	<0.005	<0.005	<0.005
	15.0		<1	<0.005	<0.005	<0.005	<0.005
	20.5		<1	<0.005	<0.005	<0.005	<0.005
	25.5		<1	<0.005	<0.005	<0.005	<0.005
	28.5		<1	<0.005	<0.005	<0.005	<0.005
BH-U (P-1)	5.5	10	37	0.58	1.5	0.89	6.8
	10.5		2	0.40	0.010	0.008	0.35
	15.5		<1	0.005	<0.005	<0.005	<0.005
	18.5		<1	0.062	0.007	<0.005	0.030

Abbreviations:

TPH-G = Total Petroleum Hydrocarbons as Gasoline by modified EPA Method 8015

B = Benzene by EPA Method 8020

E = Ethylbenzene by EPA Method 8020

T = Toluene by EPA Method 8020

X = Xylenes by EPA Method 8020

<n = Not detected above laboratory method detection limit of n ppm

Analytical Laboratory:

Superior Precision Analytical, San Francisco, California

Note:

All samples collected August 4, 1992

Table 1
Soil Analytical Results:
TPH-g & BTEX

Former Chevron Station 9-0260
21995 Foothill Boulevard
Hayward, California

Sample	Date	TPH-g	B	T	E	X	Other
DVE 1-5.3	7/17/97	<1.0	<0.005	<0.005	<0.005	<0.005	
DVE 1-10.3	7/17/97	13	0.022	0.030	0.028	<0.005	
DVE 1-15.5	7/17/97	170	0.51	0.80	0.45	0.20	
DVE 2-5.3	7/17/97	--	--	--	--	--	
DVE 2-10.3	7/17/97	--	--	--	--	--	
DVE 2-15.3	7/17/97	--	--	--	--	--	
DVE 3-10.3	7/18/97	190	2.0	5.6	3.1	16	
DVE 3-15.3	7/18/97	1,800	5.6	8.4	23	140	
DVE 4-4.8	7/18/97	43	0.22	0.18	0.79	3.2	
DVE 4-9.8	7/18/97	660	6.0	2.6	8.1	30	
DVE 4-14.3	7/18/97	1,800	23	50	24	120	
DVE 5-10.3	7/16/97	930	8.6	19	15	76	
DVE 5-15.3	7/16/97	2,600	20	25	31	220	
DVE 6-5.8	7/16/97	100	0.11	0.19	0.99	0.73	
DVE 6-10.3	7/16/97	190	0.68	1.4	3.2	11	
DVE 6-15.3	7/16/97	4,700	52	250	82	390	
DVE 7-5.3	7/18/97	3.1	0.014	0.017	0.0082	0.021	
DVE 7-10.3	7/18/97	41	0.33	0.95	0.56	3.4	
DVE 7-15.3	7/18/97	3,200	41	180	42	210	
DVE 8-5.0	7/18/97	<1.0	<0.005	<0.005	<0.005	<0.005	
DVE 8-10.3	7/18/97	2,700	11	65	39	210	
DVE 8-14.3	7/18/97	470	6.3	16	7.5	41	
DVE 9-5.3	7/17/97	--	--	--	--	--	
DVE 9-10.3	7/17/97	--	--	--	--	--	
DVE 9-19.3	7/17/97	--	--	--	--	--	
DVE 10-10.3	7/17/97	<1.0	<0.005	<0.005	<0.005	<0.005	
DVE 10-15.3	7/17/97	44	0.64	0.21	0.57	2.5	
DVE 11-5.3	7/17/97	--	--	--	--	--	
DVE 11-15.3	7/17/97	--	--	--	--	--	
DVE 12-5.3	7/17/97	--	--	--	--	--	
DVE 12-15.3	7/17/97	--	--	--	--	--	
DVE 13-10.3	7/17/97	--	--	--	--	--	
DVE 13-15.3	7/17/97	--	--	--	--	--	
DVE 14-10.3	7/16/97	3,400	44	180	60	330	
DVE 14-14.8	7/16/97	2,400	18	120	40	210	

Table 1(cont.)
 Soil Analytical Results:
 TPH-g & BTEX

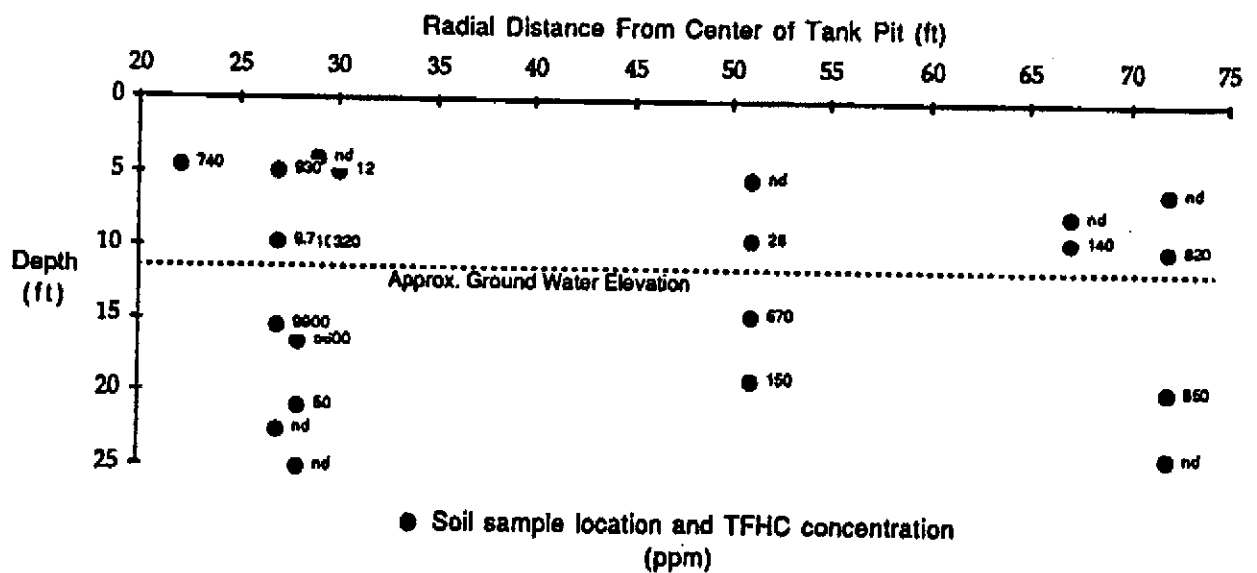
Former Chevron Station 9-0260
 21995 Foothill Boulevard
 Hayward, California

Sample	Date	TPH-g	B	T	E	X	Other
DVE 15-5.8	7/16/97	<1.0	<0.005	<0.005	<0.005	<0.005	
DVE 15-10.8	7/16/97	2,800	37	87	36	240	
DVE 15-14.5	7/16/97	56	2.0	5.0	1.1	6.4	
DVE 16-5.7	7/16/97	<1.0	<0.005	<0.005	<0.005	<0.005	
DVE 16-10.8	7/16/97	620	6.0	7.7	7.3	58	
DVE 16-15.8	7/16/97	130	1.3	1.8	1.7	8.1	
MW 18-5.3	7/16/97	<1.0	<0.005	<0.005	<0.005	<0.005	
MW 18-10.8	7/16/97	98	0.084	0.16	0.33	3.2	
MW 18-15.8	7/16/97	210	0.98	0.90	2.2	12	
MW 18-20.8	7/16/97	8.3	0.36	0.16	<0.005	0.18	
Composite 1(A-D)	7/18/97	360	0.93	1.5	3.7	16	12 ^a

Note: Concentrations are in mg/kg or ppm.

^a Analyzed for Total Lead

**Figure 3 - TFHC Soil Sample Analytic Results
Depth vs Distance From Center of Tank Pit**



C A M B R I A



ATTACHMENT D

Analytical Results for Groundwater

Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-4													
02/05/88	--	--	--	--	--	88,000	24,000	19,000	1,700	10,000	--	--	--
06/15/88	--	87.83	12.92	--	--	95,000	45,000	30,000	2,100	17,000	--	--	--
09/27/88	100.75	86.53	14.22	--	--	500,000	41,000	27,000	<5,000	16,000	--	<5,000	--
09/27/88 ¹	100.75	--	--	--	--	88,000	1,200	4,100	1,600	12,000	--	230	270
01/05/89	100.75	87.55	13.20	--	--	64,000	41,000	29,000	2,700	14,000	--	--	--
04/06/89	100.75	88.43	12.32	--	--	--	--	--	--	--	--	--	--
06/28/89	100.75	86.50	14.25	--	--	110,000	34,000	24,000	2,400	13,000	--	--	--
10/03/89	100.75	86.00	14.75	--	--	240,000	36,000	31,000	3,200	19,000	--	--	--
01/04/90	100.75	86.00	14.75	--	--	130,000	33,000	28,000	2,400	14,000	--	--	--
04/03/90	100.75	86.94	13.81	--	--	110,000	41,000	32,000	2,900	17,000	--	--	--
07/03/90	100.75	86.69	14.06	--	--	180,000	32,000	30,000	2,600	15,000	--	--	--
11/06/90	100.75	85.09	15.66	--	--	170,000	31,000	30,000	2,700	17,000	--	--	--
01/04/91	100.75	85.87	15.18	--	--	--	--	--	--	--	--	--	--
04/03/91	100.75	89.75	11.00	--	--	130,000	21,000	24,000	2,300	14,000	--	--	--
07/02/91	100.75	86.50	14.25	--	--	--	--	--	--	--	--	--	--
10/02/91	100.75	84.59	16.16	--	--	240,000	27,000	33,000	2,600	16,000	--	--	--
01/02/92	100.75	85.49	15.26	--	--	--	--	--	--	--	--	--	--
04/07/92	100.75	88.37	12.38	--	--	--	--	--	--	--	--	--	--
08/13/92	100.75	84.05	16.68	--	--	--	--	--	--	--	--	--	--
12/03/92	100.73	84.58	16.17	--	--	1,300,000	17,000	41,000	12,000	90,000	--	--	--
03/25/93	100.73	90.23	10.50	--	--	--	--	--	--	--	--	--	--
10/04/94	100.73	87.89	12.84	--	--	--	--	--	--	--	--	--	--
11/14/94	100.73	INACCESSIBLE ³		--	--	--	--	--	--	--	--	--	--
05/15/95	100.73	89.36	11.37	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/04/95	100.73	88.43	12.30	--	--	--	--	--	--	--	--	--	--
11/28/95	100.73	86.08	14.65	--	--	97,000	23,000	18,000	1,400	8,800	430	--	--
02/20/96	100.73	92.83	7.90	--	--	SAMPLED SEMI-ANNUALLY					--	--	--
05/29/96	100.73	89.73	11.00	--	--	59,000	11,000	11,000	740	4,400	<500	--	--
08/27/96	100.73	87.49	13.24	--	--	--	--	--	--	--	--	--	--
11/22/96	100.73	89.23	11.50	--	--	130,000	20,000	14,000	1,200	7,000	21,000	--	--
02/18/97	100.73	91.26	9.47	--	--	--	--	--	--	--	--	--	--
05/23/97 ⁴	100.73	88.10	12.63	--	--	120,000	23,000	21,000	1,400	8,400	50,000	--	--

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-4 (cont)													
08/04/97	100.73	87.51	13.22	--	--	120,000	25,000	22,000	1,600	8,000	15,000	--	--
11/25/97 ⁵	100.73	86.83	13.90	--	--	460,000	44,000	45,000	4,000	19,000	290,000	--	--
02/25/98	100.73	87.03	13.70	--	--	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
05/21/98	100.73	88.74	11.99	--	--	100,000	11,000	8,600	720	4,200	3,100	--	--
08/19/98	100.73	80.70	20.03	--	--	--	--	--	--	--	--	--	--
11/19/98	100.73	81.05	19.68	--	--	51,000	5,200	8,900	1,200	6,400	1,600	--	--
02/12/99	100.73	87.52	13.21	--	--	--	--	--	--	--	--	--	--
05/10/99	100.73	87.99	12.74	--	--	68,800	9,680	11,500	1,450	7,700	2,080/328 ⁷	--	--
09/02/99	100.73	85.14	15.59	--	--	--	--	--	--	--	--	--	--
02/03/00	100.73	87.83	12.90	--	--	--	--	--	--	--	--	--	--
05/09/00 ¹⁵	100.73	88.01	12.72	0.00	0.00	3,400 ⁸	24	<10	<10	890	430	--	--
08/02/00 ¹⁵	100.73	86.18	14.55	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
11/09-10/00 ¹⁵	100.73	85.34	15.39	0.00	0.00	66,700	13,900	12,400	1,460	7,940	<250	--	--
02/08/01 ¹⁵	100.73	84.99	15.74	0.00	0.00	--	--	--	--	--	--	--	--
05/02/01 ¹⁵	100.73	84.24	16.49	0.00	0.00	490,000	2,990	<5,000	<5,000	8,660	18.8	--	--
08/28/01 ¹⁵	100.73	82.77	17.96	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
11/26/01 ¹⁵	100.73	85.43	15.30	0.00	0.00	39,000	2,700	2,900	1,200	5,700	<100	--	--
02/22/02 ¹⁵	100.73	88.84	11.89	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
05/24/02 ¹⁵	100.73	85.52	15.21	0.00	0.00	55,000	4,300	4,900	1,700	9,900	<100	--	--
08/29/02 ¹⁵	100.73	85.01	15.72	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
11/29/02 ¹⁵	100.73	85.50	15.23	0.00	0.00	39,000	3,600	4,200	1,500	7,300	<50	--	--
02/28/03	100.73	89.03	11.70	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
05/30/03 ¹⁷	100.73	88.34	12.39	0.00	0.00	51,000	4,400	5,200	1,300	7,000	5	--	--
08/22/03	100.73	86.18	14.55	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
11/24-25/03 ¹⁷	100.73	85.76	14.97	0.00	0.00	50,000	3,500	6,300	1,400	7,200	1	--	--
MW-5													
02/05/88	--	--	--	--	--	80,000	16,000	15,000	2,600	17,000	--	--	--
06/15/88	--	87.67	12.30	--	--	77,000	42,000	38,000	2,500	16,000	--	--	--
09/27/88	99.97	86.72	13.25	--	--	470,000	39,000	32,000	<5,000	16,000	--	<5,000	--
09/27/88 ¹	99.97	--	--	--	--	48,000	1,800	3,500	1,600	10,000	--	420	410

Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-5 (cont)													
01/05/89	99.97	87.27	12.70	--	--	82,000	44,000	37,000	2,400	14,000	--	--	--
04/06/89	99.97	87.75	12.22	--	--	--	--	--	--	--	--	--	--
06/28/89	99.97	86.16	13.81	--	--	80,000	36,000	24,000	2,400	13,000	--	--	--
10/03/89	99.97	85.70	14.27	--	--	240,000	40,000	35,000	2,600	15,000	--	--	--
01/04/90	99.97	85.66	14.31	--	--	130,000	37,000	31,000	2,400	13,000	--	--	--
04/03/90	99.97	86.47	13.50	--	--	120,000	41,000	33,000	2,500	14,000	--	--	--
07/03/90	99.97	86.33	13.64	--	--	200,000	28,000	25,000	1,800	10,000	--	--	--
11/06/90	99.97	84.83	15.14	--	--	370,000	38,000	36,000	4,700	31,000	--	--	--
01/04/91	99.97	85.08	14.90	0.01	--	--	--	--	--	--	--	--	--
04/03/91	99.97	88.41	11.56	--	--	140,000	36,000	32,000	2,700	17,000	--	--	--
07/02/91	99.97	86.08	13.89	--	--	--	--	--	--	--	--	--	--
10/02/91	99.97	84.71	15.26	--	--	230,000	34,000	31,000	2,700	16,000	--	--	--
01/02/92	99.97	85.00	14.97	--	--	--	--	--	--	--	--	--	--
04/07/92	99.97	86.53	13.44	--	--	220,000	35,000	30,000	2,500	14,000	--	--	--
08/13/92	99.97	84.36	15.61	--	--	--	--	--	--	--	--	--	--
12/03/92	99.97	83.68	16.29	<0.02 ²	--	--	--	--	--	--	--	--	--
03/25/93	99.97	89.00	10.97	--	--	--	--	--	--	--	--	--	--
06/23/93	99.97	87.40	12.60	0.04	--	--	--	--	--	--	--	--	--
09/21/93	99.97	85.99	14.00	0.03	--	--	--	--	--	--	--	--	--
12/02/93	99.97	85.73	14.27	0.04	--	--	--	--	--	--	--	--	--
03/08/94	99.97	87.81	12.16	--	--	--	--	--	--	--	--	--	--
06/13/94	99.97	87.22	13.01	0.32	--	--	--	--	--	--	--	--	--
10/04/94	99.97	84.41	15.56	--	--	--	--	--	--	--	--	--	--
11/14/94	99.97	86.62	13.35	--	--	1,100,000	64,000	69,000	9,200	61,000	--	--	--
05/15/95	99.97	89.79	10.18	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/04/95	99.97	88.20	11.77	--	--	--	--	--	--	--	--	--	--
11/28/95	99.97	85.75	14.22	--	--	320,000	34,000	38,000	5,800	31,000	2,000	--	--
02/20/96	99.97	89.60	10.37	Sheen	--	SAMPLED SEMI-ANNUALLY					--	--	--
05/29/96	99.97	89.08	10.89	--	--	150,000	23,000	25,000	2,200	12,000	<500	--	--
08/27/96	99.97	87.22	12.75	--	--	--	--	--	--	--	--	--	--
11/22/96	99.97	87.50	12.47	--	--	170,000	25,000	27,000	2,000	12,000	<500	--	--
02/18/97	99.97	90.46	9.51	--	--	--	--	--	--	--	--	--	--

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-5 (cont)													
05/23/97	99.97	87.72	12.25	--	--	160,000	29,000	34,000	2,900	16,000	<250	--	--
08/04/97	99.97	87.09	12.88	--	--	130,000	27,000	31,000	2,500	13,000	<500	--	--
11/25/97	99.97	85.16	14.81	--	--	310,000 ⁵	52,000	59,000	5,500	28,000	3,300	--	--
02/25/98	99.97	82.51	17.46	--	--	--	--	--	--	--	--	--	--
05/21/98	99.97	88.37	11.60	--	--	220,000	20,000	26,000	2,000	10,000	8,500	--	--
08/19/98	99.97	82.27	17.70	--	--	--	--	--	--	--	--	--	--
11/19/98	99.97	--	--	--	--	NOT SAMPLED DUE TO INSUFFICIENT WATER						--	--
02/12/99	99.97	87.18	12.79	--	--	--	--	--	--	--	--	--	--
05/10/99	99.97	87.25	12.72	--	--	102,000	13,300	17,200	1,240	<200	7,560/<250 ⁷	--	--
09/02/99	99.97	85.18	14.79	--	--	--	--	--	--	--	--	--	--
02/03/00	99.97	86.86	13.11	--	--	--	--	--	--	--	--	--	--
05/09/00 ¹⁵	99.97	87.28	12.69	0.00	0.00	360 ⁸	6.2	<2.5	<2.5	13	13	--	--
08/02/00 ¹⁵	99.97	85.81	14.16	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
11/09-10/00 ¹⁵	99.97	85.36	14.61	0.00	0.00	3,280	331	235	35.7	260	9.41	--	--
02/08/01 ¹⁵	99.97	84.76	15.21	0.00	0.00	--	--	--	--	--	--	--	--
05/02/01 ¹⁵	99.97	83.77	16.20	0.00	0.00	26,700	5,490	6,310	145	2,910	<0.500	--	--
08/28/01 ¹⁵	99.97	DRY	--	--	--	--	--	--	--	--	--	--	--
11/26/01 ¹⁵	99.97	84.61	15.36	0.00	0.00	88,000	14,000	19,000	1,300	8,000	<200	--	--
02/22/02 ¹⁵	99.97	87.75	12.22	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
05/24/02 ¹⁵	99.97	84.74	15.23	0.00	0.00	92,000	11,000	17,000	1,600	9,400	<200	--	--
08/29/02 ¹⁵	99.97	84.65	15.32	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
11/29/02	99.97	85.21	14.76	0.00	0.00	62	4.9	<0.50	<0.50	<1.5	<2.5	--	--
02/28/03	99.97	88.22	11.75	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
05/30/03 ¹⁷	99.97	87.36	12.61	0.00	0.00	8,100	1,600	1,100	72	700	8	--	--
08/22/03	99.97	86.12	13.85	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
11/24-25/03 ¹⁷	99.97	85.01	14.96	0.00	0.00	86,000	9,300	16,000	1,200	6,200	<10	--	--
MW-6													
02/05/88	--	--	--	--	--	53,000	5,100	4,400	2,100	14,000	--	--	--
06/15/88	--	87.92	13.51	--	--	33,000	9,200	5,500	520	20,000	--	--	--
09/27/88	101.43	86.87	14.56	--	--	17,000	2,200	2,800	1,700	5,100	--	--	--

Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-6 (cont)													
01/05/89	101.43	87.95	13.48	--	--	37,000	5,000	3,400	2,200	10,000	--	--	--
04/06/89	101.43	88.83	12.60	--	--	--	--	--	--	--	--	--	--
06/28/89	101.43	86.85	14.58	--	--	80,000	7,000	4,100	2,000	9,700	--	--	--
10/03/89	101.43	88.40	13.03	--	--	110,000	8,500	5,100	2,600	14,000	--	--	--
01/04/90	101.43	86.35	15.08	--	--	59,000	5,200	2,600	2,000	11,000	--	--	--
04/03/90	101.43	87.37	14.06	--	--	31,000	6,600	2,600	2,200	12,000	--	--	--
07/03/90	101.43	87.15	14.28	--	--	66,000	5,800	2,900	2,000	9,800	--	--	--
11/06/90	101.43	85.33	16.10	--	--	--	--	--	--	--	--	--	--
01/04/91	101.43	85.91	15.52	--	--	50,000	5,600	2,200	1,800	9,400	--	--	--
04/03/91	101.43	90.40	11.03	--	--	--	--	--	--	--	--	--	--
07/02/91	101.43	86.99	14.44	--	--	81,000	11,000	2,700	2,100	13,000	--	--	--
10/02/91	101.43	85.21	16.22	--	--	--	--	--	--	--	--	--	--
01/02/92	101.43	85.72	15.71	--	--	67,000	7,500	1,900	1,800	9,500	--	--	--
04/07/92	101.43	87.96	13.47	--	--	--	--	--	--	--	--	--	--
08/13/92	101.43	85.46	15.97	--	--	--	--	--	--	--	--	--	--
12/03/92	101.43	84.81	16.62	--	--	--	--	--	--	--	--	--	--
03/25/93	101.43	90.85	10.58	--	--	110,000	12,000	2,900	4,200	14,000	--	--	--
06/23/93	101.43	88.42	13.01	--	--	--	--	--	--	--	--	--	--
09/21/93	101.43	86.69	14.74	--	--	62,000	12,000	1,400	2,100	12,000	--	--	--
12/02/93	101.43	86.56	14.87	--	--	--	--	--	--	--	--	--	--
03/08/94	101.43	89.39	12.04	--	--	61,000	7,000	1,500	1,500	7,400	--	--	--
06/13/94	101.43	88.06	13.37	--	--	--	--	--	--	--	--	--	--
10/04/94	101.43	85.87	15.56	--	--	78,000	13,000	940	1,900	10,000	--	--	--
11/14/94	101.43	87.90	13.53	--	--	--	--	--	--	--	--	--	--
05/15/95	101.43	90.90	10.53	--	--	--	--	--	--	--	--	--	--
08/04/95	101.43	89.05	12.38	--	--	51,000	8,600	1,400	1,900	7,800	--	--	--
11/28/95	101.43	86.80	14.63	--	--	SAMPLED SEMI-ANNUALLY					--	--	--
02/20/96	101.43	91.71	9.72	--	--	59,000	11,000	1,600	2,100	9,400	<500	--	--
05/29/96	101.43	90.49	10.94	--	--	--	--	--	--	--	--	--	--
08/27/96	101.43	88.03	13.40	--	--	84,000	11,000	960	2,300	7,700	<500	--	--
11/22/96	101.43	88.53	12.90	--	--	--	--	--	--	--	--	--	--
02/18/97	101.43	91.42	10.01	--	--	14,000	3,700	160	720	1,800	400	--	--

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-6 (cont)													
05/23/97	101.43	88.68	12.75	--	--	--	--	--	--	--	--	--	--
08/04/97	101.43	87.95	13.48	--	--	62,000	13,000	930	3,500	8,500	710	--	--
11/25/97	101.43	87.22	14.21	--	--	--	--	--	--	--	--	--	--
02/25/98	101.43	86.58	14.85	--	--	30,000	2,400	910	740	4,000	2,600	--	--
05/21/98	101.43	89.76	11.67	--	--	--	--	--	--	--	--	--	--
08/19/98	101.43	85.57	15.86	--	--	37,000	390	220	160	3,600	1,600/1,000 ⁷	--	--
11/19/98	101.43	--	--	--	--	NOT SAMPLED DUE TO INSUFFICIENT WATER				--	--	--	--
02/12/99	101.43	89.60	11.83	--	--	80	2.4	<0.5	0.68	6.2	<2.5	--	--
05/10/99	101.43	88.43	13.00	--	--	--	--	--	--	--	--	--	--
09/02/99	101.43	85.71	15.72	--	--	4,440	23.4	<5.0	45.3	46.2	<50	--	--
02/03/00	101.43	88.23	13.20	--	--	8,300	22	<10	43	140	77	--	--
05/09/00 ¹⁵	101.43	88.38	13.05	0.00	0.00	--	--	--	--	--	--	--	--
08/02/00 ¹⁵	101.43	86.68	14.75	0.00	0.00	1,700 ⁸	32	4.9	<2.5	<2.5	55	--	--
11/09-10/00 ¹⁵	101.43	85.87	15.56	0.00	0.00	--	--	--	--	--	--	--	--
02/08/01 ¹⁵	101.43	85.56	15.87	0.00	0.00	--	--	--	--	--	--	--	--
05/02/01 ¹⁵	101.43	DRY	--	--	--	--	--	--	--	--	--	--	--
08/28/01 ¹⁵	101.43	DRY	--	--	--	--	--	--	--	--	--	--	--
11/26/01 ¹⁵	101.43	85.97	15.46	0.00	0.00	--	--	--	--	--	--	--	--
02/22/02 ¹⁵	101.43	89.49	11.94	0.00	0.00	6,300	<10	1.7	17	26	<25	--	--
05/24/02 ¹⁵	101.43	85.89	15.54	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
08/29/02 ¹⁵	101.43	DRY	--	--	--	--	--	--	--	--	--	--	--
11/29/02	101.43	85.65	15.78	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
02/28/03	101.43	89.36	12.07	0.00	0.00	180	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
05/30/03	101.43	88.59	12.84	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
08/22/03	101.43	87.03	14.40	0.00	0.00	NOT SAMPLED DUE TO INSUFFICIENT WATER				--	--	--	--
11/24-25/03	101.43	86.31	15.12	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
MW-7													
02/05/88	--	--	--	--	--	81,000	34,000	36,000	2,400	16,000	--	--	--
06/15/88	--	88.34	12.57	--	--	77,000	40,000	41,000	1,400	24,000	--	--	--
09/27/88	100.91	87.31	13.60	--	--	30,000	9,700	8,900	400	4,100	--	<10	2,600

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Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-7 (cont)													
01/05/89	100.91	87.93	12.98	--	--	96,000	36,000	38,000	2,800	16,000	--	--	--
04/06/89	100.91	88.57	12.34	--	--	--	--	--	--	--	--	--	--
06/28/89	100.91	86.83	14.08	--	--	110,000	31,000	30,000	2,600	16,000	--	--	--
10/03/89	100.91	86.38	14.53	--	--	230,000	34,000	34,000	2,400	15,000	--	--	--
01/04/90	100.91	86.42	14.49	--	--	150,000	41,000	40,000	2,400	15,000	--	--	--
04/03/90	100.91	87.25	13.66	--	--	100,000	31,000	28,000	2,100	16,000	--	--	--
07/03/90	100.91	87.05	13.86	--	--	190,000	30,000	27,000	1,800	13,000	--	--	--
11/06/90	100.91	85.33	15.58	--	--	160,000	27,000	25,000	1,900	15,000	--	--	--
01/04/91	100.91	85.66	15.25	--	--	--	--	--	--	--	--	--	--
04/03/91	100.91	89.50	11.41	--	--	240,000	40,000	36,000	2,400	18,000	--	--	--
07/02/91	100.91	86.73	14.18	--	--	--	--	--	--	--	--	--	--
10/02/91	100.91	85.13	15.78	--	--	220,000	26,000	27,000	2,500	18,000	--	--	--
01/02/92	100.91	85.46	15.45	--	--	--	--	--	--	--	--	--	--
04/07/92	100.91	87.43	13.48	--	--	260,000	27,000	26,000	2,400	15,000	--	--	--
08/13/92	100.91	85.02	15.89	--	--	--	--	--	--	--	--	--	--
12/03/92	100.91	84.48	16.43	--	--	330,000	29,000	31,000	3,300	18,000	--	--	--
03/25/93	100.91	89.81	11.10	--	--	--	--	--	--	--	--	--	--
06/23/93	100.91	88.13	13.63	1.06	--	--	--	--	--	--	--	--	--
09/21/93	100.91	86.57	14.88	0.67	--	--	--	--	--	--	--	--	--
12/02/93	100.91	86.32	14.74	0.19	--	--	--	--	--	--	--	--	--
03/08/94	100.91	88.54	12.37	--	--	--	--	--	--	--	--	--	--
06/13/94	100.91	88.03	13.12	0.30	--	--	--	--	--	--	--	--	--
10/04/94	100.91	INACCESSIBLE ³		--	--	--	--	--	--	--	--	--	--
11/14/94	100.91	87.22	13.83	0.18	0.50	--	--	--	--	--	--	--	--
05/15/95	100.91	89.85	11.07	0.01	0.00	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/04/95	100.91	88.38	12.53	--	--	--	--	--	--	--	--	--	--
11/28/95	100.91	86.53	14.62	0.30	2.00	--	--	--	--	--	--	--	--
02/20/96	100.91	90.84	10.09	0.02	0.0625	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
05/29/96	100.91	90.00	10.93	0.02	0.50	--	--	--	--	--	--	--	--
08/27/96	100.91	88.18	12.75	0.02	0.50	--	--	--	--	--	--	--	--
11/22/96	100.91	87.94	12.99	0.02	0.50	--	--	--	--	--	--	--	--
02/18/97	100.91	91.33	9.58	0.01	0.50	--	--	--	--	--	--	--	--

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Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-7 (cont)													
05/23/97	100.91	88.36	12.55	--	--	8,300	210	580	130	1,400	<250	--	--
08/04/97	100.91	87.68	13.23	--	--	96,000	12,000	16,000	2,300	14,000	3,600	--	--
02/25/98	100.91	83.89	17.02	--	--	--	--	--	--	--	--	--	--
05/21/98	100.91	88.98	11.93	--	--	150,000	7,100	15,000	1,700	9,600	21,000	--	--
08/19/98	100.91	82.72	18.19	--	--	--	--	--	--	--	--	--	--
11/19/98	100.91	--	--	--	--	NOT SAMPLED DUE TO INSUFFICIENT WATER				--	--	--	--
02/12/99	100.91	88.10	12.81	--	--	--	--	--	--	--	--	--	--
05/10/99	100.91	87.87	13.04	--	--	11,200	384	764	116	618	<1,000/558 ⁷	--	--
09/02/99	100.91	85.16	15.75	--	--	--	--	--	--	--	--	--	--
02/03/00	100.91	86.84	14.07	--	--	--	--	--	--	--	--	--	--
05/09/00 ¹⁵	100.91	87.55	13.36	0.00	0.00	150 ⁸	0.52	<0.50	<0.50	2.1	130	--	--
08/02/00 ¹⁵	100.91	85.94	14.97	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
11/09-10/00 ¹⁵	100.91	85.93	14.98	0.00	0.00	559	24.1	12.4	2.34	12.5	5.32	--	--
02/08/01 ¹⁵	100.91	84.89	16.02	0.00	0.00	--	--	--	--	--	--	--	--
05/02/01 ¹⁵	100.91	83.21	17.70	0.00	0.00	NOT SAMPLED DUE TO INSUFFICIENT WATER				--	--	--	--
08/28/01 ¹⁵	100.91	82.92	17.99	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
11/26/01 ¹⁵	100.91	84.76	16.15	0.00	0.00	82,000	12,000	23,000	840	6,500	<100	--	--
02/22/02 ¹⁵	100.91	88.22	12.69	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
05/24/02 ¹⁵	100.91	84.73	16.18	0.00	0.00	NOT SAMPLED DUE TO INSUFFICIENT WATER				--	--	--	--
08/29/02 ¹⁵	100.91	84.74	16.17	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
11/29/02	100.91	85.59	15.32	0.00	0.00	890	50	150	14	77	<10	--	--
02/28/03	-- ¹⁶	-- ¹⁶	10.07	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
05/30/03 ¹⁷	-- ¹⁶	-- ¹⁶	11.12	0.00	0.00	190	0.8	1	1	3	62	--	--
08/22/03	-- ¹⁶	-- ¹⁶	DRY	--	--	--	--	--	--	--	--	--	--
11/24-25/03 ¹⁷	-- ¹⁶	-- ¹⁶	13.99	0.00	0.00	1,000	110	6	18	6	6	--	--
MW-8													
10/27/88	--	--	--	--	--	190,000	27,000	43,000	2,200	15,000	--	--	--
01/05/89	--	87.65	12.02	--	--	87,000	24,000	39,000	3,000	15,000	--	--	--
04/06/89	99.67	87.89	11.78	--	--	--	--	--	--	--	--	--	--
06/28/89	99.67	86.27	13.40	--	--	120,000	22,000	35,000	2,900	16,000	--	--	--

Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-8 (cont)													
10/03/89	99.67	85.92	13.84	0.11	--	--	--	--	--	--	--	--	--
01/04/90	99.67	85.76	13.99	0.10	--	--	--	--	--	--	--	--	--
04/03/90	99.67	86.84	13.07	0.30	--	--	--	--	--	--	--	--	--
07/03/90	99.67	86.59	13.11	0.04	--	--	--	--	--	--	--	--	--
11/06/90	99.67	85.02	14.77	0.15	--	--	--	--	--	--	--	--	--
01/04/91	99.67	85.22	14.59	0.18	--	--	--	--	--	--	--	--	--
04/03/91	99.67	88.18	11.53	0.05	--	--	--	--	--	--	--	--	--
07/02/91	99.67	86.34	13.71	0.48	--	--	--	--	--	--	--	--	--
10/02/91	99.67	85.05	14.84	0.27	--	--	--	--	--	--	--	--	--
01/02/92	99.67	84.86	15.05	0.30	--	--	--	--	--	--	--	--	--
04/07/92	99.67	87.73	12.17	0.29	--	--	--	--	--	--	--	--	--
08/13/92	99.67	84.96	14.96	0.31	--	--	--	--	--	--	--	--	--
12/03/92	99.67	84.44	15.85	0.78	--	--	--	--	--	--	--	--	--
03/25/93	99.67	88.89	10.78	--	--	--	--	--	--	--	--	--	--
06/23/93	99.67	87.60	12.27	0.25	--	--	--	--	--	--	--	--	--
09/21/93	99.67	86.25	13.68	0.32	--	--	--	--	--	--	--	--	--
12/02/93	99.67	85.86	14.00	0.24	--	--	--	--	--	--	--	--	--
03/08/94	99.67	87.83	11.84	--	--	--	--	--	--	--	--	--	--
06/13/94	99.67	87.58	12.11	0.03	--	--	--	--	--	--	--	--	--
10/04/94	99.67	85.47	14.20	--	--	--	--	--	--	--	--	--	--
11/14/94	99.67	85.61	14.06	--	--	140,000	12,000	36,000	2,400	17,000	--	--	--
05/15/95	99.67	89.72	9.95	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/04/95	99.67	88.53	11.14	--	--	--	--	--	--	--	--	--	--
11/28/95	99.67	86.35	13.32	--	--	100,000	6,900	34,000	2,700	16,000	650	--	--
02/20/96	99.67	89.67	10.00	--	--	SAMPLED SEMI-ANNUALLY					--	--	--
05/29/96	99.67	89.37	10.30	--	--	130,000	8,800	30,000	2,300	14,000	<500	--	--
08/27/96	99.67	87.42	12.25	--	--	--	--	--	--	--	--	--	--
11/22/96	99.67	87.66	12.01	--	--	150,000	7,400	33,000	2,400	14,000	<500	--	--
02/18/97	99.67	90.56	9.11	--	--	--	--	--	--	--	--	--	--
05/23/97	99.67	88.09	11.58	--	--	140,000	11,000	38,000	3,200	18,000	<250	--	--
08/04/97	99.67	87.49	12.18	--	--	140,000	8,000	38,000	3,500	18,000	<500	--	--
11/25/97	99.67	82.62	17.05	--	--	290,000 ⁵	15,000	71,000	7,400	36,000	3,600	--	--

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-8 (cont)													
02/25/98	99.67	89.64	10.03	--	--	--	--	--	--	--	--	--	--
05/21/98	99.67	90.26	9.41	--	--	110,000	2,800	11,000	1,200	9,800	660	--	--
08/19/98	99.67	82.47	17.20	--	--	--	--	--	--	--	--	--	--
11/19/98	99.67	83.00	16.67	--	--	51,000	3,100	25,000	2,300	15,000	3,100	--	--
02/12/99	99.67	89.15	10.52	--	--	--	--	--	--	--	--	--	--
05/10/99	99.67	88.72	10.95	--	--	104,000	2,980	22,000	1,960	12,800	<2,500/<333 ⁷	--	--
09/02/99	99.67	89.40	10.27	--	--	--	--	--	--	--	--	--	--
02/03/00	99.67	88.22	11.45	--	--	--	--	--	--	--	--	--	--
05/09/00 ¹⁵	99.67	88.77	10.90	0.00	0.00	37,000 ⁸	2,200	12,000	<100	8,400	1,900	--	--
08/02/00 ¹⁵	99.67	87.42	12.25	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
11/09-10/00 ¹⁵	99.67	86.73	12.94	0.00	0.00	63,100	2,330	17,200	1,520	11,300	<250	--	--
02/08/01 ¹⁵	99.67	86.42	13.25	0.00	0.00	--	--	--	--	--	--	--	--
05/02/01 ¹⁵	99.67	85.51	14.16	0.00	0.00	79,400	1,120	18,900	<2,500	13,400	47.6	--	--
08/28/01 ¹⁵	99.67	84.08	15.59	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
11/26/01 ¹⁵	99.67	86.07	13.60	0.00	0.00	48,000	640	10,000	980	8,500	<100	--	--
02/22/02 ¹⁵	99.67	89.16	10.51	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
05/24/02 ¹⁵	99.67	86.61	13.06	0.00	0.00	62,000	1,100	14,000	1,300	9,600	<200	--	--
08/29/02 ¹⁵	99.67	86.11	13.56	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
11/29/02	99.67	86.63	13.04	0.00	0.00	57,000	590	11,000	1,200	10,000	<50	--	--
02/28/03	99.67	89.59	10.08	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
05/30/03 ¹⁷	99.67	88.67	11.00	0.00	0.00	13,000	100	650	270	2,100	<0.5	--	--
08/22/03 ¹⁵	99.67	86.97	12.70	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
11/24-25/03 ¹⁷	99.67	86.39	13.28	0.00	0.00	64,000	450	17,000	1,300	9,900	<5	--	--
MW-9													
10/27/88	--	--	--	--	--	50,000	2,000	9,900	2,000	14,000	--	--	--
01/05/89	--	88.52	12.63	--	--	55,000	670	8,900	3,400	16,000	--	--	--
04/06/89	101.15	88.69	12.46	--	--	--	--	--	--	--	--	--	--
06/28/89	101.15	87.11	14.04	--	--	100,000	510	4,500	2,600	13,000	--	--	--
10/03/89	101.15	86.54	14.61	--	--	130,000	540	8,000	3,200	17,000	--	--	--
01/04/90	101.15	86.56	14.59	--	--	83,000	600	4,600	2,600	14,000	--	--	--

Table A
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-9 (cont)													
04/03/90	101.15	87.40	13.75	--	--	52,000	1,600	5,400	3,100	16,000	--	--	--
07/03/90	101.15	87.31	13.84	--	--	100,000	520	5,400	3,200	16,000	--	--	--
11/06/90	101.15	85.73	15.42	--	--	--	--	--	--	--	--	--	--
01/04/91	101.15	85.78	15.37	--	--	59,000	1,100	5,600	2,500	13,000	--	--	--
04/03/91	101.15	88.88	12.27	--	--	--	--	--	--	--	--	--	--
07/02/91	101.15	86.98	14.17	--	--	130,000	1,900	7,600	3,600	20,000	--	--	--
10/02/91	101.15	85.47	15.68	--	--	--	--	--	--	--	--	--	--
01/02/92	101.15	85.50	15.65	--	--	100,000	3,300	8,200	2,800	14,000	--	--	--
04/07/92	101.15	87.31	13.84	--	--	--	--	--	--	--	--	--	--
08/13/92	101.15	85.65	15.50	--	--	45,000	1,300	3,000	1,500	7,100	--	--	--
12/03/92	101.15	84.49	16.66	--	--	--	--	--	--	--	--	--	--
03/25/93	101.15	89.67	11.48	--	--	220,000	540	3,200	2,100	18,000	--	--	--
06/23/93	101.15	88.32	12.83	--	--	--	--	--	--	--	--	--	--
09/21/93	101.15	86.84	14.31	--	--	54,000	1,900	3,400	1,700	9,100	--	--	--
12/02/93	101.15	86.46	14.70	0.01	--	--	--	--	--	--	--	--	--
03/08/94	101.15	88.52	12.63	--	--	49,000	800	780	390	3,600	--	--	--
06/13/94	101.15	87.50	13.65	--	--	--	--	--	--	--	--	--	--
10/04/94	101.15	85.95	15.20	--	--	180,000	2,600	5,400	1,700	11,000	--	--	--
11/14/94	101.15	86.90	14.25	--	--	--	--	--	--	--	--	--	--
05/15/95	101.15	90.51	10.64	--	--	--	--	--	--	--	--	--	--
08/04/95	101.15	89.26	11.89	--	--	42,000	1,400	2,700	1,700	9,000	--	--	--
11/28/95	101.15	87.23	13.92	--	--	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
02/20/96	101.15	90.54	10.61	Sheen	--	41,000	1,600	1,700	750	6,500	<100	--	--
05/29/96	101.15	90.34	10.81	--	--	--	--	--	--	--	--	--	--
08/27/96	101.15	88.25	12.90	Sheen	--	71,000	2,700	3,600	920	5,900	290	--	--
11/22/96	101.15	88.27	12.88	--	--	--	--	--	--	--	--	--	--
02/18/97	101.15	91.49	9.66	0.01	--	78,000	1,800	3,800	2,300	13,000	510	--	--
05/23/97	101.15	88.62	12.53	--	--	--	--	--	--	--	--	--	--
08/04/97	101.15	88.15	13.00	--	--	73,000	2,600	2,200	440	9,600	370	--	--
11/25/97	101.15	84.03	17.12	--	--	--	--	--	--	--	--	--	--
02/25/98	101.15	88.46	12.69	--	--	34,000	150	510	1,300	6,400	<250	--	--
05/21/98	101.15	91.01	10.14	--	--	--	--	--	--	--	--	--	--

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-9 (cont)													
08/19/98	101.15	86.05	15.10	--	--	42,000	<50	330	890	4,200	<250	--	--
11/19/98	101.15	85.18	15.97	--	--	--	--	--	--	--	--	--	--
02/12/99	101.15	89.90	11.25	--	--	13,000	<100	200	560	2,200	<500	--	--
05/10/99	101.15	88.81	12.34	--	--	16,900	<50	112	506	1,850	<500/<20 ⁷	--	--
09/02/99	101.15	89.81	11.34	--	--	7,200	<25	<25	185	493	<250	--	--
02/03/00	101.15	88.93	12.22	--	--	11,000	68	22	380	1,000	66	--	--
05/09/00 ¹⁵	101.15	89.55	11.60	0.00	0.00	--	--	--	--	--	--	--	--
08/02/00 ¹⁵	101.15	88.10	13.05	0.00	0.00	3,400 ⁸	41	10	<5.0	360	77	--	--
11/09-10/00 ¹⁵	101.15	87.51	13.64	0.00	0.00	--	--	--	--	--	--	--	--
02/08/01 ¹⁵	101.15	87.09	14.06	0.00	0.00	--	--	--	--	--	--	--	--
05/02/01 ¹⁵	101.15	86.20	14.95	0.00	0.00	--	--	--	--	--	--	--	--
08/28/01 ¹⁵	101.15	85.03	16.12	0.00	0.00	NOT SAMPLED DUE TO INSUFFICIENT WATER				--	--	--	--
11/26/01 ¹⁵	101.15	86.49	14.66	0.00	0.00	--	--	--	--	--	--	--	--
02/22/02 ¹⁵	101.15	90.20	10.95	0.00	0.00	5,300	<10	4.5	79	190	<20	--	--
05/24/02 ¹⁵	101.15	87.52	13.63	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
08/29/02 ¹⁵	101.15	86.75	14.40	0.00	0.00	4,200	<5.0	2.7	80	37	<2.5	--	--
11/29/02	101.15	87.27	13.88	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
02/28/03	101.15	90.68	10.47	0.00	0.00	6,300	<100	11	130	210	<100	--	--
05/30/03	101.15	89.54	11.61	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
08/22/03 ¹⁷	101.15	87.64	13.51	0.00	0.00	5,500	1	5	150	38	<0.5	--	--
11/24-25/03	101.15	87.21	13.94	0.00	0.00	SAMPLED SEMI-ANNUALLY				--	--	--	--
MW-10													
10/27/88	--	--	--	--	--	<500	26	13	<5.0	<5.0	--	--	--
01/05/89	--	89.72	12.64	--	--	<1,000	<0.3	<0.3	<0.3	<0.3	--	--	--
04/06/89	102.36	90.98	11.38	--	--	--	--	--	--	--	--	--	--
06/28/89	102.36	88.72	13.64	--	--	<500	<0.5	<0.5	<0.5	<0.5	--	--	--
10/03/89	102.36	88.51	13.85	--	--	<500	<0.5	<0.5	<0.5	<0.5	--	--	--
01/04/90	102.36	88.61	13.75	--	--	<50	0.5	1.1	<0.5	1.7	--	--	--
04/03/90	102.36	89.50	12.86	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
07/03/90	102.36	88.93	13.43	--	--	--	--	--	--	--	--	--	--

Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-10 (cont)													
11/06/90	102.36	87.54	14.82	--	--	--	--	--	--	--	--	--	--
01/04/91	102.36	88.38	13.98	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
04/03/91	102.36	92.57	9.79	--	--	--	--	--	--	--	--	--	--
07/02/91	102.36	90.08	12.28	--	--	--	--	--	--	--	--	--	--
10/02/91	102.36	87.83	14.53	--	--	--	--	--	--	--	--	--	--
01/02/92	102.36	88.76	13.60	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
04/07/92	102.36	90.53	11.83	--	--	--	--	--	--	--	--	--	--
08/13/92	102.36	88.41	13.95	--	--	--	--	--	--	--	--	--	--
12/03/92	102.36	88.40	13.96	--	--	--	--	--	--	--	--	--	--
03/25/93	102.36	93.91	8.45	--	--	<50	<0.5	<0.5	<0.5	<1.5	--	--	--
06/23/93	102.36	91.03	11.60	--	--	--	--	--	--	--	--	--	--
09/21/93	102.36	89.31	13.32	--	--	--	--	--	--	--	--	--	--
12/02/93	102.36	89.36	13.27	--	--	--	--	--	--	--	--	--	--
03/08/94	102.36	91.51	10.85	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
06/13/94	102.36	--	--	--	--	--	--	--	--	--	--	--	--
10/04/94	102.36	88.46	13.90	--	--	--	--	--	--	--	--	--	--
11/14/94	102.36	90.56	11.80	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
05/15/95	102.36	93.38	8.98	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/04/95	102.36	91.92	10.44	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
11/28/95	102.36	88.81	13.55	--	--	<50	1.6	0.81	<0.5	<0.5	<0.6	--	--
02/20/96	102.36	93.84	8.52	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
05/29/96	102.36	93.16	9.20	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
08/27/96	102.36	90.35	12.01	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
11/22/96	102.36	90.84	11.52	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
02/18/97	102.36	93.87	8.49	--	--	<50	0.7	<0.5	<0.5	<0.5	<5.0	--	--
05/23/97	102.36	91.48	10.88	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
08/04/97	102.36	89.07	13.29	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
11/25/97	102.36	89.06	13.30	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
02/25/98	102.36	94.54	7.82	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
05/21/98	102.36	96.22	6.14	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
08/19/98	102.36	90.62	11.74	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
11/19/98	102.36	88.96	13.40	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--

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Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-10 (cont)													
02/12/99	102.36	93.94	8.42	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
05/10/99	102.36	92.14	10.22	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0/<2.0 ⁷	--	--
09/02/99	102.36	93.13	9.23	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
02/03/00	102.36	INACCESSIBLE		--	--	--	--	--	--	--	--	--	--
05/09/00	102.36	UNABLE TO LOCATE - OVERGROWN VEGETATION/LANDSCAPING						--	--	--	--	--	--
08/02/00	102.36	UNABLE TO LOCATE - OVERGROWN VEGETATION/LANDSCAPING						--	--	--	--	--	--
11/09-10/00	102.36	UNABLE TO LOCATE - OVERGROWN VEGETATION/LANDSCAPING						--	--	--	--	--	--
02/08/01	102.36	UNABLE TO LOCATE - OVERGROWN VEGETATION/LANDSCAPING						--	--	--	--	--	--
05/02/01	102.36	UNABLE TO LOCATE - OVERGROWN VEGETATION/LANDSCAPING						--	--	--	--	--	--
08/28/01	102.36	UNABLE TO LOCATE - OVERGROWN VEGETATION/LANDSCAPING						--	--	--	--	--	--
11/26/01	102.36	UNABLE TO LOCATE - OVERGROWN VEGETATION/LANDSCAPING						--	--	--	--	--	--
02/22/02	102.36	UNABLE TO LOCATE - OVERGROWN VEGETATION/LANDSCAPING						--	--	--	--	--	--
05/24/02	102.36	UNABLE TO LOCATE - OVERGROWN VEGETATION/LANDSCAPING						--	--	--	--	--	--
08/29/02	102.36	88.90	13.46	0.00	0.00	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
11/29/02	102.36	89.30	13.06	0.00	0.00	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
02/28/03	102.36	92.79	9.57	0.00	0.00	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
05/30/03 ¹⁷	102.36	92.37	9.99	0.00	0.00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
08/22/03 ^{15,17}	102.36	90.54	11.82	0.00	0.00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
11/24-25/03 ¹⁷	102.36	89.42	12.94	0.00	0.00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
MW-11													
06/28/89	--	85.64	14.33	--	--	60,000	36,000	13,000	2,500	12,000	--	--	--
10/03/89	--	85.36	14.61	--	--	14,000	4,200	1,400	240	1,300	--	--	--
01/04/90	99.97	85.42	14.55	--	--	82,000	33,000	11,000	2,000	10,000	--	--	--
04/03/90	99.97	86.15	13.82	--	--	78,000	35,000	12,000	2,300	12,000	--	--	--
07/03/90	99.97	85.97	14.00	--	--	140,000	32,000	12,000	2,100	10,000	--	--	--
11/06/90	99.97	84.41	15.56	--	--	--	--	--	--	--	--	--	--
01/04/91	99.97	85.09	14.88	0.30	--	--	--	--	--	--	--	--	--
04/03/91	99.97	89.22	10.75	0.21	--	340,000	29,000	14,000	3,700	24,000	--	--	--
07/02/91	99.97	86.00	13.97	0.02	--	130,000	27,000	14,000	2,200	12,000	--	--	--
10/02/91	99.97	84.37	15.60	--	--	--	--	--	--	--	--	--	--

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-11 (cont)													
01/02/92	99.97	85.46	14.51	--	--	77,000	18,000	14,000	1,900	10,000	--	--	--
04/07/92	99.97	86.84	13.13	--	--	--	--	--	--	--	--	--	--
08/13/92	99.97	82.53	17.04	--	--	--	--	--	--	--	--	--	--
12/03/92	99.57	83.98	15.59	--	--	--	--	--	--	--	--	--	--
03/25/93	99.57	89.51	10.06	--	--	110,000	13,000	2,100	5,900	9,800	--	--	--
03/08/94	99.57	87.87	11.70	--	--	--	--	--	--	--	--	--	--
06/13/94	99.57	87.41	12.16	--	--	--	--	--	--	--	--	--	--
10/04/94	99.57	INACCESSIBLE ³		--	--	--	--	--	--	--	--	--	--
11/14/94	99.57	INACCESSIBLE ³		--	--	--	--	--	--	--	--	--	--
05/15/95	99.57	89.55	10.02	--	--	--	--	--	--	--	--	--	--
08/04/95	99.57	87.75	11.82	--	--	33,000	9,400	3,000	1,800	6,100	--	--	--
11/28/95	99.57	82.85	16.72	--	--	SAMPLED SEMI-ANNUALLY					--	--	--
02/20/96	99.57	89.57	10.00	--	--	22,000	4,500	2,200	560	3,500	<120	--	--
05/29/96	99.57	88.43	11.14	--	--	--	--	--	--	--	--	--	--
08/27/96	99.57	86.44	13.13	--	--	85,000	10,000	6,600	1,500	6,500	260	--	--
11/22/96	99.57	87.47	12.10	--	--	--	--	--	--	--	--	--	--
02/18/97	99.57	90.34	9.23	--	--	42,000	7,100	3,100	830	4,200	510	--	--
05/23/97	99.57	87.29	12.28	--	--	--	--	--	--	--	--	--	--
08/04/97	99.57	86.72	12.85	--	--	79,000	14,000	8,400	2,300	9,900	6,900	--	--
11/25/97	99.57	85.71	13.86	--	--	--	--	--	--	--	--	--	--
02/25/98	99.57	82.55	17.02	--	--	34,000	5,200	2,200	1,200	4,400	5,000/5,300 ⁷	--	--
05/21/98	99.57	88.40	11.17	--	--	--	--	--	--	--	--	--	--
08/19/98	99.57	80.79	18.78	--	--	--	--	--	--	--	--	--	--
11/19/98	99.57	81.22	18.35	--	--	16,000	1,200	<100	690	1,200	540	--	--
02/12/99	99.57	88.15	11.42	--	--	4,200	580	41	220	470	<50	--	--
05/10/99	99.57	87.01	12.56	--	--	--	--	--	--	--	--	--	--
09/02/99	99.57	84.83	14.74	--	--	5,150	496	43.6	150	405	<250	--	--
02/03/00	99.57	87.23	12.34	--	--	14,000	3,400	150	860	1,500	<250	--	--
05/09/00 ¹⁵	99.57	87.24	12.33	0.00	0.00	--	--	--	--	--	--	--	--
08/02/00 ¹⁵	99.57	85.52	14.05	0.00	0.00	7,100 ⁸	2,900	61	<20	1,200	<100	--	--
11/09-10/00 ¹⁵	99.57	84.85	14.72	0.00	0.00	--	--	--	--	--	--	--	--
02/08/01 ¹⁵	99.57	84.68	14.89	0.00	0.00	18,100 ¹¹	4,300	146	743	819	<250	--	--

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-11 (cont)													
05/02/01 ¹⁵	99.57	83.82	15.75	0.00	0.00	--	--	--	--	--	--	--	--
08/28/01 ¹⁵	99.57	82.55	17.02	0.00	0.00	2,900 ¹³	600	35	120	91	100	--	--
11/26/01 ¹⁵	99.57	84.90	14.67	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
02/22/02 ¹⁵	99.57	88.00	11.57	0.00	0.00	7,700	710	61	370	500	<20	--	--
05/24/02 ¹⁵	99.57	84.81	14.76	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
08/29/02 ¹⁵	99.57	84.41	15.16	0.00	0.00	14,000	1,300	82	630	910	<20	--	--
11/29/02 ¹⁵	99.57	84.82	14.75	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
02/28/03	99.57	87.97	11.60	0.00	0.00	5,100	600	95	150	390	<50	--	--
05/30/03	99.57	87.17	12.40	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
08/22/03 ¹⁷	99.57	85.14	14.43	0.00	0.00	25,000	3,000	980	1,200	2,000	7	--	--
11/24-25/03	99.57	84.52	15.05	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
MW-12													
06/28/89	--	85.54	14.10	--	--	55,000	30,000	21,000	2,900	19,000	--	--	--
10/03/89	--	85.34	14.30	--	--	170,000	30,000	23,000	2,700	15,000	--	--	--
01/04/90	99.64	85.29	14.35	--	--	110,000	24,000	19,000	2,300	12,000	--	--	--
04/03/90	99.64	86.05	13.59	--	--	89,000	41,000	28,000	3,300	17,000	--	--	--
07/03/90	99.64	85.87	13.77	--	--	170,000	27,000	20,000	2,200	12,000	--	--	--
11/06/90	99.64	84.45	15.19	0.06	--	110,000	28,000	21,000	2,400	14,000	--	--	--
01/04/91	99.64	--	14.52	--	--	--	--	--	--	--	--	--	--
04/03/91	99.64	--	10.91	--	--	--	--	--	--	--	--	--	--
04/09/91	99.64	--	--	--	--	170,000	39,000	17,000	2,400	14,000	--	--	--
07/02/91	99.64	--	13.51	--	--	--	--	--	--	--	--	--	--
10/02/91	99.64	--	14.93	--	--	170,000	27,000	15,000	2,600	17,000	--	--	--
01/02/92	99.64	85.19	14.45	--	--	--	--	--	--	--	--	--	--
04/07/92	99.64	86.59	13.05	--	--	--	--	--	--	--	--	--	--
08/13/92	99.22	81.83	17.39	--	--	--	--	--	--	--	--	--	--
12/03/92	99.22	83.88	15.34	--	--	2,400,000	19,000	21,000	14,000	110,000	--	--	--
03/25/93	99.22	88.85	10.37	--	--	--	--	--	--	--	--	--	--
06/23/93	99.22	87.01	12.21	--	--	110,000	30,000	19,000	2,000	12,000	--	--	--
03/08/94	99.22	87.27	11.95	--	--	--	--	--	--	--	--	--	--

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-12 (cont)													
06/13/94	99.22	86.87	12.35	--	--	62,000	6,600	6,900	2,400	9,900	--	--	--
10/04/94	99.22	INACCESSIBLE ³		--	--	--	--	--	--	--	--	--	--
11/14/94	99.22	INACCESSIBLE ³		--	--	--	--	--	--	--	--	--	--
05/15/95	99.22	89.16	10.06	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/04/95	99.22	87.62	11.60	--	--	--	--	--	--	--	--	--	--
11/28/95	99.22	82.59	16.63	--	--	110,000	26,000	22,000	2,300	12,000	1,100	--	--
02/20/96	99.22	88.12	11.10	--	--	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
05/29/96	99.22	87.74	11.48	--	--	120,000	18,000	18,000	2,000	11,000	710	--	--
08/27/96	99.22	86.72	12.50	--	--	--	--	--	--	--	--	--	--
11/22/96	99.22	86.30	12.92	--	--	160,000	24,000	22,000	1,900	11,000	980	--	--
02/18/97	99.22	90.02	9.20	--	--	--	--	--	--	--	--	--	--
05/23/97 ⁶	99.22	87.22	12.00	--	--	130,000	27,000	22,000	2,700	15,000	6,200	--	--
08/04/97	99.22	86.64	12.58	--	--	130,000	23,000	28,000	2,700	13,000	11,000	--	--
11/25/97	99.22	85.30	13.92	--	--	290,000 ⁵	53,000	31,000	6,400	30,000	35,000	--	--
02/25/98	99.22	81.01	18.21	--	--	--	--	--	--	--	--	--	--
05/21/98	99.22	88.04	11.18	--	--	150,000	14,000	16,000	1,800	250	66,000/69,000 ⁷	--	--
08/19/98	99.22	80.82	18.40	--	--	--	--	--	--	--	--	--	--
11/19/98	99.22	81.24	17.98	--	--	68,000	15,000	10,000	2,000	8,800	14,000	--	--
02/12/99	99.22	84.27	14.95	--	--	--	--	--	--	--	--	--	--
05/10/99	99.22	86.75	12.47	--	--	72,600	9,920	8,100	1,600	7,480	25,800/32,500 ⁷	--	--
09/02/99	99.22	85.37	13.85	--	--	--	--	--	--	--	--	--	--
2/3/000	99.22	86.77	12.45	--	--	--	--	--	--	--	--	--	--
05/09/00 ¹⁵	99.22	86.96	12.26	0.00	0.00	27,000 ⁸	7,800	4,000	<100	6,600	6,100	--	--
08/02/00 ¹⁵	99.22	85.37	13.85	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
11/09-10/00 ¹⁵	99.22	84.73	14.49	0.00	0.00	46,400	9,550	5,470	1,240	7,660	5,150	--	--
02/08/01 ¹⁵	99.22	84.43	14.79	0.00	0.00	--	--	--	--	--	--	--	--
05/02/01 ¹⁵	99.22	83.49	15.73	0.00	0.00	94,000	8,720	3,630	<2,500	8,800	3,410	--	--
08/28/01 ¹⁵	99.22	82.16	17.06	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
11/26/01 ¹⁵	99.22	84.27	14.95	0.00	0.00	5,000	770	72	150	470	230	--	--
02/22/02 ¹⁵	99.22	87.43	11.79	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
05/24/02 ¹⁵	99.22	84.42	14.80	0.00	0.00	52,000	5,200	4,500	1,800	8,300	990	--	--
08/29/02 ¹⁵	99.22	84.24	14.98	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--

Table I
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-12 (cont)													
11/29/02	99.22	84.69	14.53	0.00	0.00	40,000	4,900	3,800	1,100	7,000	1,000	--	--
02/28/03	99.22	87.81	11.41	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
05/30/03 ¹⁷	99.22	86.97	12.25	0.00	0.00	46,000	4,300	3,100	1,400	7,500	670	--	--
08/22/03	99.22	85.16	14.06	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
11/24-25/03 ¹⁷	99.22	84.62	14.60	0.00	0.00	45,000	5,200	3,100	1,400	8,400	480	--	--
MW-13													
06/28/89	--	85.25	13.22	--	--	54,000	12,000	10,000	1,900	15,000	--	--	--
10/03/89	--	84.93	13.54	--	--	120,000	10,000	10,000	2,300	15,000	--	--	--
01/04/90	98.47	84.83	13.64	--	--	87,000	6,800	10,000	2,000	12,000	--	--	--
04/03/90	98.47	85.52	12.95	--	--	53,000	12,000	14,000	2,900	17,000	--	--	--
07/03/90	98.47	85.42	13.05	--	--	90,000	8,400	11,000	2,000	11,000	--	--	--
11/06/90	98.47	84.35	14.12	--	--	--	--	--	--	--	--	--	--
01/04/91	98.47	84.42	14.05	--	--	72,000	5,500	12,000	2,300	12,000	--	--	--
04/03/91	98.47	87.06	11.41	--	--	--	--	--	--	--	--	--	--
07/02/91	98.47	85.30	13.17	--	--	120,000	12,000	13,000	2,500	14,000	--	--	--
10/02/91	98.47	84.23	14.24	--	--	--	--	--	--	--	--	--	--
01/02/92	98.47	84.34	14.13	0.03	--	--	--	--	--	--	--	--	--
04/07/92	98.47	85.41	13.06	--	--	--	--	--	--	--	--	--	--
08/13/92	98.47	84.21	14.26	--	--	84,000	7,400	11,000	2,600	13,000	--	--	--
12/03/92	98.47	83.65	14.82	--	--	--	--	--	--	--	--	--	--
03/25/93	98.47	87.74	10.73	--	--	97,000	5,200	2,500	7,200	12,000	--	--	--
06/23/93	98.47	86.50	11.97	--	--	--	--	--	--	--	--	--	--
09/21/93	98.47	85.39	13.08	--	--	80,000	7,600	9,000	2,900	14,000	--	--	--
12/02/93	98.47	85.02	13.45	--	--	--	--	--	--	--	--	--	--
03/08/94	98.47	86.72	11.75	--	--	78,000	5,300	7,600	2,600	10,000	--	--	--
06/13/94	98.47	86.17	12.30	--	--	--	--	--	--	--	--	--	--
10/04/94	98.47	84.29	14.18	--	--	39,000	2,300	2,700	850	4,600	--	--	--
11/14/94	98.47	85.85	12.62	--	--	--	--	--	--	--	--	--	--
05/15/95	98.47	88.54	9.93	--	--	--	--	--	--	--	--	--	--
08/04/95	98.47	87.39	11.08	--	--	47,000	7,700	10,000	2,900	10,000	--	--	--

TABLE 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-13 (cont)													
11/28/95	98.47	85.52	12.95	--	--	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
02/20/96	98.47	88.61	9.86	--	--	59,000	5,500	5,500	2,900	8,800	<120	--	--
05/29/96	98.47	88.17	10.30	--	--	--	--	--	--	--	--	--	--
08/27/96	98.47	86.50	11.97	--	--	65,000	3,500	2,800	2,200	6,900	200	--	--
11/22/96	98.47	86.76	11.71	--	--	--	--	--	--	--	--	--	--
02/18/97	98.47	89.31	9.16	--	--	69,000	4,500	4,100	2,500	7,900	310	--	--
05/23/97	98.47	86.91	11.56	--	--	--	--	--	--	--	--	--	--
08/04/97	98.47	86.32	12.15	--	--	61,000	5,700	5,100	3,600	9,200	230	--	--
11/25/97	98.47	85.35	13.12	--	--	--	--	--	--	--	--	--	--
02/25/98	98.47	87.96	10.51	--	--	42,000	3,800	1,000	2,000	5,000	<250	--	--
05/21/98	98.47	89.12	9.35	--	--	--	--	--	--	--	--	--	--
08/19/98	98.47	84.47	14.00	--	--	57,000	1,600	440	1,900	4,500	<250	--	--
11/19/98	98.47	INACCESSIBLE		--	--	--	--	--	--	--	--	--	--
02/12/99	98.47	INACCESSIBLE		--	--	--	--	--	--	--	--	--	--
03/26/99	98.47	89.17	9.30	--	--	30,800	473	101	1,430	2,800	106	--	--
05/10/99	98.47	87.74	10.73	--	--	--	--	--	--	--	--	--	--
09/02/99	98.47	87.48	10.99	--	--	87,000	2,610	19,100	1,510	12,000	<2,500	--	--
02/03/00	98.47	88.02	10.45	--	--	2,900	200	16	200	340	68	--	--
05/09/00	98.47	87.95	10.52	0.00	0.00	--	--	--	--	--	--	--	--
08/02/00	98.47	86.69	11.78	0.00	0.00	1,600 ⁸	15	4.1	7.3	160	<13	--	--
11/09-10/00	98.47	86.18	12.29	0.00	0.00	--	--	--	--	--	--	--	--
02/08/01	98.47	85.76	12.71	0.00	0.00	--	--	--	--	--	--	--	--
05/02/01	98.47	84.98	13.49	0.00	0.00	--	--	--	--	--	--	--	--
08/28/01	98.47	DRY	--	--	--	--	--	--	--	--	--	--	--
11/26/01	98.47	DRY	--	--	--	--	--	--	--	--	--	--	--
02/22/02	98.47	INACCESSIBLE - CAR PARKED OVER WELL											
05/24/02	98.47	86.06	12.41	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
08/29/02	98.47	85.57	12.90	0.00	0.00	NOT SAMPLED DUE TO INSUFFICIENT WATER			--	--	--	--	--
11/29/02	98.47	85.86	12.61	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
02/28/03	98.47	88.48	9.99	0.00	0.00	340	<5.0	0.94	0.52	5.0	<10	--	--

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-13 (cont)													
05/30/03	98.47	INACCESSIBLE - VEHICLE PARKED OVER WELL					--	--	--	--	--	--	--
08/22/03 ^{17,18}	98.47	86.47	12.00	0.00	0.00	770	10	2	8	2	<0.5	--	--
11/24-25/03	98.47	85.85	12.62	0.00	0.00	SAMPLED SEMI-ANNUALLY			--	--	--	--	--
MW-14													
08/29/90	--	78.29	21.39	--	--	970	4.0	2.0	0.7	2.0	--	--	1.0
11/06/90	--	78.06	21.62	--	--	920	10	10	4.0	9.0	--	--	--
01/04/91	99.68	77.99	21.69	--	--	1,000	<0.5	4.0	2.6	4.2	--	--	--
04/03/91	99.68	80.15	19.53	--	--	1,200	380	6.0	7.0	18	--	--	--
07/02/91	99.68	78.75	20.93	--	--	460	27	1.0	1.2	1.0	--	--	--
10/02/91	99.68	78.16	21.52	--	--	480	6.7	0.8	1.4	1.8	--	--	--
01/02/92	99.68	78.25	21.43	--	--	1,100	2.4	1.5	6.2	18	--	--	--
04/07/92	99.68	78.32	21.36	--	--	290	<0.5	1.4	<0.5	1.2	--	--	--
08/13/92	99.68	78.61	21.07	--	--	370	10	1.2	<0.5	0.9	--	--	--
12/03/92	99.68	78.01	21.67	--	--	230	1.3	<0.5	<0.5	<0.5	--	--	--
03/25/93	99.68	80.65	19.03	--	--	390	57	2.1	1.3	1.7	--	--	--
06/23/93	99.68	79.74	19.94	--	--	4,400	460	220	16	62	--	--	--
09/21/93	99.68	79.03	20.65	--	--	680	8.7	1.7	3.2	12	--	--	--
12/02/93	99.68	78.63	21.05	--	--	900	0.8	7.0	3.0	7.0	--	--	--
03/08/94	99.68	79.63	20.05	--	--	1,700	2.4	7.7	5.6	14	--	--	--
06/13/94	99.68	79.47	20.21	--	--	750	0.8	8.0	3.2	5.7	--	--	--
10/04/94	99.68	78.98	20.70	--	--	130	3.4	5.4	<0.5	2.0	--	--	--
11/14/94	99.68	79.68	20.00	--	--	9,900	620	1,600	120	920	--	--	--
05/15/95	99.68	81.19	18.49	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/04/95	99.68	80.30	19.38	--	--	1,000	170	58	6.6	20	--	--	--
11/28/95	99.68	79.35	20.33	--	--	1,500	300	72	65	190	<6.0	--	--
02/20/96	99.68	82.72	16.96	--	--	70	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
05/29/96	99.68	81.10	18.58	--	--	1,600	170	39	5.0	21	6.3	--	--
08/27/96	99.68	79.89	19.79	--	--	80	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
11/22/96	99.68	80.13	19.55	--	--	620	49	13	7.2	22	210	--	--
02/18/97	99.68	82.37	17.31	--	--	190	14	9.6	3.1	15	<5.0	--	--

TABLE A
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-14 (cont)													
05/23/97	99.68	80.12	19.56	--	--	130	18	16	3.4	17	<5.0	--	--
08/04/97	99.68	79.80	19.88	--	--	200	8.3	7.9	4.1	10	<5.0	--	--
11/25/97	99.68	79.91	19.77	--	--	530	42	62	10	37	<5.0	--	--
02/25/98	99.68	85.40	14.28	--	--	220	26	10	7.0	22	23	--	--
05/21/98	99.68	81.90	17.78	--	--	8,300	1,400	48	29	59	<50	--	--
08/19/98	99.68	80.35	19.33	--	--	7,900	610	390	51	300	<250	--	--
11/19/98	99.68	79.40	20.28	--	--	87	1.0	<0.5	<0.5	<0.5	27	--	--
02/12/99	99.68	81.36	18.32	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
05/10/99	99.68	80.57	19.11	--	--	1,930	254	41.2	6.71	23	76.4/<5.0 ⁷	--	--
09/02/99	99.68	79.57	20.11	--	--	647	38.1	1.45	<0.5	1.32	10.8	--	--
02/03/00	99.68	80.80	18.88	--	--	UNABLE TO SAMPLE		--	--	--	--	--	--
05/09/00	99.68	80.99	18.69	0.00	0.00	370 ⁹	9.7	2.2	1.3	1.5	13	--	--
08/02/00	99.68	79.99	19.69	0.00	0.00	80 ¹⁰	1.2	1.8	0.85	1.2	3.1	--	--
11/09-10/00	99.68	79.49	20.19	0.00	0.00	92.3	<0.500	0.921	<0.500	<0.500	<2.50	--	--
02/08/01	99.68	79.01	20.67	0.00	0.00	728 ¹¹	33.7	<5.00	<5.00	<5.00	<25.0	--	--
05/02/01	99.68	79.68	20.00	0.00	0.00	338	3.28	<5.00	<5.00	<5.00	1.35	--	--
08/28/01	99.68	79.06	20.62	0.00	0.00	83 ¹⁴	1.7	0.64	<0.50	<0.50	2.6	--	--
11/26/01	99.68	79.13	20.55	0.00	0.00	240	2.8	<0.50	<0.50	<1.5	<2.5	--	--
02/22/02	99.68	80.41	19.27	0.00	0.00	4,000	460	140	55	51	<20	--	--
05/24/02	99.68	79.98	19.70	0.00	0.00	5,800	580	360	61	340	<20	--	--
08/29/02	99.68	79.16	20.52	0.00	0.00	360	14	0.98	<0.50	2.3	<2.5	--	--
11/29/02	99.68	78.98	20.70	0.00	0.00	1,400	32	1.8	0.62	2.6	<2.5	--	--
02/28/03	99.68	80.41	19.27	0.00	0.00	320	<5.0	0.64	<0.50	<1.5	<10	--	--
05/30/03 ¹⁷	99.68	80.58	19.10	0.00	0.00	560	150	7	4	8	<0.5	--	--
08/22/03 ¹⁷	99.68	79.96	19.72	0.00	0.00	690	<0.5	<0.5	<0.5	0.6	<0.5	--	--
11/24-25/03 ¹⁷	99.68	79.10	20.58	0.00	0.00	52	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
MW-15													
08/29/90	--	79.48	16.58	--	--	2,000	26	2.0	72	110	--	--	--
11/06/90	--	78.63	17.43	--	--	1,300	40	5.0	45	63	--	--	--
01/04/91	96.06	79.69	16.37	--	--	1,700	46	2.8	58	86	--	--	--

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-15 (cont)													
04/03/91	96.06	83.60	12.46	--	--	2,100	74	0.8	44	85	--	--	--
07/02/91	96.06	79.53	16.53	--	--	1,700	39	<0.5	35	46	--	--	--
10/02/91	96.06	78.73	17.33	--	--	1,100	50	<0.5	40	33	--	--	--
01/02/92	96.06	79.60	16.46	--	--	1,300	51	<0.5	30	30	--	--	--
04/07/92	96.06	81.36	14.70	--	--	2,600	98	<5.0	64	36	--	--	--
08/13/92	96.06	79.34	16.72	--	--	510	55	<0.5	35	2.8	--	--	--
12/03/92	96.06	78.63	17.43	--	--	1,000	64	0.9	22	4.4	--	--	--
03/25/93	96.06	82.73	13.33	--	--	1,300	86	52	0.7	7.7	--	--	--
06/23/93	96.06	80.83	15.23	--	--	7,300	34	<0.5	85	160	--	--	--
09/21/93	96.06	79.74	16.32	--	--	1,500	39	<0.5	32	33	--	--	--
12/02/93	96.06	79.49	16.57	--	--	990	28	4.0	8.0	10	--	--	--
03/08/94	96.06	81.45	14.61	--	--	3,400	44	4.0	28	53	--	--	--
10/04/94	96.06	79.58	16.48	--	--	310	11	10	2.2	12	--	--	--
11/14/94	96.06	81.86	14.20	--	--	450	27	2.4	2.2	4.2	--	--	--
05/15/95	96.06	82.68	13.38	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/04/95	96.06	81.15	14.91	--	--	<50	0.6	<0.5	<0.5	0.8	--	--	--
11/28/95	96.06	79.94	16.12	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.60	--	--
02/20/96	96.06	85.08	10.98	--	--	1,600	25	0.5	20	38	16	--	--
05/29/96 ⁴	96.06	--	--	--	--	--	--	--	--	--	--	--	--
08/27/96	96.06	80.62	15.44	--	--	80	<0.5	<0.5	<0.5	0.7	<5.0	--	--
11/22/96	96.06	81.57	14.49	--	--	1,500	14	<0.5	6.1	12	7.2	--	--
02/18/97	96.06	83.89	12.17	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
05/23/97	96.06	81.03	15.03	--	--	130	20	9.7	0.9	1.5	<5.0	--	--
08/04/97	96.06	80.58	15.48	--	--	60	1.3	<0.5	<0.5	1.1	<5.0	--	--
11/25/97	96.06	80.67	15.39	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
02/25/98	96.06	89.53	6.53	--	--	4,300	27	<10	37	46	<50	--	--
05/21/98	96.06	83.09	12.97	--	--	430	25	<0.5	2.3	1.2	<2.5	--	--
08/19/98	96.06	81.16	14.90	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
11/19/98	96.06	80.01	16.05	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
02/12/99	96.06	INACCESSIBLE		--	--	--	--	--	--	--	--	--	--
05/10/99	96.06	81.67	14.39	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0/<2.0 ⁷	--	--
09/02/99	96.06	80.53	15.53	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--

Table 1
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Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-15 (cont)													
02/03/00	96.06	83.82	12.24	--	--	480	2.5	<1.0	2.6	1.4	<5.0	--	--
05/09/00	96.06	82.41	13.65	0.00	0.00	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--
08/02/00	96.06	81.04	15.02	0.00	0.00	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--
11/09-10/00	96.06	80.54	15.52	0.00	0.00	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	--	--
02/08/01	96.06	80.36	15.70	0.00	0.00	92.6 ¹¹	0.894	<0.500	<0.500	<0.500	<2.50	--	--
05/02/01	96.06	81.44	14.62	0.00	0.00	<50.0 ¹²	0.830	<5.00	<5.00	5.94	<0.500	--	--
08/28/01	96.06	80.15	15.91	0.00	0.00	<50	<0.50	0.71	<0.50	<0.50	<2.5	--	--
11/26/01	96.06	80.65	15.41	0.00	0.00	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
02/22/02	96.06	82.51	13.55	0.00	0.00	99	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
05/24/02	96.06	81.45	14.61	0.00	0.00	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
08/29/02	96.06	INACCESSIBLE - VEHICLE PARKED OVER WELL					--	--	--	--	--	--	--
11/29/02	96.06	INACCESSIBLE - VEHICLE PARKED OVER WELL					--	--	--	--	--	--	--
02/28/03	96.06	81.80	14.26	0.00	0.00	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
05/30/03 ¹⁷	96.06	81.86	14.20	0.00	0.00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
08/22/03 ¹⁷	96.06	81.00	15.06	0.00	0.00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
11/24-25/03	96.06	INACCESSIBLE - VEHICLE PARKED OVER WELL					--	--	--	--	--	--	--
MW-16													
08/29/90	--	77.26	20.89	--	--	11,000	6,000	51	1,100	20	--	--	--
11/06/90	--	76.88	21.27	--	--	15,000	6,300	340	1,300	540	--	--	--
01/04/91	98.15	76.52	21.63	--	--	16,000	6,800	820	1,300	1,500	--	--	--
04/03/91	98.15	78.83	19.32	--	--	45,000	7,300	2,200	1,800	4,900	--	--	--
07/02/91	98.15	77.47	20.68	--	--	30,000	6,400	530	1,500	1,800	--	--	--
10/02/91	98.15	76.97	21.18	--	--	24,000	4,600	450	1,400	1,600	--	--	--
01/02/92	98.15	76.85	21.30	--	--	20,000	4,700	240	1,200	1,100	--	--	--
04/07/92	98.15	77.96	20.19	--	--	40,000	5,000	980	1,100	2,100	--	--	--
08/13/92	98.15	77.38	20.77	--	--	17,000	4,500	240	860	530	--	--	--
12/03/92	98.15	76.71	21.44	--	--	39,000	4,600	410	1,100	2,200	--	--	--
03/25/93	98.15	79.32	18.83	--	--	39,000	5,500	1,400	690	2,000	--	--	--
06/23/93	98.15	78.43	19.72	--	--	29,000	6,600	1,200	1,400	3,700	--	--	--
09/21/93	98.15	77.77	20.38	--	--	36,000	6,300	340	1,200	1,800	--	--	--

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Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-16 (cont)													
12/02/93	98.15	77.31	20.84	--	--	28,000	5,600	230	900	820	--	--	--
03/08/94	98.15	77.88	20.27	--	--	35,000	6,500	760	1,000	1,300	--	--	--
10/04/94	98.15	77.57	20.58	--	--	39,000	9,700	680	1,300	3,300	--	--	--
11/14/94	98.15	78.03	20.12	--	--	26,000	5,500	640	690	1,800	--	--	--
05/15/95	98.15	79.99	18.16	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/04/95	98.15	78.85	19.30	--	--	23,000	6,200	1,900	1,500	4,500	--	--	--
11/28/95	98.15	77.73	20.42	--	--	38,000	6,200	1,700	1,800	5,700	<120	--	--
02/20/96	98.15	81.75	16.40	--	--	46,000	6,600	2,200	2,400	7,300	<250	--	--
05/29/96	98.15	79.61	18.54	--	--	54,000	6,300	1,600	2,200	7,900	<250	--	--
08/27/96	98.15	78.73	19.42	--	--	45,000	4,100	260	1,600	2,800	<250	--	--
11/22/96	98.15	78.79	19.36	--	--	36,000	3,500	120	1,400	1,500	260	--	--
02/18/97	98.15	80.93	17.22	--	--	62,000	5,800	1,300	2,200	8,900	160	--	--
05/23/97	98.15	78.67	19.48	--	--	32,000	4,000	370	1,900	2,900	<250	--	--
08/04/97	98.15	78.43	19.72	--	--	26,000	3,300	280	2,100	1,500	200	--	--
11/25/97	98.15	78.42	19.73	--	--	38,000	3,900	370	2,400	3,000	250	--	--
02/25/98	98.15	84.13	14.02	--	--	60,000	6,400	1,400	2,200	13,000	<1,000	--	--
05/21/98	98.15	80.24	17.91	--	--	71,000	5,100	1,200	2,300	8,200	560	--	--
08/19/98	98.15	78.90	19.25	--	--	40,000	2,300	740	1,700	2,700	<250	--	--
11/19/98	98.15	77.85	20.30	--	--	51,000	2,900	<200	2,200	6,300	<1,000	--	--
02/12/99	98.15	80.24	17.91	--	--	11,000	1,100	81	810	470	130	--	--
05/10/99	98.15	79.02	19.13	--	--	52,300	4,100	587	2,430	8,800	708/<66.7 ⁷	--	--
09/02/99	98.15	78.16	19.99	--	--	26,600	1,400	1,540	1,480	2,940	<500	--	--
02/03/00	98.15	79.50	18.65	--	--	47,000	5,600	620	3,000	14,000	450	--	--
05/09/00	99.15	80.58	18.57	0.00	0.00	15,000 ⁸	990	100	800	2,000	410	--	--
08/02/00	99.15	79.57	19.58	0.00	0.00	10,000 ⁸	1,100	95	1,000	2,300	<130	--	--
11/09-10/00	99.15	79.13	20.02	0.00	0.00	5,580	334	49.3	530	256	33.6	--	--
02/08/01	99.15	78.56	20.59	0.00	0.00	25,400 ¹¹	1,340	99.9	1,380	2,700	350	--	--
05/02/01	99.15	79.44	19.71	0.00	0.00	45,600	2,130	83.6	<2,500	7,460	13.3	--	--
08/28/01	99.15	INACCESSIBLE - PAVED OVER			--	--	--	--	--	--	--	--	--
11/26/01	99.15	INACCESSIBLE - PAVED OVER			--	--	--	--	--	--	--	--	--
02/22/02	99.15	80.05	19.10	0.00	0.00	32,000	1,300	110	1,800	6,100	<50	--	--
05/24/02	99.15	79.65	19.50	0.00	0.00	13,000	590	29	830	1,000	<20	--	--

TABLE 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (<i>ft.</i>)	GWE (<i>msl</i>)	DTW (<i>ft.</i>)	SPHT (<i>ft.</i>)	SPH REMOVED (<i>gallons</i>)	TPH-G (<i>ppb</i>)	B (<i>ppb</i>)	T (<i>ppb</i>)	E (<i>ppb</i>)	X (<i>ppb</i>)	MTBE (<i>ppb</i>)	EDB (<i>ppb</i>)	DCE (<i>ppb</i>)
MW-16 (cont)													
08/29/02	99.15	78.94	20.21	0.00	0.00	9,800	500	28	670	430	<10	--	--
11/29/02	99.15	78.66	20.49	0.00	0.00	23,000	1,600	110	1,200	3,400	<10	--	--
02/28/03	99.15	79.97	19.18	0.00	0.00	20,000	1,300	90	1,000	3,300	<100	--	--
05/30/03 ¹⁷	99.15	80.34	18.81	0.00	0.00	47,000	2,100	160	2,000	8,100	<3	--	--
08/22/03 ¹⁷	99.15	79.59	19.56	0.00	0.00	25,000	1,300	94	1,200	3,200	2	--	--
11/24-25/03 ¹⁷	99.15	78.77	20.38	0.00	0.00	13,000	660	47	800	950	4	--	--
MW-17													
08/13/92	--	82.70	23.30	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
12/03/92	--	81.26	24.74	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
03/25/93	106.00	83.86	22.14	--	--	<50	<0.5	<0.5	<0.5	1.0	--	--	--
06/23/93	106.00	82.98	23.02	--	--	<50	<0.5	<0.5	<0.5	<0.8	--	--	--
09/21/93	106.00	82.91	23.09	--	--	<50	<0.5	--	--	--	--	--	--
12/02/93	106.00	82.63	23.37	--	--	--	--	--	--	--	--	--	--
03/08/94	106.00	83.17	22.83	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
06/13/94	106.00	83.38	22.62	--	--	<50	1.2	1.1	<0.5	0.9	--	--	--
10/04/94	106.00	83.00	23.00	--	--	62	8.0	2.9	0.7	3.1	--	--	--
11/14/94	106.00	82.97	23.03	--	--	550	22	120	8.9	84	--	--	--
05/15/95	106.00	84.28	21.72	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/04/95	106.00	83.63	22.37	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.6	--	--
11/28/95	106.00	83.03	22.97	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
02/20/96	106.00	84.22	21.78	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
05/29/96	106.00	84.28	21.72	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
08/27/96	106.00	83.57	22.43	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
11/22/96	106.00	83.18	22.82	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
02/18/97	106.00	84.69	21.31	--	--	140	34	11	1.6	7.7	71	--	--
05/23/97	106.00	83.75	22.25	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
08/04/97	106.00	83.47	22.53	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
11/25/97	106.00	83.09	22.91	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
02/25/98	106.00	86.37	19.63	--	--	<50	3.8	3.3	1.3	4.2	3.5	--	--
05/21/98	106.00	95.39	10.61	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--

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Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-17 (cont)													
08/19/98	106.00	84.26	21.74	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
11/19/98	106.00	83.64	22.36	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
02/12/99	106.00	84.16	21.84	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
05/10/99	106.00	84.55	21.45	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0/<2.0 ⁷	--	--
09/02/99	106.00	83.54	22.46	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
02/03/00	106.00	83.81	22.19	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
05/09/00	106.00	84.21	21.79	0.00	0.00	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--
08/02/00	106.00	83.76	22.24	0.00	0.00	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--
11/09-10/00	106.00	83.43	22.57	0.00	0.00	<1,000	<10.0	<10.0	<10.0	<10.0	<50.0	--	--
02/08/01	106.00	83.18	22.82	0.00	0.00	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	--	--
05/02/01	106.00	83.52	22.48	0.00	0.00	55.8	<0.500	<5.00	<5.00	<5.00	<0.500	--	--
08/28/01	106.00	83.05	22.95	0.00	0.00	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--
11/26/01	106.00	82.92	23.08	0.00	0.00	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
02/22/02	106.00	83.97	22.03	0.00	0.00	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
05/24/02	106.00	83.84	22.16	0.00	0.00	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
08/29/02	106.00	82.27	23.73	0.00	0.00	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
11/29/02	106.00	83.02	22.98	0.00	0.00	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
02/28/03	106.00	84.02	21.98	0.00	0.00	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
05/30/03 ¹⁷	106.00	84.15	21.85	0.00	0.00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
08/22/03 ¹⁷	106.00	83.52	22.48	0.00	0.00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
11/24-25/03 ¹⁷	106.00	83.16	22.84	0.00	0.00	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
MW-18													
08/04/97	--	--	16.60	--	--	66,000	8,600	6,100	2,800	12,000	190	--	--
11/25/97	--	--	16.22	--	--	90,000	8,500	6,000	3,400	14,000	1,200	--	--
02/25/98	--	--	12.75	--	--	60,000	6,600	4,000	2,300	11,000	<120	--	--
05/21/98	--	--	15.24	--	--	70,000	4,700	1,800	1,700	9,600	880	--	--
08/19/98	--	--	16.34	--	--	93,000	4,900	1,700	2,100	9,000	<250	--	--
11/19/98	--	--	17.15	--	--	62,000	5,600	2,300	2,700	12,000	1,800	--	--
02/12/99	--	--	16.08	--	--	48,000	3,700	2,400	1,900	8,800	1,900	--	--
05/10/99	--	--	14.98	--	--	54,700	3,250	1,770	1,900	7,570	1,270/<66.7 ⁷	--	--

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21995 Foothill Boulevard
Hayward, California

WELL ID/ DATE	TOC (ft.)	GWE (msl)	DTW (ft.)	SPHT (ft.)	SPH REMOVED (gallons)	TPH-G (ppb)	B (ppb)	T (ppb)	E (ppb)	X (ppb)	MTBE (ppb)	EDB (ppb)	DCE (ppb)
MW-18 (cont)													
09/02/99	--	--	15.86	--	--	34,400	2,120	1,230	1,420	5,460	<500	--	--
02/03/00	--	--	15.91	--	--	46,000	2,500	1,100	1,900	8,800	<1,000	--	--
05/09/00	--	--	13.93	0.00	0.00	30,000 ⁸	1,400	410	440	4,700	1,300	--	--
08/02/00	--	--	15.25	0.00	0.00	22,000 ⁸	1,200	480	1,400	5,800	<130	--	--
11/09-10/00	--	--	15.85	0.00	0.00	29,500	1,130	474	2,020	6,270	333	--	--
02/08/01	--	--	16.27	0.00	0.00	61,600 ¹¹	1,700	<500	2,690	8,110	<2,500	--	--
05/02/01	--	--	16.15	0.00	0.00	57,800	1,040	104	<2,500	6,670	20.1	--	--
08/28/01	--	--	17.03	0.00	0.00	32,000 ¹³	1,200	370	2,100	5,600	790	--	--
11/26/01	--	--	16.64	0.00	0.00	41,000	780	320	1,800	5,600	<200	--	--
02/22/02	--	--	14.93	0.00	0.00	44,000	950	270	1,300	3,900	<100	--	--
05/24/02	--	--	15.92	0.00	0.00	36,000	1,200	460	1,600	4,800	<50	--	--
08/29/02	--	--	16.56	0.00	0.00	37,000	970	520	1,900	4,800	<50	--	--
11/29/02	--	--	16.51	0.00	0.00	36,000	710	350	1,900	5,300	<20	--	--
02/28/03	--	--	14.53	0.00	0.00	19,000	350	130	270	2,500	<200	--	--
05/30/03 ¹⁷	--	--	14.56	0.00	0.00	29,000	390	110	890	2,700	<3	--	--
08/22/03 ¹⁷	--	--	14.70	0.00	0.00	17,000	270	67	600	1,700	<1	--	--
11/24-25/03 ¹⁷	--	--	16.39	0.00	0.00	23,000	320	39	980	2,100	<1	--	--
P-1													
08/13/92	--	76.41	10.02	--	--	--	--	--	--	--	--	--	--
12/03/92	--	75.63	10.80	--	--	--	--	--	--	--	--	--	--
03/25/93	86.43	77.48	8.95	--	--	--	--	--	--	--	--	--	--
EQUIPMENT BLANK													
01/05/89	--	--	--	--	--	<1,000	<0.3	<0.3	<0.3	<0.3	--	--	--
03/08/94	--	--	--	--	--	<50	1.0	1.4	<0.5	1.5	--	--	--

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TRIP BLANK													
01/05/89	--	--	--	--	--	<1,000	<0.3	<0.3	<0.3	<0.3	--	--	--
10/03/89	--	--	--	--	--	<500	<0.5	<0.5	<0.5	<0.5	--	--	--
01/04/90	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
04/03/90	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
07/03/90	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
11/06/90	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
01/04/91	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
04/03/91	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
07/02/91	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
10/02/91	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
01/02/92	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
04/07/92	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/13/92	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
12/03/92	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
03/25/93	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<1.5	--	--	--
06/23/93	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
09/21/93	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.8	--	--	--
12/02/93	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
03/08/94	--	--	--	--	--	<50	0.6	0.8	<0.5	0.6	--	--	--
06/13/94	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
10/04/94	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
11/14/94	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
05/15/95	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
08/04/95	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
11/28/95	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.60	--	--
02/20/96	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
05/29/96	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
08/27/96	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
11/22/96	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
02/18/97	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
05/23/97	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
08/04/97	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--

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TRIP BLANK (cont)													
11/25/97	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
02/25/98	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
05/21/98	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
08/19/98	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
11/19/98	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
02/12/99	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.0	--	--
03/26/99	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
05/10/99	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--
09/02/99	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
02/03/00	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--
05/09/00	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--
08/02/00	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--
11/09-10/00	--	--	--	--	--	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	--	--
02/08/01	--	--	--	--	--	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	--	--
05/02/01	--	--	--	--	--	<50.0	<0.500	<5.00	<5.00	<5.00	<0.500	--	--
08/28/01	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--
QA													
11/26/01	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
02/22/02	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
05/24/02	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
08/29/02	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
11/29/02	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
02/28/03	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.5	<2.5	--	--
05/30/03 ¹⁷	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
08/22/03 ¹⁷	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
11/24-25/03 ¹⁷	--	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<0.5	--	--

Table 1
Groundwater Monitoring Data and Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

EXPLANATIONS:

Groundwater monitoring data and laboratory analytical results prior to May 9, 2000, were compiled from reports prepared by Blaine Tech Services, Inc.

TOC = Top of Casing	SPH = Separate Phase Hydrocarbons	MTBE = Methyl tertiary butyl ether
(ft.) = Feet	TPH-G = Total Petroleum Hydrocarbons as Gasoline	EDB = Ethylene Dibromide
GWE = Groundwater Elevation	B = Benzene	DCE = 1,2-Dichloroethane
(msl) = Mean sea level	T = Toluene	(ppb) = Parts per billion
DTW = Depth to Water	E = Ethyl benzene	-- = Not Measured/Not Analyzed
SPHT = Separate Phase Hydrocarbons Thickness	X = Xylenes	QA = Quality Assurance/Trip Blank

- 1 Repeat analysis.
- 2 Estimated thickness.
- 3 Well inaccessible due to downhole equipment.
- 4 The TPH as Gasoline value was 99,000 ppb when MTBE is not included in the calculation.
- 5 Laboratory report indicates results were taken from both a low level and a diluted analysis.
- 6 The TPH as Gasoline value was 125,000 ppb when MTBE is not included in the calculation.
- 7 Confirmation run.
- 8 Laboratory report indicates gasoline C6-C12.
- 9 Laboratory report indicates gasoline C6-C12 + unidentified hydrocarbons <C6.
- 10 Laboratory report indicates gasoline C6-C12 + unidentified hydrocarbons C6-C12.
- 11 Laboratory report indicates weathered gasoline C6-C12.
- 12 Laboratory report indicates analyte was initially analyzed within hold time; however, due to instrument carryover, the sample was reanalyzed outside the method specified hold time to confirm the carryover.
- 13 Laboratory report indicates gasoline C6-C10.
- 14 Laboratory report indicates unidentified hydrocarbons C6-C10.
- 15 Connected to remediation system.
- 16 TOC was altered during removal of extraction system; unable to determine GWE. Do not use in contouring.
- 17 BTEX and MTBE by EPA Method 8260.
- 18 Hose in well.

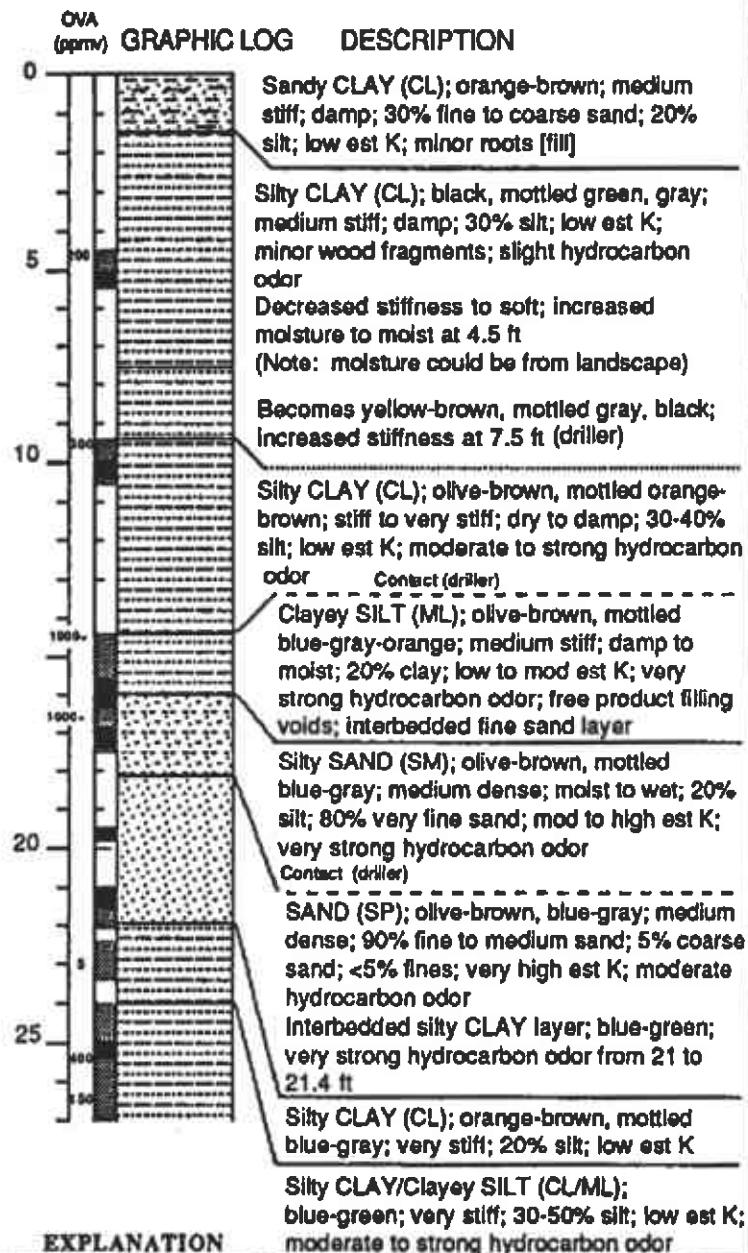
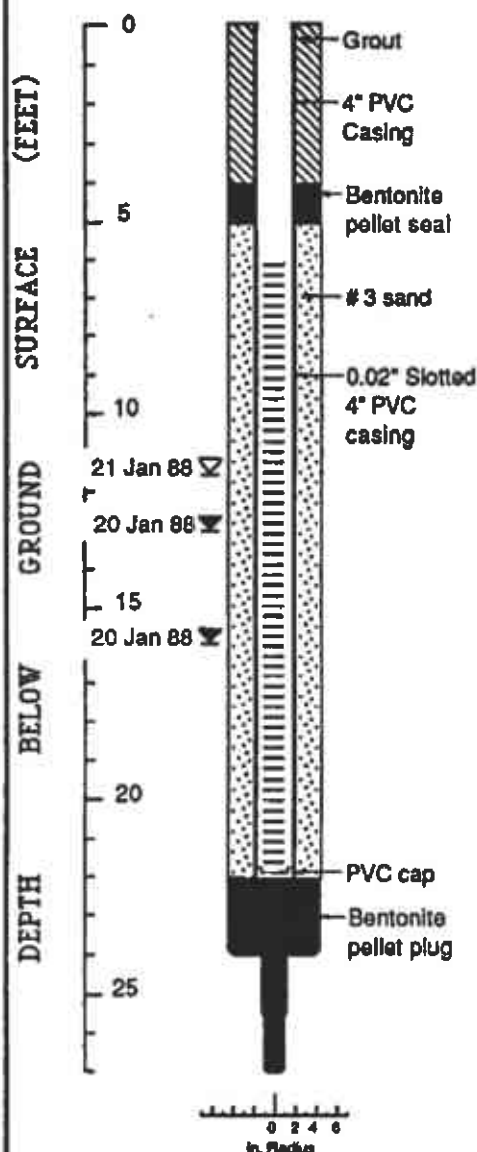
C A M B R I A



ATTACHMENT E

Boring Logs

OVA (ppm)	GRAPHIC LOG	DESCRIPTION
0	100	100
1	90	90
2	80	80
3	70	70
4	60	60
5	50	50
6	40	40
7	30	30
8	20	20
9	10	10
10	0	0

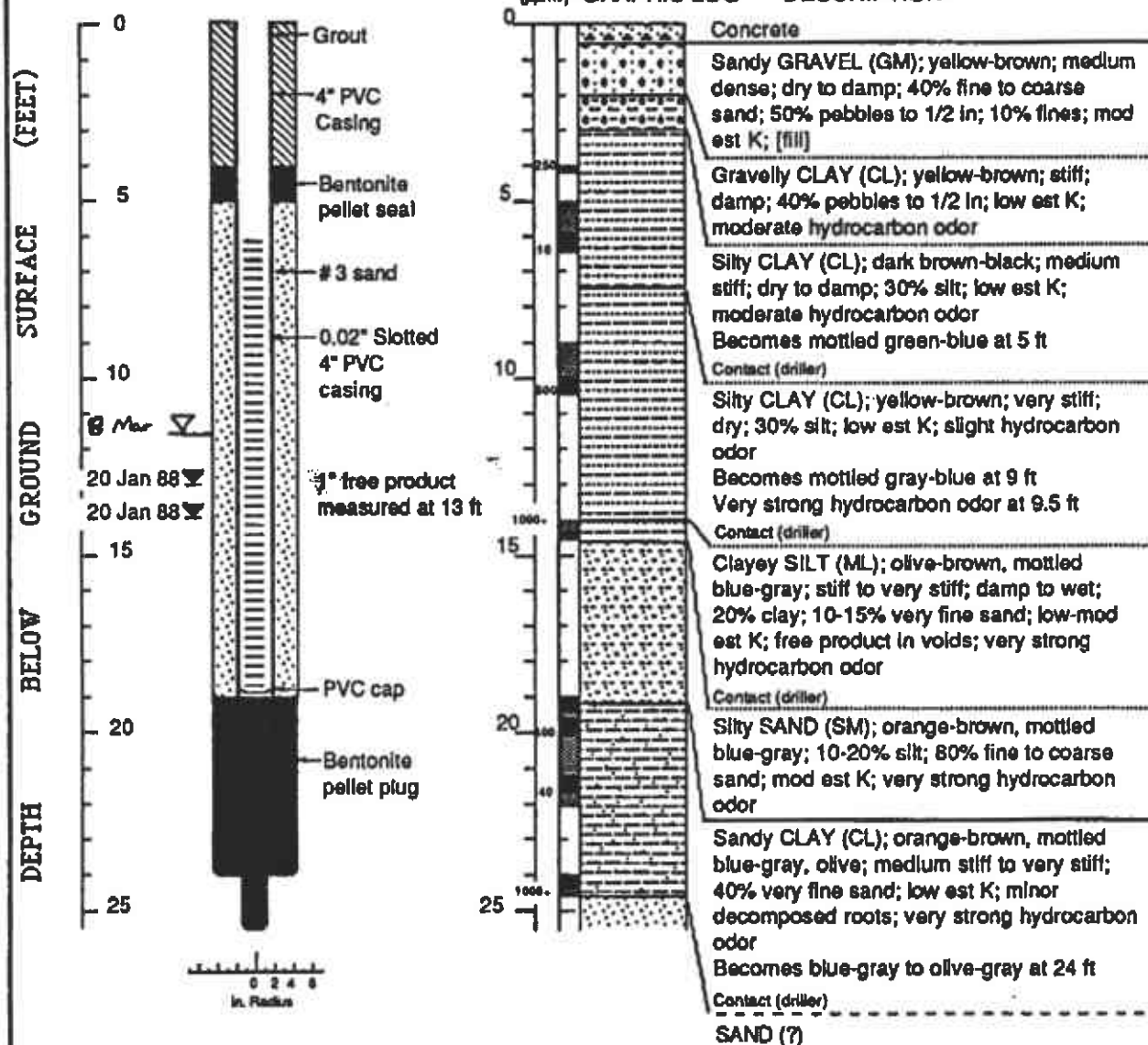


 Water level during drilling (date)
 Water Level (date)
 Contact (dotted where approx.)
 Uncertain Contact
 Location of recovered drive sample
 Location of drive sample sealed for chemical analysis
 Grab sample
 K = Estimated Permeability (hydraulic conductivity)

Logged by: Todd Daniels
 Supervisor: Richard Welss; EG 1112
 Drilling Company: Exploration Geoservices, Inc.
 Driller: Dave Yeager/Brian Swartz
 Drilling Method: Hollow stem auger
 Dates Drilled: 1-20-88
 Well Head Completion: Locking stovepipe & Christy box
 Type of sampler: Split barrel

Chevron Facility # 0260
Hayward, CA

OVA (parent)	GRAPHIC LOG	DESCRIPTION
1	1	1
2	2	2
3	3	3
4	4	4
5	5	5
6	6	6
7	7	7
8	8	8
9	9	9
10	10	10
11	11	11
12	12	12
13	13	13
14	14	14
15	15	15
16	16	16
17	17	17
18	18	18
19	19	19
20	20	20
21	21	21
22	22	22
23	23	23
24	24	24
25	25	25
26	26	26
27	27	27
28	28	28
29	29	29
30	30	30
31	31	31
32	32	32
33	33	33
34	34	34
35	35	35
36	36	36
37	37	37
38	38	38
39	39	39
40	40	40
41	41	41
42	42	42
43	43	43
44	44	44
45	45	45
46	46	46
47	47	47
48	48	48
49	49	49
50	50	50
51	51	51
52	52	52
53	53	53
54	54	54
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58	58	58
59	59	59
60	60	60
61	61	61
62	62	62
63	63	63
64	64	64
65	65	65
66	66	66
67	67	67
68	68	68
69	69	69
70	70	70
71	71	71
72	72	72
73	73	73
74	74	74
75	75	75
76	76	76
77	77	77
78	78	78
79	79	79
80	80	80
81	81	81
82	82	82
83	83	83
84	84	84
85	85	85
86	86	86
87	87	87
88	88	88
89	89	89
90	90	90
91	91	91
92	92	92
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96	96	96
97	97	97
98	98	98
99	99	99
100	100	100

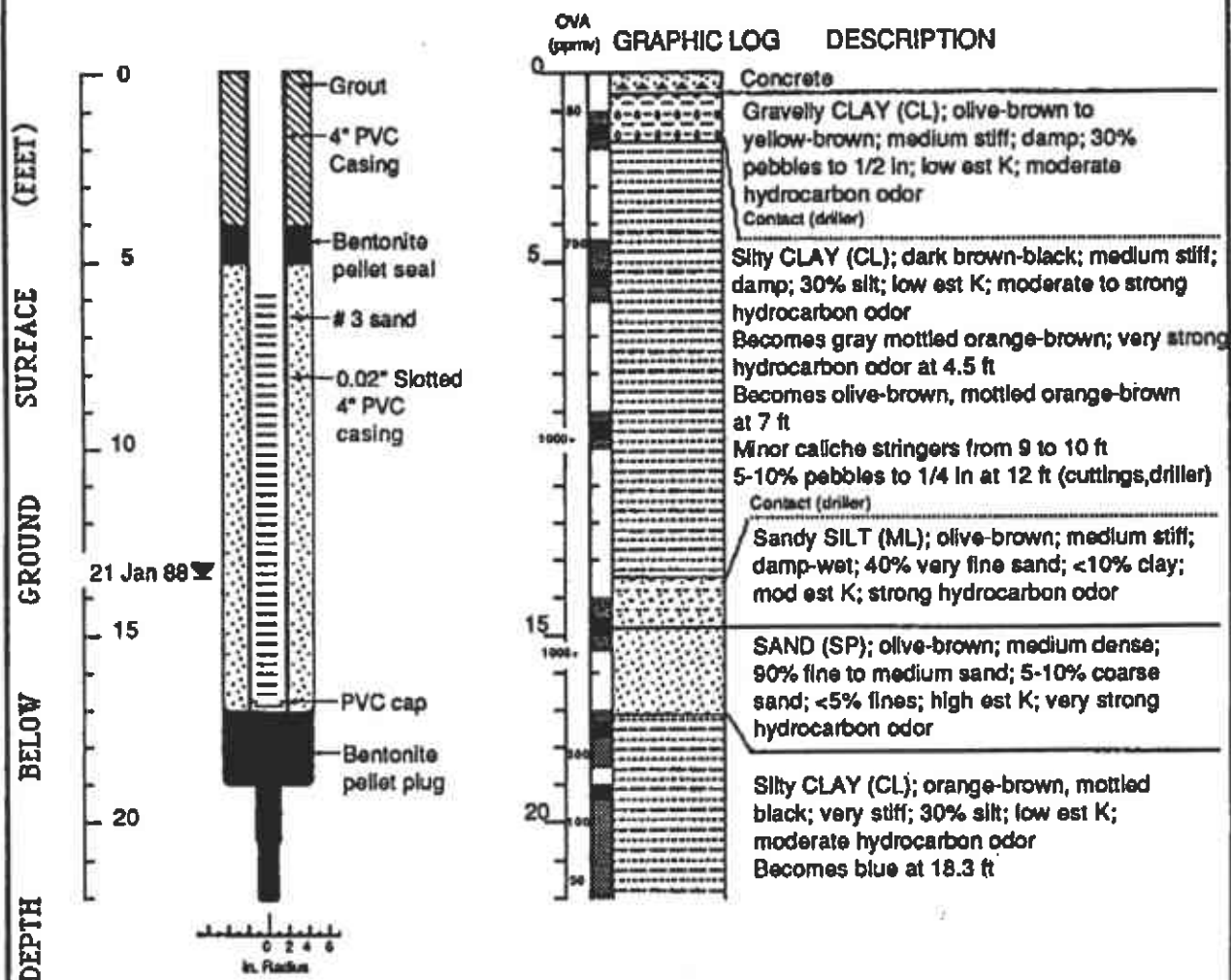


 Water level during drilling (date)
 Water Level (date)
 Contact (dotted where approx.)
 Uncertain Contact
 Location of recovered drive sample
 Location of drive sample sealed for chemical analysis
 Grab sample
 K = Estimated Permeability (hydraulic conductivity)

Logged by: Todd Daniels
 Supervisor: Richard Weiss; EG 1112
 Drilling Company: Exploration Geoservices, Inc.
 Driller: Dave Yeager/Brian Swartz
 Drilling Method: Hollow stem auger
 Dates Drilled: 1-20-88
 Well Head Completion: Locking stovepipe & Christy box
 Type of sampler: Split barrel

Chevron Facility # 0260
Hayward, CA

WELL MW-6

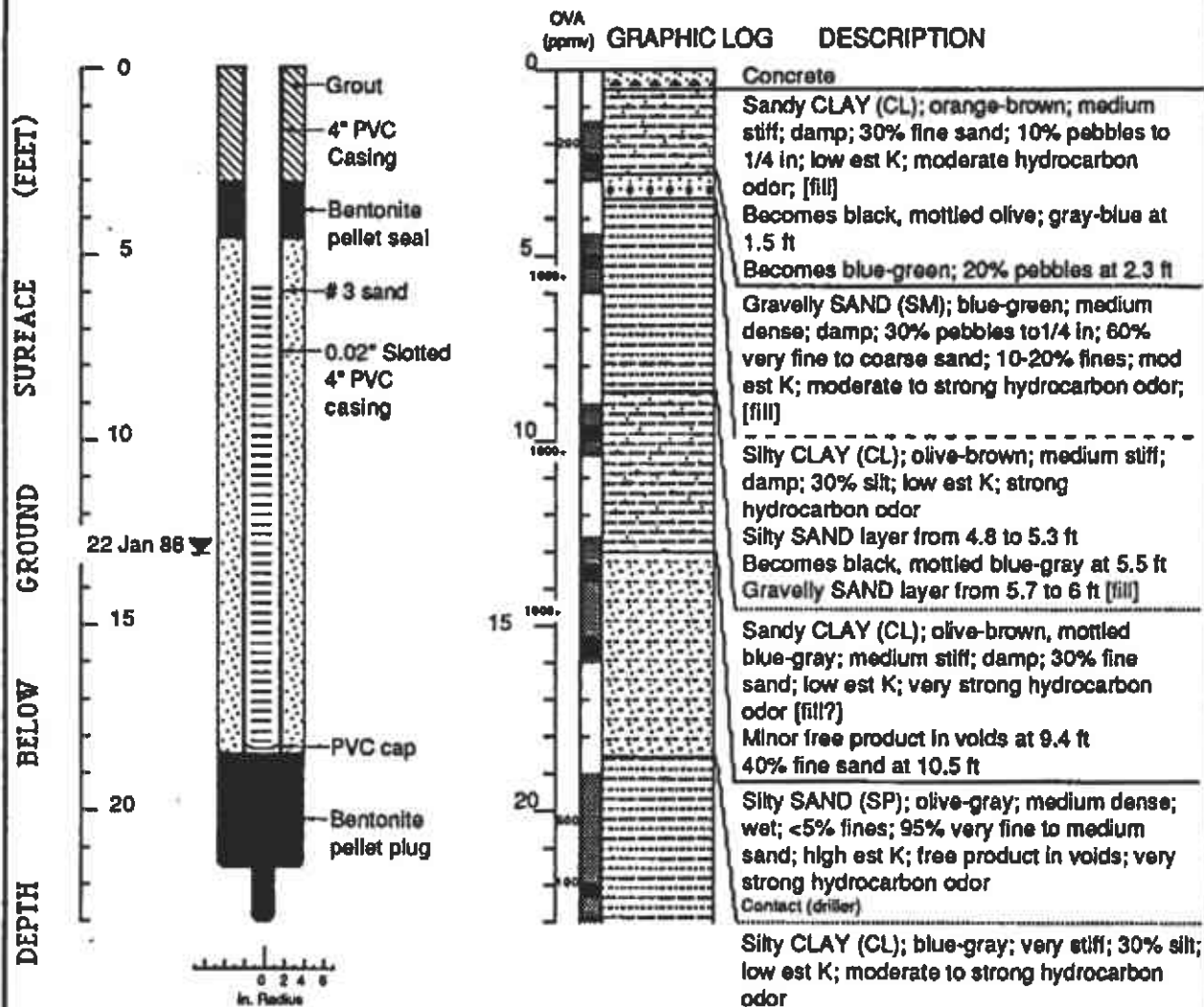


EXPLANATION

- Water level during drilling (date)
- Water Level (date)
- Contact (dotted where approx.)
- Uncertain Contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Grab sample
- K = Estimated Permeability (hydraulic conductivity)**

Logged by: Todd Daniels
 Supervisor: Richard Weiss; EG 1112
 Drilling Company: Exploration Geoservices, Inc.
 Driller: Dave Yeager/Brian Swartz
 Drilling Method: Hollow stem auger
 Dates Drilled: 1-21-88
 Well Head Completion: Locking stovepipe & Christy box
 Type of sampler: Split barrel

WELL MW-7



EXPLANATION

-  Water level during drilling (date)
 Water Level (date)
 Contact (dotted where approx.)
 Uncertain Contact
 Location of recovered drive sample
 Location of drive sample sealed for chemical analysis
 Grab sample
 K = Estimated Permeability (hydraulic conductivity)

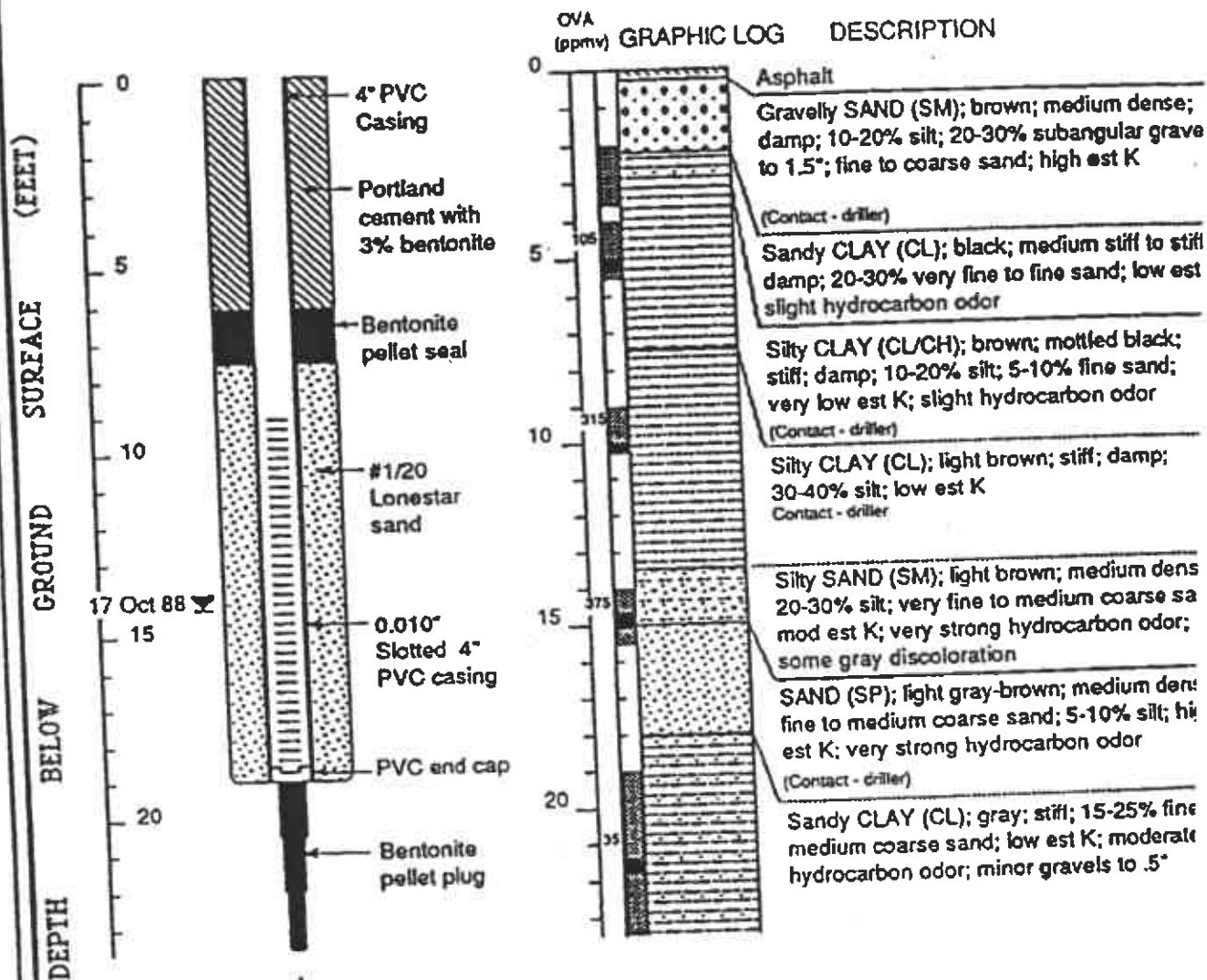
Logged by: Todd Daniels
 Supervisor: Richard Weiss; EG 1112
 Drilling Company: Exploration Geoservices, Inc.
 Driller: Dave Yeager/Brian Swartz
 Drilling Method: Hollow stem auger
 Dates Drilled: 1-22-88
 Well Head Completion: Locking stovepipe & Christy box
 Type of sampler: Split barrel

moniton

WEISS ASSOCIATES

W

WELL MW-8 (BH-A)



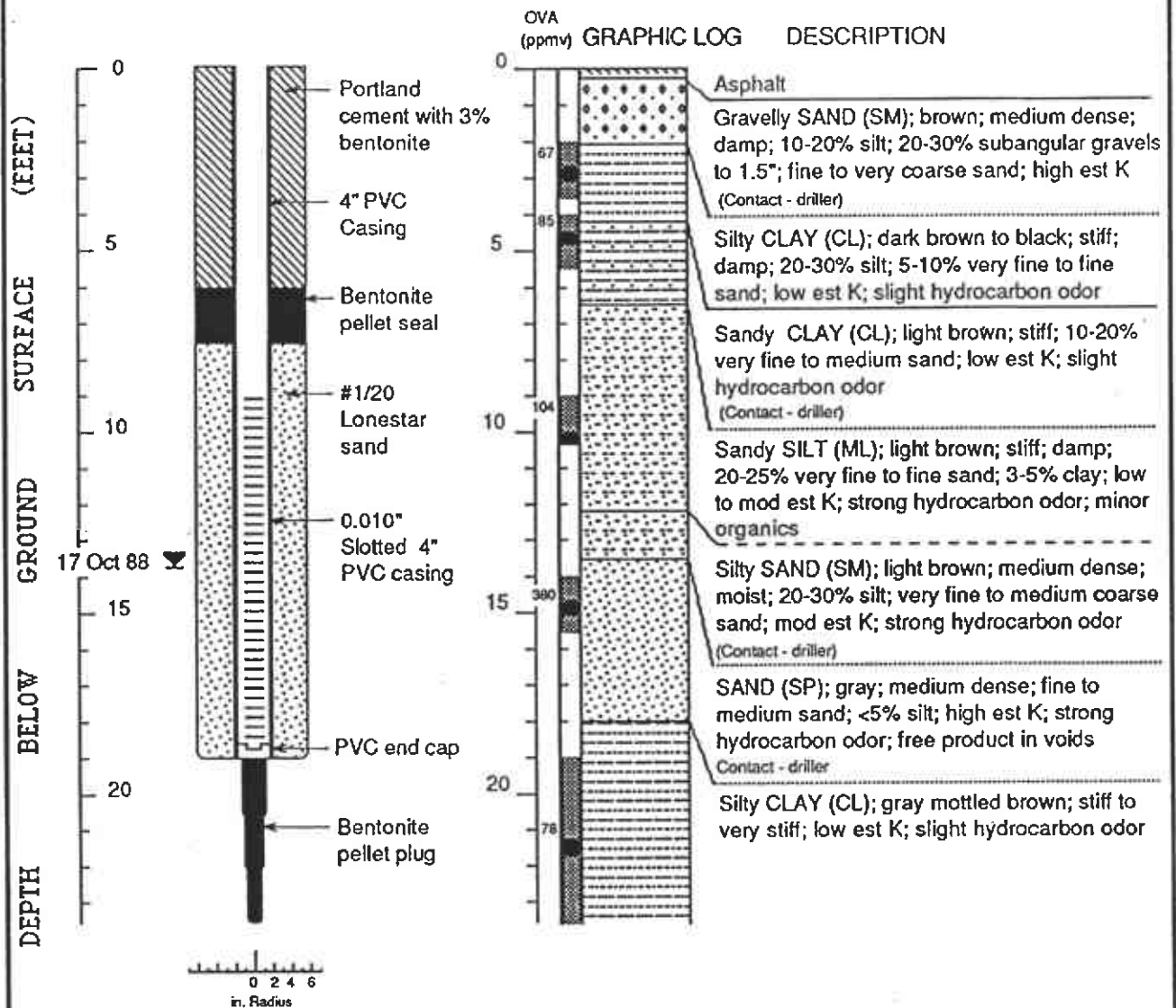
EXPLANATION

- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated permeability (hydraulic conductivity)

Logged by: Bob Agnew
 Supervisor: Richard Weiss; EG 1112
 Drilling Company: Exploration Geoservices, San Jose
 Driller: Dave Yeager
 Drilling Method: Hollow stem auger
 Dates Drilled: 17 October 88
 Well Head Completion: Locking stovepipe with traffic-rat
 Type of sampler: Split barrel (1.4", 2.0", 2.5" ID)

Well Construction and Boring Log - Well MW-8 (BH-A) Chevron Service Station :
 Hayward, California

WELL MW-9 (BH-B)



EXPLANATION

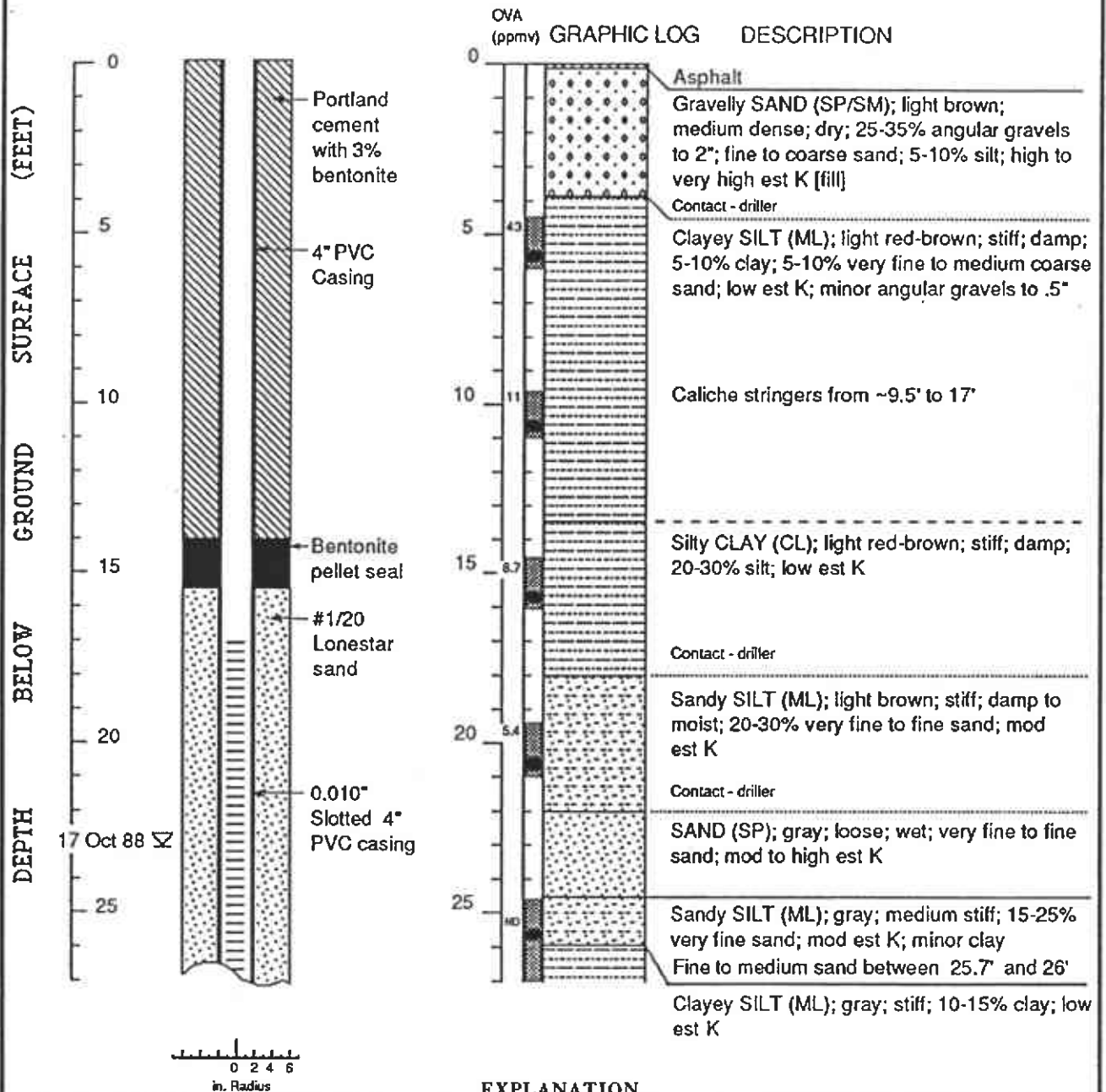
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated permeability (hydraulic conductivity)

Logged by: Bob Agnew
 Supervisor: Richard Weiss; EG 1112
 Drilling Company: Exploration Geoservices, San Jose, CA
 Driller: Dave Yeager
 Drilling Method: Hollow stem auger
 Dates Drilled: 17 October 88
 Well Head Completion: Locking stovepipe with traffic-rated vault
 Type of sampler: Split barrel (1.4\", 2.0\", 2.5\" ID)

Well Construction and Boring Log - Well MW-9 (BH-B)

Chevron Service Station #90260
Hayward, California

WELL MW-10 (BH-C)



EXPLANATION

- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated permeability (hydraulic conductivity)

Logged by: Bob Agnew
 Supervisor: Richard Weiss; EG 1112
 Drilling Company: Exploration Geoservices, San Jose, CA
 Driller: Dave Yeager
 Drilling Method: Hollow stem auger
 Dates Drilled: 17 October 88
 Well Head Completion: Locking stovepipe with traffic-rated vault
 Type of sampler: Split barrel (1.4", 2.0", 2.5" ID)

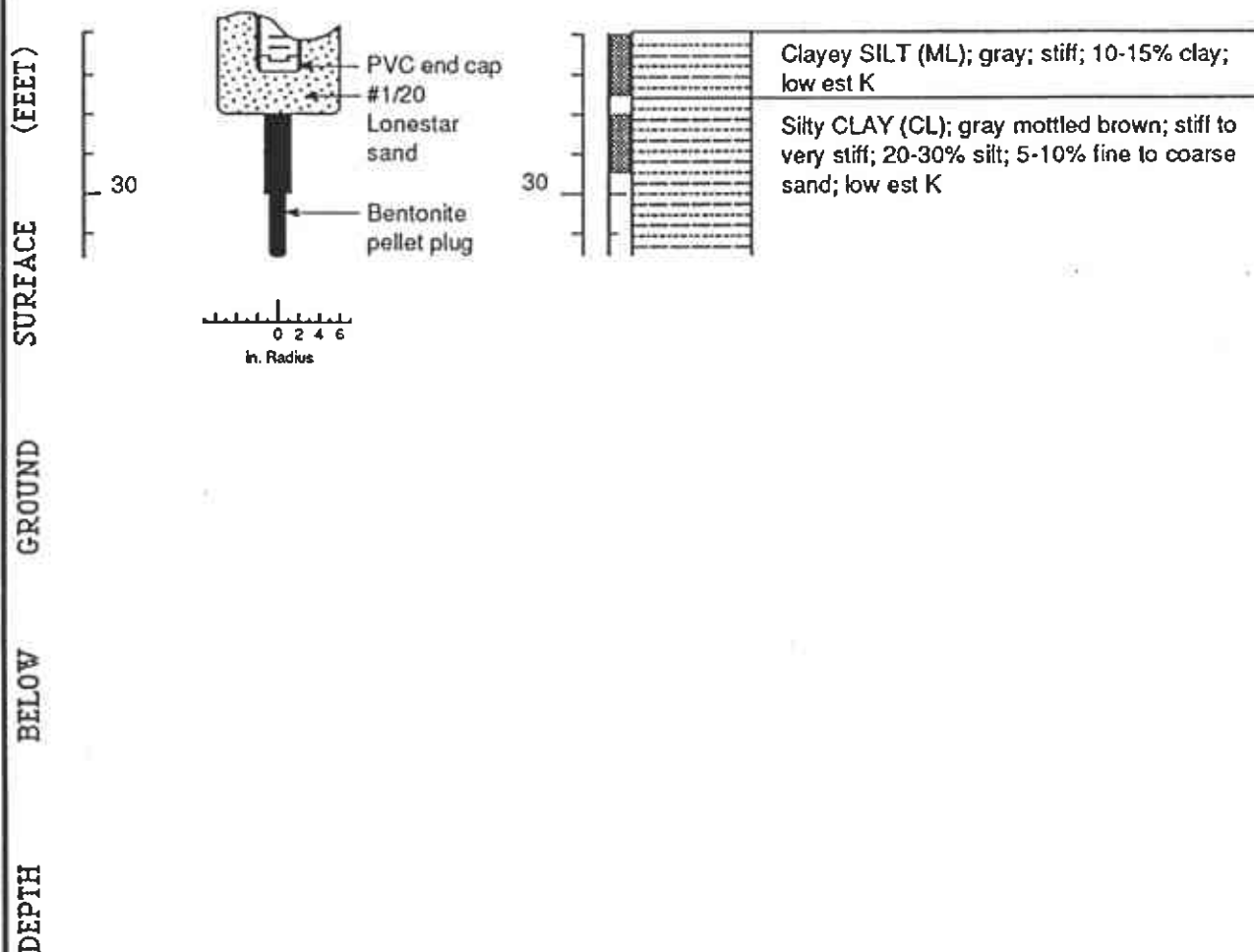
Well Construction and Boring Log - Well MW-10 (BH-C) Chevron Service Station #90260
 Hayward, California

WELL MW-10 (BH-C) (cont.)

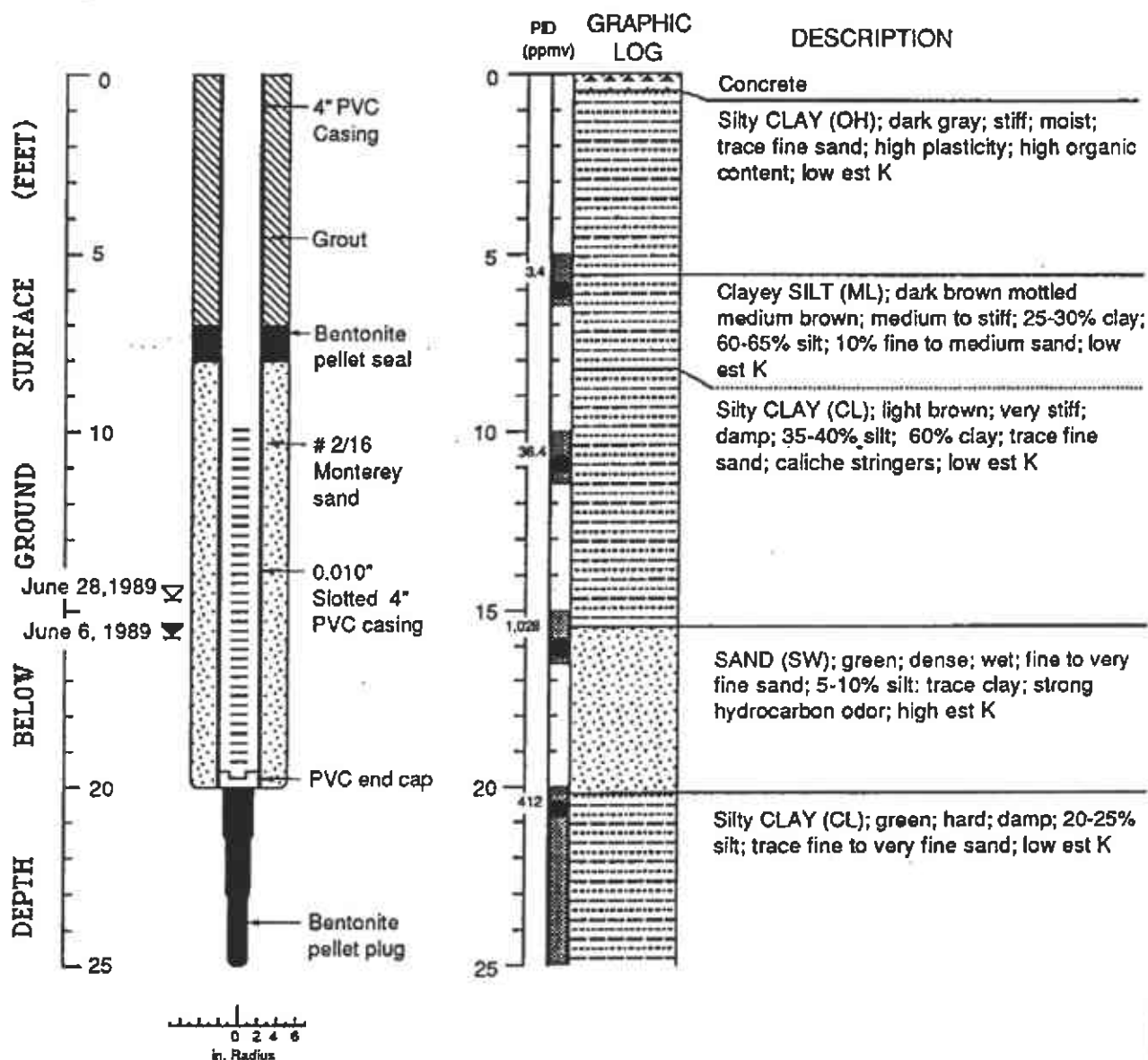
OVA
(ppmv)

GRAPHIC LOG

DESCRIPTION



WELL MW-11 (BH-A)



EXPLANATION

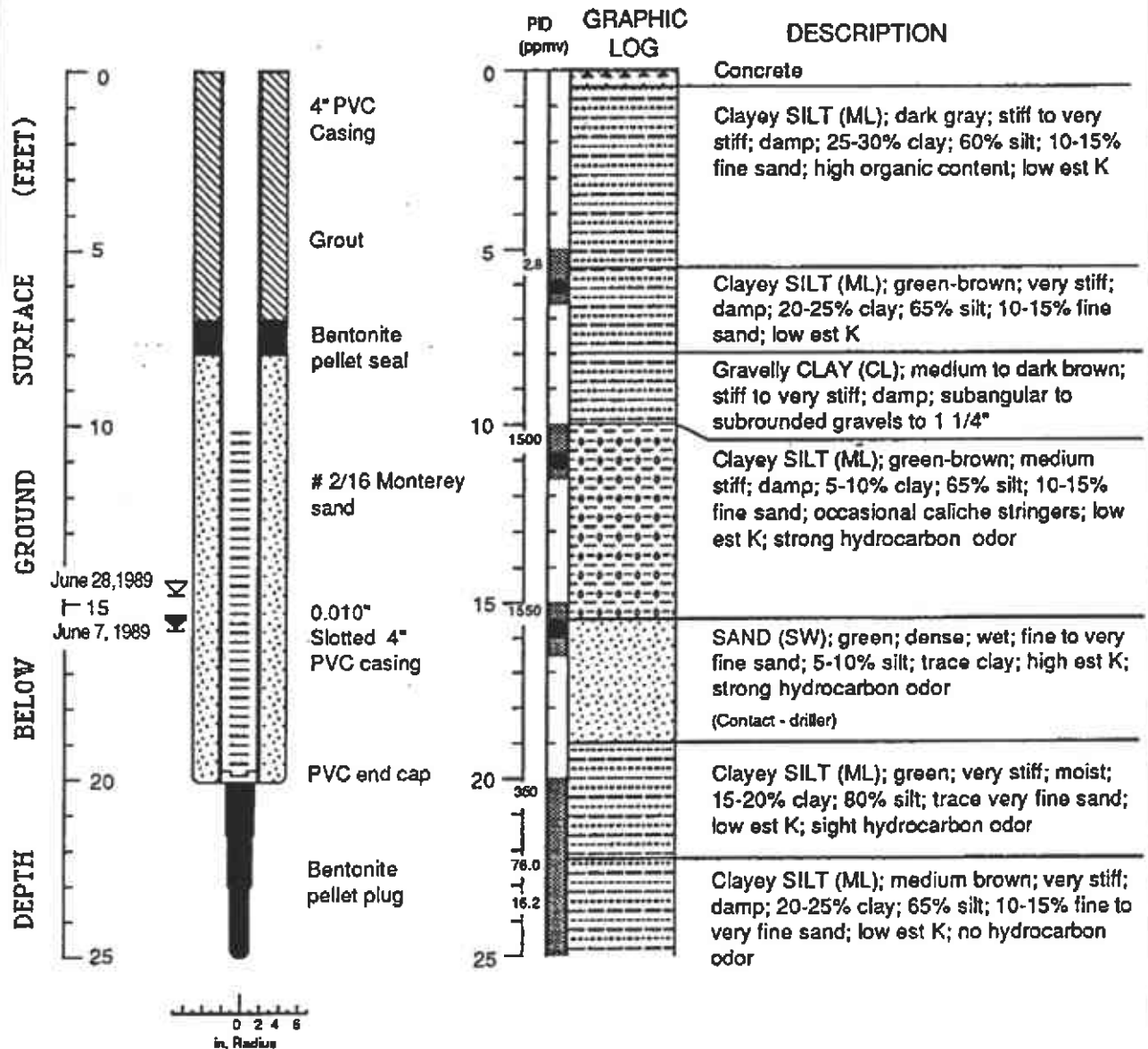
- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated permeability (hydraulic conductivity)

Logged by: Jim Carnody
 Supervisor: Richard Weiss; EG 1112
 Drilling Company: HEW Drilling Co.
 Driller: Tomas Jaime
 Drilling Method: Hollow stem auger
 Dates Drilled: June 6, 1989
 Well Head Completion: Locking stovepipe in concrete vault
 Type of sampler: Split barrel (1.4", 2.0", 2.5" ID)

Well Construction and Boring Log - Well MW-11 (BH-A)

Chevron Service Station #90260
Hayward, California

WELL MW-12 (BH-B)



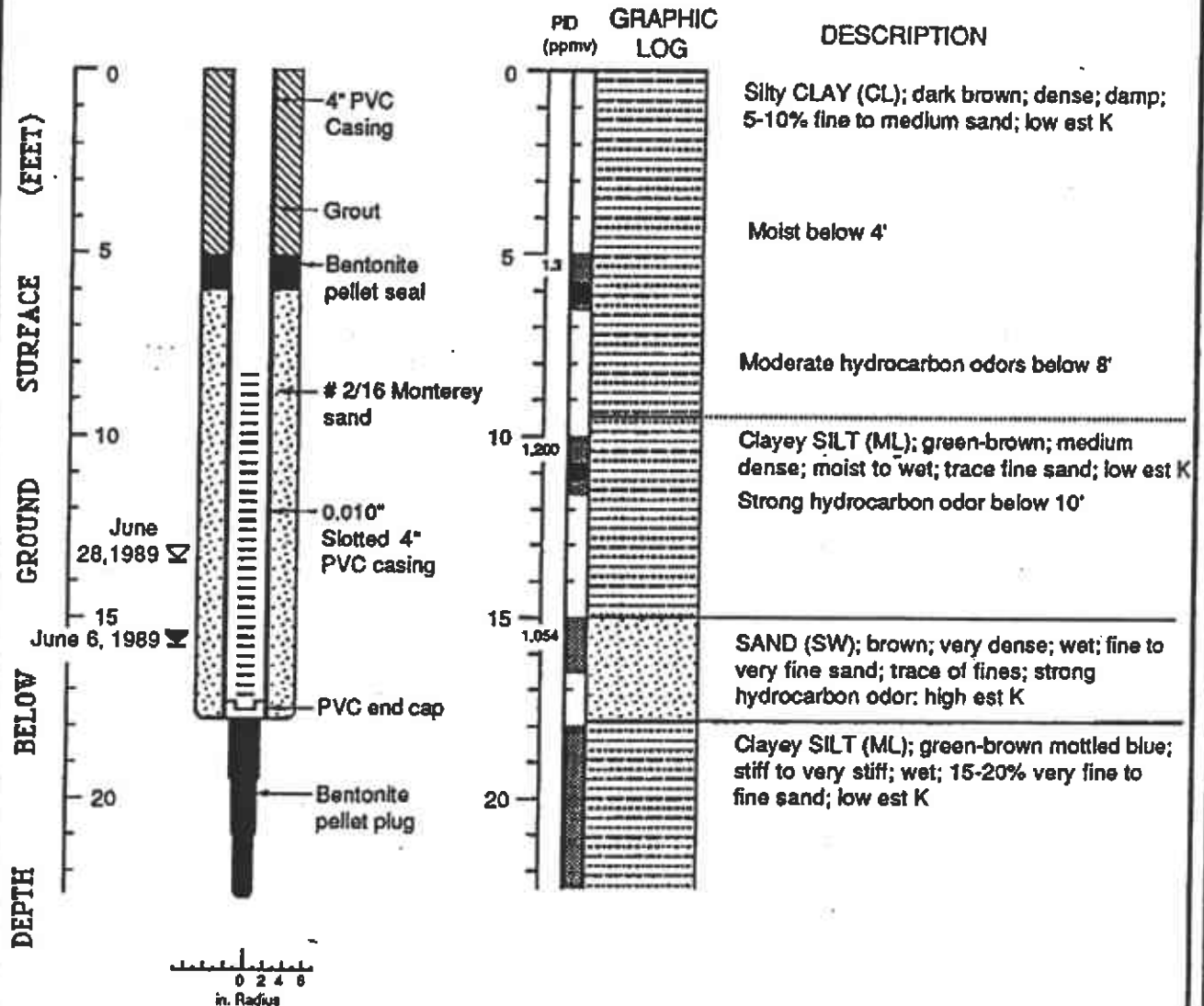
EXPLANATION

- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated permeability (hydraulic conductivity)**

Logged by: Jim Carmody
 Supervisor: Richard Weiss; EG 1112
 Drilling Company: HEW Drilling Co.
 Driller: Tomas Jaime
 Drilling Method: Hollow stem auger
 Dates Drilled: June 7, 1989
 Well Head Completion: Locking stovepipe concrete vault
 Type of sampler: Split barrel (1.4", 2.0", 2.5" ID)

Well Construction and Boring Log - Well WM-12 (BH-B) Chevron Service Station #90260
 Hayward, California

WELL MW-13 (BH-C)

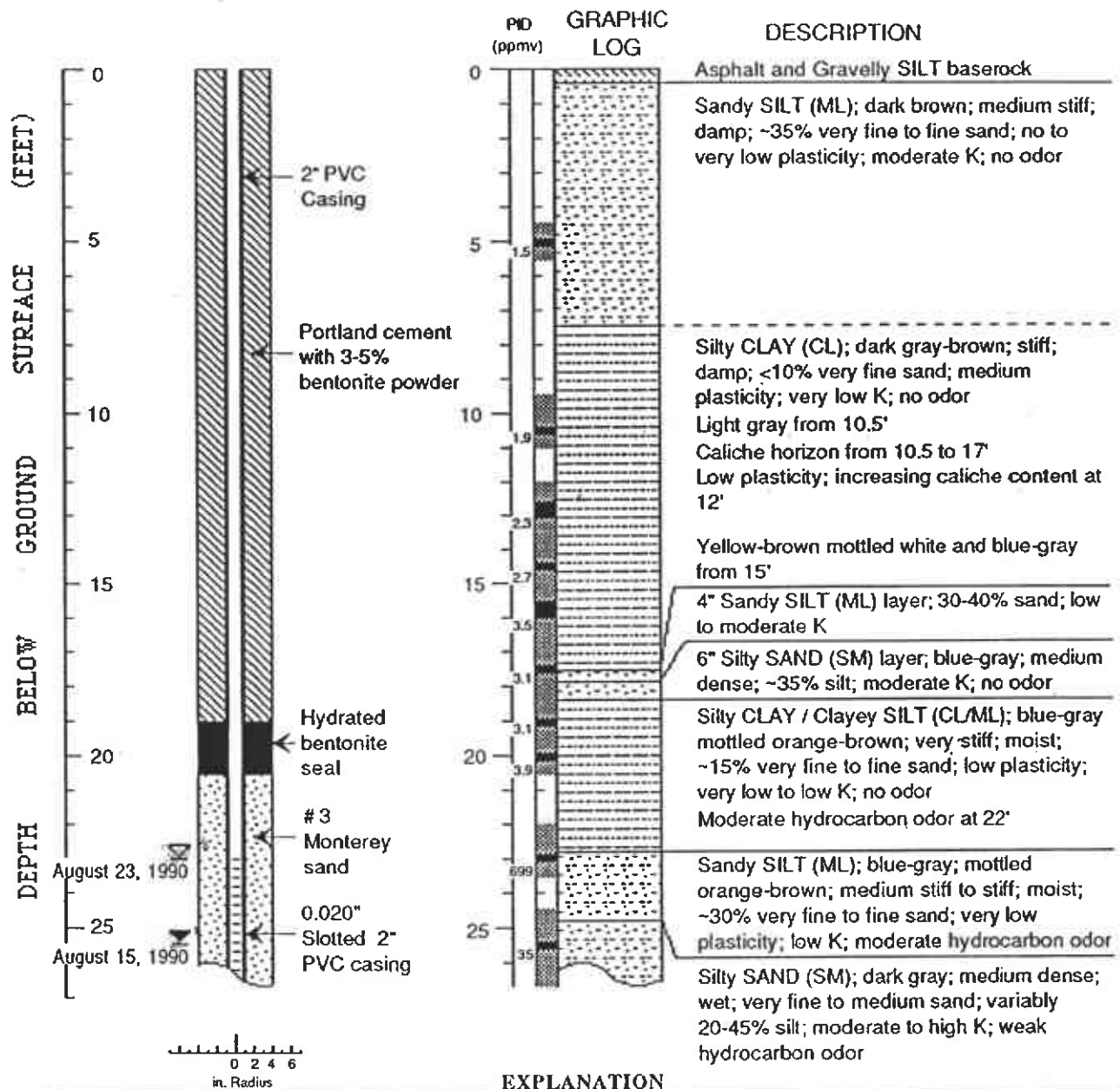


EXPLANATION

- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated permeability (hydraulic conductivity)

Logged by: Jim Carmody
 Supervisor: Richard Weiss; EG 1112
 Drilling Company: HEW Drilling Co.
 Driller: Tomas Jaime
 Drilling Method: Hollow stem auger
 Dates Drilled: June 6, 1989
 Well Head Completion: Locking stovepipe in concrete vault
 Type of sampler: Split barrel (1.4", 2.0", 2.5" ID)

WELL MW-14 (BH-H)



Logged by: John Duey

Supervisor: James Carmody; RG 4872

Drilling Company: Soils Exploration Services

Driller: Rick Carr

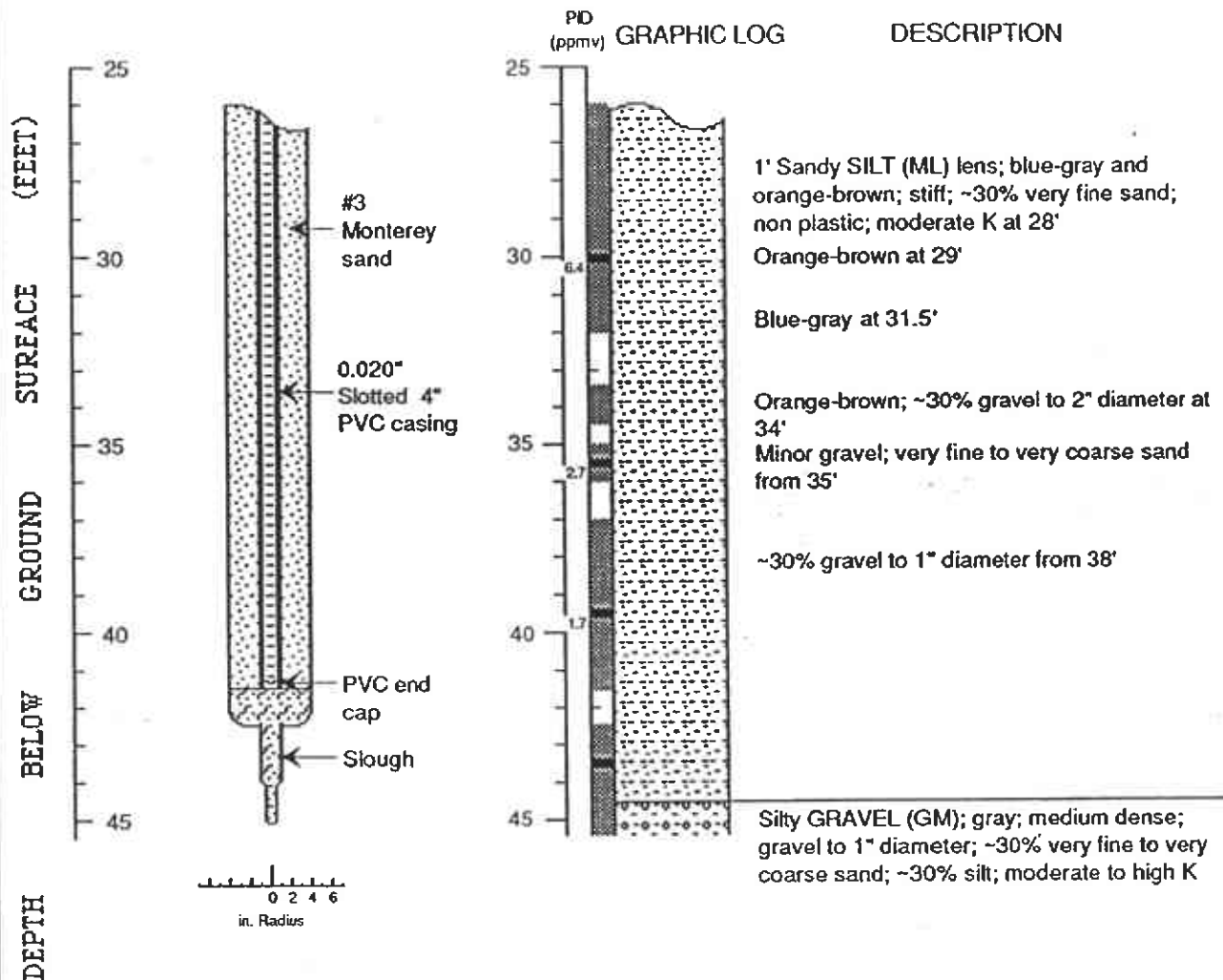
Drilling Method: Hollow stem auger

Date Drilled: August 15, 1990

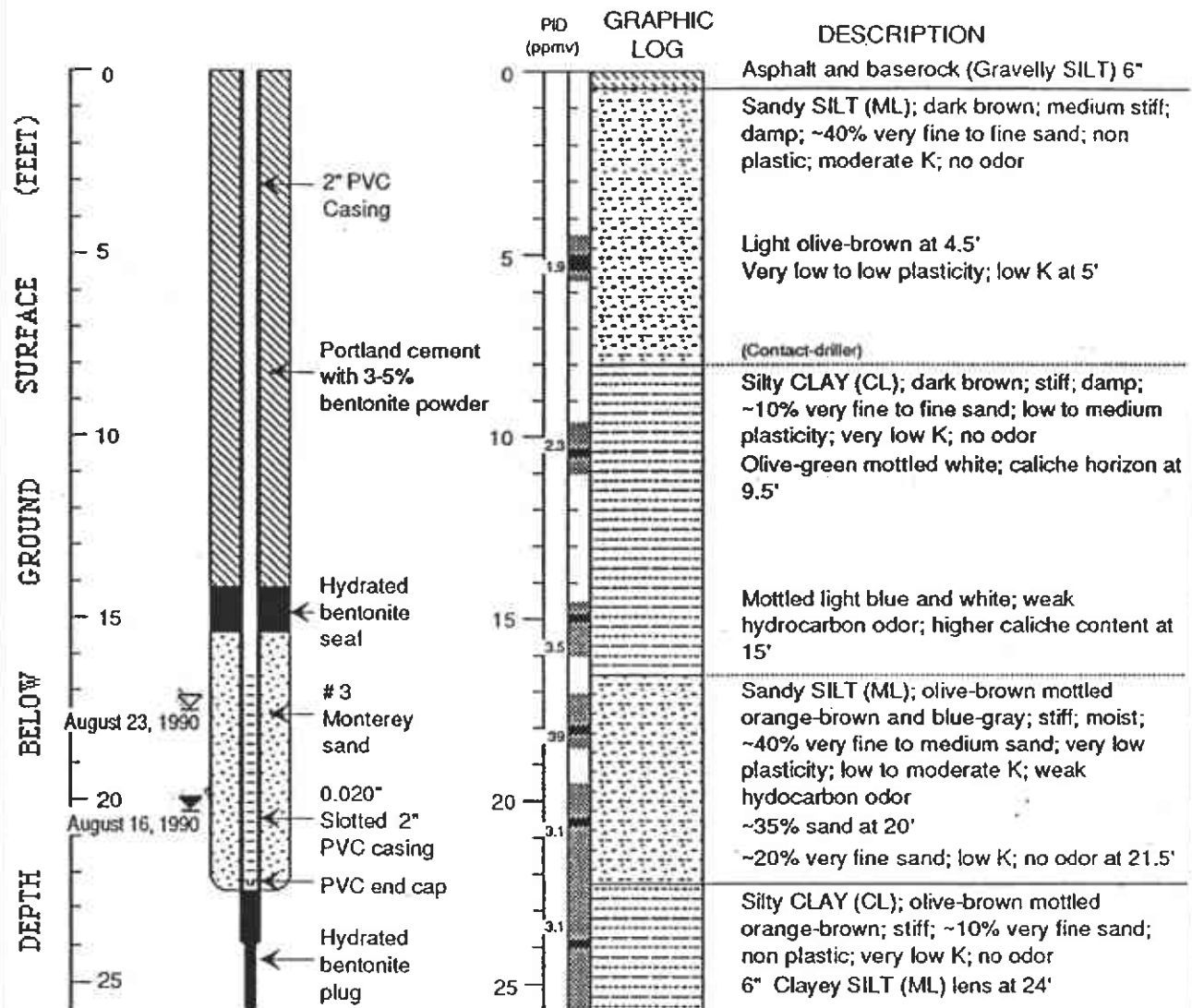
Well Head Completion: locking watertight well-cap with traffic-rated vault

Type of sampler: Split barrel (1.5", 2.5" ID)

WELL MW-14 (BH-H) (cont.)



WELL MW-15 (BH-J)

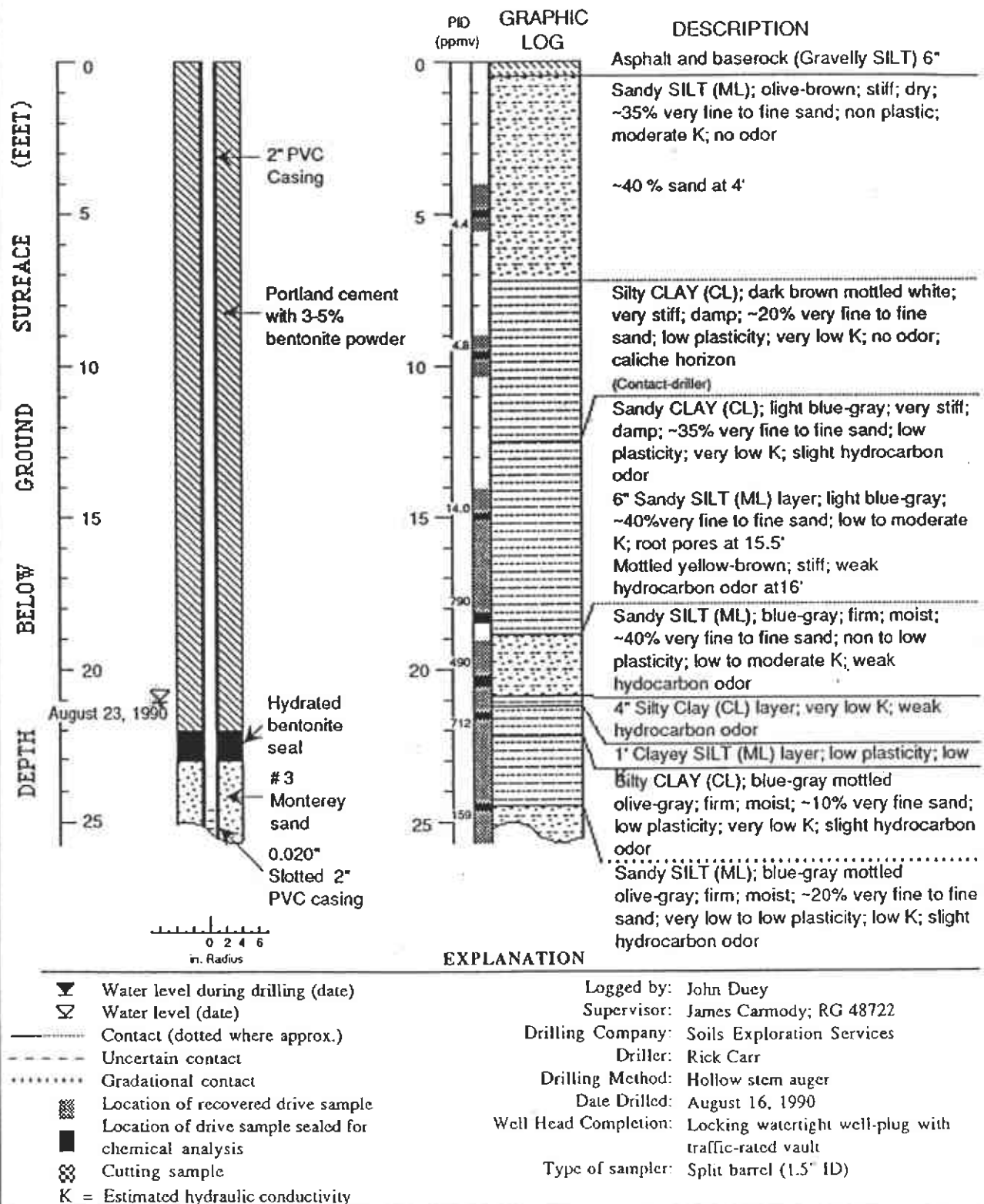


EXPLANATION

- Water level during drilling (date)
- Water level (date)
- Contact (dotted where approx.)
- Uncertain contact
- Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged by: John Duey
 Supervisor: James Carmody; RG 4872
 Drilling Company: Soils Exploration Services
 Driller: Rick Carr
 Drilling Method: Hollow stem auger
 Date Drilled: August 16, 1990
 Well Head Completion: Locking watertight well plug with traffic-rated vault
 Type of sampler: Split barrel (1.5", 2", 2.5" ID)

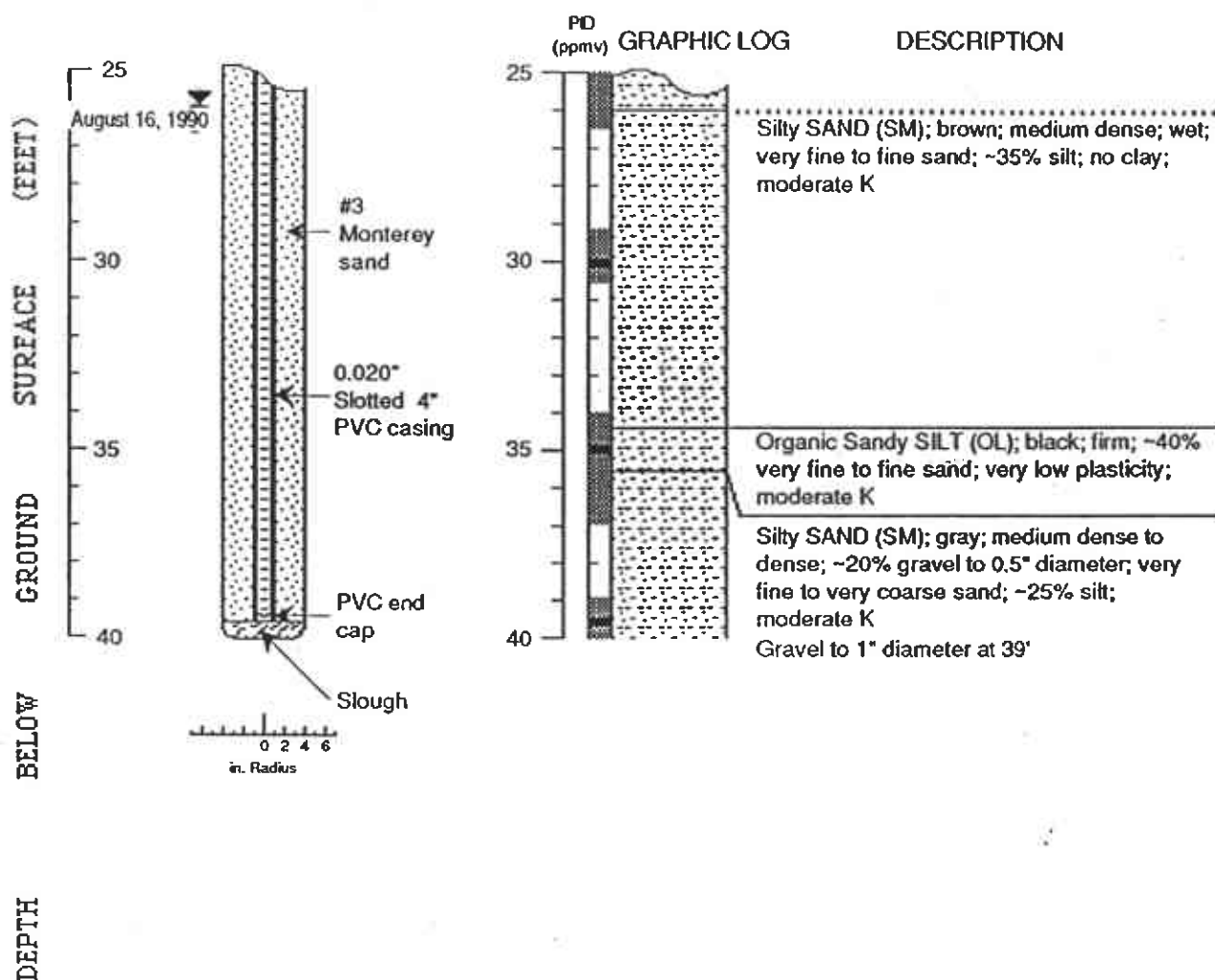
WELL MW-16 (BH-K)



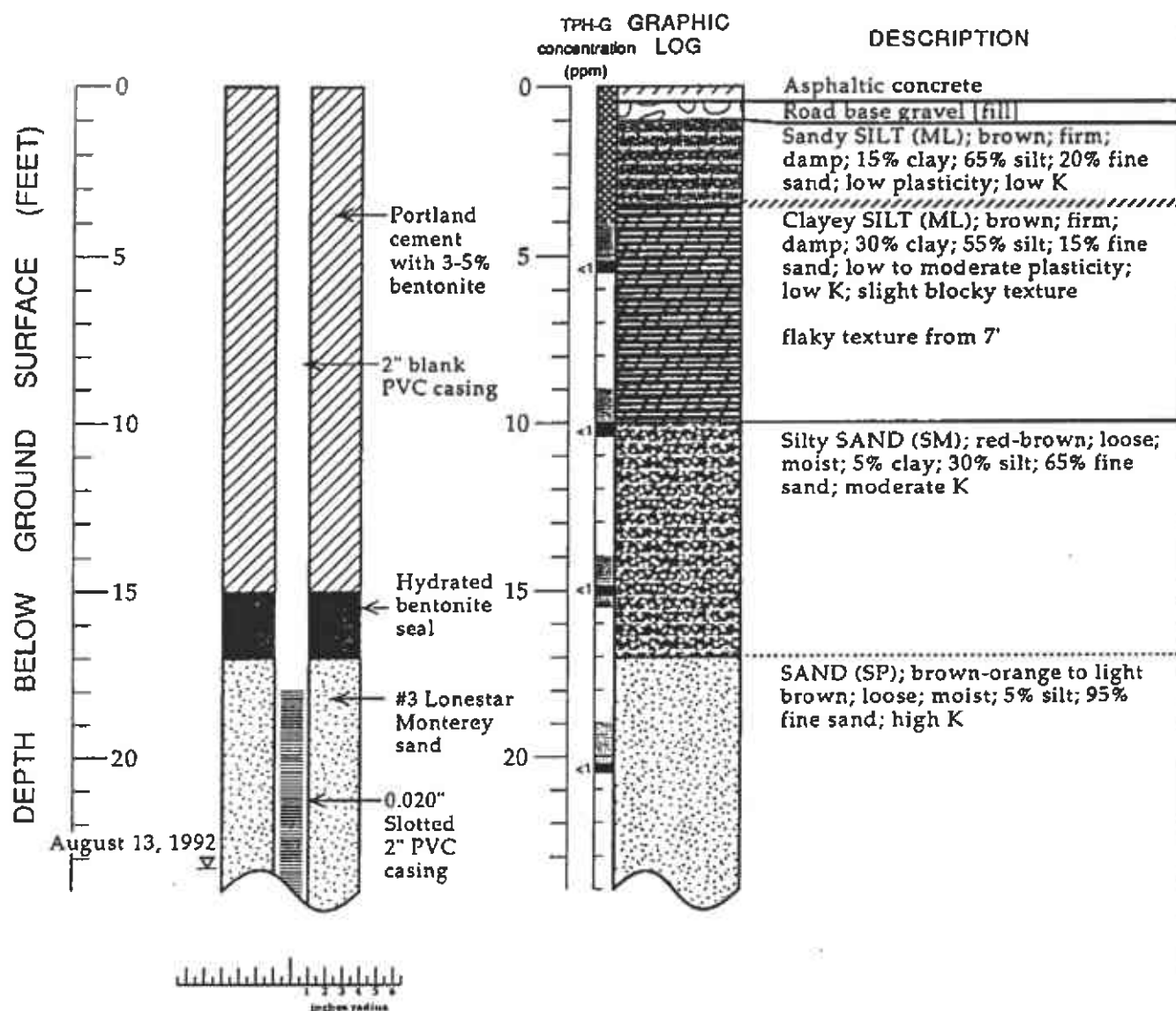
Boring Log and Well Construction Details - Well MW-16 (BH-K)

Chevron SS #9-0260
Hayward, California

WELL MW-16 (BH-K) (cont.)



WELL MW-17 (BH-T)



EXPLANATION

	Water level during drilling (date)	Logged By: Tom Fojut
	Water level (date)	Supervisor: James W. Carmody; CEG 1576
	Contact (dotted where approximate)	Drilling Company: Bayland Drilling, Menlo Park, CA
	Uncertain contact	License Number: C57-374152
	Gradational contact	Driller: Frank Bartolovich
	Location of recovered drive sample	Drilling Method: Hollow-stem auger
	Location of drive sample sealed for chemical analysis	Date Drilled: August 4, 1992
	Cutting sample	Well Head Completion: 2" locking well-plug, traffic-rated vault
	K = Estimated hydraulic conductivity	Type of Sampler: Split barrel (2" ID)
		Ground Surface Elevation: 106.59 feet above mean sea level
		TPH-G: Total petroleum hydrocarbon as gasoline in soil by modified EPA Method 8015

Boring Log and Well Construction Details - Well MW-17 (BH-T) - Chevron Service Station #9-0260, 21995 Foothill Boulevard, Hayward, California

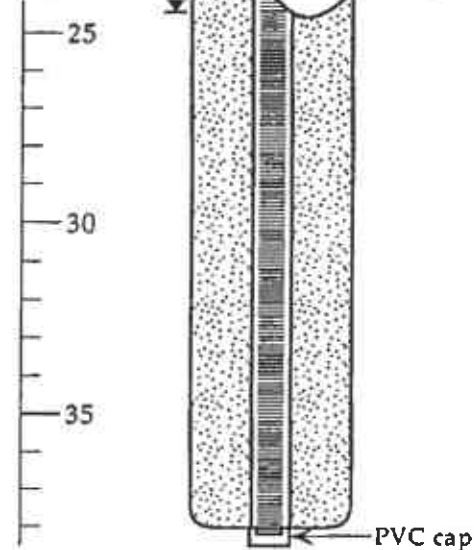
WELL MW-17 (BH-T) (cont.)

TPH-G GRAPHIC
concentration LOG
(ppm)

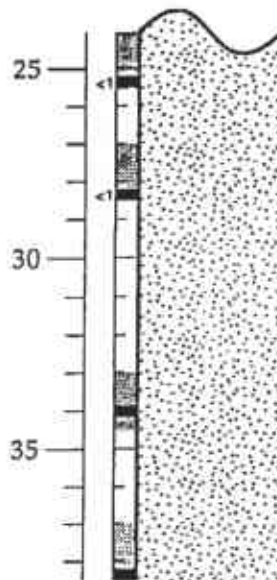
DESCRIPTION

DEPTH BELOW SURFACE (FEET)

August 4, 1992



inches radius



wet; light gray from 24.0'

blue from 27.7 to 28'

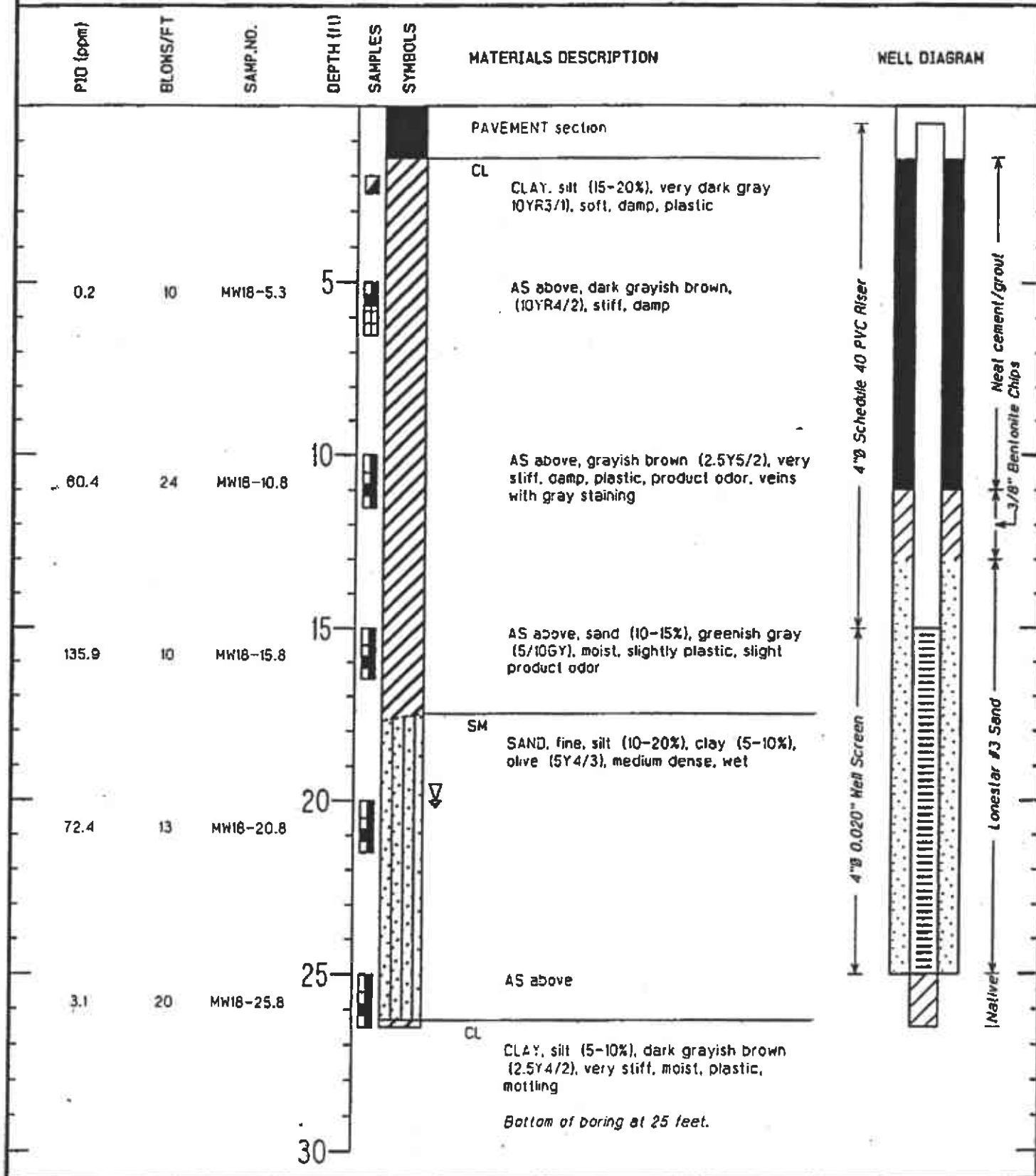
blue-gray; 100% fine to coarse sand
from 33.0'

0.5" diameter gravel at 33.5'

gray; 100% fine to medium sand
from 37.0'

LOG OF GROUNDWATER MONITORING WELL MW-18

Page 1 of 1



PROJECT Chevron Station 9-0260

LOCATION 21995 Foothill Boulevard, Hayward

JOB NUMBER 30-0236

GEOLOGIST Cliff M. Garratt

DRILLING COMPANY BAEi

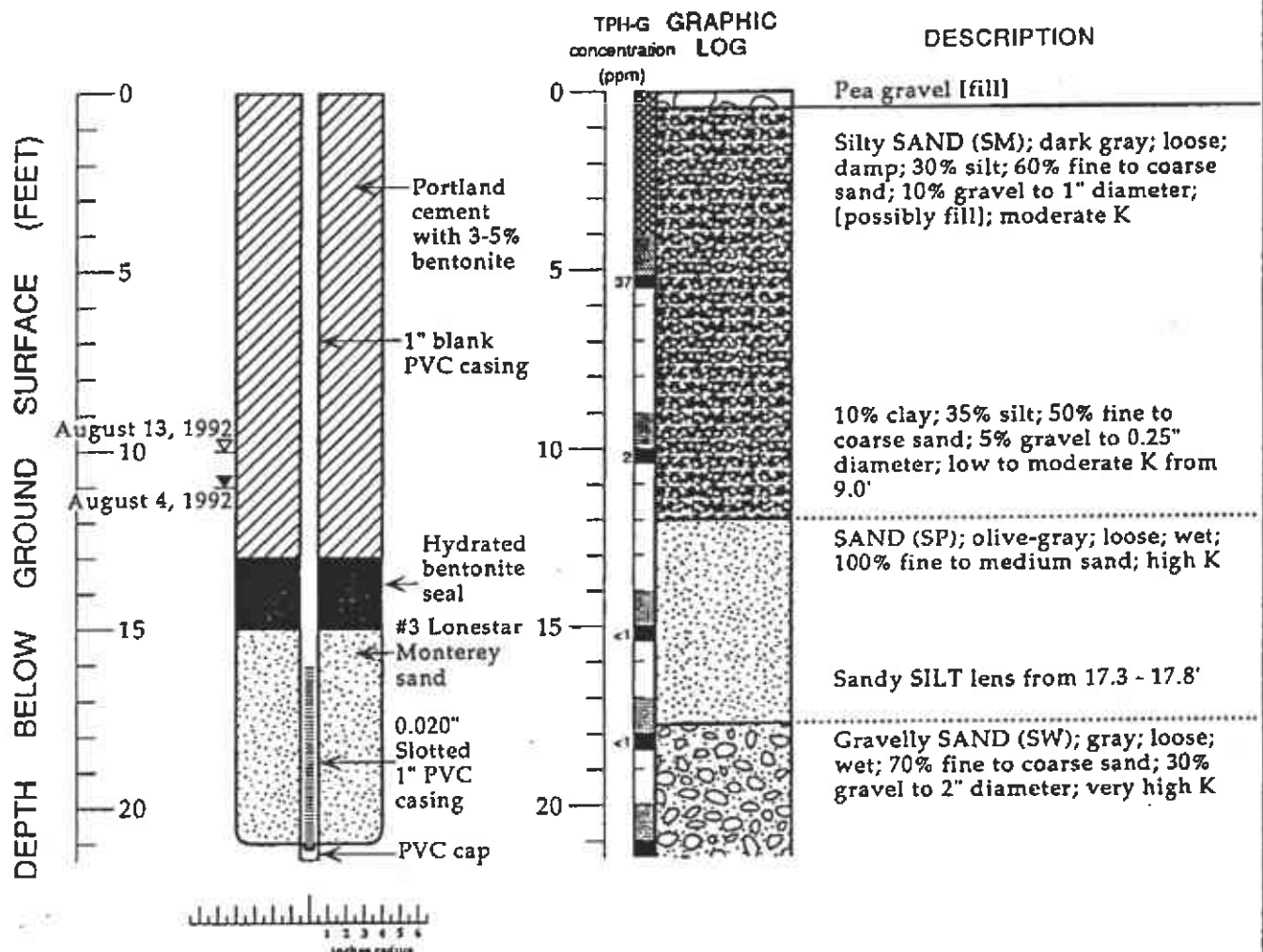
DATE DRILLED 7/16/97

SURFACE ELEVATION Not surveyed

TOTAL DEPTH OF HOLE 25 Feet

FIRST DEPTH OF HOLE 20 Feet

PIEZOMETER P-1 (BH-U)

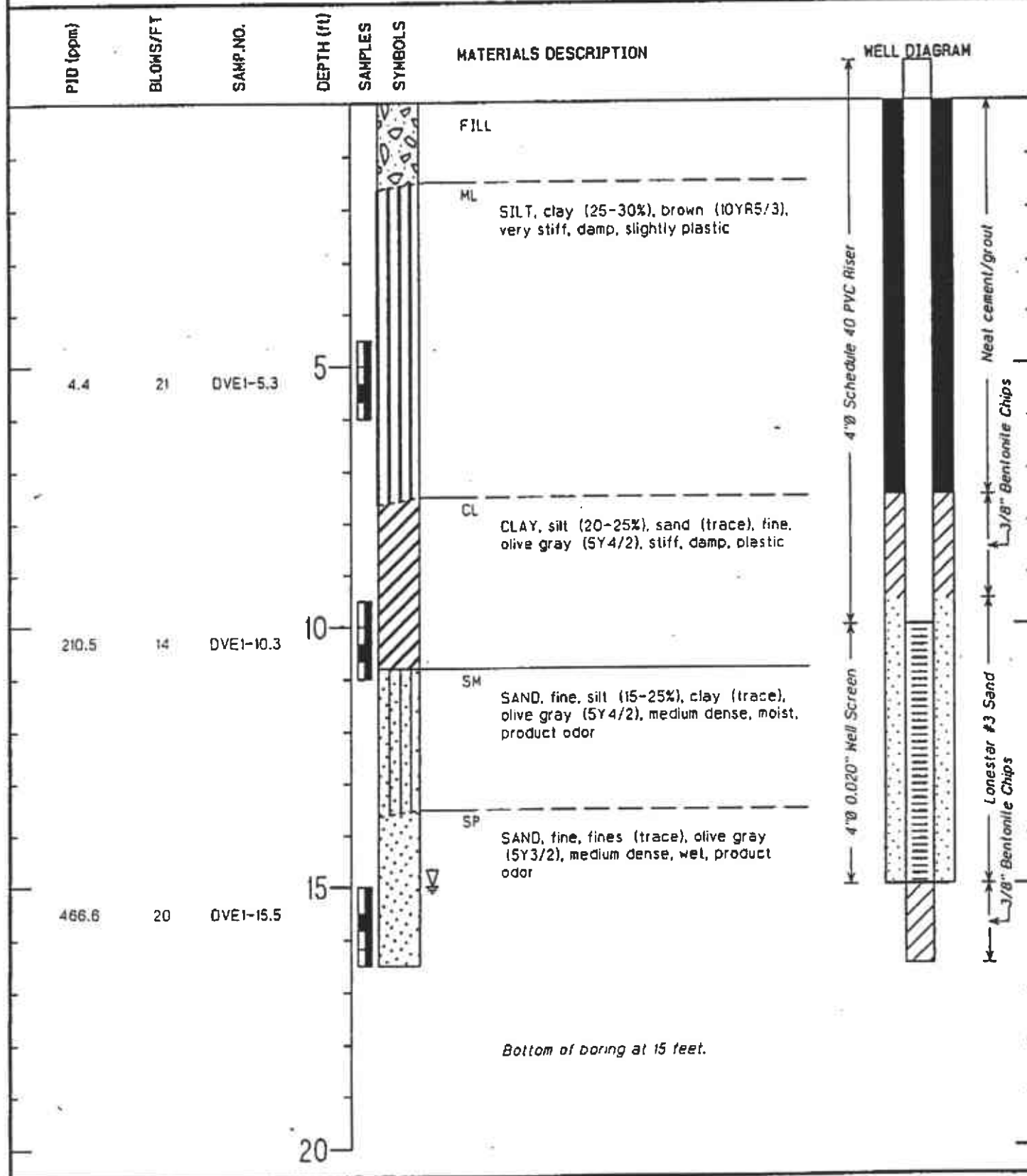


EXPLANATION

- ▼ Water level during drilling (date)
- ▽ Water level (date)
- Contact (dotted where approximate)
- ?-?-? Uncertain contact
- //// Gradational contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Cutting sample
- K = Estimated hydraulic conductivity

Logged By: Tom Fojut
 Supervisor: James W. Carmody; CEG 1576
 Drilling Company: Bayland Drilling, Menlo Park, CA
 License Number: C57-374152
 Driller: Frank Bartolovich
 Drilling Method: Hollow-stem auger
 Date Drilled: August 4, 1992
 Type of Sampler: Split barrel (2" ID)
 Piezometer Head Completion: Locking cap, traffic-rated vault
 Ground Surface Elevation: 86.73 feet above mean sea level
 TPH-G: Total petroleum hydrocarbon as gasoline in soil by modified EPA Method 8015

Boring Log and Piezometer Construction Details - Piezometer P-1 (BH-U) - Chevron Service Station #9-0260, 21995 Foothill Boulevard, Hayward, California



PROJECT Chevron Station 9-0260

LOCATION 21995 Foothill Boulevard, Hayward

JOB NUMBER 30-0236

GEOLOGIST Cliff M. Garratt

DATE 10/2/97 Hollow Stem Auger

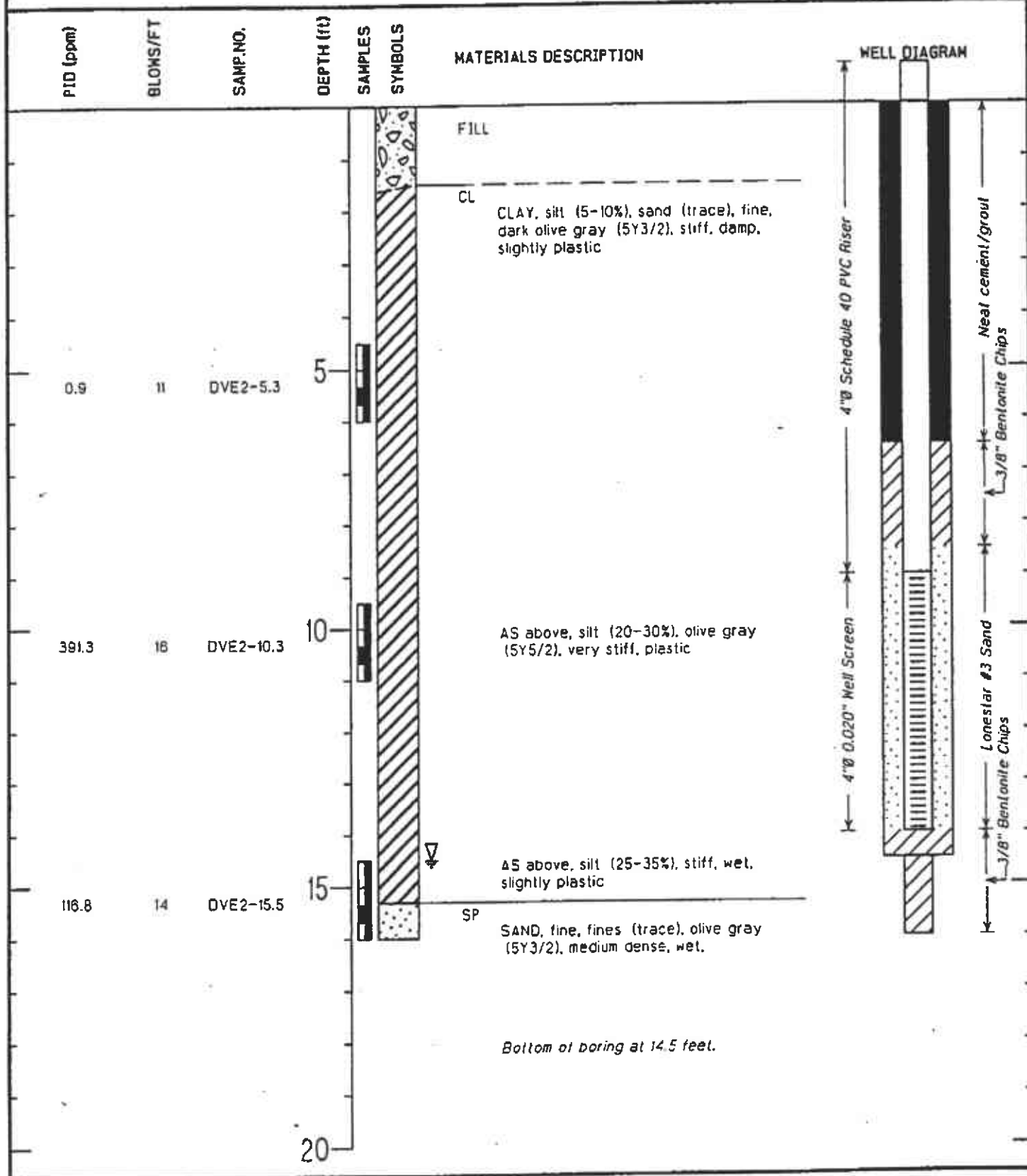
DRILLING COMPANY BAEi

DATE DRILLED 7/17/97

SURFACE ELEVATION Not surveyed

TOTAL DEPTH OF HOLE 15 Feet

FIRST OBSERVED ON 15 Feet



PROJECT Chevron Station 9-0260

LOCATION 21895 Foothill Boulevard, Hayward

JOB NUMBER 30-0236

GEOLOGIST Cliff M. Garratt

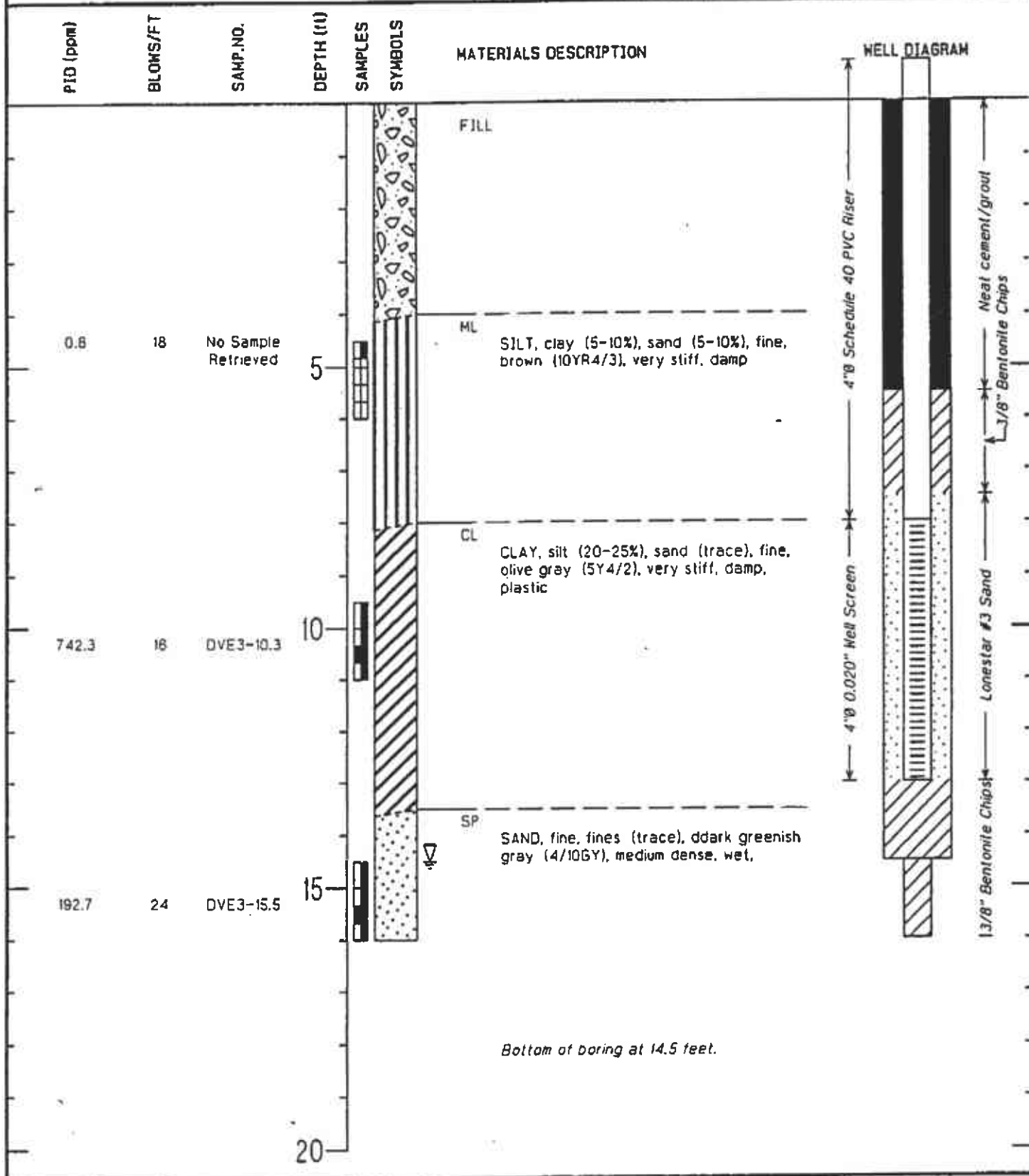
DRILLING COMPANY BAEi

DATE DRILLED 7/17/97

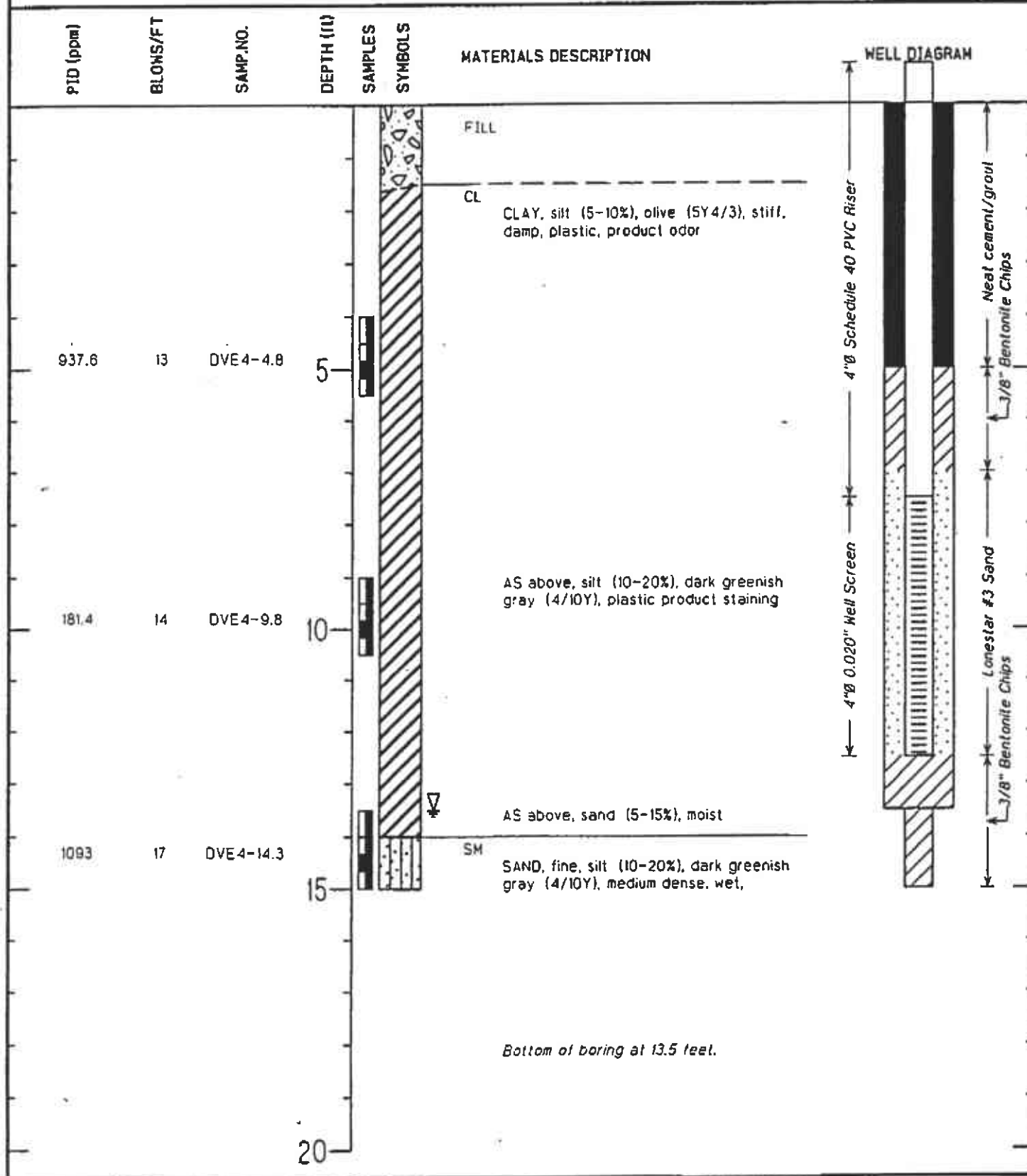
SURFACE ELEVATION Not surveyed

TOTAL DEPTH OF HOLE 14.5 Feet

WELL DEPTH TO BOTTOM 14.5 Feet



PROJECT	Chevron Station 9-C260	DRILLING COMPANY	BAEi
LOCATION	21995 Foothill Boulevard, Hayward	DATE DRILLED	7/18/97
JOB NUMBER	30-0236	SURFACE ELEVATION	Not surveyed
GEOLOGIST	Cliff M. Garratt	TOTAL DEPTH OF HOLE	14.5 Feet



PROJECT Chevron Station 9-0260

LOCATION 21995 Foothill Boulevard, Hayward

JOB NUMBER 30-0236

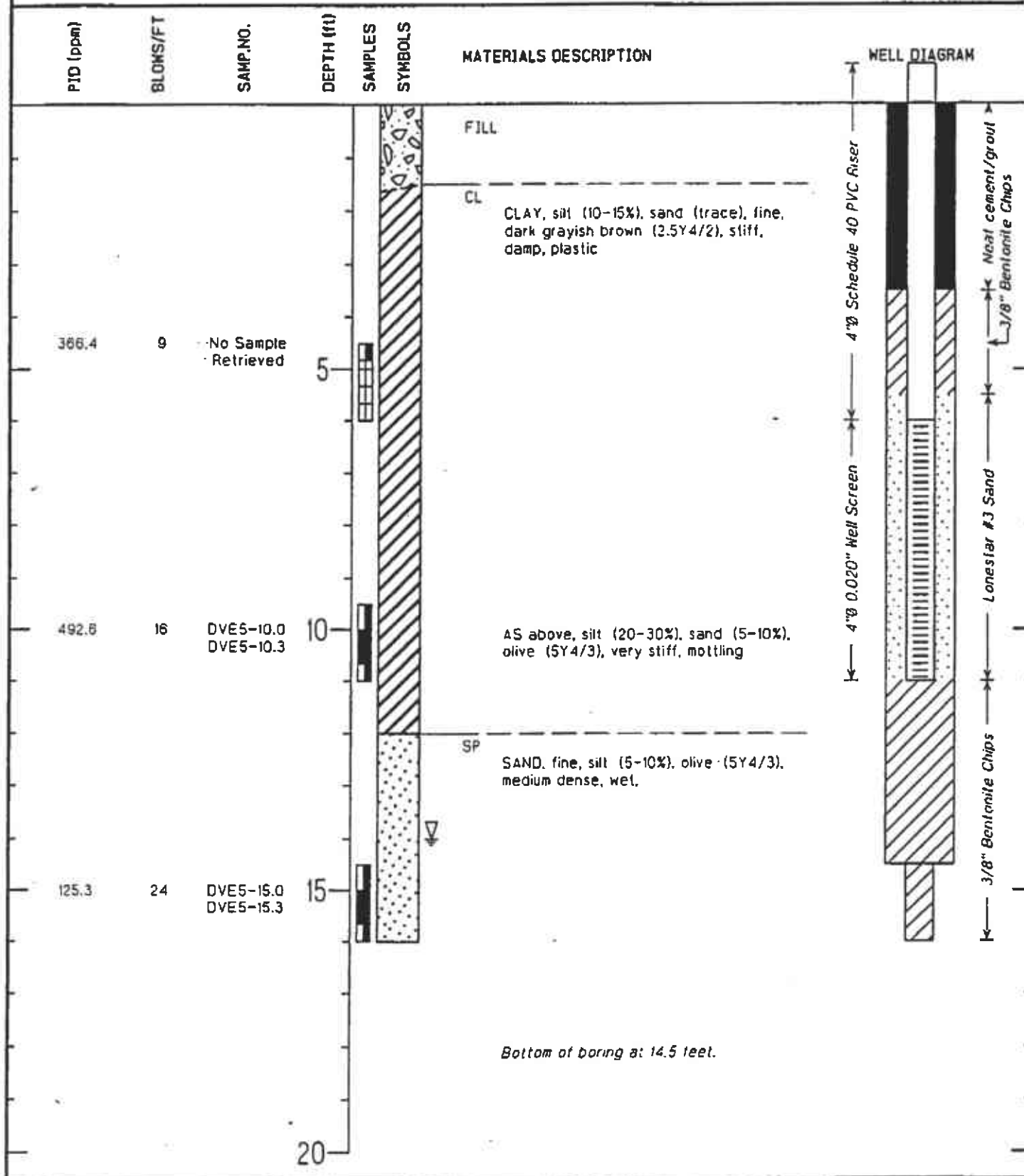
GEOLOGIST Cliff M. Garratt

DRILLING COMPANY BAEi

DATE DRILLED 7/18/97

SURFACE ELEVATION Not surveyed

TOTAL DEPTH OF HOLE 13.5 Feet



PROJECT	Chevron Station 9-0260	DRILLING COMPANY	BAEi
LOCATION	21995 Foothill Boulevard, Hayward	DATE DRILLED	7/16/97
JOB NUMBER	30-0236	SURFACE ELEVATION	Not surveyed
GEOLOGIST	Cliff M. Garratt	TOTAL DEPTH OF HOLE	14 Feet

LOG OF DUAL VAPOR EXTRACTION WELL DVE-6

PID (ppm)	BLOMS/FT	SAMP.NO.	DEPTH (ft)	SAMPLES	SYMBOLS	MATERIALS DESCRIPTION	WELL DIAGRAM
						FILL	
						CL	
						CLAY, silt (5-10%), dark olive gray (5Y3/2), medium stiff, moist to damp, plastic	
38.8	7	DVE6-5.3	5				4" Schedule 40 PVC Riser
							4" 0.020" Well Screen
1093	18	DVE6-10.3	10			AS above, silt (20-30%), sand (trace), light olive brown (2.5Y5/3), very stiff, damp, plastic. greenish gray mottling	
						SP	
						SAND, fine, silt (±5%), olive (5Y4/3), medium dense, wet,	
510.2	24	DVE6-15.3	15				3/8" Bentonite Chips
							Lonestar #3 Sand
							3/8" Bentonite Chips
							Neat cement/grout
							3/8" Bentonite Chips
			20			Bottom of boring at 14.5 feet.	

DRILLING COMPANY BAE

DATE DRILLED 7/16/97

SURFACE ELEVATION Not surveyed

TOTAL DEPTH OF HOLE 14.5 Feet

1 A B C D E F

PROJECT	Chevron Station 9-0260	DRILLING COMPANY	BAEI
LOCATION	21995 Foothill Boulevard, Hayward	DATE DRILLED	7/18/97
JOB NUMBER	30-0236	SURFACE ELEVATION	Not surveyed
GEOLOGIST	Cliff M. Garratt	TOTAL DEPTH OF HOLE	14.5 Feet

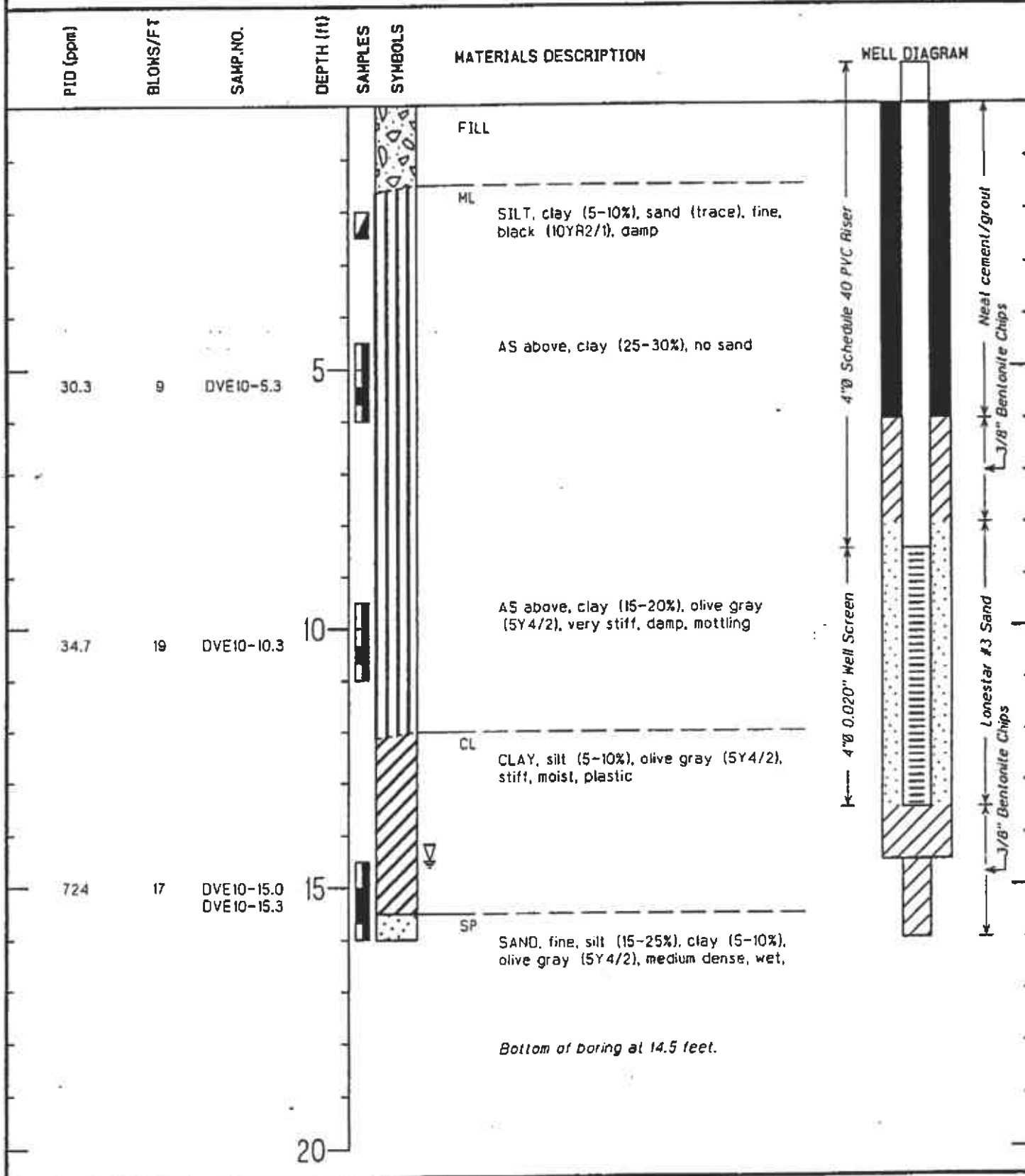
PROJECT	Chevron Station 9-0260	DRILLING COMPANY	BAE
LOCATION	21995 Foothill Boulevard, Hayward	DATE DRILLED	7/13/97
JOB NUMBER	30-0236	SURFACE ELEVATION	Not surveyed
GEOLOGIST	Cliff M. Garratt	TOTAL DEPTH OF HOLE	13.5 Feet
DRILL BIT	10"Ø Hollow Stem Auger	FIRST OBSERVED GW	13.5 Feet

PID (ppm)	BLOWS/FT	SAMP. NO.	DEPTH (ft)	SAMPLES SYMBOLS	MATERIALS DESCRIPTION	WELL DIAGRAM
					FILL	
					CL CLAY, silt (5-10%), sand (trace), fine, dark greenish gray (3/10Y), medium stiff, damp to moist, plastic	
3.2	7	DVE9-5.3	5			4" Schedule 40 PVC Riser
1093	17	DVE9-10.0 DVE9-10.3	10		AS above, silt (25-35%), olive brown (2.5Y 4/3), very stiff, damp, very plastic, mottling, product odor	Neat cement/grout
						3/8" Bentonite Chips
1093	18	DVE9-15.5	15		SM SAND, fine, silt (15-20%), clay (trace), dark greenish gray (4/5GY), medium dense, wet, silt grades to 20-25%	4" 0.020" Well Screen
					SP SAND, fine, fines (trace), dark greenish gray (4/5GY), medium dense, wet,	Lonestar #3 Sand
182.9	20	DVE9-19.3	20			Native
			25		Bottom of boring at 20 feet.	

Bottom of boring at 20 feet.

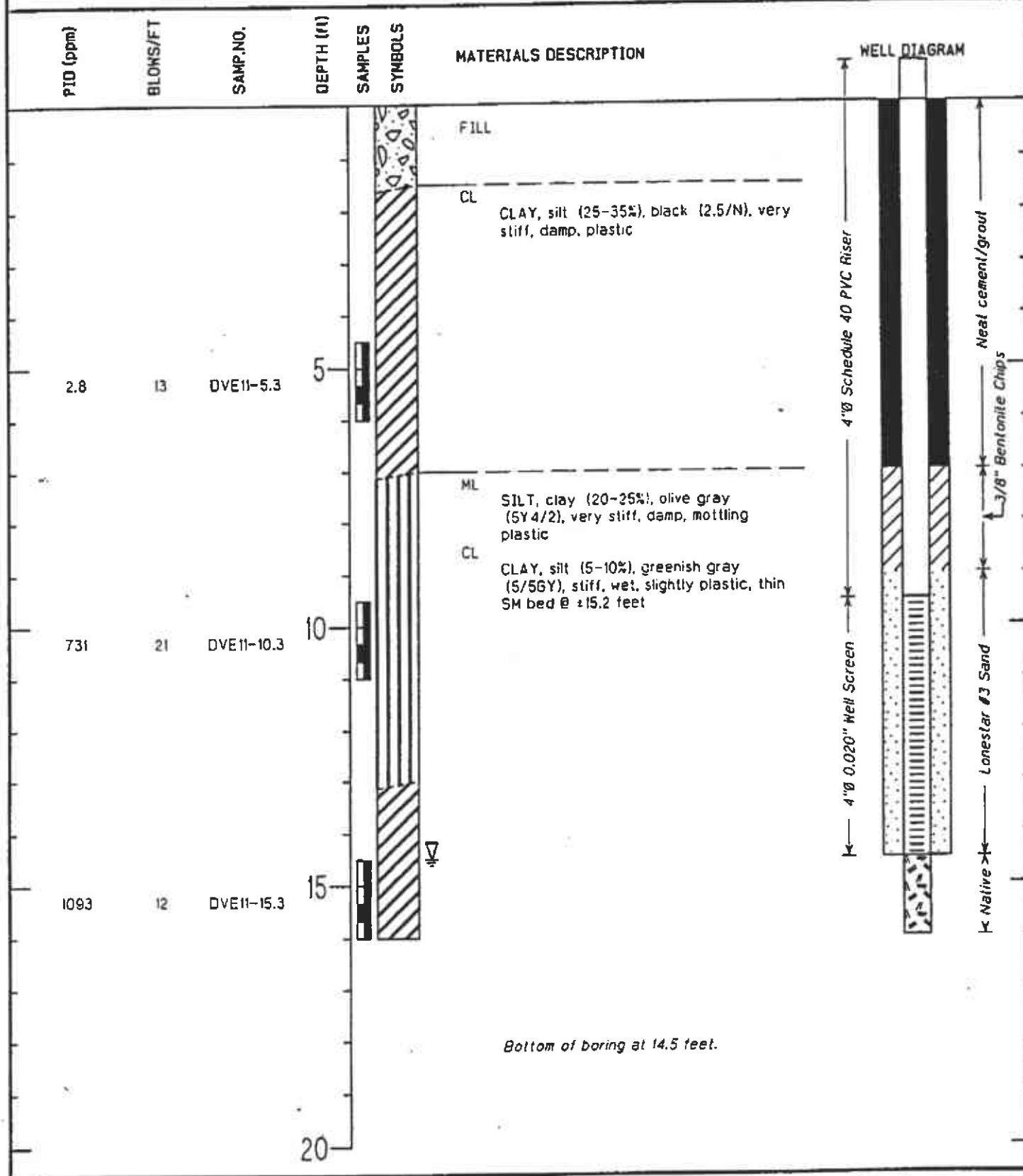
PROJECT	Chevron Station 9-0260
LOCATION	21995 Foothill Boulevard, Hayward
JOB NUMBER	30-0236
GEOLOGIST	Cliff M. Garratt

DRILLING COMPANY BAE
DATE DRILLED 7/17/97
SURFACE ELEVATION Not surveyed
TOTAL DEPTH OF HOLE 20 Feet

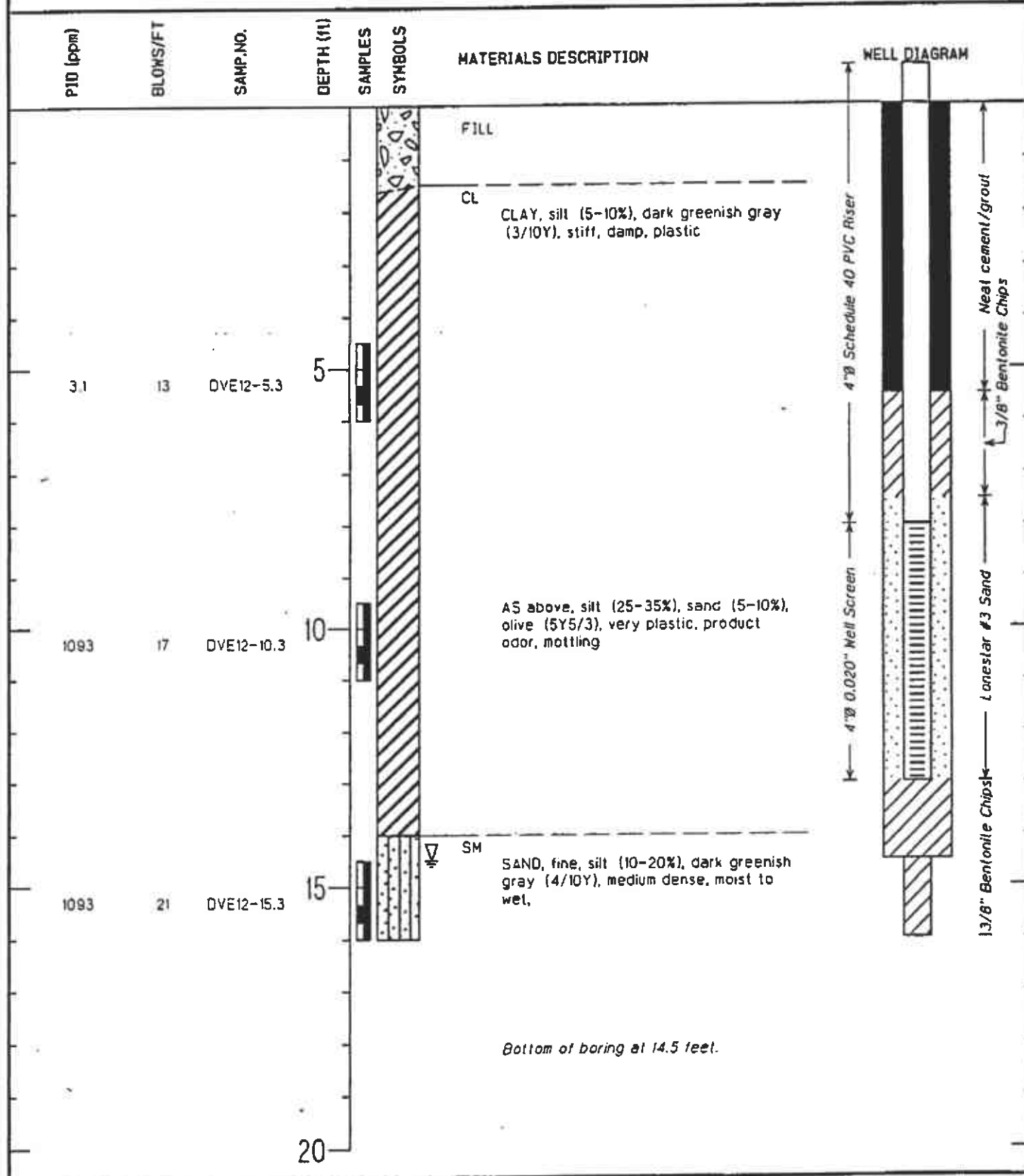


PROJECT	Chevron Station 9-0260	DRILLING COMPANY	BAEi
LOCATION	21995 Foothill Boulevard, Hayward	DATE DRILLED	7/17/97
JOB NUMBER	30-0236	SURFACE ELEVATION	Not surveyed
GEOLOGIST	Cliff M. Garratt	TOTAL DEPTH OF HOLE	14.5 Feet

LOG OF DUAL VAPOR EXTRACTION WELL DVE-11



PROJECT	Chevron Station 9-0260	DRILLING COMPANY	BAEI
LOCATION	21995 Foothill Boulevard, Hayward	DATE DRILLED	7/17/97
JOB NUMBER	30-0236	SURFACE ELEVATION	Not surveyed
GEOLOGIST	Cliff M. Garratt	TOTAL DEPTH OF HOLE	14.5 Feet



PROJECT Chevron Station 9-0250

LOCATION 21995 Foothill Boulevard, Hayward

JOB NUMBER 30-0236

GEOLOGIST Cliff M. Garratt

DRILLING COMPANY BAE

DATE DRILLED 7/17/97

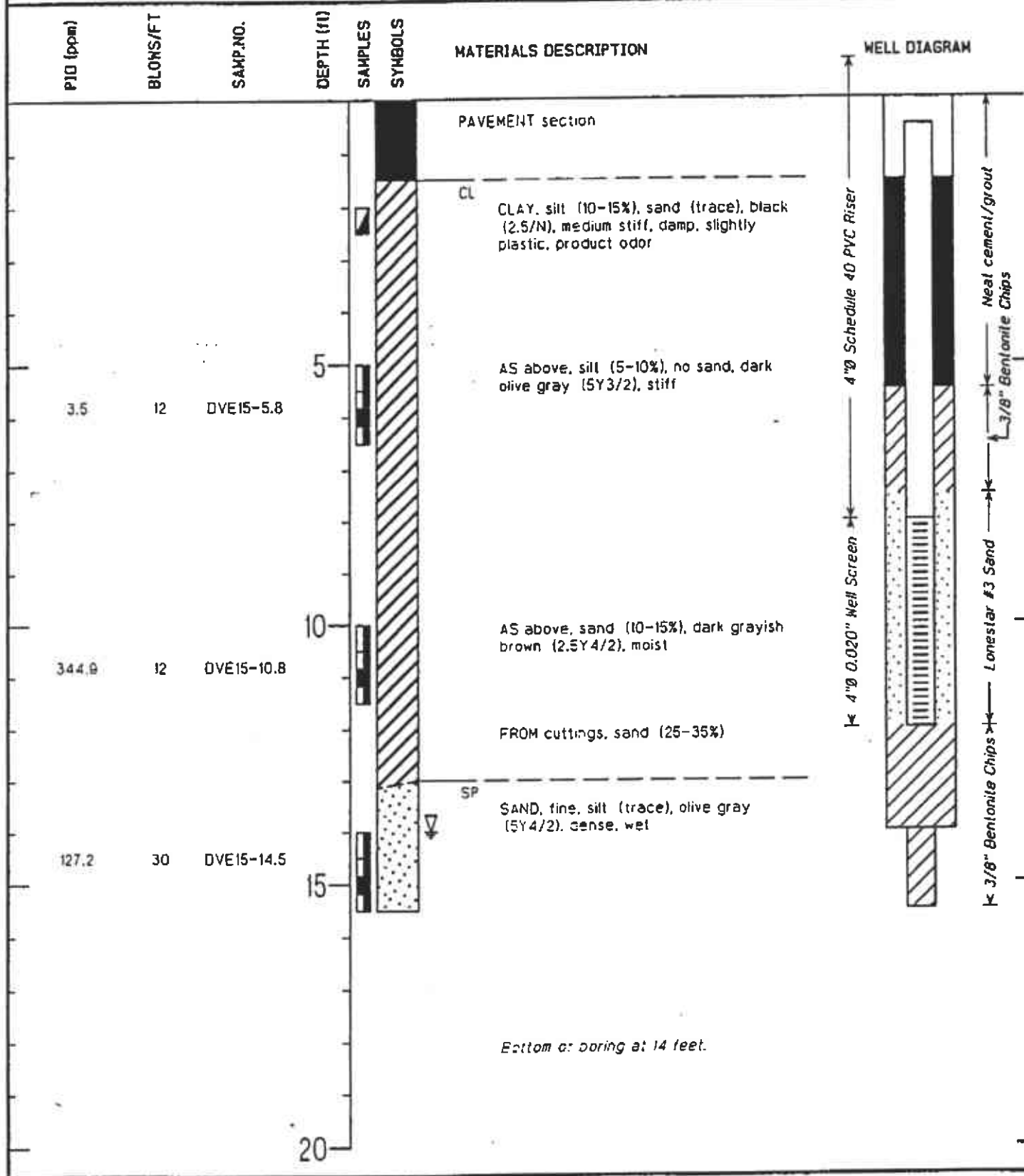
SURFACE ELEVATION Not surveyed

TOTAL DEPTH OF HOLE 14.5 Feet

PROJECT Chevron Station 9-0280
LOCATION 21995 Foothill Boulevard, Hayward
JOB NUMBER 30-0236
GEOLOGIST Chiff M. Garratt

DRILLING COMPANY BAE
DATE DRILLED 7/17/97
SURFACE ELEVATION Not surveyed
TOTAL DEPTH OF HOLE 14.5 Feet

PROJECT	Chevron Station 9-0260	DRILLING COMPANY	BAEi
LOCATION	21995 Foothill Boulevard, Hayward	DATE DRILLED	7/16/97
JOB NUMBER	30-0236	SURFACE ELEVATION	Not surveyed
GEOLOGIST	Cliff M. Garratt	TOTAL DEPTH OF HOLE	14 Feet



PROJECT Chevron Station 9-0260

LOCATION 21995 Foothill Boulevard, Hayward

JOB NUMBER 30-0236

GEOLOGIST Cliff M. Garratt

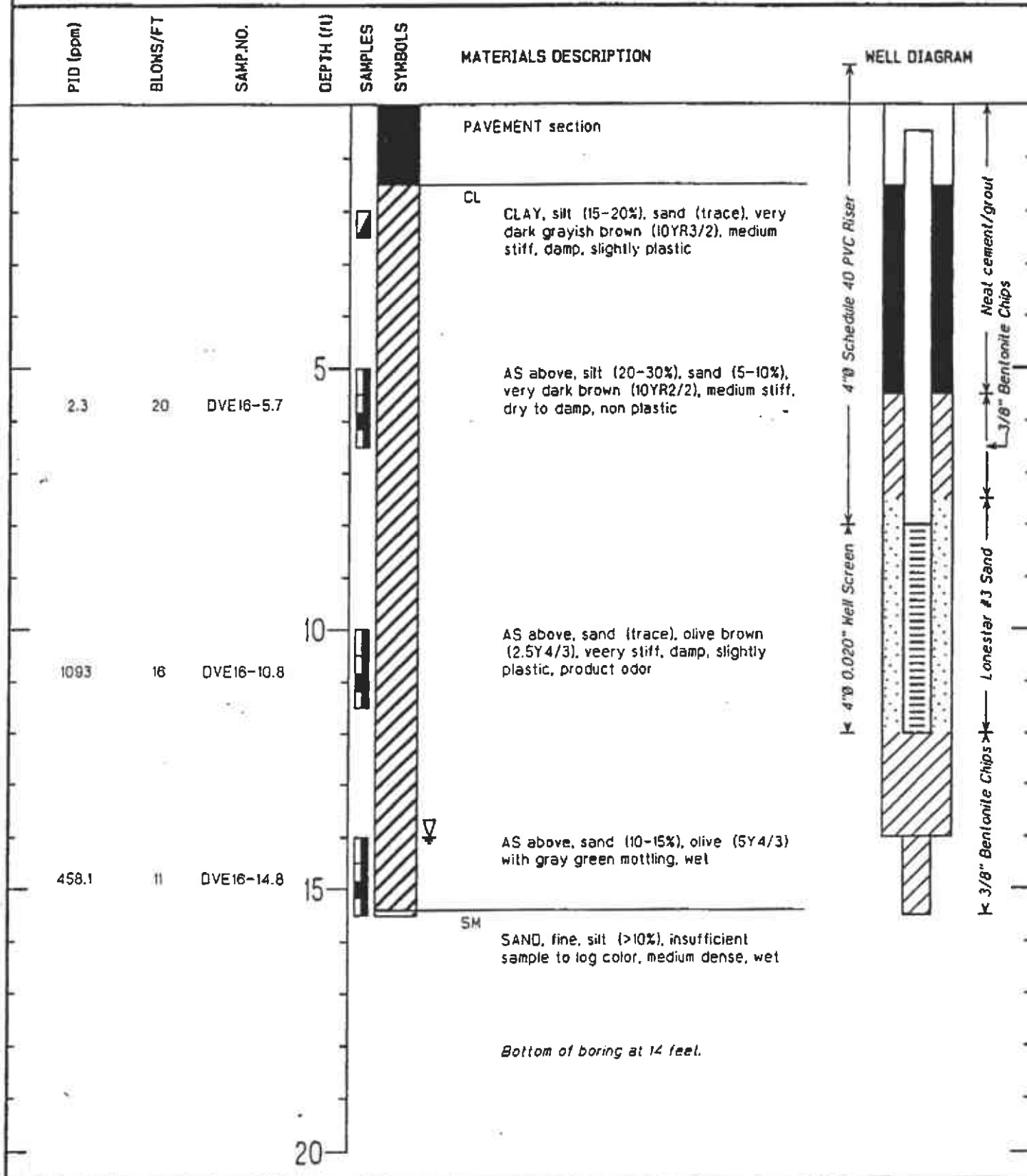
DRILLING COMPANY BAEi

DATE DRILLED 7/16/97

SURFACE ELEVATION Not surveyed

TOTAL DEPTH OF HOLE 14 Feet

1070 Baker Street, Alameda, CA 94601

PROJECT Chevron Station 9-0260LOCATION 21995 Foothill Boulevard, HaywardJOB NUMBER 30-0236GEOLOGIST Cliff M. GarrattDRILLING COMPANY BAEiDATE DRILLED 7/16/97SURFACE ELEVATION Not surveyedTOTAL DEPTH OF HOLE 14 Feet

Terra Vac

Logged by: Mary Holland-Ford

BORING NO. DVE-17	PROJECT NAME: Former Chevron 9-0260	PROJECT ADDRESS: 21995 Foothill Blvd, Hayward, California	PROJECT NUMBER: 30-0236	DATE DRILLED: March 12, 1999	SHEET 1 OF 1
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Well Construction Details	DEPTH	Sampler Interval	PID Reading	Blow/ 6 inches	USCS	LOG OF MATERIAL
Well Cap	1				af	FILL
4" blank PVC	2					
Type II Portland Cement	3		0			
8" diameter borehole	4					
Bentonite Seal	5	4 1/2'-5'	0	2/4/6	CL	<u>Silty Clay.</u> Clay with silt; some gravel; stiff; slightly plastic; roots and rootholes; brown.
#3 RMC Limestone sand	6					
4" diameter 0.020 plotted PVC well screen	7					
End Cap	8					
	9		0			
	10	9 1/2'-10'		5/12/13		increasing sand and gravel content (10%); light brown with gray.
	11					
	12					
	13					
	14					
	15	14 1/2'-15'	17	5/10/14	SP	<u>Gravelly Sand.</u> fine grained sand, well sorted, and well rounded with some gravel (15%); tan with gray; wet; petroleum odor.
	16					
	17					
	18					
	19					
	20					
	21					Total Depth 20 feet
	22					
	23					
	24					
	25					

Terra Vac

Logged by: Mary Holland-Ford

BORING NO. DVE-18	PROJECT NAME: Former Chevron 9-0260	PROJECT ADDRESS: 21995 Foothill Blvd, Hayward, California	PROJECT NUMBER: 30-0236	DATE DRILLED: March 12, 1999	SHEET 1 OF 1
----------------------	--	--	----------------------------	---------------------------------	-----------------

Well Construction Details	DEPTH	Sampler Interval	PID Reading	Blow/ 6 inches	USCS	LOG OF MATERIAL
Well Cap	1				af	FILL
4" blank PVC	2					
Type II Portland Cement	3					
8" diameter borehole	4					
Bentonite Seal	5	4 1/2'-5'	0	3/3/5	CL	<u>Silty Clay</u> , with some gravel; stiff; moderately plastic; roots and rootholes; damp; brown with rust mottling.
#3 RMC Lonestar sand	6					
Depth of GW	7					
	8					
	9					
	10	9 1/2'-10'	10	5/7/11		increasing to very stiff; plastic.
	11					
	12					
	13					
	14					
4" diameter 0.020 slotted PVC well screen	15	14 1/2'-15'	28	5/9/14	SP	<u>Sandy Silt</u> , ravel: fine grained sand (20%); well sorted, and well rounded; green; crumbles easily with hand pressure; wet; petroleum odor.
End Cap	16					
	17					
	18					
	19					
	20		32		CL	<u>Silty Clay</u> , very stiff; highly plastic; green; petroleum odor.
	21					Total Depth 20 feet
	22					
	23					
	24					
	25					

Terra Vac

Logged by: Mary Holland-Ford

BORING NO. DVE-19	PROJECT NAME: Former Chevron 9-0260	PROJECT ADDRESS: 21995 Foothill Blvd, Hayward, California	PROJECT NUMBER: 30-0236	DATE DRILLED: March 12, 1999	SHEET 1 OF 1
----------------------	--	--	----------------------------	---------------------------------	-----------------

Well Construction Details	DEPTH	Sampler Interval	PID Reading	Blow/ 6 inches	USCS	LOG OF MATERIAL
Well Cap	1				af	FILL
	2					
	3		0			
	4					
4" blank PVC	5	4 1/2'-5'	0	2/5/7	CL	<u>Clayey Silt</u> . Clay with silt; some sand; very stiff; moderately plastic; roots and rootholes; brown with dark brown streaks.
Type II Portland Cement	6					
8" diameter borehole	7					
Bentonite Seal	8					
	9					
	10	9 1/2'-10'	0	5/7/9		increasing fine sands (10%).
	11					
#3 RMC Lonestar sand	12					
	13					
	14	13 1/2'-14'	58	5/8/16		
4" diameter 0.020 slotted PVC well screen	15				SP	<u>Silty Sand</u> . Very fine grained sand, well sorted, well rounded; green; wet; petroleum odor.
Depth of GW	16					
	17					
	18					
	19		41	4/7/9	CL	<u>Clayey Silt</u> . With very fine grained sand, green; moist; petroleum odor.
End Cap	20					
	21					Total Depth 20 feet
	22					
	23					
	24					
	25					

(FORMER CHEVROLET 9-0260)

002

Figure 2

Key State

HAYWARD, CA

9-0260

Case 19

TMP-1 Pg 1 of 2

Page 2 of 2

21995 Foothill Blvd.

City State

Hayward CA

Local Legend

003

Surface Elevation

Data Project

Casing Elevation

TMP-1. Pg 2 of 2

Depth	Casing Size and Type	Annulus Filler	Sample ID	Sample Driven (in)	Sample Recovered	Blow Count	PID readings	USCS	Depth	Dates and Times		Visual Description		Comments
										Start	Log	Drilling Equipment and Method	Box Hole Diameter	
										Total Depth	11/26/02 10:25	Sampling Method and Diameter		
										Completion or backfill		Permitting Agency		Permit #
										Drilling Company and Driller				Driller's C-57
23								CH	23			FAT CLAY; GRAY; PLASTIC; FIRM; MOIST (CH)	NOTICEABLE HC ODOR AND STAINING	
24							80 SW		24			WELL GRADED FINE TO MEDIUM SAND. GRAY (STAINED) LOOSE; SATURATED (SW)		
25							97 CH		25			CLAY; GRAY; FIRM; FRT PLASTIC-HIGHLY; V. MOIST (CH)	STRONG HC ODOR AND STAIN	
26									26					
27									27			BORING TERMINATED @ 25' bsg		
28									28					
29									29					
30									30					
31									31					
32									32					
33									33					
34									34					
35									35					
36									36					
37									37					
38									38					
39									39					
40									40					
41									41					
42									42					
43									43					
44									44					

21995 Foothill Blvd. (Former LTRKON 7-0660) 25' 659

City State

HAYWARD, CA

D690260

Casing Den

TMP-2 Pg 1 of 2

Dates and Times		Loggers	Base Hole Diameter
Start	11/26/02 08:30	Drilling Equipment and Method	2"
Total Depth	11/26/02 09:25	Sampling Method and Diameter	0.75" PI
Completion or backfill	11/26/02 11:20	Permitting Agency	0.0209
Drilling Company and Driller	ALAMEDA CO.		Point #
GREGG DRILLING - PAUL			W02-1075
			Driller's C-ST

Depth	Casing Size and Type	Anvilus Filler	Sample ID	Sample Driven (in)	Sample Recovered	Blow Count	PID readings	USCS	Depth	Visual Description	Comments
23	0.75-inch PVC	CG-MET							1	GRASS	
24									2	LEAN CLAY WITH APPRECIABLE SILT; BROWN TO DARK BROWN; FRIABLE; LOW PLASTICITY; MOIST (CL)	
25								CL	3		
26									4		
27								CL	5	LEAN CLAY; LIGHT BROWN; FRIABLE; MODERATE PLASTICITY; MOIST (CL)	
28									6		
29								CL	7	LEAN CLAY, DARK BROWN; VERY FRIABLE (SOFT); MOD PLASTICITY; MOIST (CL)	
30									8		
31								CL	9	LEAN CLAY; LIGHT BROWN W/ GRAY MOTTLES (CL)	
32									10		
33									11		
34									12		
35									13		
36									14		
37									15		
38								CL	16	LEAN CLAY - GRAY/BROWN; FRIABLE; MOD PLASTIC; VERY MOIST (CL)	NOTICEABLE STALE HC ODOR
39									17		
40								SC	18	CLAYEY SAND; WELL GRADED FINE TO MEDIUM SAND; (SC)	STRONG PETROLEUM HYDROCAR
41									19		
42									20		
43								CL	21	LEAN CLAY; GRAY; MOD PLASTIC; FRIABLE; MOIST (CL)	STRONG HC ODOR
44									22		GRAY STAIN

21995 Foothill Blvd.

Hayward, CA

005

Duke Project

Casing Elevation

Casing Size and Type		Annulus Filler		Sample ID					Sample Driven (in)	Sample Recovered	Blow Count	PTD readings	USCS	Depth	Visual Description		Comments
23	0.020	#3											SW	23	WELL GRADED SAND; FINE TO MEDIUM GRADED SAND; LOOSE; SATURATED (SW)	STRONG HC ODOR	
24										CH	24	FAT CLAY; GRAY, STIFF, PLASTIC; MOIST; # (CH)	STRONG HC ODOR				
25											25						
26											26	BORING TERMINATED					
27											27						
28											28						
29											29						
30											30						
31											31						
32											32						
33								33									
34								34									
35								35									
36								36									
37								37									
38								38									
39								39									
40								40									
41								41									
42								42									
43								43									
44								44									

Dates and Times

Start

Total Depth

Completion or backfill

Drilling Company and Driller

Log

Drilling Equipment and Method

Sampling Method and Diameter

Permitting Agency

Bore Hole Diameter

Discharge, Type and Size of Casing

Project #

Driller's C-37



Delta
Environmental
Consultants, Inc.

Street Address

21995 Foothill Boulevard

City & State

Hayward, California

Delta Project #

DG90-260

Project ID

Chevron Station No. 9-0260

Surface Elev.

NA

Well / Boring ID

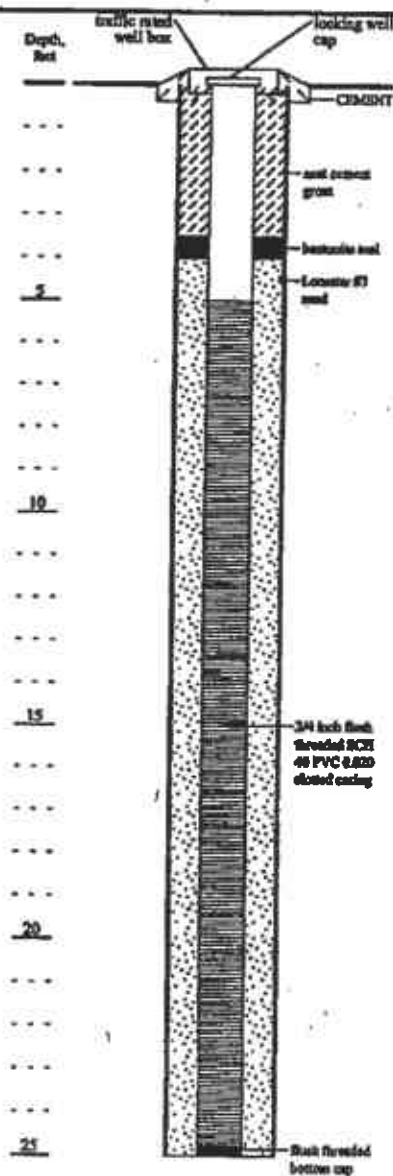
PMW

Casing Elev.

NA

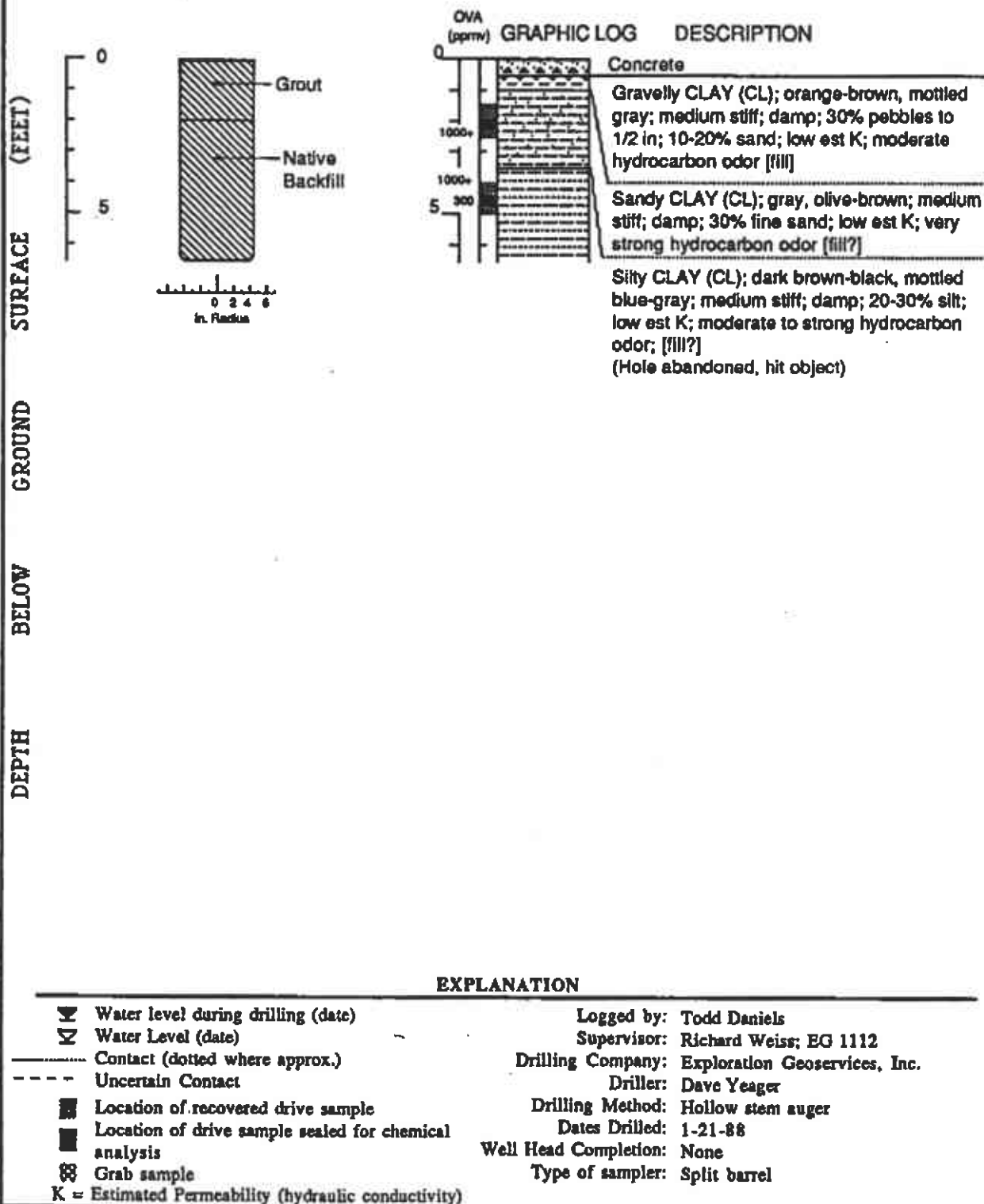
Total Depth

25'



Dates and Times	Logger Delta Geologist	Sampling Method & Diameter NA	Permitting Agency Alameda County Health Care Services Agency
Start	Drilling Company & Driller NA, TBA	Bore Hole Diameter 4-inches	Permit # NA
Total Depth	Drillers C-57#	Diameter, Type & Slot Size of Casing 3/4-inch SCH 40 PVC 8.820 slot	
Completion or backfill	Drilling Equipment and method Geoprobe 6600, NA		

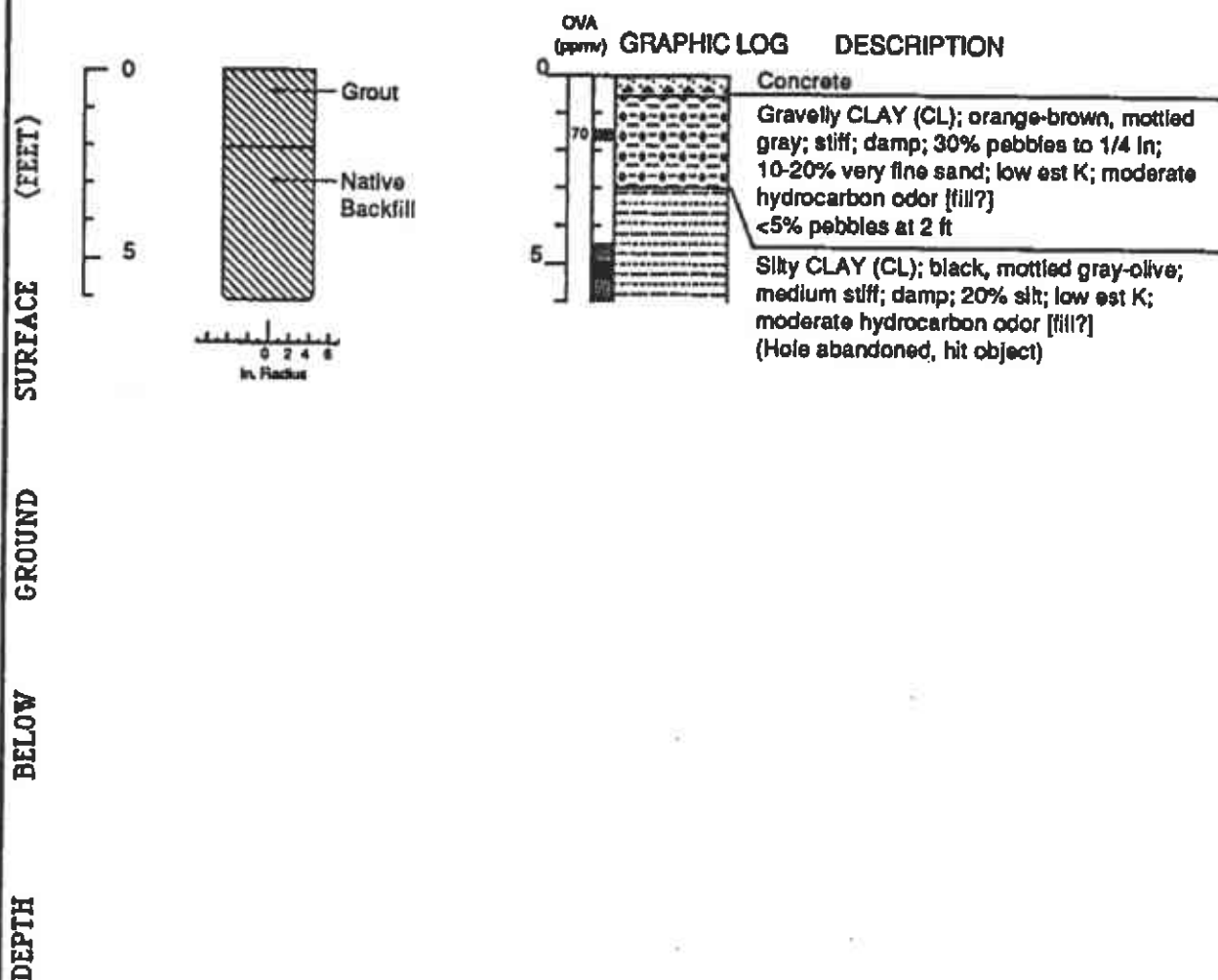
BORING B-6



Boring Log B-6

Chevron Facility #0260
Hayward, CA

BORING B-8



EXPLANATION

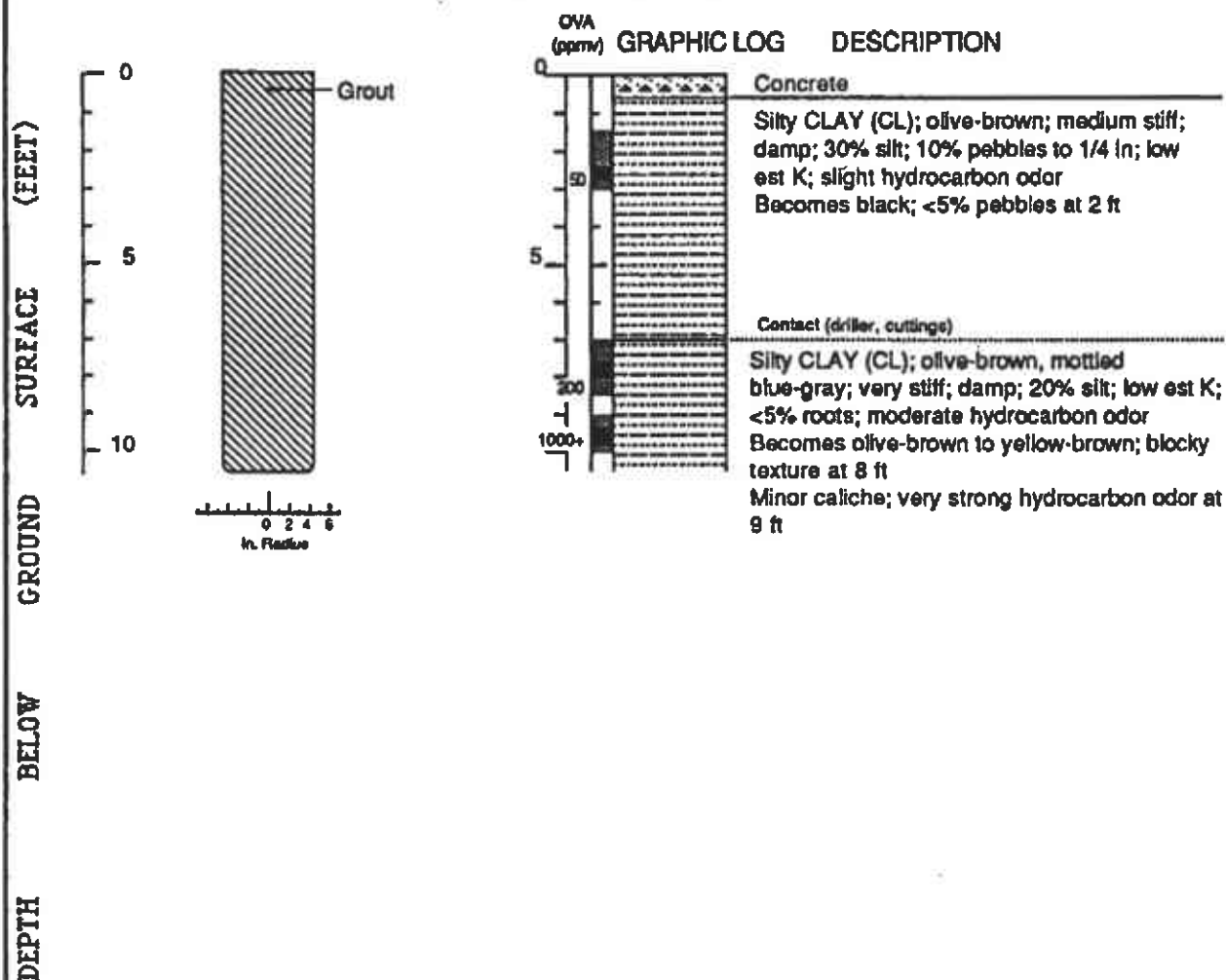
- Water level during drilling (date)
 Water Level (date)
 Contact (dotted where approx.)
 Uncertain Contact
 Location of recovered drive sample
 Location of drive sample sealed for chemical analysis
 Grab sample
 K = Estimated Permeability (hydraulic conductivity)

Logged by: Todd Daniels
 Supervisor: Richard Weiss; EG 1112
 Drilling Company: Exploration Geoservices, Inc.
 Driller: Dave Yeager
 Drilling Method: Hollow stem auger
 Dates Drilled: 1-21-88
 Well Head Completion: None
 Type of sampler: Split barrel

Boring Log B-8

 Chevron Facility #0260
 Hayward, CA

BORING B-9



EXPLANATION

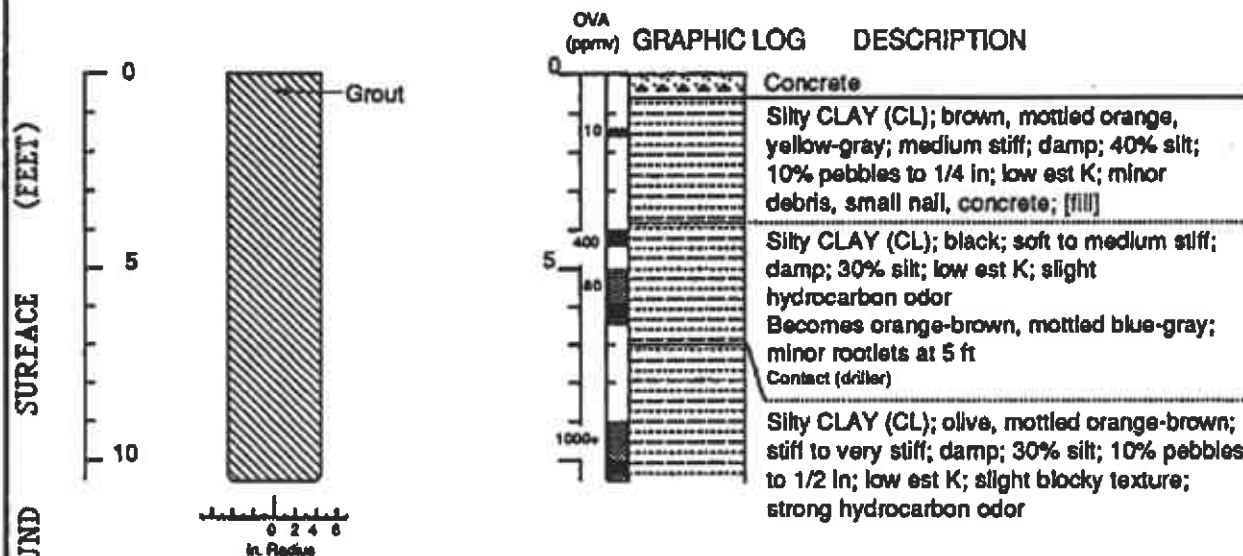
- Water level during drilling (date)
- Water Level (date)
- Contact (dotted where approx.)
- Uncertain Contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Grab sample
- K = Estimated Permeability (hydraulic conductivity)

Logged by: Todd Daniels
 Supervisor: Richard Weiss; EG 1112
 Drilling Company: Exploration Geoservices, Inc
 Driller: Dave Yeager
 Drilling Method: Hollow stem auger
 Dates Drilled: 1-22-88
 Well Head Completion: None
 Type of sampler: Split barrel

Boring Log B-9

Chevron Facility #0260
 Hayward, CA

BORING B-10



EXPLANATION

- Water level during drilling (date)
- Water Level (date)
- Contact (dotted where approx.)
- Uncertain Contact
- Location of recovered drive sample
- Location of drive sample sealed for chemical analysis
- Grab sample
- K = Estimated Permeability (hydraulic conductivity)

Logged by: Todd Daniels
 Supervisor: Richard Weiss; EG 1112
 Drilling Company: Exploration Geoservices, Inc.
 Driller: Dave Yeager
 Drilling Method: Hollow stem auger
 Dates Drilled: 1-22-88
 Well Head Completion: None
 Type of sampler: Split barrel

Boring Log B-10

Chevron Facility #0260
 Hayward, CA

C A M B R I A



ATTACHMENT F

Groundwater Extraction System Operational Data

Table 1: Flow Totalizer Readings
 Chevron Service Station #9-0260
 21995 Foothill Boulevard, Hayward, California.

Date	Totalizer Reading (Gallons)	Gallons Discharged This Period	Cumulative Gallons	Days Since Previous Reading	Average Discharge Rate (GPM)	Remarks
3-Jul-92	12,327 (a)	0	0		0	
13-Aug-92	42,512	30,185	30,185	41	0.51	
25-Sep-92	56,701	14,189	44,374	43	0.23	
27-Oct-92	72,361	15,660	60,034	32	0.34	
27-Nov-92	84,455	12,094	72,128	31	0.27	
17-Dec-92	91,520	7,065	79,193	20	0.25	
30-Jan-93	128,498	36,978	116,171	44	0.58	
27-Feb-93	150,357	21,859	138,030	28	0.54	
30-Mar-93	155,242	4,885	142,915	31	0.11	
17-Apr-93	155,256	14	142,929	18	0.001	
13-May-93	155,256	0	142,929	26	0	
10-Jun-93	155,512	256	143,185	28	0.006	
29-Jul-93	172,040	16,528	159,713	49	0.23	
26-Aug-93	172,213	173	159,886	28	off/restart	
29-Sep-93	177,080	4,867	164,753	34	off/restart	
29-Oct-93	180,341	3,261	168,014	30	0.08	
15-Nov-93	181,811	1,471	169,484	17	0.06	
14-Dec-93	182,823	1,012	170,496	29	0.02	
18-Jan-94	186,242	3,419	173,915	35	0.07	
21-Feb-94	189,034	2,792	176,707	34	0.06	
25-Mar-94	191,104	2,070	178,777	32	0.04	
21-Apr-94	191,108	4	178,781	27	---	System off on arrival
26-May-94	202,576	11,468	190,249	35	0.23	
22-Jun-94	204,246	1,670	191,919	27	0.04	System off on arrival
27-Jul-94	233,126	28,881	220,799	35	0.57	
31-Aug-94	261,243	28,117	248,916	35	0.56	
20-Sep-94	274,831	13,588	262,504	20	0.47	
5-Oct-94	278,498	3,667	266,171	15	0.17	System shut down
10-Jun-95	278,601	103	266,274	248	0.00	System restarted
12-Jun-95	278,669	68	266,342	2	0.02	No samples collected
21-Jun-95	278,669	0	266,342	9	0.00	System sampled
29-Jun-95	279,843	1,174	267,516	8	0.10	System resampled
29-Sep-95	---	---	---	---	---	System off; no measurements
5-Oct-95	---	---	---	---	---	System restarted

Table 1: Flow Totalizer Readings
 Chevron Service Station #9-0260
 21995 Foothill Boulevard, Hayward, California.

Date	Totalizer Reading (Gallons)	Gallons Discharged This Period	Cumulative Gallons	Days Since Previous Reading	Average Discharge Rate (GPM)	Remarks
23-Oct-95	300,640	20,797	288,313	18	0.80	System off on arrival
22-Nov-95	301,109	469	288,782	30	0.01	System restarted
12-Dec-95	313,212	12,103	300,885	20	0.42	System sampled
10-Jan-96	318,311	5,099	305,984	29	0.12	System sampled
2-Feb-96	330,862	12,551	318,535	23	0.38	System sampled

GPM = Gallons per minute

(a) Meter not zeroed when system began operation.

Table 2: Groundwater Treatment System Analytical Results
Chevron Service Station #9-0260
21995 Foothill Boulevard, Hayward, California.

Sample	Date	TPH as Gasoline (µg/L) (a)	Benzene (µg/L) (b)	Toluene (µg/L) (b)	Ethylbenzene (µg/L) (b)	Xylenes (µg/L) (b)	Arsenic (mg/L) (c)	TSS (mg/L) (d)	COD (mg/L) (e)	pH (pH units) (f)
Sewer Effluent	13-Aug-92	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.005)	NA	NA	NA
Sewer Effluent	25-Sep-92	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA	NA	NA	NA
Sewer Effluent	27-Oct-92	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.28	ND(<5)	NA	NA
Sewer Effluent	17-Dec-92	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.005)	ND(<5)	NA	NA
Sewer Effluent	4-Jan-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.005)	ND(<5)	NA	NA
Sewer Effluent	30-Jan-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.34	NA	17.1	NA
Sewer Effluent	27-Feb-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.29	5	11.1	7.6
Sewer Effluent	30-Mar-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.005)	NA	12	7.8
Sewer Effluent	13-May-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.40	8	34	7.4 (g)
Sewer Effluent	4-Jul-93	ND(<50)	ND(<0.5)	0.5	ND(<0.5)	ND(<0.5)	2.00	8	12	7.5 (g)
Sewer Effluent	29-Jul-93	2,200	680	500	9	310	1.00	31	12	6.9
Sewer Effluent	6-Oct-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.04	10	13	7.5
Sewer Effluent	29-Oct-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.02	ND(<5)	7.0	7.6 (g)
Sewer Effluent	15-Nov-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.014	8	15	7.8 (g)
Sewer Effluent	14-Dec-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.010	NA	NA	6.1 (h)
Sewer Effluent	18-Jan-94	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.021	ND(<5)	6	8 (h)
Sewer Effluent	21-Feb-94	ND(<50)	ND(<0.5)	1.0	ND(<0.5)	0.6	0.074	950	NA	7.2 (h)
Sewer Effluent	15-Mar-94	ND(<50)	2.3	0.9	ND(<0.5)	ND(<0.5)	0.057	ND(<5)	13	7.4 (h)
Sewer Effluent	26-May-94	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.005)	ND(<1)	ND(<5)	7.4 (h)
Sewer Effluent	22-Jun-94	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.045	3	ND(<5)	7.5 (h)
Sewer Effluent	27-Jul-94	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.380	1	ND(<20)	8 (h)
Sewer Effluent	31-Aug-94	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.880	7	ND(<20)	7.5 (h)
Sewer Effluent	20-Sep-94	ND(<50)	0.6	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.750	10	ND(<20)	7.5 (h)
Sewer Effluent	22-Jun-95	ND(<50)	1.7	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.05)	ND(<10)	ND(<20)	7.86
Sewer Effluent	29-Jun-95	ND(<50)	ND(<50)	ND(<50)	ND(<50)	ND(<50)	NA	NA	NA	7 (h)
Sewer Effluent	12-Dec-95	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.28	ND(<1.0)	ND(<20)	NM
Sewer Effluent	10-Jan-96	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.36	4.0	26	7.0 (h)
Sewer Effluent	2-Feb-96	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	0.24	9.0	ND(<20)	NM

(a) Analyzed by USEPA Method 8015, modified.

(b) Analyzed by USEPA Method 8020.

(c) Analyzed by USEPA Method 7060.

(d) Analyzed by USEPA Method 160.2.

(e) Analyzed by USEPA Method 410.1.

(f) Analyzed by USEPA Method 150.1.

(g) The laboratory reported that this sample was analyzed upon receipt in the laboratory, but was beyond the recommended holding time. This is an estimated concentration.

(h) Measurement taken in field.

(Remarks continued on next page.)



Table 2: Groundwater Treatment System Analytical Results
 Chevron Service Station #9-0260
 21995 Foothill Boulevard, Hayward, California.

Sample	Date	TPH as Gasoline (µg/L) (a)	Benzene (µg/L) (b)	Toluene (µg/L) (b)	Ethylbenzene (µg/L) (b)	Xylenes (µg/L) (b)	Arsenic (mg/L) (c)	TSS (mg/L) (d)	COD (mg/L) (e)	pH (pH units) (f)
TPH	Total petroleum hydrocarbons									
TSS	Total suspended solids									
COD	Chemical oxygen demand									
mg/L	Milligrams per liter									
µg/L	Micrograms per liter									
ND()	Laboratory method detection limit; limit in parentheses									
NA	Not analyzed									



C A M B R I A



ATTACHMENT G
1993 SVE and GWE Test Data

Table 1: Aquifer/SVE Pilot Test Data - Extraction Well MW-12
Chevron Service Station #9-0260
21995 Foothill Boulevard, Hayward, California.

Notes	Real Time	Test Running Time (min)	DTW From TVS (feet)	DTW From TOC (feet)	Vacuum (in. H ₂ O)	Air Extraction Rate cfm	Totalizing Flowmeter (gallons)	Flow Rate (GPM)	Blower Exhaust Temperature (°F)	Comments
START	9:30:00	0.0	13.20	11.95	0		0000059.1	---		
	9:31:00	1.0	15.05	13.80	100			3.00		
	9:32:00	2.0	15.50	14.25						
	9:32:00	2.0	15.70	14.45						
	9:33:00	3.0	15.85	14.60						
	9:33:15	3.3	16.00	14.75						
	9:33:25	3.4	16.02	14.77				3.00		
	9:33:45	3.8	16.45	15.20						
	9:33:55	3.9	16.50	15.25						
	9:34:00	4.0	16.60	15.35						
	9:34:10	4.2	16.70	15.45						
	9:34:30	4.5	16.90	15.65			0000060.0			
	9:34:45	4.8	17.10	15.85						
	9:35:00	5.0	17.25	16.00						
	9:35:20	5.3	17.40	16.15						
	9:35:40	5.7	17.40	16.15	100					
	9:37:00	7.0	18.00	16.75						
	9:38:00	8.0	18.35	17.10			0000074.0			
	9:39:00	9.0	19.00	17.75				3.00		
	9:40:00	10.0	19.30	18.05	100	17.44		2.50		
	9:41:00	11.0	19.30	18.05				2.50	180	
	9:43:00	13.0	19.30	18.05	100	17.44				
	9:45:00	15.0	19.00	17.75			0000087.5	2.25		
	9:47:00	17.0	19.30	18.05			0000090.3	2.50		
	9:48:00	18.0	19.35	18.10				2.00		
	9:50:00	20.0	19.30	18.05			0000100.9	2.00		
	9:52:00	22.0	19.30	18.05		17.44	0000103.1	2.00		
	9:54:00	24.0	---	---				2.00		
	9:56:00	26.0	19.30	18.05				2.00		
	9:59:00	29.0	19.30	18.05			0000129.9	2.00		
	10:01:00	31.0	19.30	18.05				2.00		
	10:06:00	36.0	19.30	18.05			0000131.1	2.00		
	10:08:00	38.0	---	---		17.44	0000140.0	2.00		
	10:10:00	40.0	19.30	18.05				2.00		
	10:15:00	45.0	19.30	18.05			0000150.8	2.00		
*	10:20:00	50.0	19.30	18.05		20.72	0000162.1	2.00		Leak in pipe
	10:25:00	55.0	19.30	18.05		27.26	0000174.7	2.00		Leak in pipe
	10:26:00	56.0	---	---			0000183.3	2.00		Leak in pipe
	10:29:00	59.0	---	---		16.35		2.00		Leak in pipe
	10:30:00	60.0	19.30	18.05			0000196.9	2.00		
	10:33:00	63.0	---	---		17.44		2.00		
	10:35:00	65.0	19.30	18.05	100		0000205.6	2.00		
	10:40:00	70.0	19.30	18.05	100	17.44	0000214.8	2.00		
	10:50:00	80.0	19.30	18.05	100	17.44	0000235.7	2.00		
	11:00:00	90.0	19.30	18.05	100	17.44	0000268.5	2.00	210	
	11:03:00	93.0	19.30	18.05			0000286.4	2.00	220	
	11:10:00	100.0	19.30	18.05			0000307.4		220	
	11:20:00	110.0	19.30	18.05		17.44		2.00	220	
	11:31:00	121.0	19.10	17.85			0000321.6	1.50	220	
	11:33:00	123.0	19.35	18.10					220	
	11:42:00	132.0	19.35	18.10			0000342.4	1.50	220	
	12:00:00	150.0	19.35	18.10		17.44	0000371.5	1.50	220	



Table 1: Aquifer/SVE Pilot Test Data - Extraction Well MW-12
 Chevron Service Station #9-0260
 21995 Foothill Boulevard, Hayward, California.

Notes	Real Time	Test Running Time (min)	DTW From TVS (feet)	DTW From TOC (feet)	Vacuum (in. H ₂ O)	Air Extraction Rate cfm	Totalizing Flowmeter (gallons)	Flow Rate (GPM)	Blower Exhaust Temperature (°F)	Comments
SVE and Pump Off	12:10:00	160.0	19.35	18.10		19.63	0000390.7	1.50	220	
	12:20:00	170.0	19.35	18.10		19.63	0000418.5	1.50	220	
	12:30:00	180.0	19.35	18.10		19.63	0000425.4	1.50	220	
	12:40:00	190.0	19.35	18.10		19.63	0000442.6	1.50	220	
	12:50:00	200.0	19.35	18.10		21.81	0000462.6	1.50	220	
	13:00:00	210.0	19.35	18.10		22.90	0000488.4	1.50	220	
	13:15:00	225.0	19.35	18.10		22.90	0000503.6	1.50	200	
	13:28:00	238.0	19.35	18.10		23.99	0000537.5	1.50	200	
	13:45:00	255.0	19.35	18.10		23.99	0000552.8	1.50	200	
	14:05:00	275.0	19.35	18.10		23.99	0000598.3	1.50	200	
	14:27:00	297.0	19.35	18.10		26.17	0000636.2	1.50	210	
	14:45:00	315.0	19.35	18.10		26.17	0000656.6	1.50	200	
	15:10:00	340.0	19.35	18.10		26.17	0000700.8	1.50	190	
	16:02:00	392.0	19.35	18.10	100	21.81	0000786.1	1.50		
	16:10:00	400.0	19.35	18.10	80	21.81				
	16:12:00	402.0	19.35	18.10	60	16.35				
	16:21:00	411.0	---	---	100	26.17				
	16:25:00	415.0	19.35	18.10	80	20.72				
	16:26:00	416.0	19.35	18.10	60	15.26	0000824.3	1.50		
	16:27:00	417.0	19.35	18.10	40	10.36				
	16:28:00	418.0	19.35	18.10	20	2.18	0000827.0	1.50		
	16:29:00	419.0	19.35	18.10	100	26.17				
	16:30:00	420.0	19.35	18.10						
	16:30:00	420.0	19.35	18.10						
	16:31:00	421.0	19.00	17.75						
	16:31:00	421.0	18.65	17.40						
	16:31:00	421.0	18.55	17.30						
	16:32:00	422.0	18.45	17.20						
	16:32:00	422.0	18.25	17.00						
	16:32:00	422.0	18.10	16.85						
	16:33:00	423.0	18.00	16.75						
	16:33:00	423.0	17.90	16.65						
	16:33:00	423.0	17.80	16.55						
	16:33:00	423.0	17.75	16.50						
	16:34:00	424.0	17.65	16.40						
	16:35:00	425.0	17.45	16.20						
	16:35:00	425.0	17.40	16.15						
	16:35:00	425.0	17.35	16.10						
	16:36:00	426.0	17.25	16.00						
	16:36:00	426.0	17.10	15.85						
	16:37:00	427.0	16.90	15.65						
	16:38:00	428.0	16.80	15.55						
	16:39:00	429.0	16.65	15.40						
	16:40:00	430.0	16.55	15.30						
	16:41:00	431.0	16.40	15.15						
	16:42:00	432.0	16.30	15.05						
	16:43:00	433.0	16.15	14.90						
	16:44:00	434.0	16.10	14.85						
	16:45:00	435.0	16.05	14.80						
	16:45:00	435.0	16.00	14.75						
	16:46:00	436.0	15.95	14.70						
	16:47:00	437.0	15.90	14.65						



Table 1: Aquifer/SVE Pilot Test Data - Extraction Well MW-12
 Chevron Service Station #9-0260
 21995 Foothill Boulevard, Hayward, California.

Notes	Real Time	Test Running Time (min)	DTW From TVS (feet)	DTW From TOC (feet)	Vacuum (in. H ₂ O)	Air Extraction Rate cfm	Totalizing Flowmeter (gallons)	Flow Rate (GPM)	Blower Exhaust Temperature (°F)	Comments
Pump Remove	16:48:00	438.0	15.80	14.55						
	16:48:35	438.6	15.75	14.50						
	16:49:00	439.0	15.75	14.50						
	16:50:30	440.5	15.70	14.45						
	16:51:00	441.0	15.65	14.40						
	16:52:00	442.0	15.60	14.35						
	16:54:00	444.0	15.50	14.25						
	16:57:00	447.0	15.40	14.15						
	17:07:00	457.0	15.15	13.90						
	17:11:00	461.0	15.05	13.80						
	17:14:00	464.0	15.15	13.90						
	17:23:00	473.0	14.90	13.65						
	17:28:00	478.0	14.80	13.55						
	17:44:00	494.0	14.70	13.45						
	18:07:00	517.0	14.45	13.20						
	18:45:00	555.0	14.25	13.00						
	19:35:00	605.0	14.05	12.80						

1.5 gpm bucket flow test at 13:30.

* leak in pipe

TOC = Top of Casing

TVS = Top of Vacuum Seal

DTW = Depth to Water

DTB = Depth to Bottom

Totalizing flowmeter not zeroed prior to test

Average flow rate using elapsed time and totalizing flowmeter is 1.73 gpm.



Table 3: SVE Pilot Test Analytical Results – Air
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California.

Sample Name	Date	TPH as Gasoline (ppmv) (a)	Benzene (ppmv) (b)	Toluene (ppmv) (b)	Ethylbenzene (ppmv) (b)	Xylenes (ppmv) (b)	Methane (ppmv) (c)	CO2 (ppmv) (c)	O2 (ppmv) (c)
MW-12/AM	10-Jun-93	6,300	18	7.6	4.5	38	6,500	26,000	150,000
MW-12/PM	10-Jun-93	44,000	74	29	15	96	8,500	44,000	140,000
Trip Blank	10-Jun-93	ND(<50)	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)	NA	NA	NA

(a) Analyzed by USEPA Method 8015, modified.

(b) Analyzed by USEPA Method 8020.

(c) Analyzed by Method GC-TCD (a method developed by GTEL for fixed-gas analysis).

TPH Total petroleum hydrocarbons

CO2 Carbon dioxide

O2 Oxygen

ppmv parts per million by volume

ND() Not detected (laboratory method detection limit in parentheses)

Analytical results provided by GTEL Environmental Laboratories, Concord, California.

Table 4: SVE Pilot Test Analytical Results – Groundwater
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California.

Sample Name	Date	TPH as Gasoline (µg/L) (a)	TPH as Diesel (µg/L) (a)	Benzene (µg/L) (b)	Toluene (µg/L) (b)	Ethylbenzene (µg/L) (b)	Xylenes (µg/L) (b)
MW-12	10-Jun-93	110,000	ND(<1)	30,000	20,000	2,000	11,000
Trip Blank	10-Jun-93	ND(<50)	NA	ND(<0.5)	ND(<0.5)	ND(<0.5)	ND(<0.5)

(a) Analyzed by USEPA Method 8015, modified.

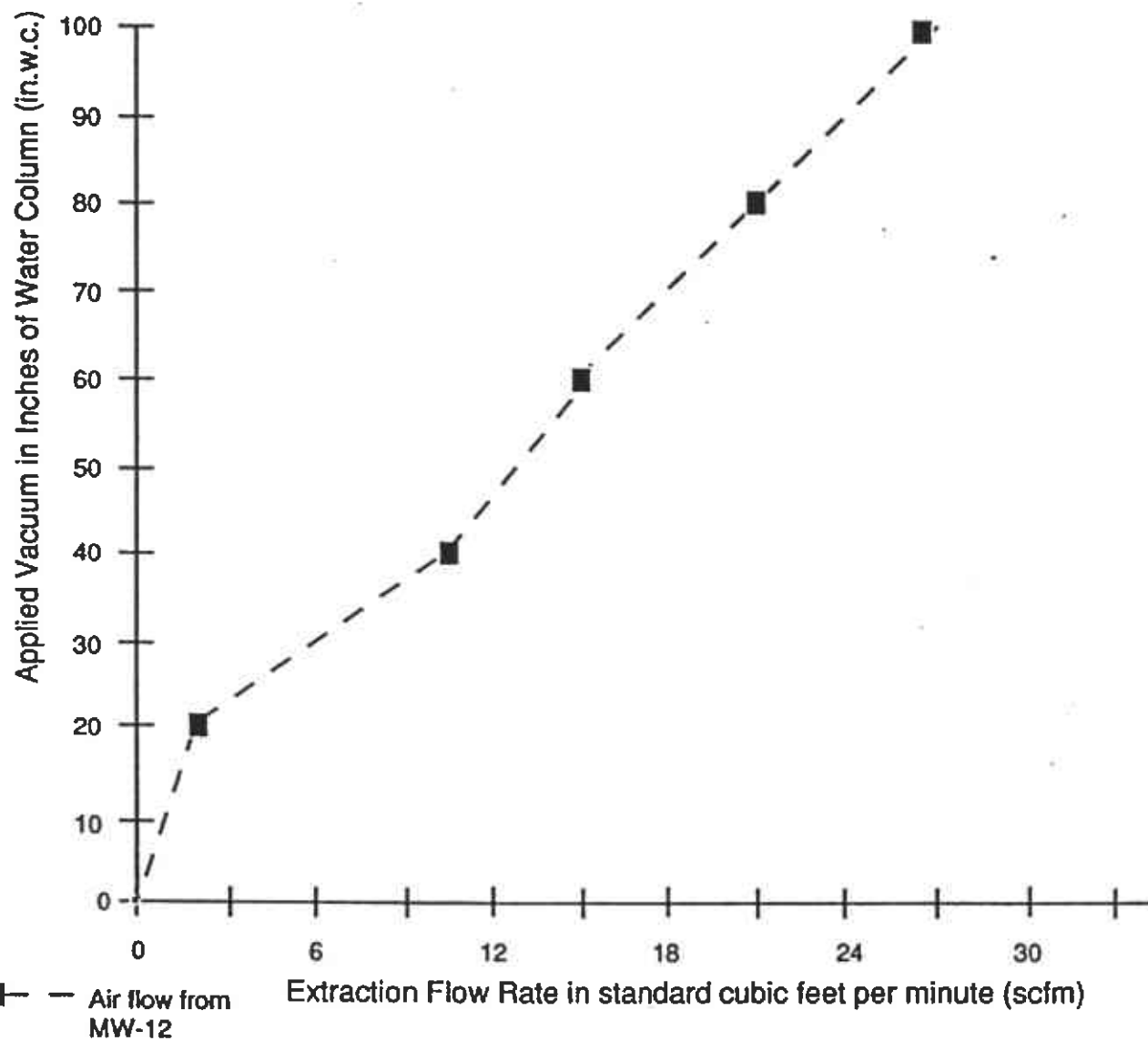
(b) Analyzed by USEPA Method 8020.

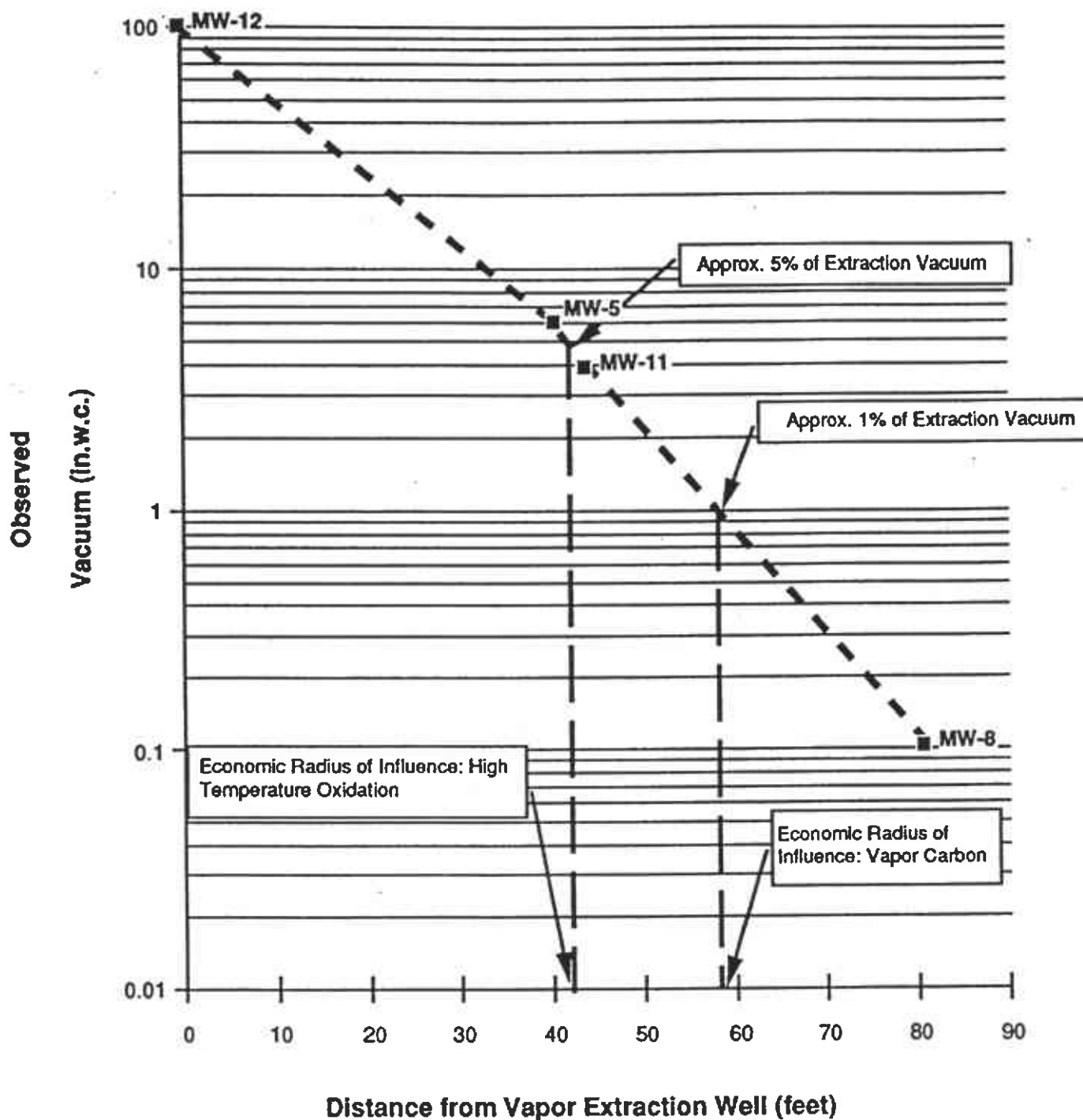
TPH Total petroleum hydrocarbons

µg/L Micrograms per liter

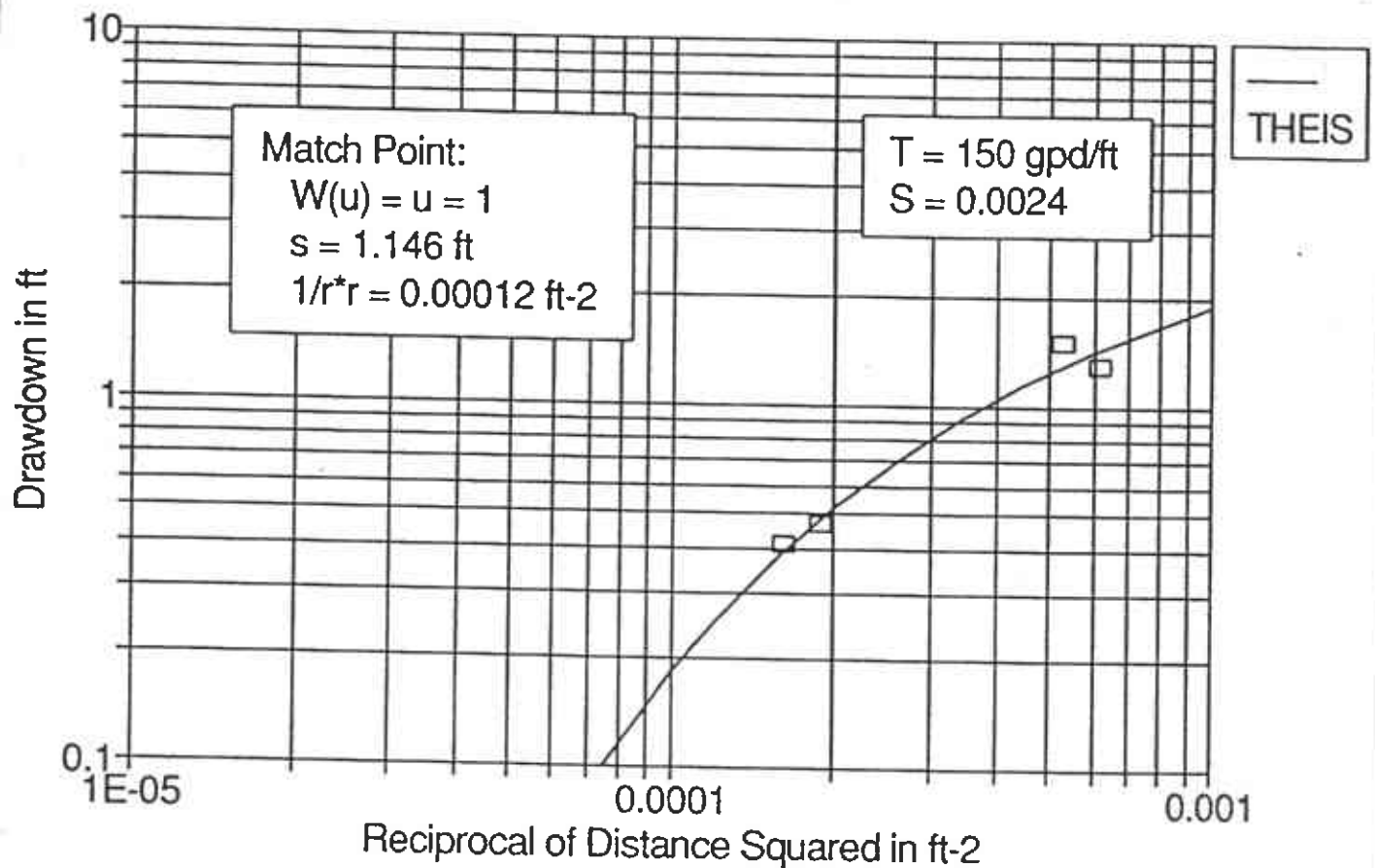
ND() Not detected (laboratory method detection limit in parentheses)

Analytical results provided by GTEL Environmental Laboratories, Concord, California.

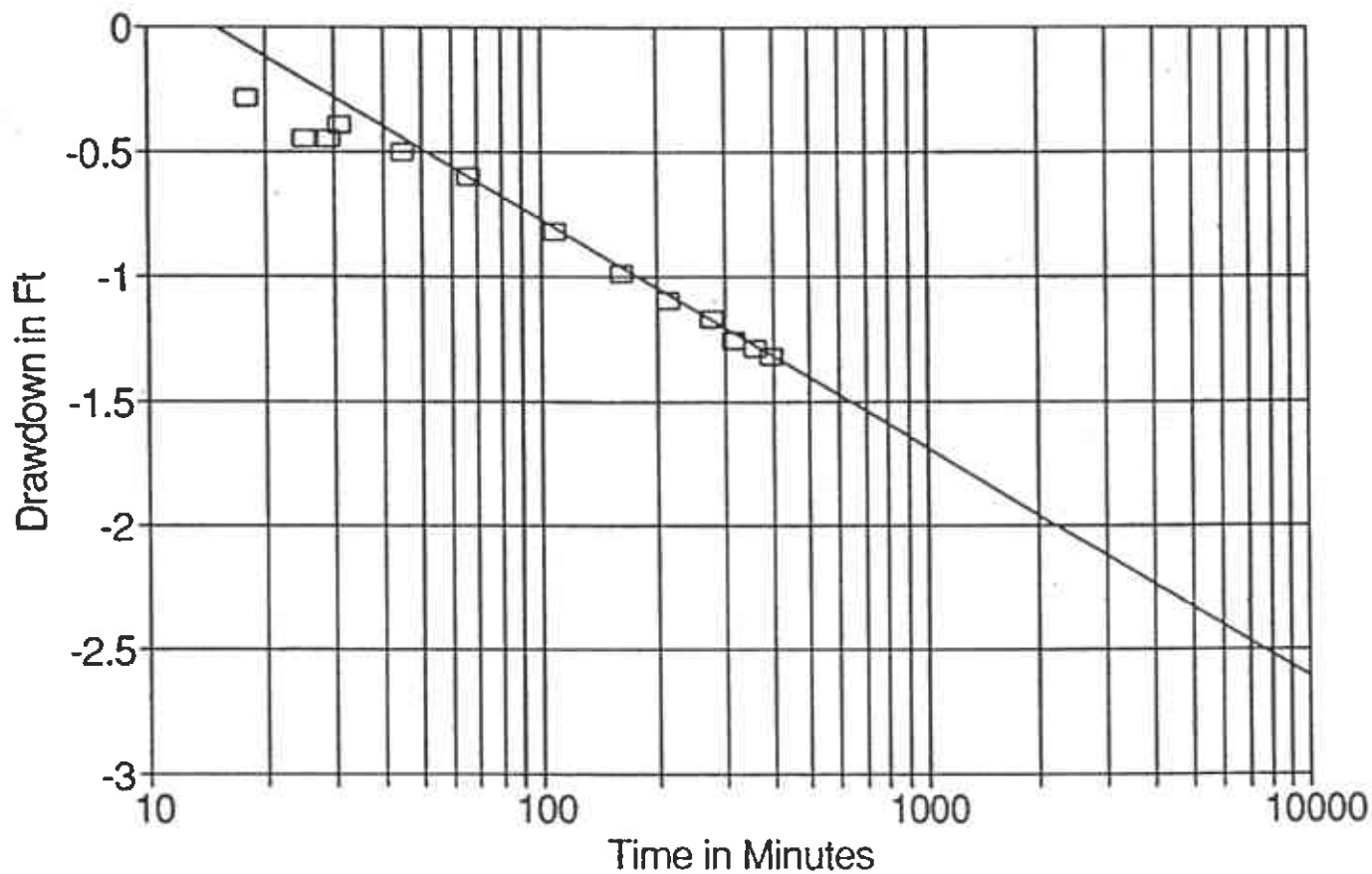




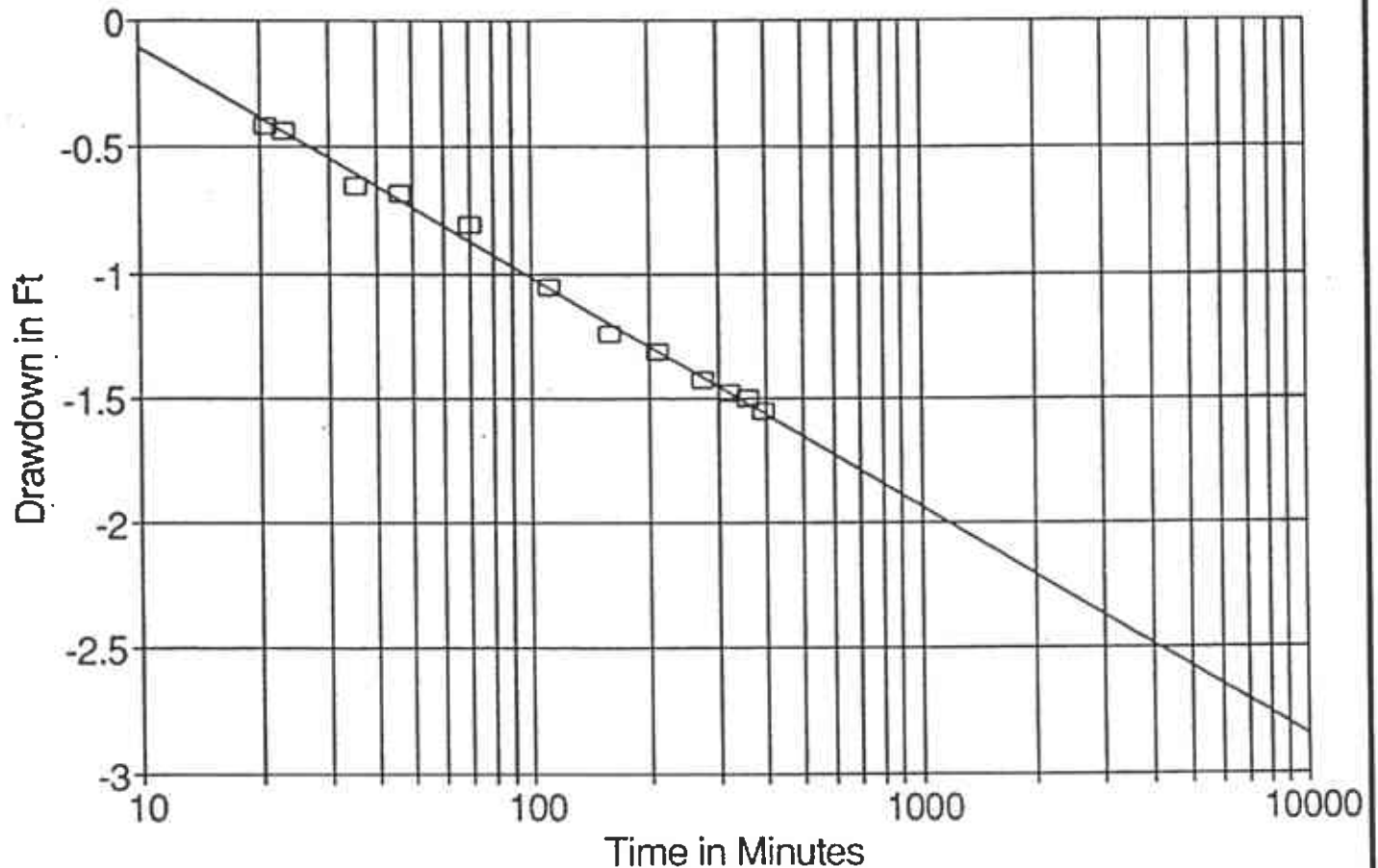
Chevron #9-0206
360 minutes @ 1.5 gpm



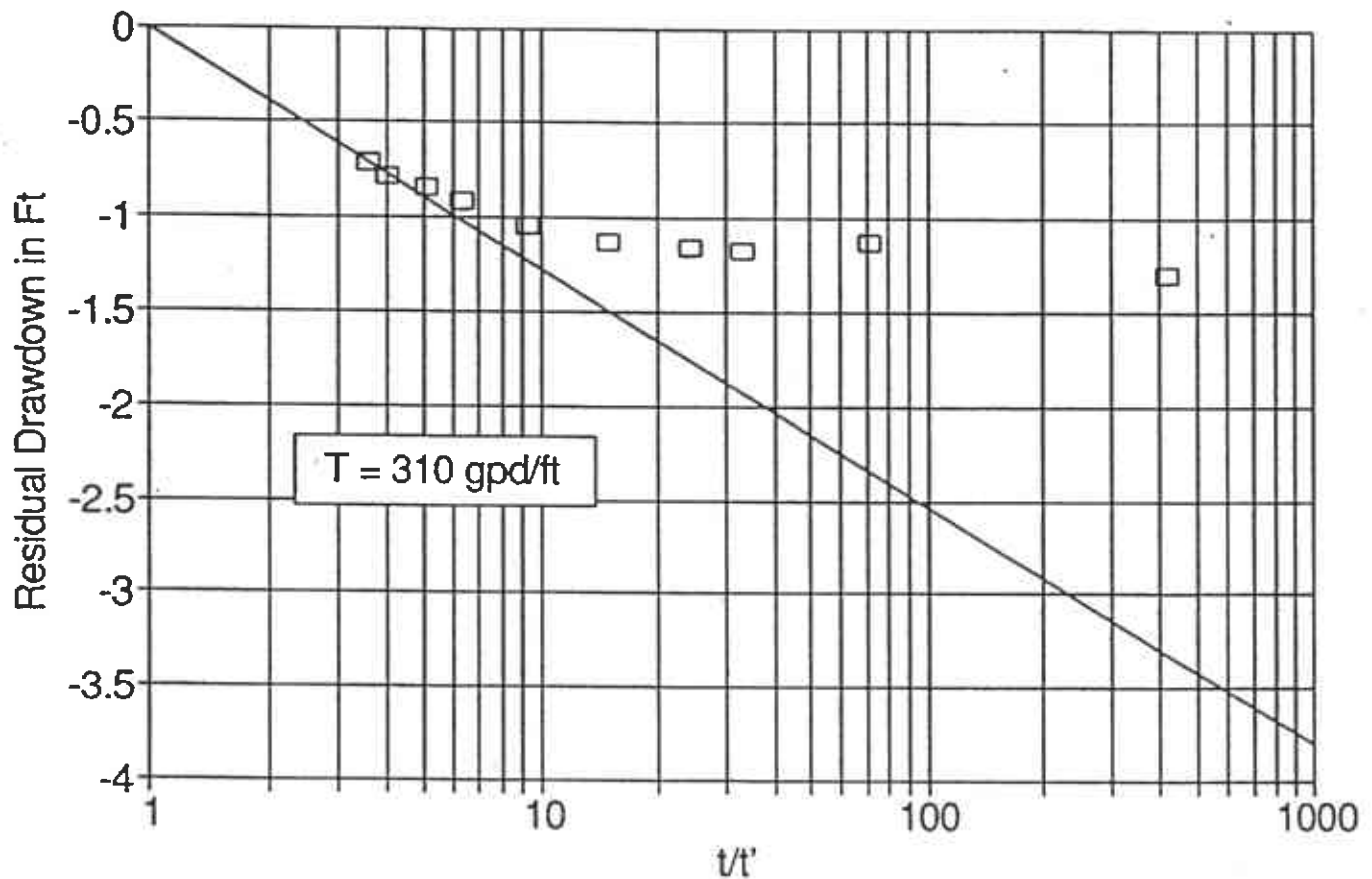
Chevron #9-0260
MW-5 Drawdown



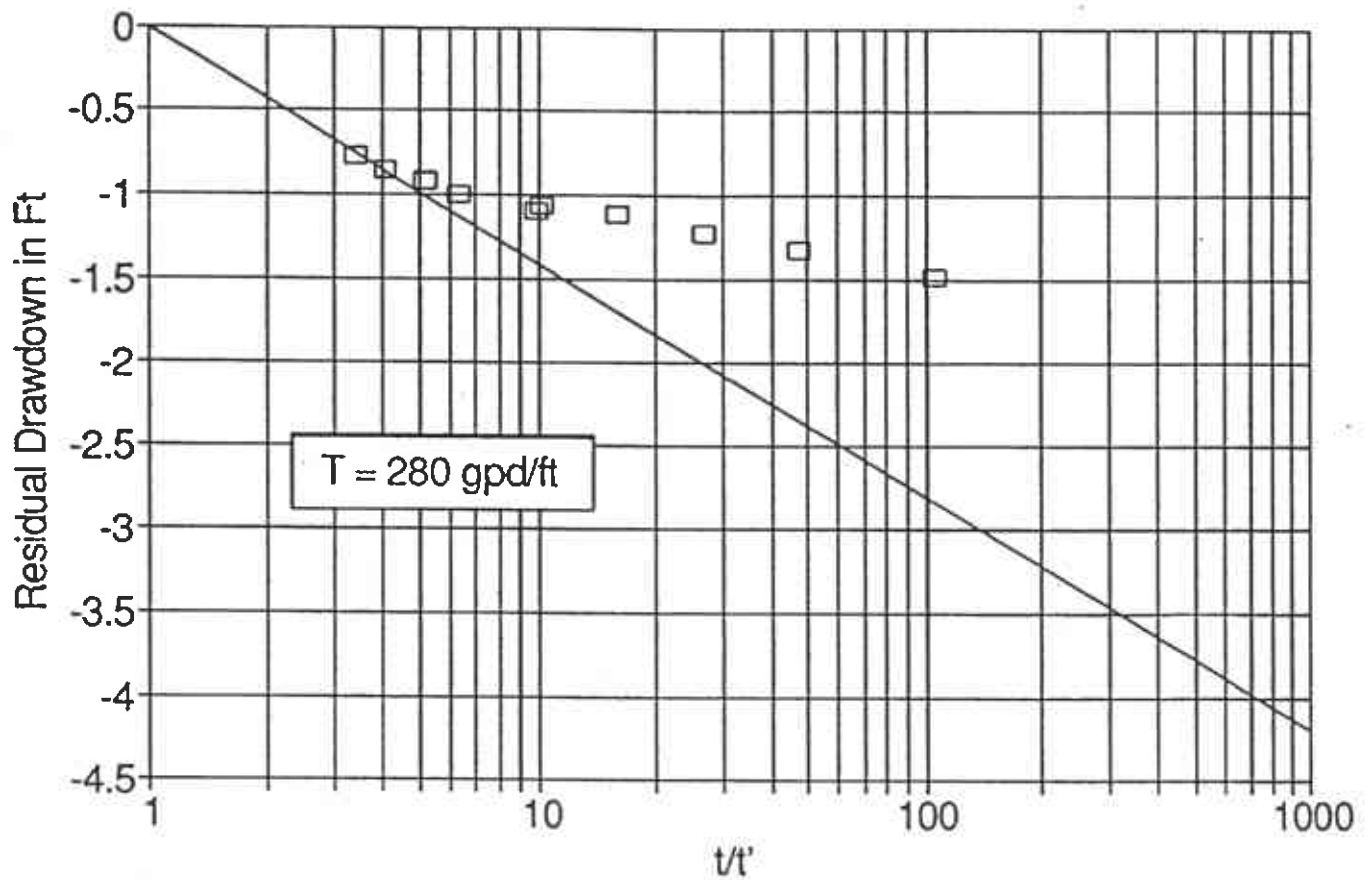
Chevron #9-0260
MW-11 Drawdown



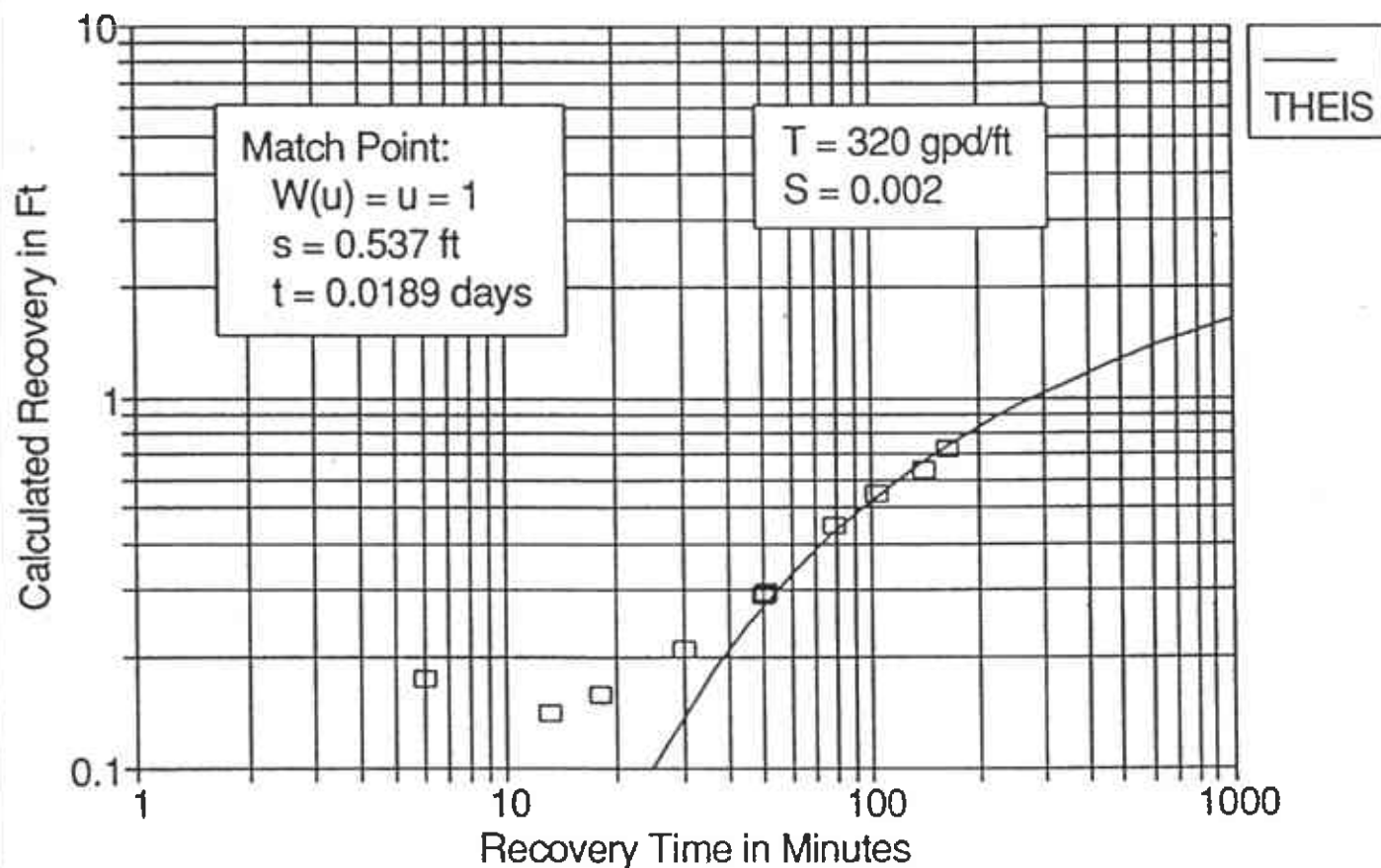
Chevron #9-0260
MW-5 Recovery



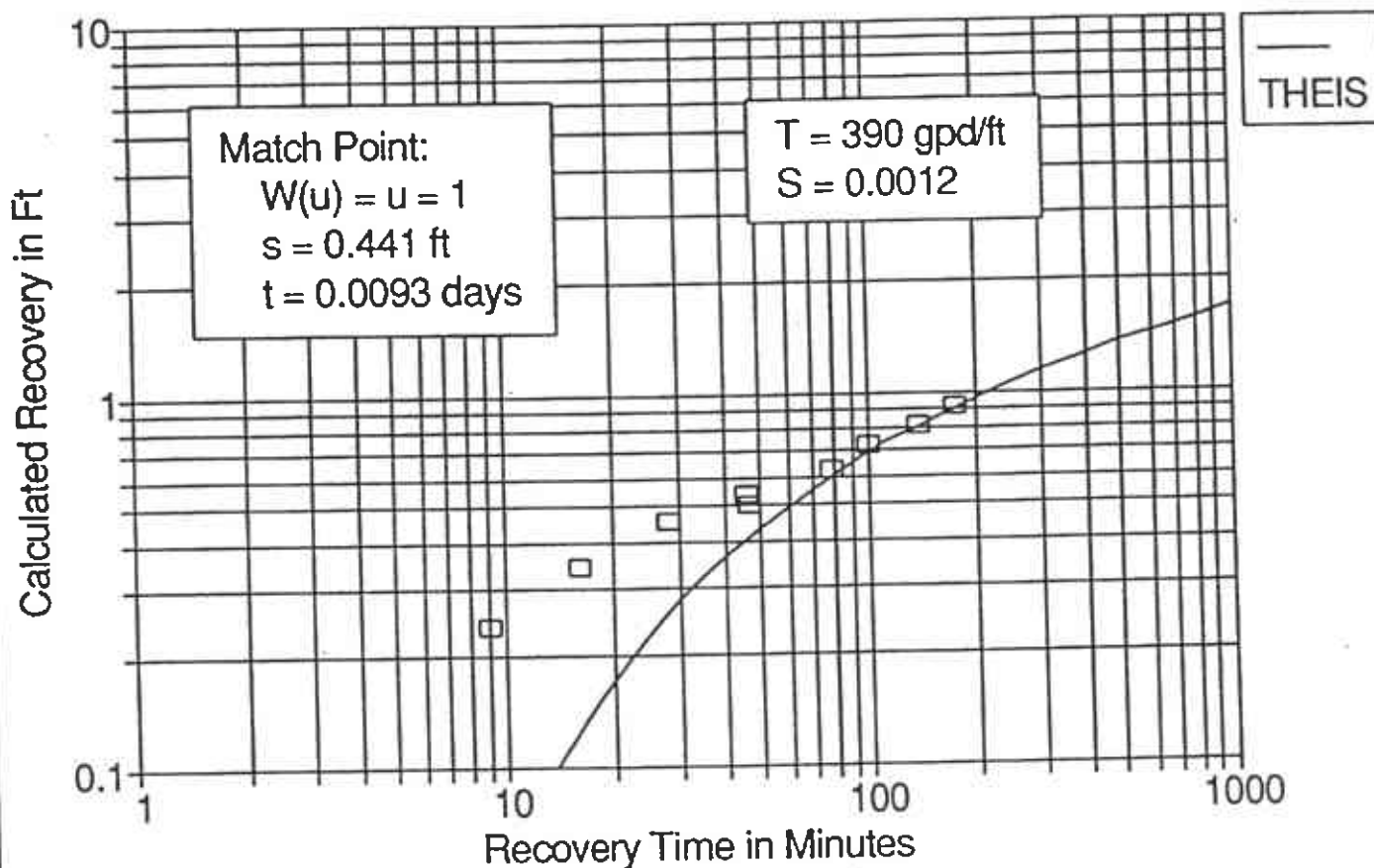
Chevron #9-0260
MW-11 Recovery

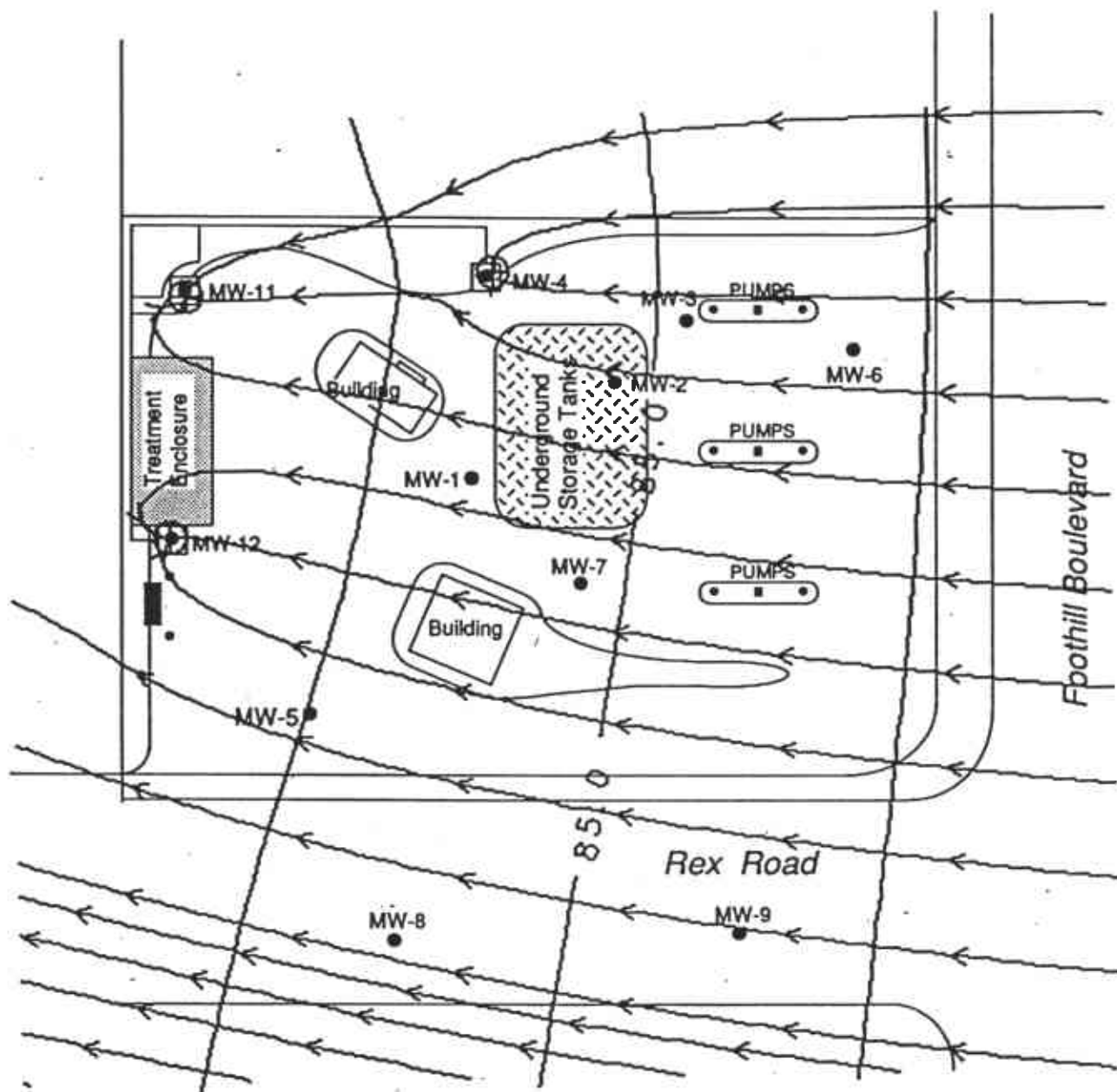


Chevron #9-0260 MW-5 Recovery



Chevron #9-0260 MW-11 Recovery





EXPLANATION

- Existing Monitoring Well
- ◻ Existing Extraction Wells Operating at 0.08 gpm each
- Calculated Hydraulic Flow Lines
- Calculated Groundwater Elevation Contours

0 30



Scale feet



Source: Weiss Associates, 4/23/92

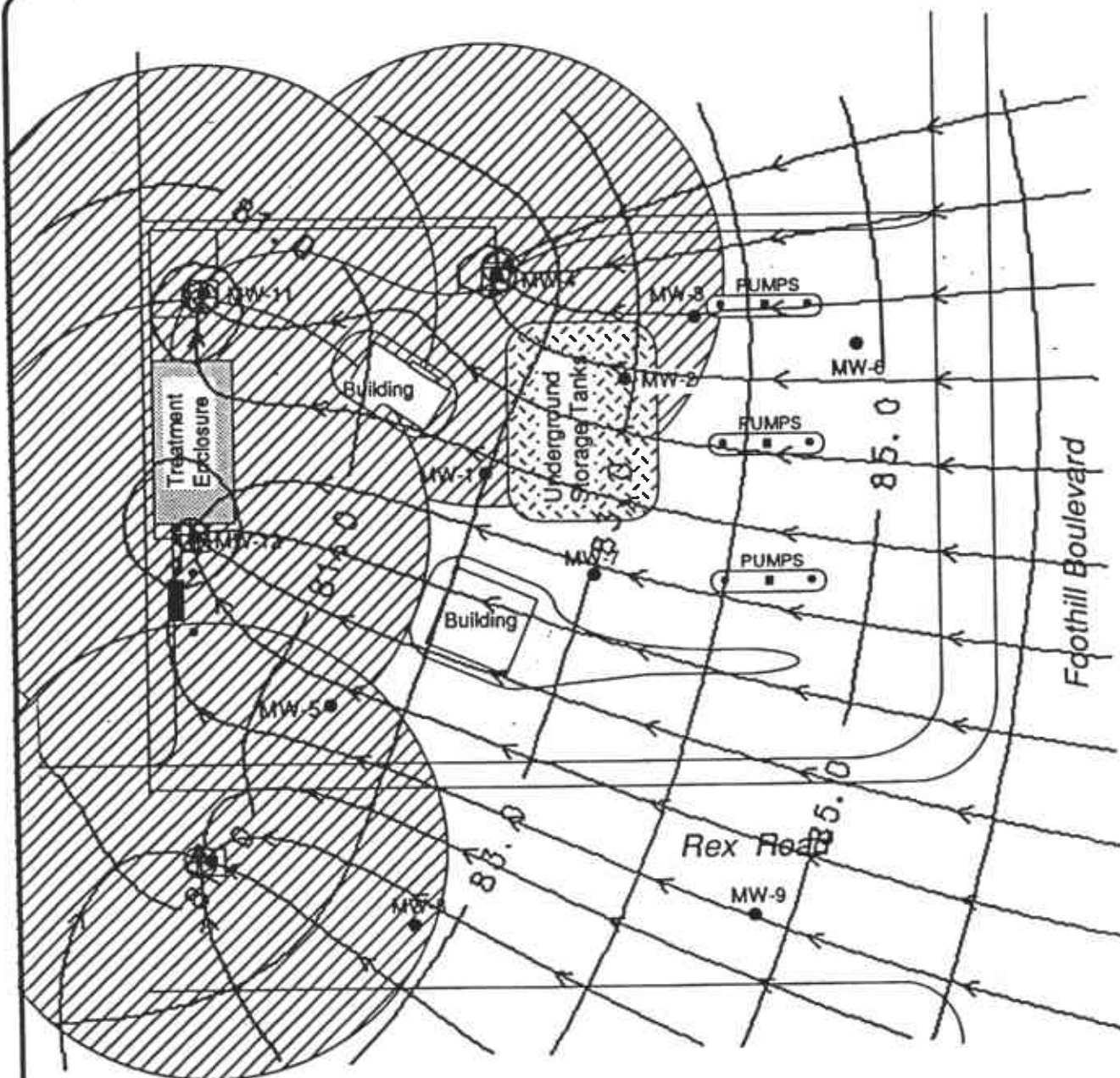


Project No. RC0107.000

Hydraulic Containment of Existing System
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

FIGURE

12



EXPLANATION

- Existing Monitoring Well
- Extraction Wells Operating at 0.42 gpm each

— Calculated Hydraulic Flow Lines

— Calculated Groundwater Elevation Contours

0 30

Scale feet

Source: Weiss Associates, 4/23/92



Project No. RC0107.000

**Vapor and Hydraulic Capture
of Proposed System**
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

FIGURE

13

Table 2: Observation Well Response
Chevron Service Station #9-0260
21995 Foothill Boulevard, Hayward, California.

Monitor Well MW-4	(feet)	Notes	Real Time	Test Running Time (min)	DTW From TVS (feet)	DTW From TOC (feet)	Vacuum (in. H2O)	Depth to Water Below Static Water Level
DTW from TOC	12.80	START	8:53					
DTW from TVS	14.43		9:31	0	14.43	12.80	0	0.00
Distance to Vacuum Extraction Well	72.7		9:53	22	14.43	12.80	0	0.00
			10:08	37	14.45	12.82	0	0.02
			10:19	48	14.51	12.88	0	0.08
			10:43	72	14.58	12.95	0	0.15
			11:25	114	14.65	13.02	0	0.22
			12:13	162	14.72	13.09	0	0.29
			13:05	214	14.77	13.14	0	0.34
			14:07	276	14.83	13.20	0	0.40
		OFF	14:51	320	14.88	13.25	0	0.45
			15:30	359	14.90	13.27	0	0.47
			16:30	419				
			16:35	424	14.93	13.30	0	0.50
			16:40	429	14.91	13.28	0	0.48
			16:47	436	14.88	13.25	0	0.45
			16:59	448	14.89	13.26	0	0.46
			17:18	467	14.86	13.23	0	0.43
			17:18	467	14.85	13.22	0	0.42
			17:47	496	14.79	13.16	0	0.36
			18:10	519	14.77	13.14	0	0.34
			18:48	557	14.73	13.10	0	0.30
			19:29	598	14.70	13.07	0	0.27



Table 2: Observation Well Response
Chevron Service Station #9-0260
21995 Foothill Boulevard, Hayward, California.

Monitor Well MW-5	(feet)	Notes	Real Time	Test Running Time (min)	DTW From TVS (feet)	DTW From TOC (feet)	Vacuum (in. H ₂ O)	Depth to Water Below Static Water Level
DTW from TOC	12.28							
DTW from TVS	14.25							
Distance to Vacuum Extraction Well	40.2							
		START	8:46	0	14.25	12.28	0	0.00
			9:31	18	14.54	12.57	5+	0.29
			9:49	25	14.70	12.73	5+	0.45
		New Vac Gauge	9:56	29	14.70	12.73	5.40	0.45
			10:00	31	14.65	12.68	5.60	0.40
			10:02	45	14.75	12.78	6.00	0.50
			10:16	66	14.85	12.88	6.00	0.60
			10:37	109	15.07	13.10	6.60	0.82
			12:15	164	15.24	13.27	6.50	0.99
			13:07	216	15.34	13.37	6.10	1.09
			14:08	277	15.42	13.45	6.20	1.17
			14:46	315	15.51	13.54	6.40	1.26
			15:31	360	15.54	13.57	6.20	1.29
			16:07	396	15.57	13.60	6.10	1.32
		OFF	16:30	419				
			16:31	420	15.55	13.58	4.50	1.30
			16:36	425	15.38	13.41	1.00	1.13
			16:43	432	15.42	13.45	0.40	1.17
			16:48	437	15.41	13.44	0.20	1.16
			17:00	449	15.37	13.40	0	1.12
			17:20	469	15.30	13.33	0	1.05
		Remove Gauge	17:21	470	15.30	13.33	0	1.05
			17:49	498	15.17	13.20	0	0.92
			18:13	522	15.09	13.12	0	0.84
			18:50	559	15.03	13.06	0	0.78
			19:13	582	14.96	12.99	0	0.71



Table 2: Observation Well Response
Chevron Service Station #9-0260
21995 Foothill Boulevard, Hayward, California.

Monitor Well MW-8	(feet)	Notes	Real Time	Test Running Time (min)	DTW	DTW	Vacuum (in. H2O)	Depth to Water Below Static Water Level
DTW from TOC	11.96				From TVS (feet)	From TOC (feet)		
DTW from TVS	13.65	START	8:48					
Distance to Vacuum Extraction Well	78.8		9:31	0	13.65	11.96	0	0.00
Vac. Meter Fluctuating at 8:48			9:50	19	13.81	12.12	0.03	0.16
			9:59	28	13.85	12.16	0.05	0.20
			10:11	40	13.85	12.16	0.10	0.20
			10:23	52	13.85	12.16	0.10	0.20
			10:40	69	13.85	12.16	0.10	0.20
			11:21	110	13.87	12.18	0.12	0.22
			12:16	165	13.93	12.24	0.12	0.28
			13:10	219	13.96	12.27	0.11	0.31
		14:11	280	14.00	12.31	0.10	0.35	
		14:47	316	14.03	12.34	0.10	0.38	
15:33	362	14.06	12.37	0.10	0.41			
16:08	397	14.07	12.38	0.10	0.42			
OFF	16:30	419						
	16:32	421	14.07	12.38	0.16	0.42		
	16:37	426	14.07	12.38	0.06	0.42		
	16:44	433	14.07	12.38	0.01	0.42		
	16:50	439	14.07	12.38	0	0.42		
	17:02	451	14.07	12.38	0	0.42		
	17:24	473	14.07	12.38	0	0.42		
	17:25	474	14.07	12.38	0	0.42		
	17:50	499	14.05	12.36	0	0.40		
	18:14	523	14.04	12.35	0	0.39		
18:51	560	14.02	12.33	0	0.37			
19:16	585	14.01	12.32	0	0.36			



Table 2: Observation Well Response
Chevron Service Station #9-0260
21995 Foothill Boulevard, Hayward, California.

Monitor Well MW-11	(feet)	Notes	Real Time	Test Running Time (min)	DTW From TVS (feet)	DTW From TOC (feet)	Vacuum (in. H ₂ O)	Depth to Water Below Static Water Level
DTW from TOC	12.01							
DTW from TVS	13.94							
Distance to Vacuum Extraction Well	43.5							
		START	8:51					
			9:31	0	13.94	12.01	0	0.00
			9:52	21	14.35	12.42	2+	0.41
			9:54	23	14.38	12.45	2+	0.44
		New gauge	10:06	35	14.60	12.67	4.10	0.66
			10:17	46	14.62	12.69	4.50	0.68
			10:41	70	14.75	12.82	4.90	0.81
			11:23	112	15.00	13.07	5.00	1.06
			12:11	160	15.18	13.25	4.60	1.24
			13:03	212	15.25	13.32	4.20	1.31
			14:06	275	15.37	13.44	3.90	1.43
			14:49	318	15.42	13.49	3.85	1.48
			15:29	358	15.44	13.51	3.65	1.50
			16:04	393	15.49	13.56	3.60	1.55
		OFF	16:30	419				
			16:34	423	15.41	13.48	2.80	1.47
			16:39	428	15.26	13.33	1.60	1.32
			16:46	435	15.16	13.23	0.60	1.22
			16:58	447	15.06	13.13	0	1.12
		Remove gauge	17:16	465	14.99	13.06	0	1.05
			17:17	466	15.03	13.10	0	1.09
			17:49	498	14.93	13.00	0	0.99
			18:09	518	14.85	12.92	0	0.91
			18:47	556	14.79	12.86	0	0.85
			19:25	594	14.71	12.78	0	0.77

TOC = Top of Casing

TVS = Top of Vacuum Seal

DTW = Depth to Water

DTB = Depth to Bottom



C A M B R I A

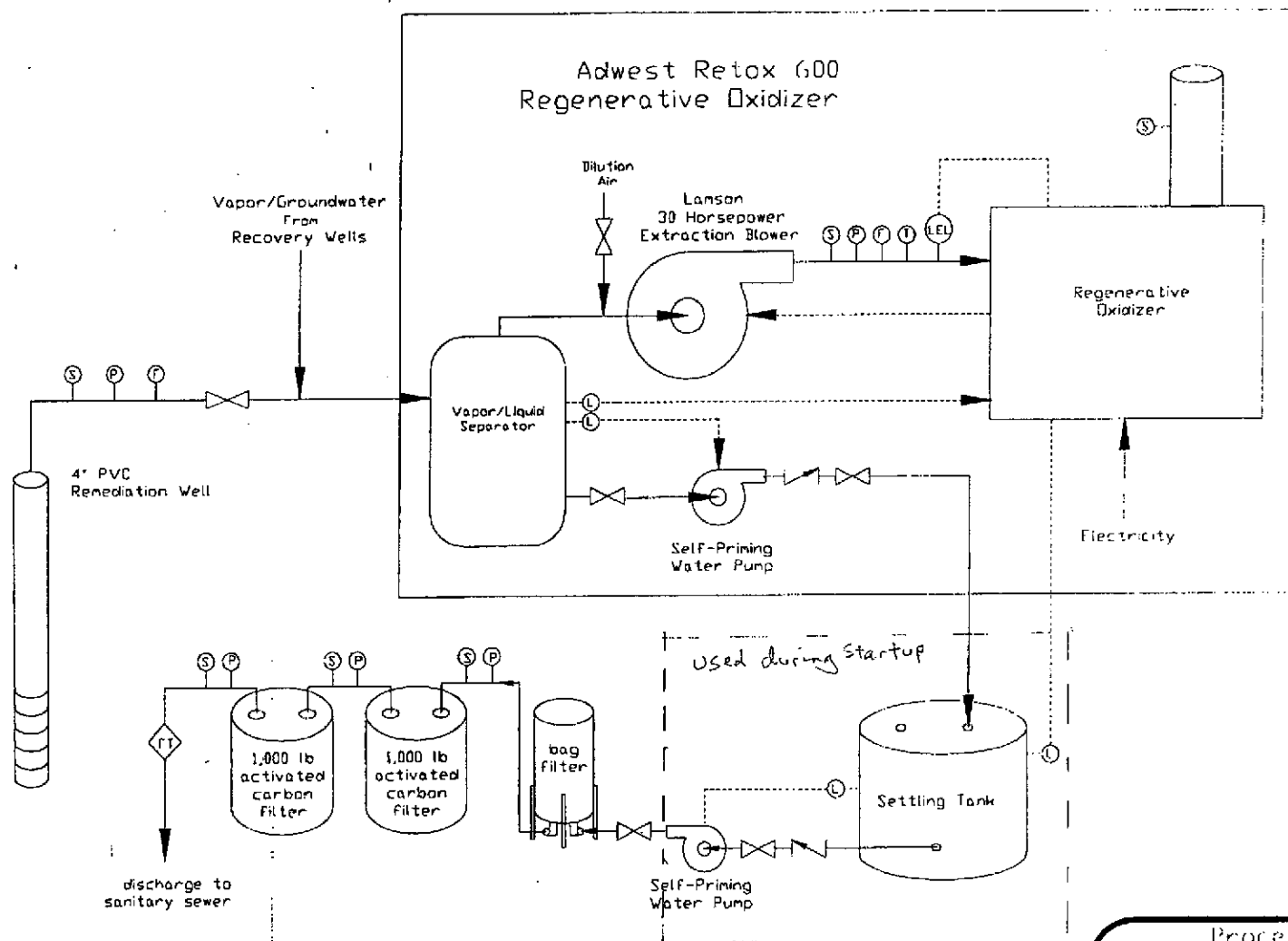


ATTACHMENT H
DPE System Operational Data

SOURCE TEST RESULTS, Retox 600 Thermal Oxidizer, Application Number 17663
Former Chevron Service Station 9-0260
21995 Foothill Boulevard
Hayward, California

Inlet		Exhaust		Limit	Destruction Efficiency		Limit
16-Oct-97		16-Oct-97					
flow (scfm)	450	flow (scfm)	450				
POC conc. (mg/l)	4.80	POC conc. (mg/l)	0.020		POC (%)	99.6	98.5
POC extraction rate (lb/day)	194	POC emission rate (lb/day)	0.81				
benzene conc. (mg/l)	0.095	*benzene conc. (mg/l)	0.001	1.2	benzene (%)	98.9	98.5
bed temperature (degrees F)	1894	benzene emission rate (lb/day)	0.04				
POC conc. (ppmv)	1,363						
Inlet		Exhaust		Limit	Destruction Efficiency		Limit
17-Oct-97		17-Oct-97					
flow (scfm)	384	flow (scfm)	384				
POC conc. (mg/l)	5.15	POC conc. (mg/l)	0.02		POC (%)	99.5	98.5
POC extraction rate (lb/day)	178	POC emission rate (lb/day)	0.83				
benzene conc. (mg/l)	0.100	*benzene conc. (mg/l)	0.001	1.2	benzene (%)	99.0	98.5
bed temperature (degrees F)	1878	benzene emission rate (lb/day)	0.03				
POC conc. (ppmv)	1,463						
Inlet		Exhaust		Limit	Destruction Efficiency		Limit
20-Oct-97		20-Oct-97					
flow (scfm)	450	flow (scfm)	450				
POC conc. (mg/l)	6.30	POC conc. (mg/l)	0.02		POC (%)	99.6	98.5
POC extraction rate (lb/day)	255	POC emission rate (lb/day)	0.97				
benzene conc. (mg/l)	0.125	*benzene conc. (mg/l)	0.001	1.2	benzene (%)	99.2	98.5
bed temperature (degrees F)	1876	benzene emission rate (lb/day)	0.04				
POC conc. (ppmv)	1,789						
Inlet		Exhaust		Limit	Destruction Efficiency		Limit
Average		Average					
flow (scfm)	428	flow (scfm)	428				
POC conc. (mg/l)	5.42	POC conc. (mg/l)	0.02		POC (%)	99.6	98.5
POC extraction rate (lb/day)	208	POC emission rate (lb/day)	0.87				
benzene conc. (mg/l)	0.11	benzene conc. (mg/l)	0.001	0.92	benzene (%)	99.3	98.5
bed temperature (degrees F)	1883	benzene emission rate (lb/day)	0.04				
POC conc. (ppmv)	1,538						

*benzene concentration reported as detection limit of 0.001 when not detected



- FT = Flow Totalizer
 --- = Lines of Control
 ① = Flow Rate Indicator
 P = Pressure/Vacuum Indicator
 LEL = LEL Monitor
 ∇ = Check Valve
 X = Ball Valve
 ② = Water Level Sensor
 S = Sample Port
 T = Temperature Indicator

Process Flow Diagram
Former Chevron 9 0260
21995 Foothill Boulevard
Hayward, California

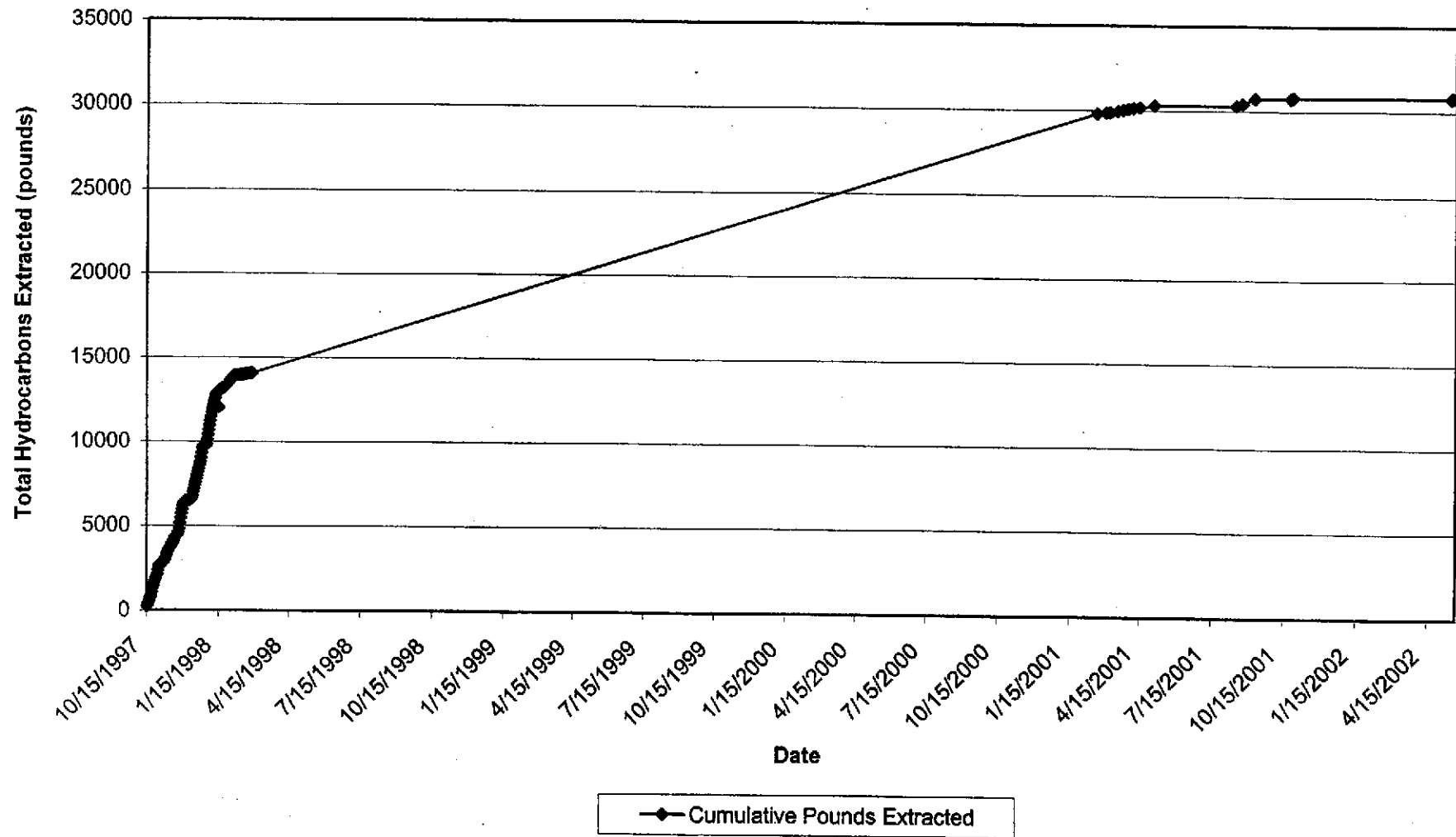
Project	30-0236	Drawn	JLN
Date	5/14/97	Revision	
Scale	None	Checked	

TERRA VAC
14798 W. 14th Boulevard
San Leandro, CA 94577
(510) 351-8900 Fax: --0221

Figure

3

**Cumulative Hydrocarbon Mass Extraction
Former Chevron No. 9-0260
21995 Foothill Boulevard, Hayward, CA**



less than six carbons in the hydrocarbon chain, using benzene as a marker. This percentage of light ends to the total is an indication of the "weathering" of the residual hydrocarbons due to extraction and natural attenuation. The shift toward the heavier compounds in gasoline also means continued decline in benzene concentrations, the primary target compound for remediation.

Well	Non-CH4 TPH, mg/L, 1997 S/U	% <C6	Non-CH4 TPH, mg/L, 5/02	% <C6
DVE-3	56.9	66	0.001 (dl)	-
DVE-4	333	72	0.001 (dl)	-
DVE-2	15	67	0.064	7
DVE-7	267	83	0.18	41
DVE-1	5.3	23	0.004	0
MW-7	0.8	61.3	0.03	33
DVE-8	193	71	0.14	35
DVE-10	13.3	53	0.05	67
DVE-11	106	60	0.3	59
DVE-6	1.7	45	0.06	29
DVE-9	11.4	61	0.01	69
DVE-18	7.6 (2001)	55	3	32
DVE-19	6.4 (2001)	43	1.1	29

As groundwater levels continue to drop and operations stabilize, other wells will be brought on line and sampled.

Air Permit Compliance

The following table shows collection dates and results of inlet and exhaust vapor samples. All samples were obtained in tedlar bags and transported to the Terra Vac office to be analyzed by GC-FID. Destruction efficiency for the abatement unit was 63 percent with these low concentrations. The flow rate was 375 scfm. The exhaust sample was below detection limits for benzene. Mass rates of only 0.8 pounds per day (and concentrations < 10ppm) to the inlet are generally below that requiring abatement.

Date	Inlet, TPH mg/l (ppmv)	Exhaust, TPH mg/l	Destruction Efficiency (%)
5/16/02	0.024mg/l(7 ppm)	0.009mg/l	63

21995 Foothill Boulevard
Wellhead Vapor Concentrations
non-methane TPH,mg/L

Well							Wellhead data				
	13-Oct-97	17-Nov-97	14-Jan-98	10-Aug-98	12-Oct-98	nov	may,02	vac,"Hg	dp	flow, scfm	lbs/day
DVE3	56.9	3.8	2.2	0.4	0.01		0.001	7	9	81	0.01
DVE4	333	76	3.8	4.5	0.85		0.001	7	0.3	15	0.00
DVE2	15	1.5	0.1	8.2	4.2		0.064	10	0.4	16	0.09
DVE5	6.4	6.7	0.1	0.71	0.6						
DVE7	267	110	12.6	9.7	8.1	2.6	0.18	6	0.5	19	0.31
DVE14	49.5			4.76	2						
mw6	18	11	2.1		3.8		0.32	8	1.5	32	0.92
DVE1	2.6	4.7	5.3	1	1.2		0.004	7	1.4	32	0.01
MW7	0.8	0.5		1	4.8	0.004	0.03				
DVE8	193	145	38.0	9	7.7	1.4	0.14				
DVE10		13.3	0.3	31.6	2.8		0.05	8	0.4	17	0.07
DVE12		0.6	0.1	23.6	4.2		0.56	8	0.5	19	0.93
DVE11		106	3.5	23.8	1		0.3	7	0.4	17	0.46
mw9		42.90		1.8	4.6						
mw5			23.5	25.5	0.9						
mw11			2.9	0.9	0.06						
dve6			1.7	47.9	11.2	7	0.6	10	0.3	14	0.74
mw8			14.6	9.9	3.1						
dve15			0.1	13	2.7						
dve13			61.0	0.7	3.9		0.26	4	1	29	0.67
mw12			28.0	16	13.3	3.6					
dve9			11.4	15.5	7.6		0.01	7	0.3	15	0.01
mw4			1.0	0.29	0.3						
dve17						0.49(3/01)					
dve18						7.6(3/01)	3	7	0.5	19	5.12
dve19						6.4(3/01)	1.1				

Table 1, Remediation System Operations Data
 Former Chevron Service Station 9-0260
 21995 Foothill Blvd.
 Hayward, California

Date	Mode	run time (days)	bed temp.	delta temp.	flow (scfm)	LEL	#/day	total pounds
14 Oct 97	#REF!	1.0	#REF!	#REF!	#REF!	#REF!	144	144
15 Oct 97	run	2.0	1885	145	437	6.4%	134	278
16 Oct 97	run	3.0	1891	136	440	6.4%	128	405
17 Oct 97	run	4.0	1883	192	401	10.5%	160	565
18 Oct 97	run	5.0	1878	210	404	11.6%	172	737
19 Oct 97	run	6.0	1880	205	409	11.2%	171	908
20 Oct 97	run	7.0	1880	193	414	10.6%	164	1,072
21 Oct 97	run	8.0	1880	267	448	14.5%	238	1,310
22 Oct 97	run	9.0	1888	259	460	13.6%	233	1,543
23 Oct 97	run	10.0	1890	227	462	12.1%	208	1,751
24 Oct 97	run	11.0	1889	210	464	11.3%	195	1,946
25 Oct 97	run	12.0	1893	195	460	9.6%	180	2,126
26 Oct 97	run	13.0	1895	185	463	9.3%	174	2,299
27 Oct 97	run	14.0	1896	176	463	9.0%	166	2,465
28 Oct 97	shutdown	14.5	1833	0	0		185	2,558
29 Oct 97	startup	15.4	1873	303	512	15.7%	277	2,801
30 Oct 97	down/up	16.3	1884	212	476	12.3%	237	3,018
31 Oct 97	run	17.3	1885	192	463	11.3%	179	3,197
1 Nov 97	shutdown	17.6	1803	0	0		175	3,255
2 Nov 97	standby	17.6	1739	0	0			3,255
3 Nov 97	standby	17.6	1748	0	0			3,255
4 Nov 97	up/down	17.9	1792	0	0		139	3,295
5 Nov 97	up/down	18.0	1758	0	0			3,323
6 Nov 97	up/down	18.5	1843	0	0		186	3,417
7 Nov 97	up/down	19.0	1847	0	0		218	3,525
8 Nov 97	startup	19.9	1879	184	502	10.4%	179	3,682
9 Nov 97	run	20.9	1890	171	476	9.9%	165	3,847
10 Nov 97	run	21.9	1896	156	472	9.5%	153	4,000
11 Nov 97	run	22.9	1894	156	472	9.9%	153	4,153
12 Nov 97	run	23.9	1894	154	476	9.5%	152	4,305
13 Nov 97	shutdown	24.5	1843	0	0		153	4,394
14 Nov 97	up/down	24.7	1779	0	0			4,414
15 Nov 97	startup	25.4	1863	188	492	11.8%	171	4,543
16 Nov 97	shutdown	26.4	1894	0	0		179	4,714
17 Nov 97	standby	26.4	1731	0	0			4,714
18 Nov 97	startup	27.2	1863	244	502	13.7%	215	4,885
19 Nov 97	run	28.2	1885	157	465	9.2%	149	5,033
20 Nov 97	run	29.2	1893	123	467	8.1%	124	5,157
21 Nov 97	shutdown	29.3	1726	0	0			5,167
22 Nov 97	startup	29.9	1863	135	481	8.2%	118	5,246
23 Nov 97	run	30.9	1883	131	479	8.8%	133	5,379
24 Nov 97	run	31.9	1892	132	481	8.8%	134	5,513
25 Nov 97	run	32.9	1883	307	429	19.7%	253	5,767
26 Nov 97	run	33.9	1878	436	396	26.6%	328	6,095

Table 1, Remediation System Operations Data
 Former Chevron Service Station 9-0260
 21995 Foothill Blvd.
 Hayward, California

Date	Mode	run time (days)	bed temp.	delta temp.	flow (scfm)	LEL	#/day	total pounds
27 Nov 97	run	34.9	1879	452	386	27.1%	331	6,426
28 Nov 97	run	35.9	1878	398	390	23.6%	296	6,722
29 Nov 97	run	36.9	1876	364	391	21.6%	273	6,995
30 Nov 97	run	37.9	1870	345	389	20.6%	260	7,255
1 Dec 97	shutdown	38.6	1860	0	0		226	7,415
2 Dec 97	startup	39.5	1886	55	502	4.2%	95	7,498
3 Dec 97	run	40.5	1883	55	495	5.0%	69	7,568
4 Dec 97	run	41.5	1883	54	488	5.1%	68	7,636
5 Dec 97	shutdown	41.7	1680	0	0			7,647
6 Dec 97	standby	41.7	1740	0	0			7,647
7 Dec 97	standby	41.7	1688	0	0			7,647
8 Dec 97	standby	41.7	1734	0	0			7,647
9 Dec 97	startup	42.4	1863	118	437	9.6%	82	7,705
10 Dec 97	shutdown	42.8	1824	0	0		126	7,758
11 Dec 97	startup	43.5	1853	157	427	12.1%	126	7,842
12 Dec 97	run	44.5	1870	215	444	14.0%	194	8,035
13 Dec 97	run	45.5	1883	259	448	15.7%	228	8,263
14 Dec 97	run	46.5	1884	259	446	15.8%	226	8,490
15 Dec 97	run	47.5	1880	263	448	16.4%	231	8,721
16 Dec 97	run	48.5	1881	253	444	15.7%	220	8,942
17 Dec 97	run	49.5	1881	244	446	15.4%	215	9,157
18 Dec 97	run	50.5	1878	255	450	16.0%	226	9,383
19 Dec 97	run	51.5	1879	259	451	15.9%	230	9,613
20 Dec 97	run	52.5	1881	264	458	15.9%	236	9,849
21 Dec 97	run	53.5	1881	264	459	16.0%	236	10,085
22 Dec 97	run	54.5	1881	258	456	15.8%	230	10,315
23 Dec 97	run	55.5	1878	314	452	19.5%	276	10,591
24 Dec 97	run	56.5	1871	367	443	22.2%	310	10,901
25 Dec 97	run	57.5	1869	363	447	22.2%	309	11,210
26 Dec 97	shutdown	57.9	1831	0	0		310	11,352
27 Dec 97	standby	57.9	1751	0	0			11,352
28 Dec 97	standby	57.9	1727	0	0			11,352
29 Dec 97	standby	57.9	1747	0	0			11,352
30 Dec 97	startup	58.6	1838	308	447	19.9%	221	11,509
31 Dec 97	run	59.6	1854	324	441	20.2%	276	11,784
1 Jan 98	run	60.6	1863	351	448	21.6%	302	12,086
2 Jan 98	run	61.6	1864	359	451	22.3%	309	12,396
3 Jan 98	run	62.6	1863	356	448	22.2%	305	12,701
4 Jan 98	run	63.6	1861	351	449	21.9%	301	13,002
5 Jan 98	run	64.6	1861	339	443	21.2%	288	13,289
6 Jan 98	run	65.6	1861	309	441	19.6%	263	13,552
7 Jan 98	run	66.6	1862	292	438	18.7%	248	13,800
8 Jan 98	run	67.6	1863	280	445	18.2%	243	14,043

Table 1, Remediation System Operations Data
 Former Chevron Service Station 9-0260
 21995 Foothill Blvd.
 Hayward, California

Date	Mode	run time (days)	bed temp.	delta temp.	flow (scfm)	LEL	#/day	total pounds
9 Jan 98	run	68.6	1863	269	441	17.7%	231	14,275
10 Jan 98	run	69.6	1862	264	434	17.7%	226	14,500
11 Jan 98	run	70.6	1860	258	432	17.6%	219	14,720
12 Jan 98	run	71.6	1870	155	471	11.9%	145	14,865
13 Jan 98	run	72.6	1880	75	485	8.2%	86	14,951
14 Jan 98	run	73.6	1870	59	475	7.1%	71	15,022
15 Jan 98	run	74.6	1843	72	369	10.7%	68	15,090
16 Jan 98	run	75.6	1838	94	324	10.8%	75	15,165
17 Jan 98	run	76.6	1834	80	337	10.1%	70	15,234
18 Jan 98	down/up	77.3	1817	80	324	11.3%	66	15,278
19 Jan 98	shutdown	77.9	1801	60	0		56	15,314
20 Jan 98	startup	78.8	1802	35	296	8.0%	44	15,351
21 Jan 98	run	79.8	1809	45	324	8.6%	48	15,399
22 Jan 98	run	80.8	1829	60	337	9.5%	58	15,456
23 Jan 98	run	81.8	1834	67	339	9.6%	62	15,518
24 Jan 98	run	82.8	1834	73	339	10.2%	65	15,584
25 Jan 98	run	83.8	1835	99	339	11.4%	82	15,665
26 Jan 98	down/up	84.6	1834	124	365	11.8%	95	15,745
27 Jan 98	down/up	85.4	1830	124	338	12.1%	98	15,826
28 Jan 98	down/up	86.3	1833	126	339	12.7%	96	15,907
29 Jan 98	run	87.3	1837	122	345	12.7%	96	16,003
30 Jan 98	run	88.3	1845	124	355	12.2%	99	16,102
31 Jan 98	run	89.3	1847	113	348	11.7%	91	16,194
1 Feb 98	run	90.3	1845	110	353	11.7%	90	16,284
2 Feb 98	run	91.3	1843	107	348	11.7%	87	16,371
3 Feb 98	run	92.3	1842	96	334	11.5%	78	16,450
4 Feb 98	shutdown	92.4	1727	0	0			16,461
5 Feb 98	standby	92.4	1689	0	0			16,461
6 Feb 98	up/down	92.5	1679	0	0			16,471
7 Feb 98	startup	93.3	1683	19	311	7.3%	43	16,503
8 Feb 98	run	94.3	1708	17	324	7.2%	27	16,531
9 Feb 98	run	95.3	1708	20	332	7.2%	36	16,567
10 Feb 98	run	96.3	1709	22	343	7.0%	24	16,592
11 Feb 98	shutdown	96.4	1744	0	0			16,596
12 Feb 98	standby	96.4	1738	0	0			16,596
13 Feb 98	standby	96.4	1679	0	0			16,596
14 Feb 98	startup	97.2	1739	8	296	6.7%	34	16,621
15 Feb 98	run	98.2	1709	11	299	6.8%	27	16,648
16 Feb 98	run	99.2	1708	11	299	6.8%	18	16,666
17 Feb 98	run	100.2	1709	10	298	6.8%	23	16,689
18 Feb 98	run	101.2	1707	11	300	7.2%	22	16,711

Table 1, Remediation System Operations Data
 Former Chevron Service Station 9-0260
 21995 Foothill Blvd.
 Hayward, California

Date	Mode	run time (days)	bed temp.	delta temp.	flow (scfm)	LEL	#/day	total pounds
19 Feb 98	down/up	102.1	1733	25	324	9.3%	30	16,739
20 Feb 98	down/up	103.0	1775	28	339	8.5%	37	16,773
21 Feb 98	run	104.0	1782	28	324	9.2%	38	16,811
22 Feb 98	run	105.0	1788	29	323	9.2%	38	16,849
23 Feb 98	run	106.0	1783	28	316	9.2%	37	16,887
24 Feb 98	down/up	106.8	1759	39	333	9.5%	41	16,919
25 Feb 98	down/up	107.5	1751	35	329	10.0%	42	16,947
26 Feb 98	down/up	108.0	1750	38	324	9.4%	41	16,966
27 Feb 98	shutdown	108.3	1719	0	0		39	16,980
28 Feb 98	standby	108.3	1743	0	0			16,980
1 Mar 98	standby	108.3	1679	0	0			16,980
2 Mar 98	standby	108.3	1702	0	0			16,980
3 Mar 98	standby	108.3	1729	0	0			16,980
4 Mar 98	startup	109.0	1697	14	287	1.6%	18	16,993
5 Mar 98	run	110.0	1706	11	293	1.7%	9	17,003
6 Mar 98	run	111.0	1707	12	299	2.1%	14	17,017
7 Mar 98	run	112.0	1703	12	300	2.1%	14	17,031
8 Mar 98	run	113.0	1699	14	300	2.3%	10	17,041
9 Mar 98	run	114.0	1697	15	303	2.5%	4	17,044
10 Mar 98	run	115.0	1688	14	300	2.5%	7	17,051
11 Mar 98	run	116.0	1702	14	299	2.7%	3	17,054
12 Mar 98	run	117.0	1697	14	295	2.9%	3	17,057
13 Mar 98	run	118.0	1697	16	299	3.2%	5	17,063
14 Mar 98	run	119.0	1697	13	297	2.7%	4	17,067
15 Mar 98	run	120.0	1705	12	291	2.7%	4	17,071
16 Mar 98	run	121.0	1703	11	292	2.8%	3	17,074
17 Mar 98	run	122.0	1706	12	289	2.8%	7	17,081
18 Mar 98	shutdown	122.8	1711	0	0		4	17,084
19 Mar 98	standby	122.8	1732	0	0			17,084
20 Mar 98	standby	122.8	1720	0	0			17,084
21 Mar 98	standby	122.8	1683	0	0			17,084
22 Mar 98	standby	122.8	1704	0	0			17,084
23 Mar 98	standby	122.8	1730	0	0			17,084
15 Apr 98	startup	123.7	1686	0	273	2.6%	4	17,088
16 Apr 98	run	124.7	1708	1	264	2.5%	0	17,088
17 Apr 98	run	125.7	1703	0	262	2.9%	-4	17,084
18 Apr 98	run	126.7	1707	0	261	2.9%	0	17,084
19 Apr 98	run	127.7	1707	1	261	3.3%	-3	17,080
20 Apr 98	run	128.7	1706	1	260	3.5%	-1	17,079
21 Apr 98	run	129.7	1704	1	260	3.2%	6	17,085
22 Apr 98	shutdown	130.1	1703	0	0		14	17,091
23 Apr 98	standby	130.1	1741	0	0			17,091
24 Apr 98	standby	130.1	1744	0	0			17,091

Table 1, Remediation System Operations Data
 Former Chevron Service Station 9-0260
 21995 Foothill Blvd.
 Hayward, California

Date	Mode	run time (days)	bed temp.	delta temp.	flow (scfm)	LEL	#/day	total pounds
25 Apr 98	standby	130.1	1701	0	0			17,091
26 Apr 98	standby	130.1	1688	0	0			17,091
27 Apr 98	standby	130.1	1701	0	0			17,091
28 Apr 98	standby	130.1	1722	0	0			17,091
29 Apr 98	startup	130.4	1736	23	301	4.2%	36	17,101
30 Apr 98	down/up	131.3	1707	18	296	4.8%	9	17,110
16 Jul 98	down/up	132.3	1767	28	313	8.5%	31	17,138
17 Jul 98	run	133.3	1778	31	302	8.4%	33	17,172
18 Jul 98	run	134.3	1811	52	310	9.4%	44	17,216
19 Jul 98	run	135.3	1827	74	311	10.4%	55	17,270
20 Jul 98	shutdown	136.1	1827	0	0		65	17,324
21 Jul 98	startup	136.4	1775	62	320	6.7%	59	17,344
22 Jul 98	shutdown	137.2	1831	96	0		61	17,392
23 Jul 98	startup	138.2	1835	110	339	12.6%	72	17,461
24 Jul 98	down/up	139.1	1836	125	330	13.2%	80	17,534
25 Jul 98	run	140.1	1838	120	327	12.7%	79	17,613
26 Jul 98	down/up	141.0	1834	121	312	13.5%	79	17,689
27 Jul 98	down/up	141.9	1828	121	339	12.7%	82	17,757
28 Jul 98	run	142.9	1838	119	339	12.2%	81	17,838
29 Jul 98	run	143.9	1845	111	347	11.9%	66	17,904
30 Jul 98	run	144.9	1846	112	347	12.3%	79	17,982
31 Jul 98	down/up	145.8	1841	159	348	14.0%	99	18,078
1 Aug 98	run	146.8	1843	157	349	14.0%	109	18,186
2 Aug 98	run	147.8	1842	156	346	13.7%	107	18,293
3 Aug 98	run	148.8	1842	153	345	13.6%	105	18,398
4 Aug 98	run	149.8	1842	151	350	13.4%	106	18,504
5 Aug 98	run	150.8	1848	139	376	13.3%	104	18,608
6 Aug 98	run	151.8	1848	145	382	14.0%	110	18,718
7 Aug 98	run	152.8	1849	149	390	14.1%	113	18,831
8 Aug 98	run	153.8	1853	134	401	13.5%	107	18,938
9 Aug 98	run	154.8	1856	131	407	13.2%	106	19,045
10 Aug 98	run	155.8	1852	141	387	13.8%	108	19,153
11 Aug 98	run	156.8	1842	177	378	15.3%	128	19,281
12 Aug 98	run	157.8	1841	197	374	16.2%	140	19,421
13 Aug 98	run	158.8	1842	204	389	16.8%	148	19,569
14 Aug 98	run	159.8	1846	193	398	16.6%	144	19,713
15 Aug 98	run	160.8	1848	188	398	16.3%	141	19,854
16 Aug 98	run	161.8	1848	189	399	16.4%	143	19,997
17 Aug 98	down/up	162.3	1789	236	339	20.7%	132	20,057
18 Aug 98	run	163.3	1811	266	339	22.0%	183	20,240
19 Aug 98	shutdown	164.1	1830	0	0		204	20,401

Table 1, Remediation System Operations Data
 Former Chevron Service Station 9-0260
 21995 Foothill Blvd.
 Hayward, California

Date	Mode	run time (days)	bed temp.	delta temp.	flow (scfm)	LEL	#/day	total pounds
20 Aug 98	startup	164.4	1788	137	446	15.7%	114	20,435
21 Aug 98	down/up	165.0	1787	254	321	21.4%	135	20,513
22 Aug 98	down/up	165.9	1818	306	339	24.4%	183	20,689
23 Aug 98	down/up	166.9	1827	343	330	27.0%	212	20,892
24 Aug 98	down/up	167.8	1831	346	321	27.8%	216	21,099
25 Aug 98	run	168.8	1834	340	325	27.1%	218	21,317
26 Aug 98	run	169.8	1832	335	325	26.4%	215	21,532
27 Aug 98	run	170.8	1831	331	329	26.1%	215	21,747
28 Aug 98	run	171.8	1829	328	328	25.9%	212	21,959
29 Aug 98	run	172.8	1828	323	328	25.7%	209	22,168
30 Aug 98	run	173.8	1826	315	332	25.4%	208	22,376
31 Aug 98	run	174.8	1826	308	331	24.9%	203	22,579
1 Sep 98	run	175.8	1824	299	330	24.5%	197	22,775
2 Sep 98	run	176.8	1824	297	331	24.5%	196	22,972
3 Sep 98	run	177.8	1824	306	326	25.2%	199	23,170
4 Sep 98	run	178.8	1824	303	324	25.3%	196	23,366
5 Sep 98	run	179.8	1823	290	325	24.6%	189	23,555
6 Sep 98	run	180.8	1824	270	327	23.5%	178	23,733
7 Sep 98	run	181.8	1825	255	321	22.8%	166	23,900
8 Sep 98	run	182.8	1826	240	328	22.9%	161	24,061
9 Sep 98	run	183.8	1830	220	344	22.1%	156	24,216
10 Sep 98	run	184.8	1835	207	353	20.9%	151	24,367
11 Sep 98	run	185.8	1836	197	354	20.4%	148	24,516
12 Sep 98	run	186.8	1836	189	353	20.0%	140	24,655
13 Sep 98	run	187.8	1835	187	357	20.0%	140	24,795
9/15/98	run	189.8	1824		360	20.0%	116	25051
24 Sep 98	run	198.8	1850		329	17.6%	65	25868
9 Oct 98	run	213.8	1842		366	20.8%	95	27070
12 Oct 98	run	216.8	1843		371	20.8%	87	27343
23 Oct 98	run	227.8	1853		318	20.5%	45	28064
4 Nov 98	run	239.8	1829		321	6.0%	32	28522
13 Nov 98	run	248.8	1824	58	321	5.1%	27	28784
19 Nov 98	shutdown	254.8	1824		321	5.1%	27	28943
1 Dec 98	startup	254.8	1824		321	5.1%	27	28943
22 Dec 98	shutdown	275.8	1824	60	340	7.1%	5	29279
9 Jun 99	standby	275.8	1706	0	0		0	29279
10 Jun 99	standby	275.8	1738	0	0		0	29279
11 Jun 99	startup	276.3	1740	33	339	0.0%	3	29280
12 Jun 99	run	277.3	1703	27	350	#DIV/0!	3	29283
13 Jun 99	shutdown	277.5	1715	0	0		3	29286
14 Jun 99	standby	277.5	1680	0	0		0	29288

Table 1, Remediation System Operations Data
 Former Chevron Service Station 9-0260
 21995 Foothill Blvd.
 Hayward, California

Date	Mode	run time (days)	bed temp.	delta temp.	flow (scfm)	LEL	#/day	total pounds
15 Jun 99	startup	277.9	1722	FALSE	375	0.0%	3	29290
16 Jun 99	shutdown	278.6	1710	FALSE	0		0	29290
17 Jun 99	standby	278.6	1682	0	0			29290
18 Jun 99	standby	278.6	1700	0	0			29290
19 Jun 99	standby	278.6	1735	0	0			29290
20 Jun 99	standby	278.6	1678	0	0			29290
21 Jun 99	standby	278.6	1708	0	0			29290
22 Jun 99	up/down	278.8	1714	0	0			29290
23 Jun 99	standby	278.8	1728	0	0			29290
24 Jun 99	standby	278.8	1694	0	0			29290
25 Jun 99	standby	278.8	1726	0	0			29290
26 Jun 99	standby	278.8	1716	0	0			29290
27 Jun 99	standby	278.8	1696	0	0			29290
28 Jun 99	standby	278.8	1709	0	0			29290
29 Jun 99	standby	278.8	1745	FALSE	0			29290
30 Jun 99	up/down	279.1	1756	FALSE	0		0	29290
1 Jul 99	standby	279.1	1680	0	0			29290
2 Jul 99	standby	279.1	1720	0	0			29290

DVE Operations Summary
 Chevron 9-0260
 21995 Foothill Boulevard
 Hayward, CA

Table 1

02/17/01	270.0	start	0		0.0		29,796
02/17/01	272.3	173	403	0.14	5.1	36	29,802
03/01/01	279.3	175	436	0.14	5.5	36	29,839
03/06/01	284.2	179	348	0.18	5.7	47	29,866
03/16/01	294.3	180	367	0.21	6.9	54	29,930
03/23/01	301.3	182	372	0.33	11.0	84	30,010
03/29/01	307.3	184	375	0.25	8.5	65	30,068
04/05/01	314.2	inlet	371	0.28	9.3	71	30,130
04/13/01	319.2	inlet	389	0.27	9.4	69	30,177
05/02/01	332.1	stop	389		9.4	69	30,298
08/14/01	336.5	start	389		9.4	69	30,298
08/22/01	344.4	inlet	346	0.68	21.1	173	30,419
09/07/01	359.5	stop	346		21.1	173	30,738
10/23/01	359.5	start	346		21.1	173	30,738
10/26/01	362.5	stop	346		21.1	173	30,802
05/14/02	362.7	start	346		0.8	173	30,802
05/16/02	364.3	inlet	375	0.02	0.8	6	30,803
05/20/02	368.3	inlet	352	0.01	0.3	3	30,805
05/27/02	374.5	nst	352		0.3	3	30,807

C A M B R I A



ATTACHMENT I

Terra Vac Risk Assessment

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.3

Site Name: Chevron Station 9-0260

Completed By: Jason Nutt

Site Location: 21995 Foothill Boulevard, Hayward, CA

Date Completed: 7/15/1997

1 OF 1

GROUNDWATER SSTL VALUES

Target Risk (Class A & B) 1.0E-8

☐ MCL exposure limit?

Calculation Option: 1

Target Risk (Class C) 1.0E-5

☐ PEL exposure limit?

Target Hazard Quotient 1.0E+0

SSTL Results For Complete Exposure Pathways ("x" if Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Groundwater Ingestion			X	Groundwater Volatilization to Indoor Air		X	Groundwater Volatilization to Outdoor Air		Applicable SSTL	Exceeded ?	Required CRF
CAS No.	Name	(mg/L)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential: (on-site)	Commercial: (on-site)		Residential: (on-site)	Commercial: (on-site)	(mg/L)	"X" if yes	Only if "yes" left
71-43-2	Benzene	8.8E+0	NA	NA	NA		1.9E-1	NA		1.6E+1	NA	1.9E-1	☒	4.8E+01
100-41-4	Ethylbenzene	1.4E+0	NA	NA	NA		>Sol	NA		>Sol	NA	>Sol	☐	<1
108-88-3	Toluene	1.1E+0	NA	NA	NA		>Sol	NA		>Sol	NA	>Sol	☐	<1
1330-20-7	Xylene (mixed isomers)	6.3E+0	NA	NA	NA		>Sol	NA		>Sol	NA	>Sol	☐	<1

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.2

Site Name: Chevron Station 9-0280

Completed By: Jason Nutt

Site Location: 21995 Foothill Boulevard, Hayward, CA

Date Completed: 7/15/1997

1 OF 1

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

Target Risk (Class A & B) 1.0E-5

☐ MCL exposure limit?

Calculation Option: 1

Target Risk (Class C) 1.0E-5

☐ PEL exposure limit?

Target Hazard Quotient 1.0E+0

SSTL Results For Complete Exposure Pathways ("X" If Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Soil Leaching to Groundwater			X	Soil Volatilization to Indoor Air		X	Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential: (on-site)	Commercial: (on-site)		Residential: (on-site)	Commercial: (on-site)	(mg/kg)	"X" If yes	Only if "yes" left
71-43-2	Benzene	1.5E+0	NA	NA	NA		4.6E-1	NA		4.6E+1	NA	4.6E-1	☒	3.0E+00
100-41-4	Ethylbenzene	6.0E+0	NA	NA	NA		>Res	NA		>Res	NA	>Res	☐	<1
108-88-3	Toluene	1.9E+0	NA	NA	NA		2.2E+2	NA		>Res	NA	2.2E+2	☐	<1
1330-20-7	Xylene (mixed isomers)	3.3E+1	NA	NA	NA		>Res	NA		>Res	NA	>Res	☐	<1

RBCA SITE ASSESSMENT

Tier 2 Worksheet 9.2

Site Name: Chevron Station 9-0260

Completed By: Jason Nutt

Site Location: 21995 Foothill Boulevard, Hayward, CA

Date Completed: 7/15/1997

1 OF 1

SUBSURFACE SOIL SSTL VALUES (> 3 FT BGS)

Target Risk (Class A & B) 1.0E-5

☐ MCL exposure limit?

Calculation Option: 1

Target Risk (Class C) 1.0E-5

☐ PEL exposure limit?

Target Hazard Quotient 1.0E+0

SSTL Results For Complete Exposure Pathways ("X" = Complete)

CONSTITUENTS OF CONCERN		Representative Concentration	Soil Leaching to Groundwater			X	Soil Volatilization to Indoor Air		X	Soil Volatilization to Outdoor Air		Applicable SSTL	SSTL Exceeded?	Required CRF
CAS No.	Name	(mg/kg)	Residential: (on-site)	Commercial: (on-site)	Regulatory(MCL): (on-site)		Residential: (on-site)	Commercial: (on-site)		Residential: (on-site)	Commercial: (on-site)	(mg/kg)	"X" If yes	Only if "yes" left
71-43-2	Benzene	1.5E+0	NA	NA	NA		NA	1.1E+0		NA	6.4E+1	1.1E+0	☒	1.0E+00
100-41-4	Ethylbenzene	6.0E+0	NA	NA	NA		NA	>Res		NA	>Res	>Res	☐	<1
108-88-3	Toluene	1.9E+0	NA	NA	NA		NA	4.4E+2		NA	>Res	4.4E+2	☐	<1
1330-20-7	Xylene (mixed isomers)	3.3E+1	NA	NA	NA		NA	>Res		NA	>Res	>Res	☐	<1

RBCA TIER 1/TIER 2 EVALUATION

Output Table 1

Site Name: Chevron Station 9-0260 Job Identification: 30-0236
 Site Location: 21995 Foothill Boulevard, Hayward, CA 94541 Date Completed: 7/15/97
 Completed By: Jason Nutt

Software: GSI RBCA Spreadsheet
 Version: v 1.0

NOTE: values which differ from Tier 1 default values are shown in bold italics and underlined

DEFAULT PARAMETERS

Exposure Parameter	Definition (Units)	Residential			Commercial/Industrial	
		Adult	(1-6yrs)	(1-16 yrs)	Chronic	Construction
ATc	Averaging time for carcinogens (yr)	70				
ATn	Averaging time for non-carcinogens (yr)	30	6	16	25	1
BW	Body Weight (kg)	70	15	35	70	
ED	Exposure Duration (yr)	30	6	16	25	1
EF	Exposure Frequency (days/yr)	350			250	180
EF Dermal	Exposure Frequency for dermal exposure	350			250	
IRgw	Ingestion Rate of Water (l/day)	2			1	
IRs	Ingestion Rate of Soil (mg/day)	100	200		50	100
IRadj	Adjusted soil ing. rate (mg-yr/kg-d)	1.1E+02			9.4E+01	
IRa in	Inhalation rate indoor (m ³ /day)	15			20	
IRa out	Inhalation rate outdoor (m ³ /day)	20			20	10
SA	Skin surface area (dermal) (cm ²)	5.8E+03		2.0E+03	5.8E+03	5.8E+03
SAadj	Adjusted dermal area (cm ² -yr/kg)	2.1E+03			1.7E+03	
M	Soil to Skin adherence factor	1				
AAFs	Age adjustment on soil ingestion	FALSE			FALSE	
AAFd	Age adjustment on skin surface area	FALSE			FALSE	
tox	Use EPA tox data for air (or PEL based)	TRUE				
gwMCL?	Use MCL as exposure limit in groundwater?	FALSE				

Matrix of Exposed Persons to Complete Exposure Pathways

Groundwater Pathways:					
GW i	Groundwater Ingestion	FALSE		FALSE	
GW v	Volatilization to Outdoor Air	TRUE		FALSE	
GW b	Vapor Intrusion to Buildings	TRUE		FALSE	
Soil Pathways					
S v	Volatiles from Subsurface Soils	TRUE		FALSE	
SS v	Volatiles and Particulate Inhalation	FALSE		FALSE	FALSE
SS d	Direct Ingestion and Dermal Contact	FALSE		FALSE	FALSE
S l	Leaching to Groundwater from all Soils	FALSE		FALSE	
S b	Intrusion to Buildings - Subsurface Soils	TRUE		FALSE	

Matrix of Receptor Distance and Location on- or off-site

		Residential		Commercial/Industrial	
		Distance	On-Site	Distance	On-Site
GW	Groundwater receptor (cm)		TRUE		TRUE
S	Inhalation receptor (cm)		TRUE		TRUE

Matrix of Target Risks

		Individual	Cumulative
TRab	Target Risk (class A&B carcinogens)	1.0E-06	
TRc	Target Risk (class C carcinogens)	1.0E-05	
THQ	Target Hazard Quotient	1.0E+00	
Opt	Calculation Option (1, 2, or 3)	1	
Tier	RBCA Tier	2	

Surface Parameters	Definition (Units)	Residential		
		Chronic	Construction	Commercial/Industrial
I	Exposure duration (yr)	30	25	1
A	Contaminated soil area (cm ²)	<u>1.3E+04</u>		
W	Length of affected soil parallel to wind (cm)	<u>3.0E+01</u>		
Wgw	Length of affected soil parallel to groundwater (cm)	1.5E+03		
Uair	Ambient air velocity in mixing zone (cm/s)	2.3E+02		
delta	Air mixing zone height (cm)	2.0E+02		
Lsa	Definition of surficial soils (cm)	<u>9.1E+01</u>		
Pe	Particulate areal emission rate (g/cm ² /s)	2.2E-10		

Groundwater Definition (Units)

Parameters	Definition (Units)	Value
delta.gw	Groundwater mixing zone depth (cm)	2.0E+02
I	Groundwater infiltration rate (cm/yr)	3.0E+01
Ugw	Groundwater Darcy velocity (cm/yr)	<u>7.8E+01</u>
Ugw.tr	Groundwater Transport velocity (cm/yr)	<u>2.5E+01</u>
Ks	Saturated Hydraulic Conductivity (cm/s)	1.2E-03
grad	Groundwater Gradient (cm/cm)	2.0E-02
Sw	Width of groundwater source zone (cm)	
Sd	Depth of groundwater source zone (cm)	
BC	Biodegradation Capacity (mg/L)	
BIO?	Is Bioattenuation Considered	TRUE
phi.eff	Effective Porosity in Water-Bearing Unit	3.0E-01
foc.sal	Fraction organic carbon in water-bearing unit	1.0E-03

Soil Definition (Units)

hc	Capillary zone thickness (cm)	4.7E+01		
hv	Vadose zone thickness (cm)	3.0E+02		
rho	Soil density (g/cm ³)	1.7		
foc	Fraction of organic carbon in vadose zone	0.01		
phi	Soil porosity in vadose zone	0.38		
Lgw	Depth to groundwater (cm)	3.7E+02		
Ls	Depth to top of affected soil (cm)	3.0E+02		
Lsubs	Thickness of affected subsurface soils (cm)	1.5E+02		
pH	Soil/groundwater pH	6.5		
		capillary	vadose	foundation
phi.w	Volumetric water content	0.342	0.12	0.12
phi.a	Volumetric air content	0.038	0.26	0.26

Building Definition (Units)

Parameters	Definition (Units)	Residential	Commercial
Lb	Building volume/area ratio (cm)	2.0E+02	3.0E+02
ER	Building air exchange rate (h ⁻¹)	<u>5.5E-04</u>	<u>9.3E-04</u>
Lcrk	Foundation crack thickness (cm)	1.5E+01	
ela	Foundation crack fraction	<u>0.005</u>	

Dispersive Transport

Parameters	Definition (Units)	Residential	Commercial
Groundwater			
ax	Longitudinal dispersion coefficient (cm)		
ay	Transverse dispersion coefficient (cm)		
az	Vertical dispersion coefficient (cm)		
Vapor			
dxy	Transverse dispersion coefficient (cm)		
dcz	Vertical dispersion coefficient (cm)		

ALAMEDA COUNTY
HEALTH CARE SERVICES

AGENCY

DAVID J. KEARS, Agency Director



P.R.B.

AUG 22 97

August 19, 1997

Phil Briggs
Chevron Products Company
6001 Bollinger Canyon Road, P.O. Box 5004
San Ramon, CA 94583-0804

ENVIRONMENTAL HEALTH SERVICES
ENVIRONMENTAL PROTECTION (LOP)
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577
(510) 567-6700
FAX (510) 337-9335

Re: Chevron Station, 21995 Foothill Blvd, Hayward, CA

Dear Mr. Briggs:

This Department received an addendum to the risk assessment, dated July 18, 1997, prepared by Terra Vac for the above referenced site. Based on the information submitted to this Department, the revised risk assessment is acceptable to this Department and the following cleanup levels (based on a 10-5 risk) have been established as remediation goals:

Chemical name	Soil		Groundwater	
	Commercial	Residential	Commercial	Residential
Benzene	1.1 ppm	0.4 ppm	4600 ppb	1900 ppb
Toluene	440 ppm	220 ppm	less than saturation	less than saturation

Please notify the City of Hayward Fire Department prior to initiating any field work. If you have any questions regarding the risk assessment, you may reach me at (510) 567-6764.

Sincerely,

Madhulla Logan
Hazardous Material Specialist

C: Mr. Hugh Murphy, City of Hayward Fire Department
25151 Clawiter Road, Hayward, CA - 94545

Robert Dahl, TERRA VAC
1651 Alvarado Street, San Leandro, CA - 94577

C A M B R I A



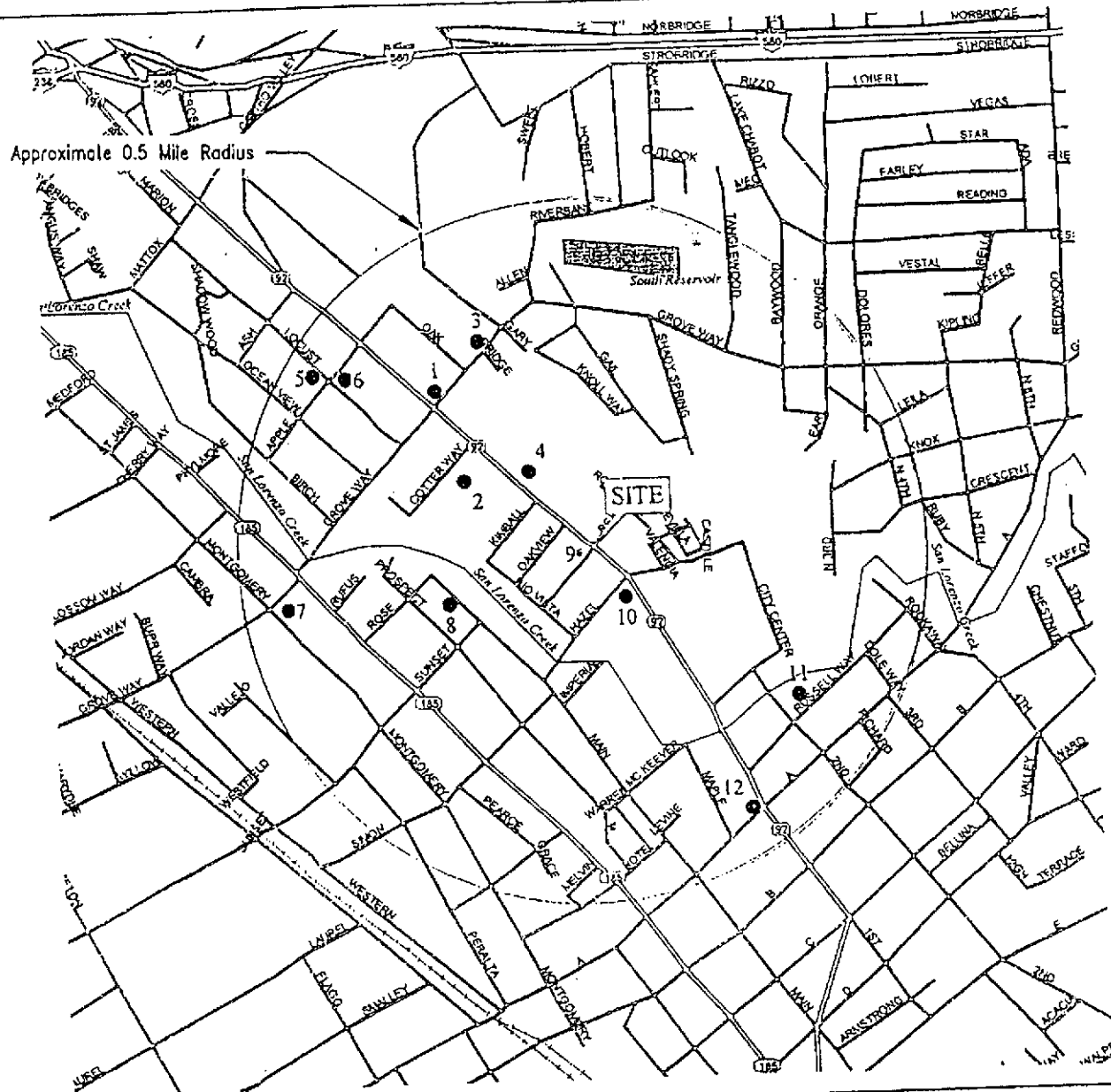
ATTACHMENT J

Well Survey Data

Approximate 0.5 Mile Radius

EXPLANATION:

- Well Location



Source: Street Atlas USA, Delorme (1995).



Gettler - Ryan Inc.

6747 Sierrita Ct., Suite J
Dublin, CA 94568

(510) 551-7555

VICINITY MAP
Chevron Service Station No. 9-0260
21995 Foothill Drive
Hayward, California

FIGURE

1

TABLE 1 - WELL SEARCH DATA
Chevron Service Station #9-0260
21995 Foothill Boulevard
Hayward, California

Map ID	Well Owner	Well Location	Well Use	State Well Number	Year Installed
1	BP Oil Company	21494 Foothill Boulevard, Hayward	Mon (3)	03S02W09H	1990
2	Luiz Ornelas	1205 Cotter Way	Irrigation	03S02W09K	1977
3	EBMUD	Grove Way	Cathodic	03S02W09K	1982
4	Hayward Tool	21732 Foothill Boulevard, Hayward	Mon (3)	03S02W09K	1992
5	M. Verandos	21295 Locust Street, Hayward	Irrigation	03S02W09L	1977
6	PG&E	Locust and Apple Streets, Hayward	Cathodic	03S02W09L	Unknown
7	Dale Davis	921 Grove Way	Unknown	03S02W09P	1977
8	George Simmonds	10 Main Street, Hayward	Domestic	03S02W09P	1951
9	Chevron Products Company	21995 Foothill Boulevard, Hayward	Mon (12)	03S02W09Q	1989
10	Shell Oil Company	Corner of Hazel and Foothill Blvd.	Cathodic	03S02W09R	1973
11	E.R. Abratt	1228 Russell Way, Hayward	Domestic	03S02W16A	1953
12	Mervyn's	22301 Foothill Boulevard, Hayward	Test	03S02W16A	1984

Well data information was collected on August 5, 1997 from the Department of Water Resources files located in Sacramento, California.

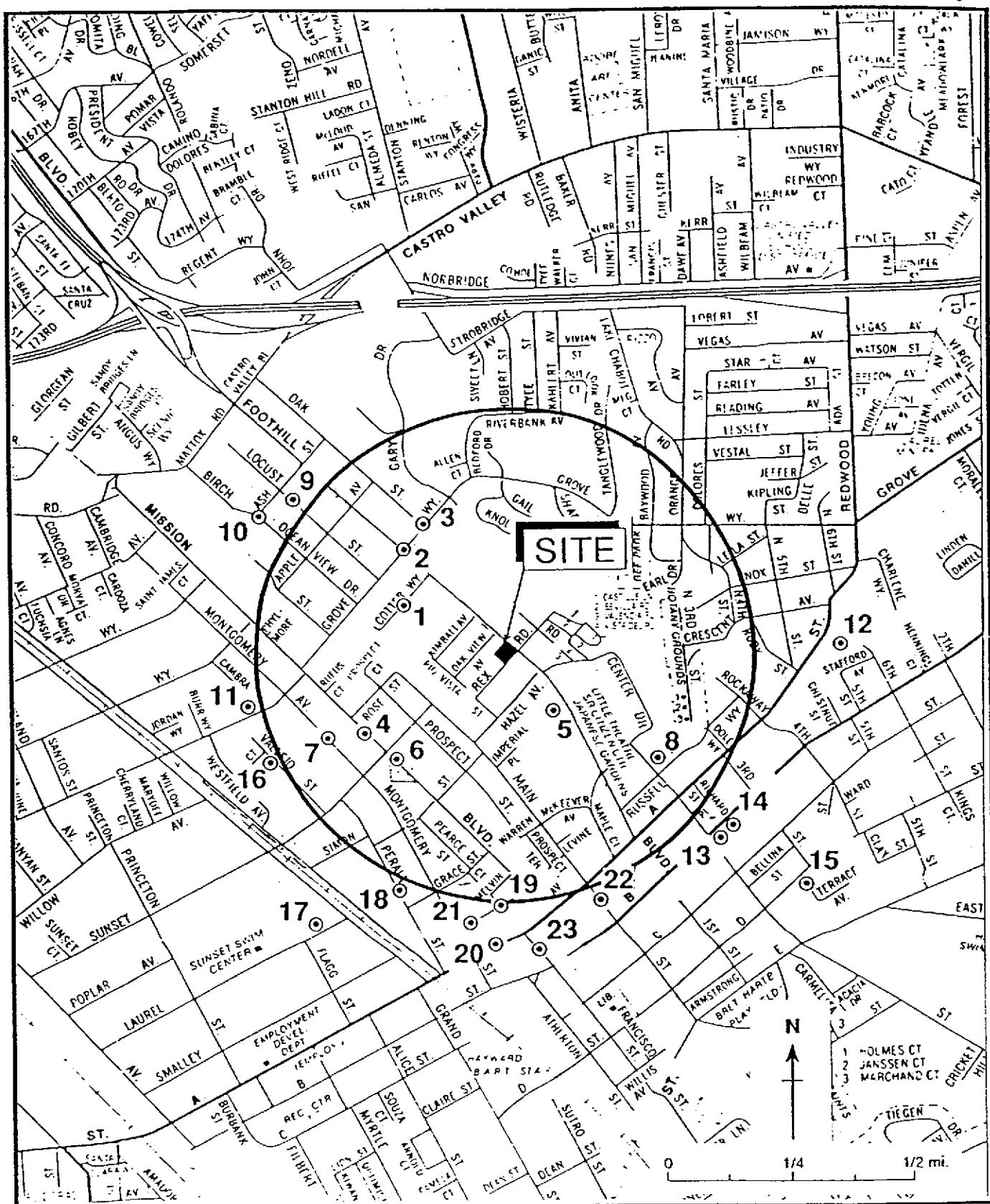


Figure 6. Wells Within Approximately One-Half Mile of Chevron Service Station #90260, 21995 Foothill Blvd., Hayward, California

TABLE 4. Wells Within Approximately One Half-Mile of Chevron Service Station #90260, Hayward, California

Map Loc. No. ¹	Owner	Owner's Address	Well Location	Year Drilled	Use
1	Luiz Orinelas	1205 Cotter Way, Hayward	(3S2W9K1) 1205 Cotter Way	1977	I
2	Jerry's Texaco	21501 Foothill Boulevard, Hayward	(3S2W9K3) 21501 Foothill Boulevard	1986	-
3	Dale L. Davis	921 Grove Way, Hayward	921 Grove Way	1977	-
4	S & K Toyota	21715 Mission Boulevard, Hayward	(3S2W16 C2-C3) 21715 Mission Boulevard	1986	-
5	Mervyn's	22301 Foothill Boulevard, Hayward	(3S2W16A2) 22301 Foothill Boulevard	1984	T
6	Hayward Mitsubishi	22196 Mission Boulevard, Hayward	(3S2W16 B1-B4) 22196 Mission Boulevard	1986	-
7	Al Santucci	21123 Montgomery Street, Hayward	(3S2W9N1) 21123 Montgomery Street	1977	I
8	E.R. Abrott	1228 Russell Way, Hayward	(3S2W15A1) South edge of creek bank, N/S of Russell Way, 150 ft east of 2nd Street	1953	D
9	M. Verandes	21293 Locust Street, Hayward	(3S2W9L3) 21293 Locust Street	1977	I
10	Livermore- Amador Valley, Mgmt. Agency	-	(3S2W9M1) Ocean View & Ash, San Leandro	1979	C
11	Geo. Simmonds	10 Main Street, Hayward	(3S2W9P1) 600 ft south, 2,400 ft west	1951	D
12	Dr. Beauchamp	-	(3S2W10P1) Part of old Rancho Cesta between A and B Streets, and 5th and 6th (Hayward)	1950	-

--Table 4 continues on next page--

Source: Phase II

TABLE 4. Wells Within Approximately One Half-Mile of Chevron Service Station #90260, Hayward, California (continued)

Map Loc. No.¹	Owner	Owner's Address	Well Location	Year Drilled	Use
13	Chevron	-	(3S2W15D1-6) B and 2nd Streets, Hayward	1986	-
14	Westmont Development	-	(3S2W15D) B and 2nd Streets, Hayward	1986	-
15	Frank Costa	841 High Street, Hayward	(3S2W15E)	1956	I
16	J.H. Lake	21702 Vallejo Street, Hayward	(3S2W16C) 21702 Vallejo Street	1954	D
17	King	504 Laurel Avenue, Hayward	(3S2W16F1) 504 Laurel Avenue	1943	-
18	Emilia Chaves	22270 Peralta, Hayward	(3SW16G1) 22270 Peralta	1977	I
19	Humphrey Motors	760 Smalley Avenue, Hayward	(3S2W16G3) 760 Smalley Avenue	1986	-
20	Humphrey Motors	750 A Street, Hayward	(3S2W16G4) 750 A Street	1986	-
21	Bob Gennoy	374 Jackson Street, Hayward	(3S2W16G) 534 Smalley Avenue 145 ft North of sidewalk, 5 ft from east fence	1986	-
22	Schaeffer & Foster, Inc.	22525 Main Street, Hayward	(3S2W15H1) 22525 Main Street	1984	-
23	Veterans Yellow Cab	22547 Watkins Street, Hayward	(3S2W116H2) 22547 Watkins Street	1986	-

Explanation of Well Types: I = Irrigation; C = Cathodic; - = Not Given;
D = Domestic; T = Test Well

¹ = Well number as shown on map, Figure 6

Source: Phase II

C A M B R I A



ATTACHMENT K
Delta DPE Test Data

DPE PILOT TEST RESULTS SUMMARY (MW-11)

Total Time Operated (minutes)	Total Water Extracted (gallons)	Average Water Extraction Flow rate (gpm)	Maximum Decrease in Depth to Water in Test Well (feet)	Average Vapor Flow rate (scfm)	Average Field Hydrocarbon Vapor Concentration Reading by PID (ppmv)	Total TPH Vapor Extraction (lbs)	TPH Vapor Extraction Rates (lbs/day)
834	2,674	2.25	1.4	171.3	52.6	1.7	2.88

During the pilot test on MW-11, the test well vacuum was initially measured at 14 inches of Hg and steadily decreased to 11 inches of Hg at the end of the test. The average vapor flow rate was 171.3 scfm. Vapor concentrations remained relatively constant during the test with an average value of 52.6 ppmv as measured with a PID. Based on laboratory analytical results, beginning and ending TPHg concentrations were only 25 and 16 ppmv, respectively (Table 2). Vacuum influence was observed in wells DVE-10, DVE-11, TMP-2, MW-12 and MW-4 which are located approximately 22.1, 20.1, 37.8, 44.9 and 47.8 feet, respectively, from MW-11. Average readings collected during this phase of the pilot test are tabulated below:

System Vapor Readings			MW-11 (Test Well)	DVE-10	DVE-11	TMP-2	MW-12
Pilot Test Well	Average Vapor Concentration (ppmv)	System Flow rate (scfm)	Average Vacuum ("Hg)	Average Vacuum ("H ₂ O)	Average Vacuum ("H ₂ O)	Average Vacuum ("H ₂ O)	Average Vacuum ("H ₂ O)
MW-11	52.6	171.25	12.8	0.103	0.5	0.220	0.01

Vacuum Radius of Influence from MW-11

Based on EPA guidance documentation, as a rule of thumb, a vacuum of 0.1" H₂O is used as the minimum vacuum level required for observed radial influence. An observed vacuum of 0.10" H₂O was noted at 22.1 feet in DVE-10. However, since the lithology at this site is considered to be heterogeneous, vacuum radius of influence can only be used as a qualitative estimate of an effective radius of influence for well spacing in an MPE system design. Since the main purpose of MPE is to dewater and expose impacted soils to vapor extraction, drawdown in surrounding observation wells becomes the most crucial piece of data to be used in an MPE system design.

Drawdown in Observation Wells from Testing on MW-11

At the conclusion of the test on MW-11, depth to water measurements in the surrounding observation wells revealed that drawdown ranged from a maximum of 0.41 feet in monitoring well MW-12 (44.9 feet from MW-11) to a minimum of 0.22 feet in temporary well TMP-2 (37.8 feet from MW-11). Table 2 presents the drawdown or depth to water data in the surrounding observation wells. Drawdown data was graphed to assess whether steady state conditions had been achieved by the end of the pilot test. The drawdown graph for temporary well TMP-2 did not behave as expected which should have followed a typical logarithmic pattern. Instead the well showed a sporadic pattern, which may have

DPE PILOT TEST RESULTS SUMMARY (MW-12)

Total Time Operated (minutes)	Total Water Extracted (gallons)	Average Water Extraction Flow rate (gpm)	Maximum Decrease in Depth to Water in Test Well (feet)	Average Vapor Flow rate (scfm)	Average Vapor Concentration (ppmv)	Total TPH Vapor Extraction (lbs)	TPH Vapor Extraction Rate (lbs/day)
954	1,732	1.82	4.1	33.1	1,200	7.8	11.8

During the pilot test on MW-12, the test well vacuum was consistently measured at 25 inches of Hg throughout the majority of the test. Vacuum gauge readings on the MPE unit showed very little difference from the wellhead vacuum gauge readings. This signified that there was very little head-loss in the process piping that connected MW-12 to the MPE unit. The average vapor flow rate was 33.1 scfm. Due to the higher hydrocarbon vapor concentrations encountered from this well, and the PID not operating properly, an FID was brought to the site and used to monitor hydrocarbon concentrations in the soil vapor stream. Using methane-filtering methods, the hydrocarbon vapor concentrations as measured by the FID initially were 1,900 ppmv and then gradually decreased to 650 ppmv two hours before the end of the test, but then jumped up to 950 ppmv at the very end. The average FID hydrocarbon vapor concentration value was 1,199 ppmv. Based on laboratory analytical results from a vapor sample collected near the end of the test, the TPHg concentration was reported at 700 ppmv (Table 2). This matched up relatively close with the field FID measurements. Vacuum influence was observed in wells DVE-11, DVE-12, DVE-13, MW-5, DVE-9 and MW-11, which are located approximately 25.8, 28.1, 34.5, 38.7, 43.1 and 45 feet, respectively from MW-12. Average readings collected during this phase of the pilot test are tabulated below:

System Vapor Readings			MW-12	DVE-11	DVE-12	DVE-13	MW-5
Pilot Test Well	Average Vapor Concentration (ppmv)	System Flow rate (scfm)	Average Vacuum ("Hg)	Average Vacuum ("H ₂ O)	Average Vacuum ("H ₂ O)	Average Vacuum ("H ₂ O)	Average Vacuum ("H ₂ O)
MW-12	1,200	33.1	24.9	4.14	0.23	3.3	0.13

Vacuum Radius of Influence from MW-12

Based on EPA guidance documentation, as a rule of thumb, a vacuum of 0.1" H₂O is used as the minimum vacuum level required for observed radial influence. An observed vacuum of 0.10" H₂O was noted at 43.1 feet in DVE-9. However, as explained previously, since the lithology at this site is considered to be heterogeneous, vacuum radius of influence can only be used as a qualitative estimate of an effective radius of influence for well spacing in an MPE system design. Since the main purpose of MPE is to dewater and expose impacted soils to vapor extraction, drawdown in surrounding observation wells becomes the most crucial piece of data to be used in an MPE system design.

TABLE 1**VAPOR ANALYTICAL RESULTS**

Former Chevron Station No. 9-0260
21995 Foothill Boulevard
Hayward, California

Sample ID	Sample Date	Benzene (ppmv)	Toluene (ppmv)	Ethyl-benzene (ppmv)	Total Xylenes (ppmv)	MTBE (ppmv)	TPH (ppmv)
MW-11A	12/10/02	0.38	0.037	<0.012	<0.012	0.57	25
MW-11B	12/11/02	0.28	0.015	<0.012	<0.012	0.39	16
MW-12	12/11/02	12	3.5	1.1	2.2	15	700

TPH = Total petroleum hydrocarbons.

MTBE = Methyl tertiary butyl ether.

ppmv = parts per million by volume.

TABLE 2

DUAL-PHASE EXTRACTION SYSTEM FIELD DATA

Former Chevron Station No. 9-0260
21995 Foothill Boulevard
Hayward, California

		Extraction Well						Distance 44.9 Feet		Distance 47.8 Feet		Distance 35.1 Feet		Distance 37.8 Feet		Distance 22.1 Feet		Distance 20.1 Feet		
		System Readings					MW-11		MW-12		MW-4		DVE-9		TMP-2		DVE-10		DVE-11	
Date	Time	Total System Vacuum ("Hg)	Total System FID (ppmv)	System Flowrate (scfm)	Water Flow rate (gpm)	Total Discharge (gallons)	Depth to Water (Feet)	Vacuum Reading ("Hg)	Depth to Water (Feet)	Vacuum Reading ("H ₂ O)	Depth to Water (Feet)	Vacuum Reading ("H ₂ O)	Depth to Water (Feet)	Vacuum Reading ("H ₂ O)	Depth to Water (Feet)	Vacuum Reading ("H ₂ O)	Depth to Water (Feet)	Vacuum Reading ("H ₂ O)	Depth to Water (Feet)	Vacuum Reading ("H ₂ O)
12/10/02	14:40				2.25	0	15.40													
12/10/02	20:36	18	55.4	166	2.25	801	16.49	14.00	15.88	0.01	16.55	0.05	-	0.00	15.50	0.005	-	0.10	-	0.5
12/10/02	22:15	17	52.8	168	1.75	974	16.39	14.00	15.60	0.01	16.37	0.05	-	0.00	15.60	0.005	-	0.10	-	0.5
12/11/02	0:32	17	54.2	168	1.75	1,214	16.62	13.00	16.20	0.01	16.50	0.05	-	0.00	15.40	0.005	-	0.10	-	0.5
12/11/02	2:36	17	55.6	166	2.68	1,546	16.37	13.00	16.20	0.01	16.60	0.05	-	0.00	15.60	0.005	-	0.10	-	0.5
12/11/02	4:40	17	53.7	167	2.42	1,846	16.65	13.00	16.20	0.01	16.70	0.05	-	0.00	15.50	0.005	-	0.10	-	0.5
12/11/02	6:30	17	53.6	165	2.65	2,138	16.42	13.00	16.30	0.01	16.75	0.05	-	0.00	15.30	0.005	-	0.10	-	0.5
12/11/02	8:30	16	48.0	190	2.70	2,462	16.37	11.00	16.22	0.01	16.72	0.05	-	0.00	15.43	0.005	-	0.10	-	0.5
12/11/02	10:30	17	47.6	180	1.77	2,674	17.30	11.00	16.28	0.01	16.84	0.05	-	0.00	15.72	0.005	-	0.125	-	0.5
Totals	1,190 834	minutes	52.6	Average:	2.25		1.90	12.8	0.41	0.010	0.290	0.050		0.000	0.220	0.005		0.103		0.500
									Distance		Distance		Distance		Distance		Distance		Distance	

834		171.3					Extraction Well		Distance 34.5 Feet		Distance 38.7 Feet		Distance 28.1 Feet		Distance 43.1 Feet		Distance 45.0 Feet		Distance 25.8 Feet		
		System Readings					MW-12		DVE-13		MW-5		DVE-12		DVE-9		MW-11		DVE-11		
Date	Time	Total System Vacuum ("Hg)	Total System FID (ppmv)	System Flowrate (scfm)	Water Flow rate (gpm)	Total Discharge (gallons)	Depth to Water (Feet)	Vacuum Reading ("Hg)	Depth to Water (Feet)	Vacuum Reading ("H ₂ O)	Depth to Water (Feet)	Vacuum Reading ("H ₂ O)	Depth to Water (Feet)	Vacuum Reading ("H ₂ O)	Depth to Water (Feet)	Vacuum Reading ("H ₂ O)	Depth to Water (Feet)	Vacuum Reading ("H ₂ O)	Depth to Water (Feet)	Vacuum Reading ("H ₂ O)	
							14.90														
12/11/02	16:36	25	1,900	26	3.33	0	18.92	25.0	-	4.5	16.20	0.090	13.55	0.19	16.88	0.100	16.87	0.063	-	2.2	
12/11/02	18:30	25	1,890	30	2.00	228	19.04	25.0	-	2.0	16.75	0.100	13.55	0.20	17.35	0.100	17.19	0.063	-	3.3	
12/11/02	20:30	25	1,900	32	1.82	446	19.00	25.0	-	2.8	17.04	0.095	13.55	0.20	17.58	0.090	17.29	0.063	-	3.3	
12/11/02	22:30	25	990	34	1.82	664	19.01	25.0	-	3.0	17.17	0.110	13.55	0.25	17.70	0.175	17.52	0.063	-	4.3	
12/12/02	0:30	25	880	34	1.87	889	19.03	25.0	-	3.2	17.21	0.128	13.55	0.25	17.81	0.160	17.58	0.063	-	4.5	
12/12/02	2:30	25	860	34	1.82	1,107	19.03	25.0	-	3.3	17.32	0.136	13.55	0.25	DRY	0.160	17.64	0.063	-	4.7	
12/12/02	4:30	25	750	36	1.81	1,324	19.01	25.0	-	3.5	17.38	0.149	13.55	0.25	DRY	0.160	17.67	0.063	-	4.8	
12/12/02	6:20	25	670	36	1.70	1,511	19.03	25.0	-	3.6	17.40	0.167	13.55	0.25	DRY	0.150	17.71	0.063	-	5.0	
12/12/02	8:30	25	850	36	1.70	1,732	19.00	24.5	-	4.0	17.44	0.200	13.55	0.25	DRY	0.200	17.72	0.063	-	5.0	
Totals	954	minutes	1,199	Average:	1.82		4.10	24.9		3.3	1.240	0.13	0.000	0.23	1.000	0.14	0.850	0.06		4.11	
		33.1																			

33.1

ppmv = parts per million by volume.

"Hg = inches of Mercury

"H₂O = inches of water column

scfm = actual cubic feet per minute

gpm = gallons per minute

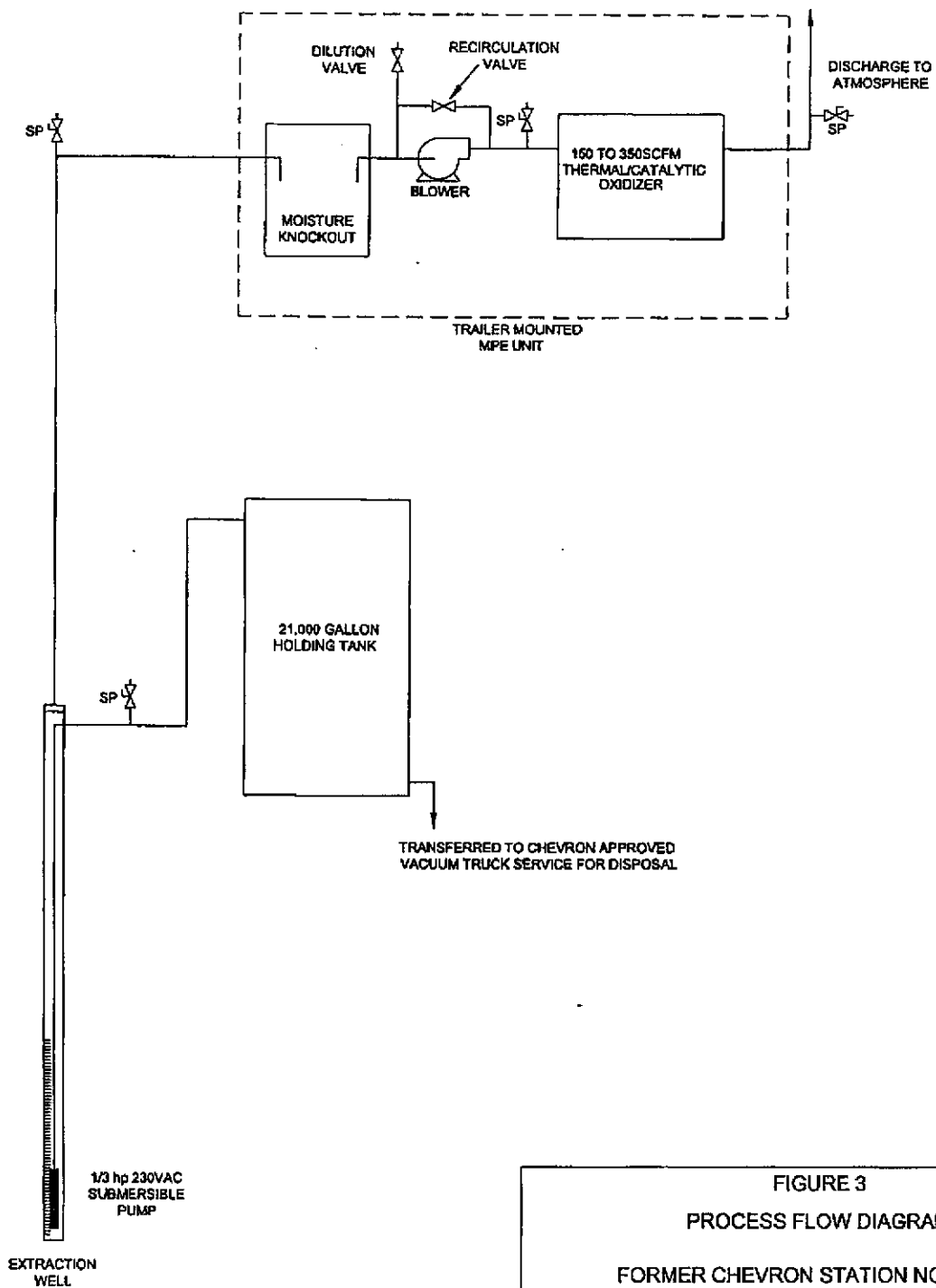


FIGURE 3
PROCESS FLOW DIAGRAM

FORMER CHEVRON STATION NO. 9-0260
21995 FOOTHILL BOULEVARD
HAYWARD, CA.

PROJECT NO.
DG80-280

FILE NO.
DG90280C

REVISION NO.
1

DRAWN BY
M.L. 11/8/02

PREPARED BY
W.S.

REVIEWED BY



Delta
Environmental
Consultants, Inc.

Pilot Test Data Sheet for Chevron 9-0280

Vacuum and DTW Readings in Wells

ORIGINAL

Dist to Wells (feet):		Test Well		10		5		30		26							
Well Names:		MW-4		TMP-1		TMP-2		DVE-5		DVE-6		DVE-9		DVE-10		DVE-17	
Date	Time	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum	DTW	Vacuum
12/90	20:36					15.5	.005					0.00			.100		
12/10	22:08					15.6	.005					0.00			.100		
12/11	00:32					15.4	.005					0.00			.100		
12/11	21:36					15.6	.005					0.00			.100		
12/11	24:40					15.5	.005					0.00			.100		
12/11	26:30					15.3	.005					0.00			.100		
SECOND TEST ON MW 4																	
12/12	10:00	5.75		15.34	1.5	15.5	.35	7.71	—	DRY	.08	17.15	.02	DRY	.190	16.05	.200
12/12	11:05				1.5		.35		—	—	.08		.02	—		16.15	.200
FID = 30 ppm																	

START OF TEST
10:00

Flow = 30 ppm

THIS IS DATA FOR MW4, NOT MUCH INFORMATION DUE TO SHORT RUNS.

7.25 - 1.25
6.00 1/3

Pumping Data at Chevron No. 9-0280

Test Well: MW-4

Pumping Data at Green No. 8-2200		Foot Valve MW-4		Bottom of (Measured, with 10 inch ext) sensor at 23.8'	
Date	Time	Submersible Pump Flow Rate (gpm)	Submersible Pump Flow Totalizer Reading (gallons)	Pump Depth Setting (feet bag)	Notes
12/10	13:20	—	—	24.3	Intake at 24.3' Depth 24.3 (17.3)
12/10	13:47	0.67	85790		P.D. = 30' approx
	MW-4				
12/11	14:40	2.25		19	Intake @ 17.25
12/10	22:49	1.75			INTAKE @ 17.25
12/10	03:00	2.68			TOTALIZER Locked up.
12/11	04:05	3.17			TAKING Bucket Readings
					AVERAGE 2.0 NIGHT READINGS
					AVERAGE 4.66 GPM
					1,200 GPM 8:30 - 10:50

MW-11 Depth to water = 15.4
" DTB = 19.0

MW-12 DTW = 14.9
DTB = 20.5

MW-5 DTW = 15.05
DTB = 18.7

mw //

Pilot Test on MW-4 Chevron No. 9-0280

[illegible]

Pilot Test Data Sheet for Chevron 9-0283

Vacuum and DTW Readings in Wells

[illegible]

~~2004-14-11-000000~~

TEST ON MW 11

Date	Time	Submersible Pump Flow Rate (gpm)	Submersible Pump Flow Totalizer Reading (gallons)	Pump Depth Setting (feet bag)	Notes
12/10	14:40	2.25		19	INTAKE @ 1725
12/10	22:49	1.75			INTAKE @ 1725
12/11	02:00	2.68			TOTALIZER LOCKED UP FROM SAND. STARTED TAKING BUCKET READINGS.
	04:30	2.42			READING'S
	06:30	2.65			OFF PUMP PILOT (BUCKET TEST AVERAGE ABOUT 2 GPM OVER THIS PERIOD.)
	08:30	2.70			READING'S
	10:30	1.77			OFF PUMP PILOT (BUCKET READINGS AVERAGE 1.200 GPM DUE TO CLOG TOTALIZER.)

TEST ON MW 12

[illegible]

Pilot Test Data Sheet for Chevron 9-0260

Vacuum and DTW Readings in Wells

TEST ON mw 12

[illegible]

442

Test Well: ~~202~~

mw. 12

[illegible]

12/10/02

Delta Project # DG90260

LOCATION: 21995 Foothill Blvd, HAYWARD

OBJECTIVE: ASSIST IN GWE SVE PILOT TEST

DELTA PERSONNEL: STEVE MCKEY, WILL SLOWIK

DEPTH TO GW MEASUREMENTS TAKEN PRE-TEST

WELL DTW TIME
ID

MW-4 15.60 8:20

MW-5 15.06 8:41

MW-6 DRY

MW-7 14.39 8:49

MW-8 13.26 9:02

MW-9 14.04 8:59

MW-11 15.11 8:36

MW-12 15.84 8:39 15:03

MW-13

TMP-1 14.14 8:35 15.31 15:82

TMP-2 14.24 8:16 14.96 15:41 14:87

DVE-5 7.62 8:51

DVE-6 NO WATER

DVE-9 15.18 8:32

DVE-10 NO WATER

DVE-17 15.41 8:43

DVE-18 15.18 8:30

DVE-11 DRY

NOTES ON CATALYTIC OXIDIZER

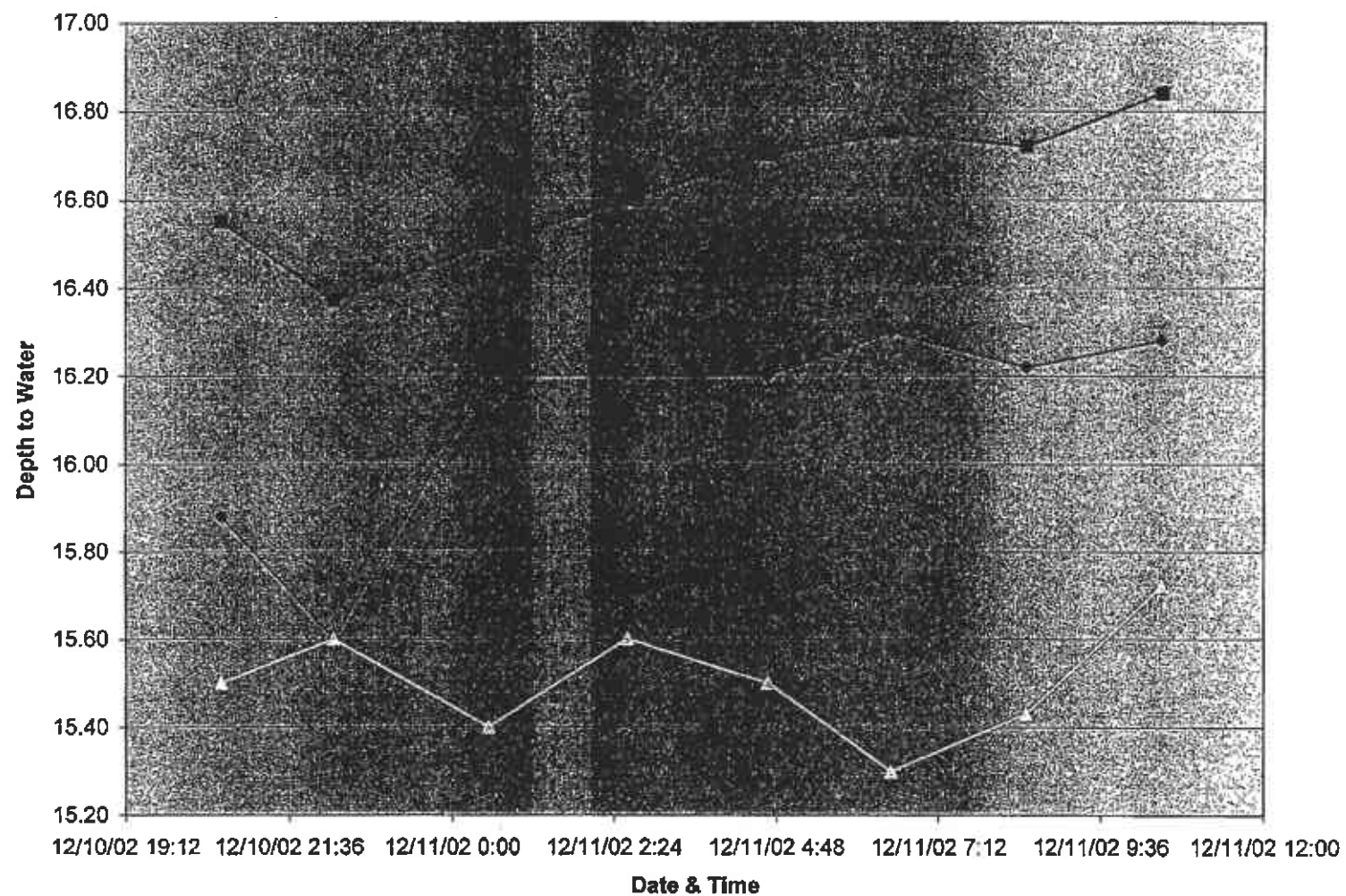
1400°F what we want to burn at

1650° when we start to dilute

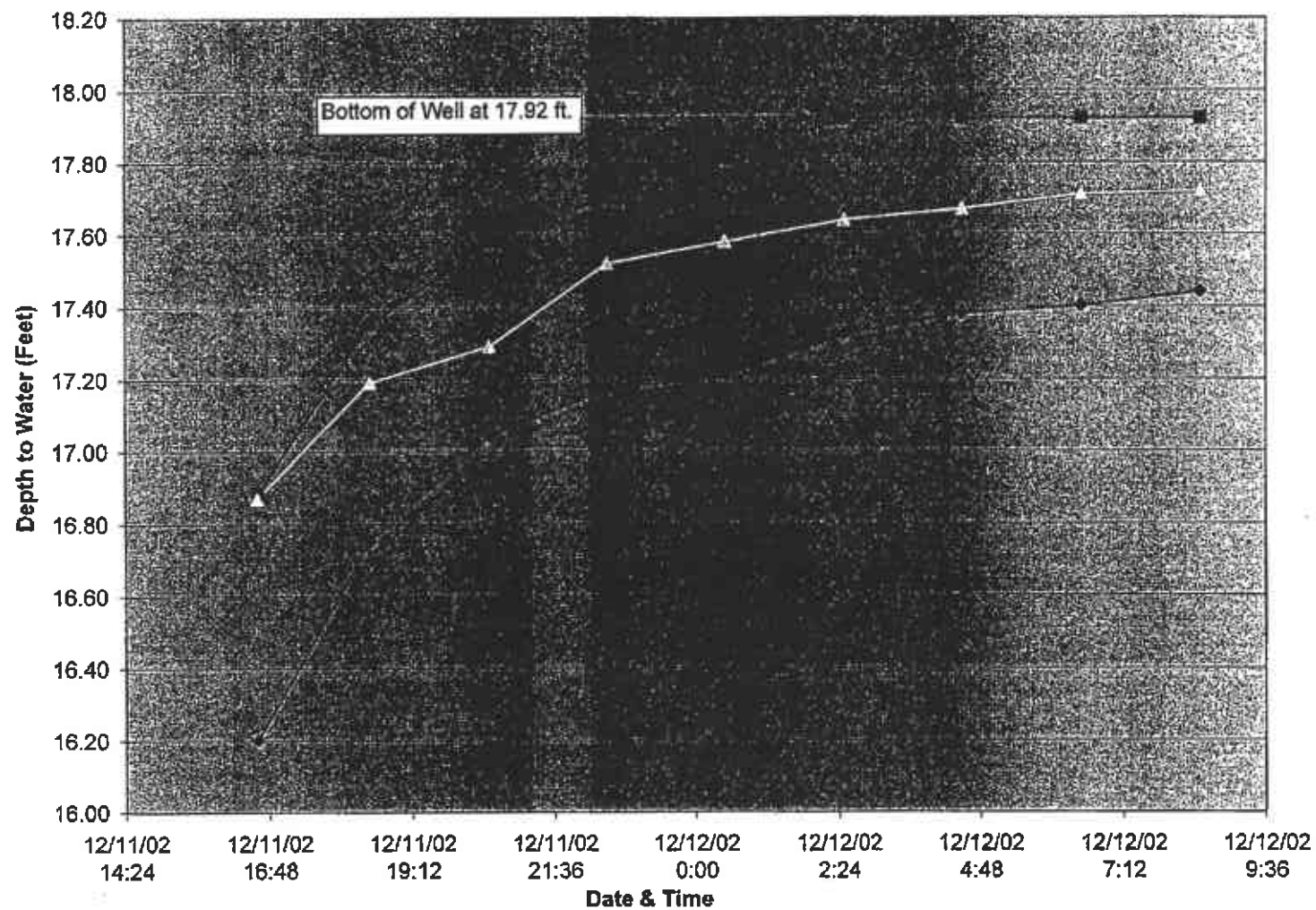
> 1800° when it shuts off

"0" on dilution controller is wide open

Testing on MW-11 at Former Chevron Service Station No. 9-0260, Hayward, CA



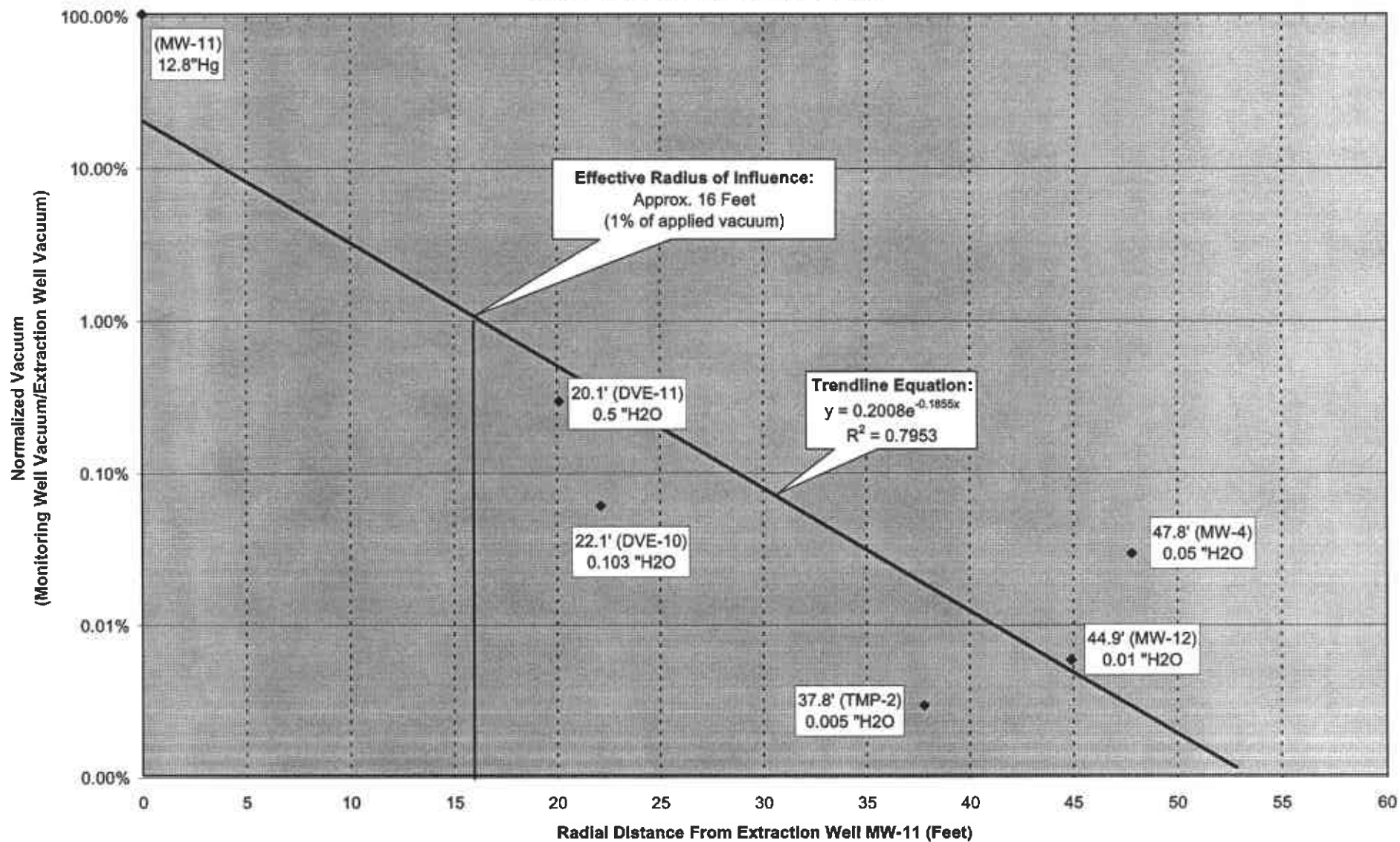
Testing on MW-12 at Former Chevron Service Station No. 9-0260, Hayward, CA



GRAPH 1

MULTI-PHASE PILOT TEST ON MW-11 (DECEMBER 10-11, 2002)
GRAPHICAL RADIUS OF INFLUENCE PLOT

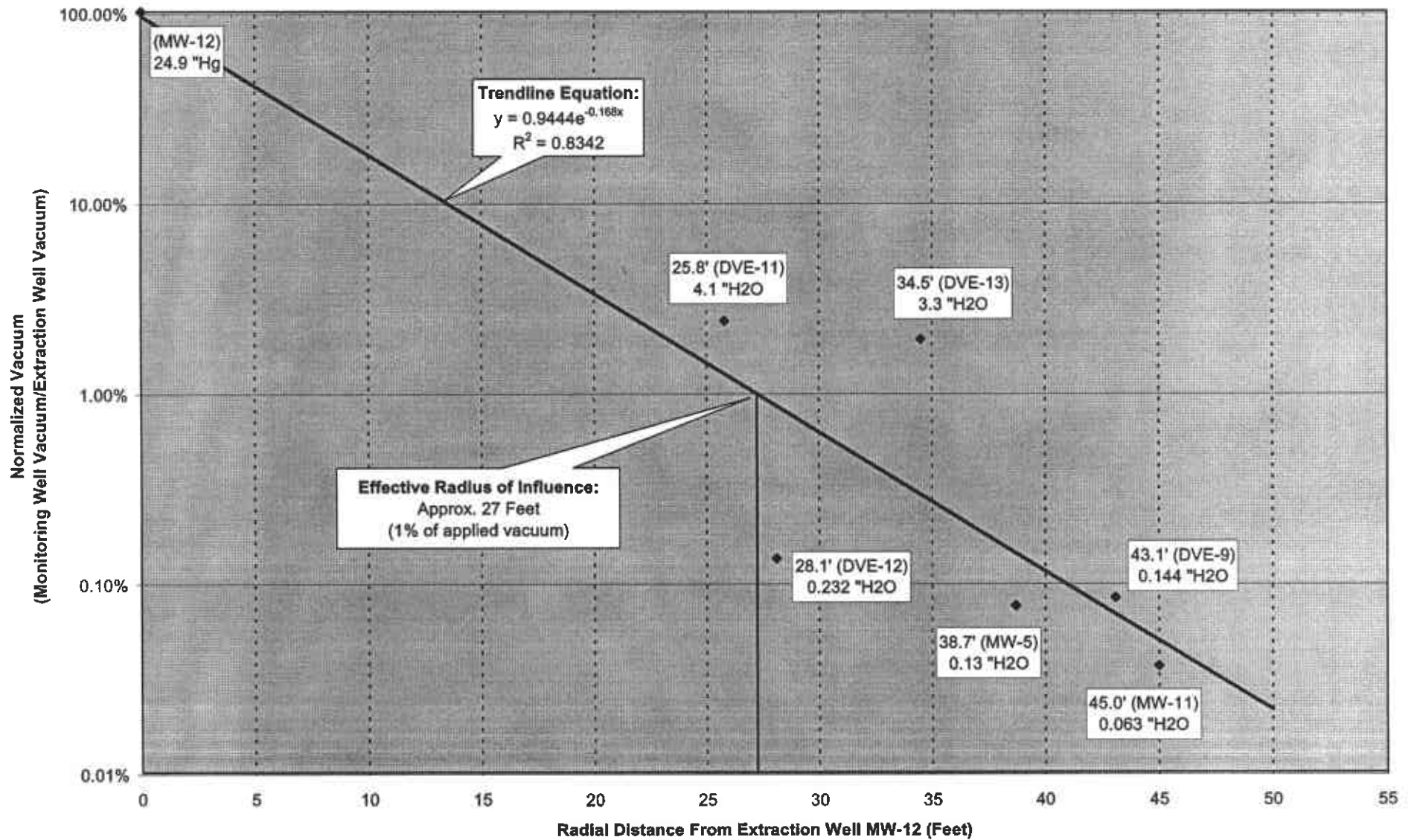
Former Chevron Station No. 9-0260
21995 Foothills Boulevard, Hayward, California



GRAPH 2

MULTI-PHASE PILOT TEST ON MW-12 (DECEMBER 11-12, 2002)
GRAPHICAL RADIUS OF INFLUENCE PLOT

Former Chevron Station No. 9-0260
21995 Foothills Boulevard, Hayward, California



C A M B R I A



ATTACHMENT L

Vapor Probe Analytical Data

CAMBRIA

Table 2. Analytic Results for Soil Vapor - Chevron Station 9-0260, 21995 Foothill Blvd., Hayward

Sample ID	Sample Date	Probe Depth Interval (fbg)	Sample Collection Time (minutes)	TPHg	B	T	E	X ¹	MTBE ²
Concentrations reported in micrograms per liter - $\mu\text{g}/\text{m}^3$									
VP-1	8/26/03	3.0-4.5	40	60,000	<21	26	<28	<28	<94
VP-1	8/26/03	8.0-9.5	90	81,000	<26	<31	<36	<36	<120
VP-1	8/26/03	12.0-13.5	120	160,000	26	25	<16	17	<52
VP-2	8/26/03	3.0-4.5	35	63,000*	<11	160	<15	18	<49
VP-2	8/26/03	8.0-9.5	45	66,000*	13	77	<15	<15	<50
VP-2	8/26/03	12.0-13.5	35	96,000*	14	130	<15	26	95
VP-3	8/26/03	3.0-4.5	37	53,000	<10	28	<14	<14	<45
VP-3	8/26/03	8.0-9.5	35	68,000	17	46	<14	<14	<48
VP-3	8/26/03	12.0-13.5	35	140,000	54	27	<14	21	<46

Abbreviations/Notes:

Total petroleum hydrocarbons as gasoline (TPHg), benzene, toluene, ethylbenzene and xylenes (BTEX), and oxygenates including methyl tertiary butyl ether (MTBE) by EPA T0-15.

<x = Not detected above method detection limit

fbg = Feet below grade

1 = Values for m,p-xylenes only. No o-xylenes detected in any sample.

2 = Except for MTBE, no other analyzed oxygenates were detected.

* = Values may contain up to an 11% error.

C A M B R I A



ATTACHMENT M

Vapor Risk Assessment Analysis

Energy Research and Technology Company
100 Chevron Way, P.O. Box 1627
Richmond CA 94802-0627

October 29, 2003

ChevronTexaco

Ms. Karen Streich
Project Manager, Retail Business Unit
6001 Bollinger Canyon Rd, L4050
Post Office Box 6012
San Ramon, California 94583-2324

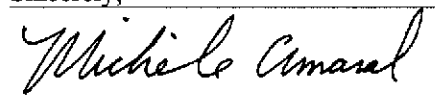
**SUBJECT: RBCA EVALUATION OF VAPOR INTRUSION TO INDOOR AIR FROM SOIL VAPOR
FORMER CHEVRON SERVICE STATION 9-0260**

Dear Karen,

Per your request, we have developed a risk-based corrective action evaluation of vapor intrusion to indoor air from soil vapor at the former Chevron Products Company service station Number 9-0260 located at 21995 Foothill Boulevard in Hayward, California. The attached document presents the RBCA evaluation and the information used to develop it.

If you have any comments or questions regarding the information presented in the evaluation, please contact me at (510) 242-1094 or Renae Magaw at (510) 242-7235.

Sincerely,



Michele Emerson Amaral
Senior Toxicologist

Attachments

Cc: THRA File
R. Magaw, ERTC

MEMORANDUM

The purpose of this memorandum is to present estimated excess lifetime cancer risks and noncarcinogenic hazards due to potential exposures to predicted indoor air concentrations of chemicals of potential concern (COPCs) from soil vapor at the former Chevron Products Company service station no. 9-0260 located at 21995 Foothill Blvd. in Hayward, California. The following sections describe the information that was used to estimate human health risks and hazards. Included are discussions on the COPCs in soil vapor, exposure assessment, toxicity criteria, and lastly estimated risks and hazards. Predicted concentrations of COPCs in indoor air, modeled from maximum detected concentrations in soil vapor, result in risk and hazard estimates that are well below USEPA established criteria.

Selection of COPCs in Soil Vapor

Soil vapor data were collected at the site by Cambria Environmental Technology Inc. (Cambria, 2003a) in August 2003. Soil vapor samples were collected based on a Revised Exposure Assessment Workplan submitted to the Alameda County Department of Environmental Health (Cambria, 2003b). The workplan generally follows the Los Angeles Regional Water Quality Control Board (2003) Active Soil Gas Investigations Advisory.

Table 1 presents COPCs in soil vapor and their detected concentrations. Benzene, toluene, xylenes, and methyl tertbutyl ether (MTBE) are COPCs. Ethylbenzene was not detected in soil vapor, has a reporting limit ranging from <14 to <28 $\mu\text{g}/\text{m}^3$, and is not considered a COPC.

Sample depths, maximum concentrations, and 95th percent upper confident limit (UCL) of the mean concentrations are provided for each chemical in Table 1. One-half of the reporting limit was assumed for nondetects to calculate 95% UCL concentrations.

All soil vapor data were collected at 3 feet below ground surface or greater. The maximum soil vapor concentration of benzene, 54 $\mu\text{g}/\text{m}^3$, was detected from 12 to 13.5 feet below ground surface (bgs) at sample location VP3. Maximum soil vapor concentrations of toluene, xylenes, and MTBE were collected at 3-4.5, 12-13.5, and 12-13.5 ft bgs, respectively. In general, higher soil vapor concentrations were collected at depth with lower concentrations near the surface. For example, the average benzene concentration collected from 12-13.5 ft bgs is 31.3 $\mu\text{g}/\text{m}^3$. Whereas, the average benzene concentrations collected from 8-9.5 ft bgs and 3-4.5 ft bgs are 14.3 and 7 $\mu\text{g}/\text{m}^3$, respectively.

Exposure Assessment

The site is the former location of a Chevron gasoline service station. Currently, the property is fenced and undeveloped. The properties surrounding the facility are commercial/industrial and residential. Groundwater beneath the site is not used as a drinking water source and it is not expected to be used as a potable source in the future. The potential future land use of the site was assumed to be residential.

Risks and hazards for COPCs in soil vapor were estimated for the potentially complete exposure pathway of inhalation of vapors in indoor air by onsite residents. It was assumed that future onsite adult and child residents breathe vapors within an enclosed dwelling located on the site. The USEPA (2001) SG-SCREEN Model (Version 1.0), based on a volatilization spreadsheet developed by Johnson and Ettinger (1999), was used to predict COPC indoor air building concentrations. Maximum detected concentrations of the COPCs in soil vapor collected across the site were conservatively used as input to the model.

The fate and transport parameter values and exposure assumptions that were used to estimate indoor air risks and hazards are presented in Tables 2 and 3, respectively. The source vapor concentrations, shallowest soil vapor sampling depth below grade, average vadose zone soil dry bulk density, total porosity, and air-filled porosity were obtained from direct site measurements collected by Cambria (2003). The average vadose zone soil water-filled porosity was calculated from total and air-filled porosities. It was assumed that the future residence would be built with slab-on-grade construction. The depth below grade to bottom of enclosed floor space reflects this assumption. This is likely a conservative assumption given that the residential dwellings located adjacent to the site all have crawl spaces that are approximately 2 feet in height. The average soil temperature used was also the model default. The vadose zone SCS soil type selected was silty clay (SIC). This assumption was made based on information provided in boring logs collected by Cambria during the July sampling event. Default properties for SIC soil in the SG-SCREEN model were used.

In general, the exposure parameter values shown in Table 3 are consistent with those recommended by ASTM (1995) for petroleum release sites, and the California Environmental Protection Agency Department of Toxic Substances Control (Cal/EPA DTSC, 1992). For example, adult and child exposure duration and frequency values of 30 and 6 years and 350 days per year are used for residents.

Toxicity Assessment

The inhalation reference doses (RfDs) and cancer slope factors (CSFs) used for the COPCs are presented in Table 4. The inhalation RfDs were obtained from USEPA's (2003) Integrated Risk Information System. The source of the CSFs is the California Environmental Protection Agency Office of Environmental Health Hazard Assessment (2003).

Risk Characterization

Table 5 presents estimated risks and hazards for onsite residents based on potential exposures to COPCs in indoor air that have volatilized from soil vapor. Risks and hazards were conservatively estimated based on maximum detected concentrations of the COPCs. The total estimated excess cancer risks for adult and child residents are 2×10^{-9} and 1×10^{-9} , respectively. Due to the inherent higher dose estimates for children, following USEPA's guidance noncancer

hazards were only estimated for children residents. The total noncancer hazard estimate for child residents is 7×10^{-5} .

Conclusions

Risks and hazards were estimated for onsite residents based on potential exposures to COPCs in indoor air that have volatilized from soil vapor. The maximum detected concentration of each COPC in soil vapor collected at the site was used to predict indoor air concentrations. The estimated excess cancer risk based on maximum concentrations of COPCs in soil vapor is well below the USEPA established target risk range from 1×10^{-4} to 1×10^{-6} . Similarly, the noncarcinogenic hazard estimate was well below the target hazard index of 1.0.

This evaluation is conservative in that maximum soil vapor concentrations of COPCs were modeled into an enclosed space. In general, risks and hazards are typically estimated assuming exposures to representative COPC concentrations, such as the 95% UCL of the mean concentrations. It is unlikely that potential receptors will be exposed to indoor air concentrations predicted from the maximum detected soil vapor concentrations over an extended period of time. Furthermore, given that the maximum soil vapor concentration of benzene was at depth, and that neither dispersion nor biodegradation have been considered, this evaluation is conservative.

References

California Environmental Protection Agency Department of Toxic Substances Control. 1992. Supplemental Guidance for Human Health Multimedia Risk Assessment of Hazardous Waste Sites and Permitted Facilities. July.

California Environmental Protection Agency Department of Toxic Substances Control and the California Regional Water Quality Control Board-Los Angeles Region (LARWQCB). 2003. Advisory-Active Soil Gas Investigations. January 28.

Cambria Environmental Technology Inc. (Cambria). 2003b. Revised Exposure Assessment Workplan.

Cambria Environmental Technology Inc. (Cambria). 2003a. Physical Properties Data and Analytical Results for Soil Vapor-Chevron Station 9-0260, 21995 Foothill Blvd., Hayward.

United States Environmental Protection Agency (USEPA). 1989. Risk Assessment Guidance for Superfund, Volume 1: Human Health Evaluation Manual. OSWER Dir. 9285.7-01a.

United States Environmental Protection Agency (USEPA). 1991. Human Health Evaluation Manual, Supplemental Guidance: "Standard Default Exposure Factors". OSWER Dir. 9285.6-03.

United States Environmental Protection Agency (USEPA). 1992. Dermal Exposure Assessment: Principles and Application. Interim Report. Office of Health and Environmental Assessment. EPA 600/8-91-011B.Soil.

United States Environmental Protection Agency (USEPA). 1996. Soil Screening Guidance: Technical Background Document. EPA/540/R-95/129.

United States Environmental Protection Agency (USEPA). 1997. Exposure Factors Handbook. EPA/600/P-95/002Fa. August.

United States Environmental Protection Agency (USEPA). 2001. SG-SCREEN Model. Version 1.0. March.

United States Environmental Protection Agency (USEPA). 2003. Integrated Risk Information System. Cincinnati, Ohio.

Table 1. Chemicals of Potential Concern in Soil Vapor and Their Detected Concentrations

Chemical	CAS No.	VP1	VP1	VP1	VP2	VP2	VP2	VP3	VP3	VP3	Maximum Detected Concentration	95% UCL Concentration	Lesser of 95% UCL or Max Concentration
Sample Depth		3-4.5	8-9.5	12-13.5	3-4.5	8-9.5	12-13.5	3-4.5	8-9.5	12-13.5			
Benzene	71-43-2	<21	<26	26	<11	13	14	<10	17	54	54	11	11
Ethylbenzene	100-41-4	<28	<36	<16	<15	<15	<15	<14	<14	<14	<36	3	3
Toluene	108-88-3	26	<31	25	160	77	130	28	46	27	160	39	39
Xylenes	106-42-3	<28	<36	17	18	<15	26	<14	<14	21	26	5	5
MTBE	1634-044	<94	<120	<52	<49	<50	95	<45	<48	<46	95	18	18

Concentration units are in micrograms per cubic meter ($\mu\text{g}/\text{m}^3$).

< = Not detected at the specified reporting limit.

UCL = Upper confidence limit

One-half of the reporting limit was used for nondetects.

Note: All data were collected at 3 feet below ground surface or greater.

Table 2. Input Parameters Used to Estimate Indoor Air Risks and Hazards

Parameter	Value	Units	Source
Source vapor concentration, C_{source}	Chemical-specific	$\mu\text{g}/\text{m}^3$	Measured (Table 1)
Depth below grade to bottom of enclosed space floor ¹	15	cm	Model default
Shallowest soil vapor sampling depth below grade	91.44 (3)	cm (ft)	Measured
Average soil temperature	10 (50)	$^{\circ}\text{C}$ ($^{\circ}\text{F}$)	Model default
Vadose zone SCS soil type	Silty Clay (SIC)	-	Boring Logs
Average vadose zone soil dry bulk density	1.74	g/cm^3	Measured
Average vadose zone total porosity	34.0%	percent	Measured
Average air-filled porosity	3.6%	percent	Measured
Average vadose zone soil water-filled porosity	30.4%	percent	Calculated from total & air-filled porosities

¹ Assumes slab-on-grade.

Table 3. Exposure Parameters Used to Estimate Indoor Air Risks

Parameter	Symbol	Units	Value	Source
Infinite source building concentration	C_{building}	$\mu\text{g}/\text{m}^3$	Chemical-specific	Modeled
Inhalation rate-adult resident	IRA_{adult}	m^3/day	20	USEPA, 1989
Inhalation rate-child resident	IRA_{child}	m^3/day	10	USEPA, 1997
Exposure frequency-resident	EF_r	days/year	350	USEPA, 1991
Exposure duration-adult resident	ED_{adult}	years	30	USEPA, 1991
Exposure duration-child resident	ED_{child}	years	6	USEPA, 1991
Averaging time-adult and child (carcinogens)	AT_c	days	25,550	USEPA, 1989
Averaging time-adult resident (noncarcinogens)	$AT_{\text{nc-a}}$	days	10,950	ED x 365
Averaging time-child (noncarcinogens)	$AT_{\text{nc-c}}$	days	2,190	ED x 365
Conversion factor	CF	$\mu\text{g}/\text{mg}$	1,000	-
Body weight-adult	BW_{adult}	kg	70	USEPA, 1989
Body weight-child	BW_{child}	kg	15	USEPA, 1991

Table 4. Inhalation Toxicity Criteria

Chemical	Inhalation RfD mg/kg/day	Inhalation CSF (mg/kg-day)⁻¹
Benzene	1.70E-03	1.02E-01
Toluene	1.10E-01	NC
Xylenes	2.90E-02	NC
MTBE	8.57E-01	9.40E-04

RfD = Reference dose

CSF = Cancer slope factor

NC = Noncarcinogen

Source of RfDs = USEPA (2003) Integrated Risk Information System

Source of CSFs = OEHHA (2003) Cancer Potency Values

**Table 5. Estimated Excess Lifetime Cancer Risks and Noncarcinogenic Hazards
Maximum Soil Vapor Concentrations Used as Input**

Equations:

$$\text{Risk} = \text{CSF} \times C_{\text{building}} \times 1/\text{CF} \times (\text{IRA}_{\text{adult}} \times \text{EF}_r \times \text{ED}_{\text{adult}}) / (\text{BW}_{\text{adult}} \times \text{AT}_c)$$

$$\text{Risk} = \text{CSF} \times C_{\text{building}} \times 1/\text{CF} \times (\text{IRA}_{\text{child}} \times \text{EF}_r \times \text{ED}_{\text{child}}) / (\text{BW}_{\text{child}} \times \text{AT}_c)$$

$$\text{Hazard} = (1/\text{RFD}) \times C_{\text{building}} \times 1/\text{CF} \times (\text{IRA}_{\text{child}} \times \text{EF}_r \times \text{ED}_{\text{child}}) / (\text{BW}_{\text{child}} \times \text{AT}_{\text{nc-c}})$$

Chemical	Infinite Source Building Concentration, C_{building} , SG-SCREEN ¹ ($\mu\text{g}/\text{m}^3$)	Adult Excess Cancer Risk	Child Excess Cancer Risk	Child Noncancer Hazard
Benzene	1.69E-04	2.0E-09	9.4E-10	6.4E-05
Toluene	4.68E-04	NC	NC	2.7E-06
Xylenes	7.32E-05	NC	NC	1.6E-06
MTBE	5.51E-04	6.1E-11	2.8E-11	4.1E-07
Total		2.E-09	1.E-09	7.E-05

¹ See Appendix A for model results.

NC = Noncarcinogen

APPENDIX A

USEPA INDOOR AIR SG-MODEL RESULTS

INTERMEDIATE CALCULATIONS SHEET

BENZENE - Maximum Soil Vapor Concentration

Source- building separation, LT (cm)	Vadose zone soil air-filled porosity, $\theta_{\alpha\zeta}$ (cm ³ /cm ³)	Vadose zone effective total fluid saturation, Ste (cm ³ /cm ³)	Vadose zone soil intrinsic permeability, ki (cm ²)	Vadose zone soil relative air permeability, krg (cm ²)	Vadose zone soil effective vapor permeability, kv (cm ²)	Floor- wall seam perimeter, Xcrack (cm)	Soil gas conc. (mg/m ³)	Bldg. ventilation rate, Qbuilding (cm ³ /s)
76.44	0.036	0.843	1.48E-09	0.285	4.22E-10	3,844	5.40E+01	5.63E+04

Area of enclosed space below grade, AB (cm ²)	Crack- to-total area ratio, η (unitless)	Crack depth below grade, Zcrack (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_w, T\Sigma$ (cal/mol)	Henry's law constant at ave. soil temperature, HTS (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'TS (unitless)	Vapor viscosity at ave. soil temperature, $\mu T\Sigma$ (g/cm-s)	Vadose zone effective diffusion coefficient, DeffV (cm ² /s)	Diffusion path length, Ld (cm)
9.24E+05	4.16E-04	15	8,122	2.69E-03	1.16E-01	1.75E-04	2.57E-05	76.44

Convection path length, Lp (cm)	Source vapor conc., Csource (mg/m ³)	Crack radius, rcrack (cm)	Average vapor flow rate into bldg., Qsoil (cm ³ /s)	Crack effective diffusion coefficient, Dcrack (cm ² /s)	Area of crack, Acrack (cm ²)	Exponent of equivalent foundation Peclet number, exp(Pef) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., Cbuilding (mg/m ³)
15	5.40E+01	0.10	4.07E-01	2.57E-05	3.84E+02	2.03E+268	3.13E-06	1.69E-04

Unit risk factor, URF (mg/m ³)-1	Reference conc., RfC (mg/m ³)
2.9E-05	6.0E-03

END

INTERMEDIATE CALCULATIONS SHEET

TOLUENE - Maximum Soil Vapor Concentration

Source- building separation, LT (cm)	Vadose zone soil air-filled porosity, $\theta_{\alpha\zeta}$ (cm ³ /cm ³)	Vadose zone effective total fluid saturation, Ste (cm ³ /cm ³)	Vadose zone soil intrinsic permeability, ki (cm ²)	Vadose zone soil relative air permeability, krg (cm ²)	Vadose zone soil effective vapor permeability, kv (cm ²)	Floor- wall seam perimeter, Xcrack (cm)	Soil gas conc. (mg/m ³)	Bldg. ventilation rate, Qbuilding (cm ³ /s)
76.44	0.036	0.843	1.48E-09	0.285	4.22E-10	3,844	1.60E+02	5.63E+04

Area of enclosed space below grade, AB (cm ²)	Crack- to-total area ratio, η (unitless)	Crack depth below grade, Zcrack (cm)	Enthalpy of vaporization a ave. soil temperature, $\Delta H_{\alpha, T\Sigma}$ (cal/mol)	Henry's law constant at ave. soil temperature, HTS (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'TS (unitless)	Vapor viscosity at ave. soil temperature, $\mu T\Sigma$ (g/cm-s)	Vadose zone effective diffusion coefficient, DeffV (cm ² /s)	Diffusion path length, Ld (cm)
9.24E+05	4.16E-04	15	9,154	2.92E-03	1.26E-01	1.75E-04	2.29E-05	76.44

Convection path length, Lp (cm)	Source vapor conc., Csource (mg/m ³)	Crack radius, rcrack (cm)	Average vapor flow rate into bldg., Qsoil (cm ³ /s)	Crack effective diffusion coefficient, Dcrack (cm ² /s)	Area of crack, Acrack (cm ²)	Exponent of equivalent foundation Peclet number, exp(Pef) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., Cbuilding (mg/m ³)
15	1.60E+02	0.10	4.07E-01	2.29E-05	3.84E+02	1.70E+301	2.93E-06	4.68E-04

Unit
risk
factor,
URF
(mg/m³)-1

Reference
conc.,
RfC
(mg/m³)

NA	3.9E-01
----	---------

END

INTERMEDIATE CALCULATIONS SHEET

XYLENES - Maximum Soil Vapor Concentration

Source- building separation, LT (cm)	Vadose zone soil air-filled porosity, $\theta_{\alpha\zeta}$ (cm ³ /cm ³)	Vadose zone effective total fluid saturation, Ste (cm ³ /cm ³)	Vadose zone soil intrinsic permeability, ki (cm ²)	Vadose zone soil relative air permeability, krg (cm ²)	Vadose zone soil effective vapor permeability, kv (cm ²)	Floor- wall seam perimeter, Xcrack (cm)	Soil gas conc. (mg/m ³)	Bldg. ventilation rate, Qbuilding (cm ³ /s)
76.44	0.036	0.843	1.48E-09	0.285	4.22E-10	3,844	2.60E+01	5.63E+04

Area of enclosed space below grade, AB (cm ²)	Crack- to-total area ratio, η (unitless)	Crack depth below grade, Zcrack (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_{\alpha,T\Sigma}$ (cal/mol)	Henry's law constant at ave. soil temperature, HTS (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, H'TS (unitless)	Vapor viscosity at ave. soil temperature, $\mu T\Sigma$ (g/cm-s)	Vadose zone effective diffusion coefficient, DeffV (cm ² /s)	Diffusion path length, Ld (cm)
9.24E+05	4.16E-04	15	10,248	2.89E-03	1.24E-01	1.75E-04	2.15E-05	76.44

Convection path length, Lp (cm)	Source vapor conc., Csource (mg/m ³)	Crack radius, rcrack (cm)	Average vapor flow rate into bldg., Qsoil (cm ³ /s)	Crack effective diffusion coefficient, Dcrack (cm ² /s)	Area of crack, Acrack (cm ²)	Exponent of equivalent foundation Peclet number, exp(Pef) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., Cbuilding (mg/m ³)
15	2.60E+01	0.10	4.07E-01	2.15E-05	3.84E+02	#NUM!	2.81E-06	7.32E-05

Unit risk factor, URF (mg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
NA	1.0E-01
END	

INTERMEDIATE CALCULATIONS SHEET

MTBE - Maximum Soil Vapor Concentration

Source- building separation, LT (cm)	Vadose zone soil air-filled porosity, $\theta_{a\zeta}$ (cm ³ /cm ³)	Vadose zone effective total fluid saturation, Ste (cm ³ /cm ³)	Vadose zone soil intrinsic permeability, ki (cm ²)	Vadose zone soil relative air permeability, krg (cm ²)	Vadose zone soil effective vapor permeability, kv (cm ²)	Floor- wall seam perimeter, Xcrack (cm)	Soil gas conc. (mg/m ³)	Bldg. ventilation rate, Qbuilding (cm ³ /s)
76.44	0.036	0.843	1.48E-09	0.285	4.22E-10	3,844	9.50E+01	5.63E+04

Area of enclosed space below grade, AB (cm ²)	Crack- to-total area ratio, η (unitless)	Crack depth below grade, Zcrack (cm)	Enthalpy of vaporization at ave. soil temperature, $\Delta H_w, T\zeta$ (cal/mol)	Henry's law constant at ave. soil temperature, HTS (atm-m ³ /mol)	Henry's law constant at ave. soil temperature, HTS (unitless)	Vapor viscosity at ave. soil temperature, $\mu, T\zeta$ (g/cm-s)	Vadose zone effective diffusion coefficient, DeffV (cm ² /s)	Diffusion path length, Ld (cm)
9.24E+05	4.16E-04	15	7,294	3.25E-04	1.40E-02	1.75E-04	1.37E-04	76.44

Convection path length, Lp (cm)	Source vapor conc., Csource (mg/m ³)	Crack radius, rcrack (cm)	Average vapor flow rate into bldg., Qsoil (cm ³ /s)	Crack effective diffusion coefficient, Dcrack (cm ² /s)	Area of crack, Acrack (cm ²)	Exponent of equivalent foundation Peclet number, exp(Pef) (unitless)	Infinite source indoor attenuation coefficient, α (unitless)	Infinite source bldg. conc., Cbuilding (mg/m ³)
15	9.50E+01	0.10	4.07E-01	1.37E-04	3.84E+02	2.48E+50	5.80E-06	5.51E-04

Unit risk factor, URF (mg/m ³) ⁻¹	Reference conc., RfC (mg/m ³)
9.4E-04	3.0E+00

END

C A M B R I A



ATTACHMENT N

Groundwater Elevation Contour Maps

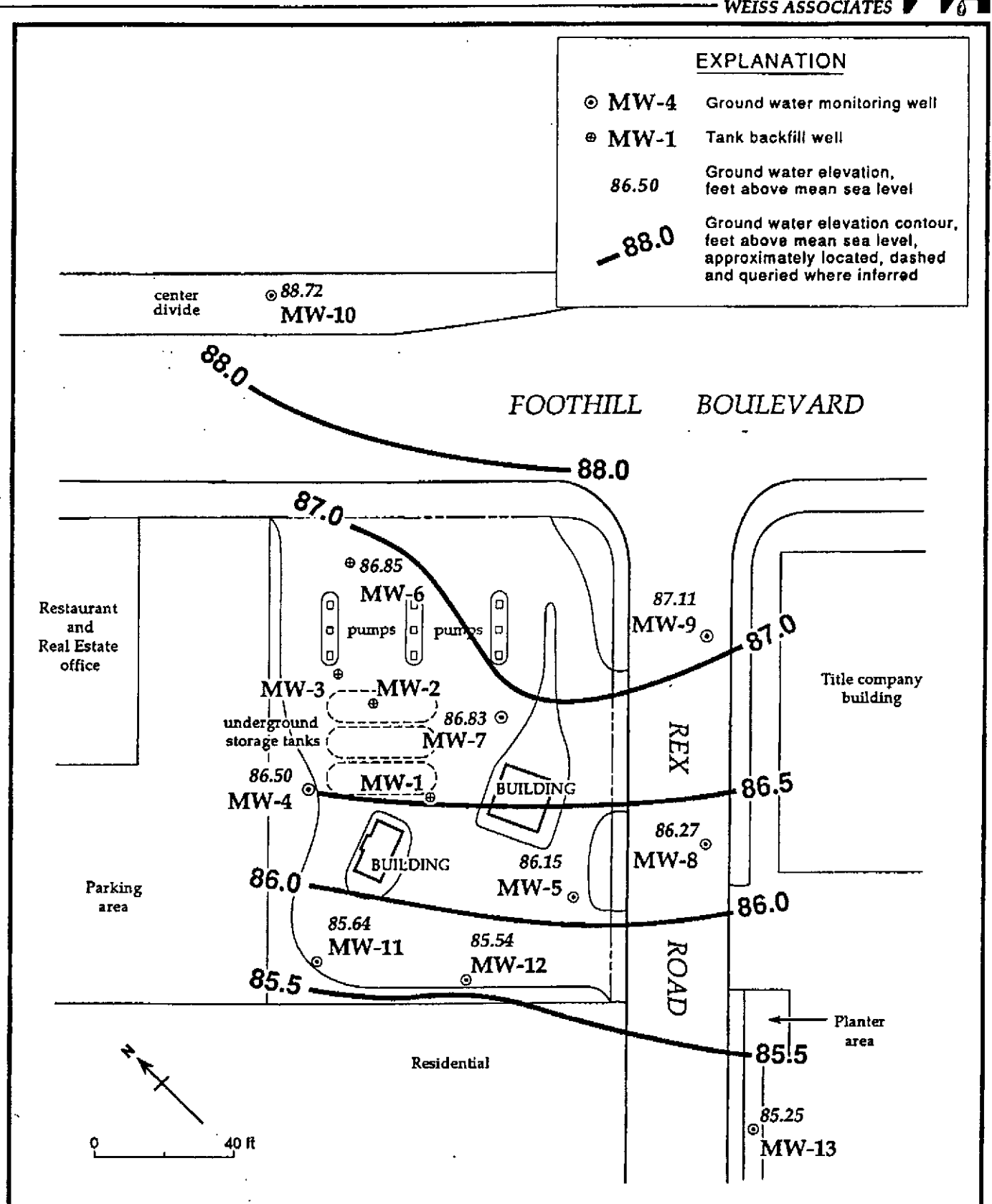


Figure 4. Ground Water Elevation Contours - June 28, 1989 - Chevron Service Station #90260, Hayward, California

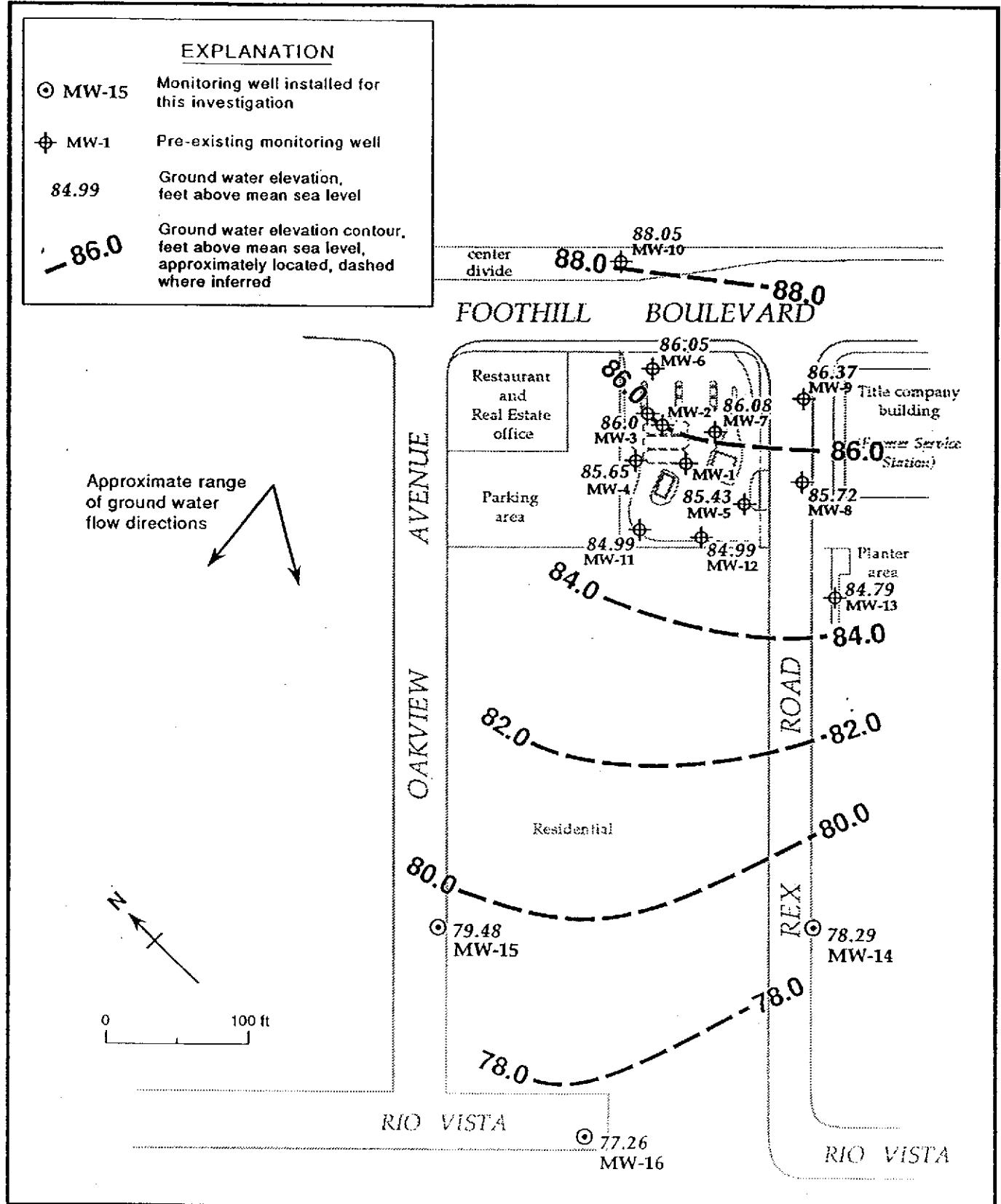


Figure 4. Ground Water Elevation Contours - August 29, 1990 - Chevron Service Station #9-0260, 21995 Foothill Boulevard, Hayward, California

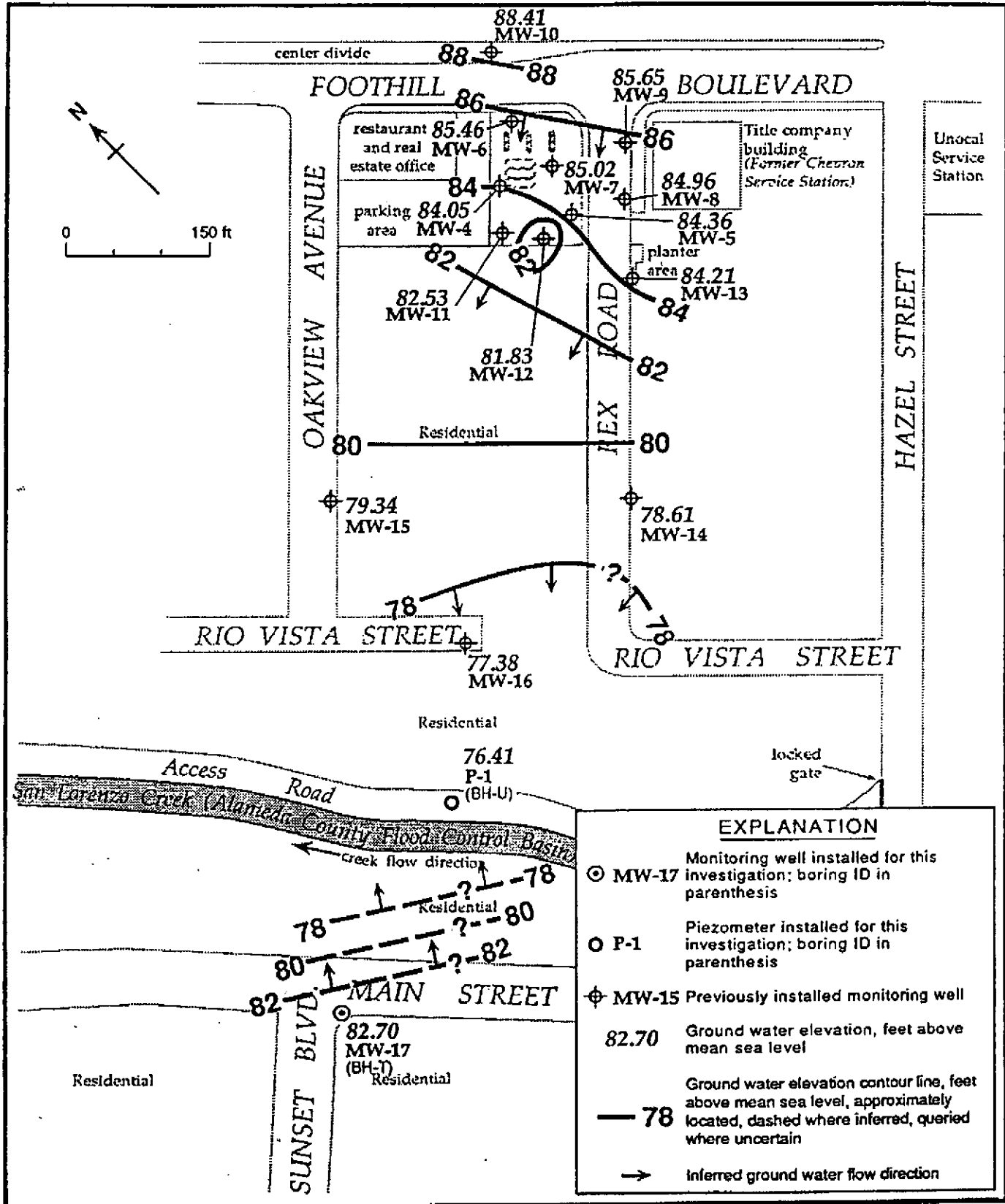
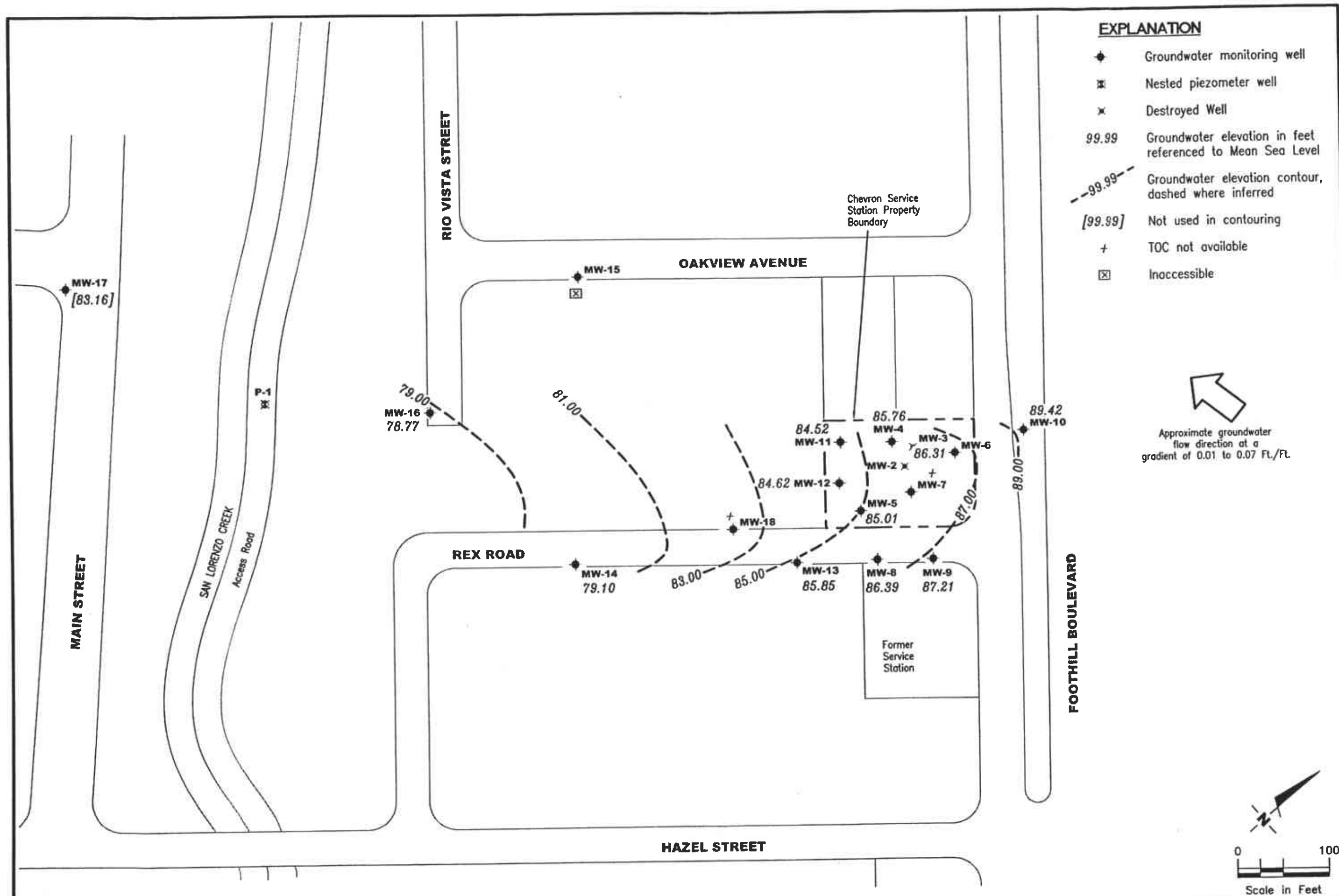


Figure 2. Monitoring Well and Piezometer Locations and Ground Water Elevation Contours - August 13, 1992 - Chevron Service Station #9-0260, 21995 Foothill Boulevard, Hayward, California



Source: Figure modified from drawing provided by RRM engineering contracting firm.

C A M B R I A



ATTACHMENT O

Hydrocarbon Degradation Rate Analysis

Table A - Concentration Trend Analysis Summary Data

Well	Analyte	Maximum Concentration Detected (ug/l)	Water Quality Objective*	Estimated Year to Reach WQO	Estimated Half-Life (days)	Estimated Concentration in 10 Years (ug/l)	Estimated Concentration in 20 Years (ug/l)
MW-4	TPHg	1,300,000	100 ug/l	2097	3,466	22,077	10,635
	Benzene	45,000	1 ug/l	2045	1,386	290	47
	MTBE	290,000	5 ug/l	2003	173	<0.5	<0.5
MW-11	TPHg	340,000	100 ug/l	2022	990	380	29
	Benzene	36,000	1 ug/l	2029	990	52	4
	MTBE	6,900	5 ug/l	2003	267	<0.5	<0.5
MW-12	TPHg	2,400,000	100 ug/l	2097	3,466	21,317	10,267
	Benzene	53,000	1 ug/l	2081	2,310	1722	516
	MTBE	69,000	5 ug/l	2009	315	<5	<5
MW-13	TPHg	120,000	100 ug/l	2017	866	93	<50
	Benzene	12,000	1 ug/l	2012	578	<5	<5
MW-16	TPHg	62,000	100 ug/l	2043	1,733	3,316	769
	Benzene	11,000	1 ug/l	2050	1,733	189	44
	MTBE	450	5 ug/l	2002	289	<1	<1

* = Assumed WQOs

Concentration Data for Well MW-4, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Raw Data

Date	GWE	TPH-G (ug/L)	Benzene (ug/L)	MTBE (ug/L)
2/5/88		88,000	24,000	
6/15/88	87.83	95,000	43,000	
9/27/88	86.53	500,000	41,000	
1/5/89	87.53	64,000	41,000	
5/28/89	86.50	110,000	34,000	
10/3/89	86.00	240,000	36,000	
1/4/90	86.00	130,000	33,000	
4/3/90	86.94	110,000	41,000	
7/3/90	86.69	180,000	32,000	
11/6/90	85.09	170,000	31,000	
4/3/91	89.79	130,000	21,000	
10/2/91	84.59	240,000	27,000	
12/3/92	84.58	1,300,000	17,000	
5/15/95	89.36	<50	<0.5	
11/28/95	86.08	97,000	23,000	430
5/29/96	89.73	99,000	11,000	<500
11/22/96	89.23	130,000	20,000	21,000
5/23/97	88.10	120,000	23,000	30,000
8/4/97	87.51	120,000	25,000	15,000
11/25/97	86.83	460,000	44,000	290,000
5/21/98	88.74	100,000	11,000	3,100
11/18/98	81.05	51,000	5,200	1,600
5/10/99	87.99	68,800	9,680	328
5/9/00	88.01	3,400	24	430
11/9/00	85.34	66,700	13,900	<250
5/2/01	84.24	490,000	2,990	19
11/26/01	85.43	39,000	2,700	<100
5/24/02	85.52	55,000	4,300	<100
11/29/02	85.50	39,000	3,600	<50
5/30/03	88.34	51,000	4,400	5
11/24/03	85.76	50,000	6,300	1

Edited Data

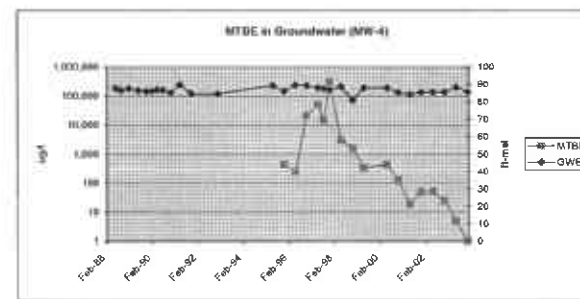
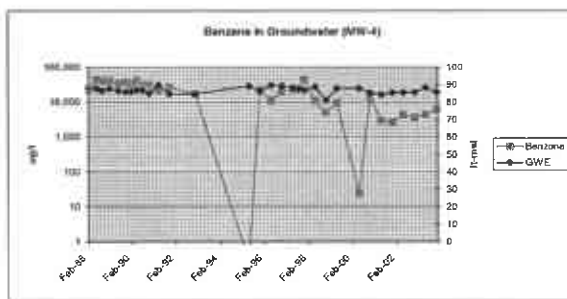
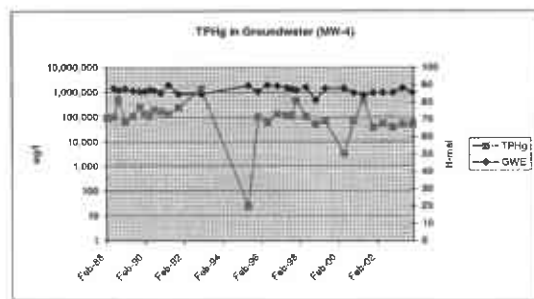
Date	GWE	TPH-G (ug/L)	Benzene (ug/L)	MTBE (ug/L)
2/5/88		88,000	24,000	
6/15/88	87.83	95,000	43,000	
9/27/88	86.53	500,000	41,000	
1/5/89	87.51	64,000	41,000	
5/28/89	86.50	110,000	34,000	
10/3/89	86.00	240,000	36,000	
1/4/90	86.00	130,000	33,000	
4/3/90	86.94	110,000	41,000	
7/3/90	86.69	180,000	32,000	
11/6/90	85.09	170,000	31,000	
4/3/91	89.75	130,000	21,000	
10/2/91	84.59	240,000	27,000	
12/3/92	84.58	1,300,000	17,000	
5/15/95	89.36	25	0.25	
11/28/95	86.08	97,000	23,000	430
5/29/96	89.73	99,000	11,000	250
11/22/96	89.23	130,000	20,000	21,000
5/23/97	88.10	120,000	23,000	30,000
8/4/97	87.51	120,000	25,000	15,000
11/25/97	86.83	460,000	44,000	290,000
5/21/98	88.74	100,000	11,000	3,100
11/18/98	81.05	51,000	5,200	1,600
5/10/99	87.99	68,800	9,680	328
5/9/00	88.01	3,400	24	430
11/9/00	85.34	66,700	13,900	125
5/2/01	84.24	490,000	2,990	19
11/26/01	85.43	39,000	2,700	50
5/24/02	85.52	55,000	4,300	80
11/29/02	85.50	39,000	3,600	25
5/30/03	88.34	51,000	4,400	5
11/24/03	85.76	50,000	6,300	1

Days Since 2/5/1988	TPH-G (ug/L)
0	88,000
131	95,000
235	500,000
335	64,000
509	110,000
606	240,000
699	130,000
786	110,000
879	180,000
1,005	170,000
1,153	130,000
1,335	240,000
1,763	1,300,000
2,656	25
2,853	97,000
3,036	99,000
3,213	130,000
3,395	120,000
3,468	120,000
3,581	460,000
3,758	100,000
3,940	51,000
4,112	68,800
4,477	3,400
4,661	66,700
4,835	490,000
5,043	39,000
5,222	55,000
5,411	39,000
5,593	51,000
5,771	50,000

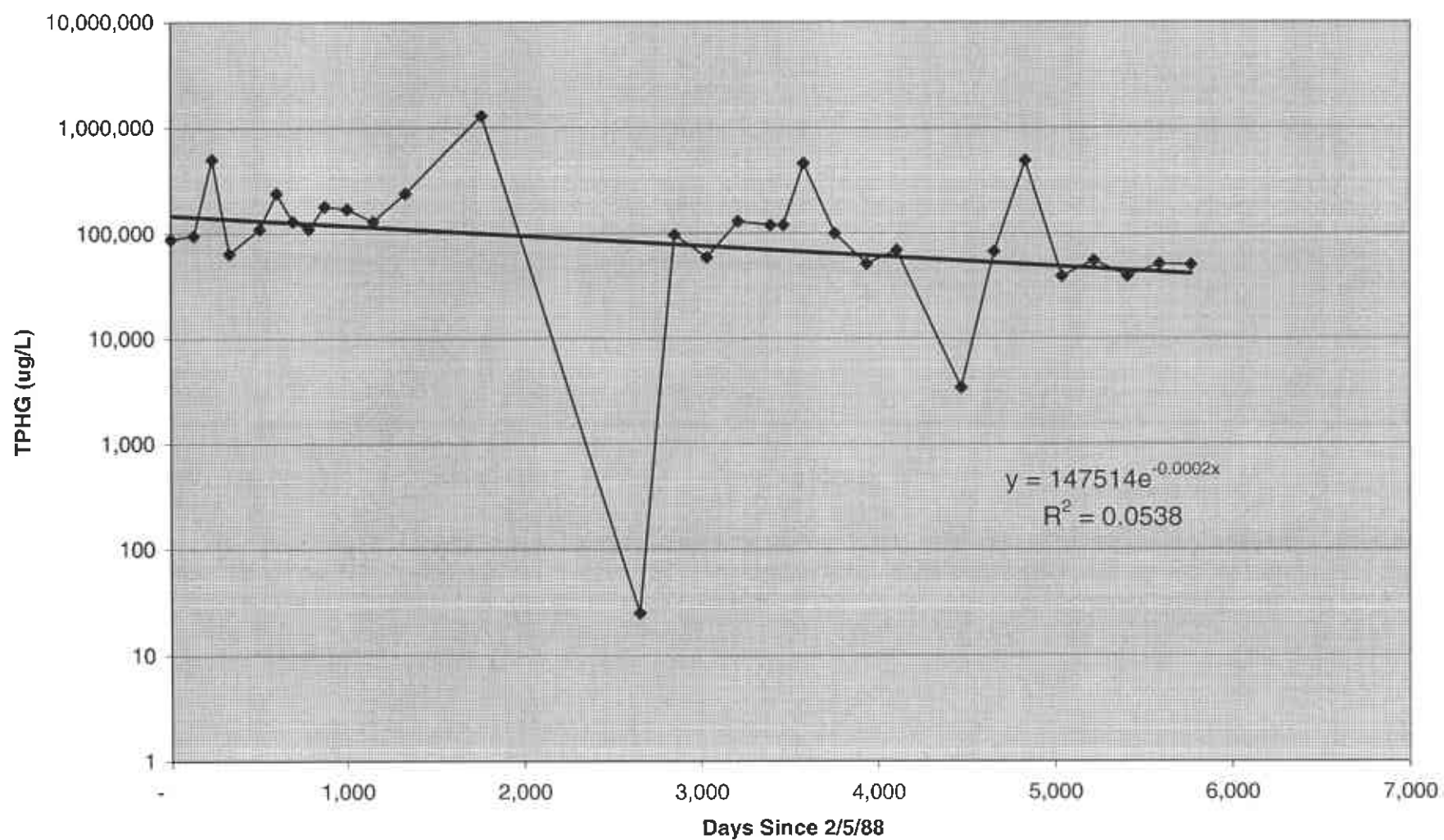
Days Since 2/5/1988	Benzene (ug/L)
0	24,000
131	43,000
235	41,000
335	41,000
509	34,000
606	36,000
699	33,000
786	41,000
879	32,000
1,005	31,000
1,153	21,000
1,335	27,000
1,763	17,000
2,656	0.25
2,853	23,000
3,036	11,000
3,213	20,000
3,395	23,000
3,468	25,000
3,581	44,000
3,758	11,000
3,940	5,200
4,112	9,680
4,477	24
4,661	13,900
4,835	2,990
5,043	2,700
5,222	4,300
5,411	3,600
5,593	4,400
5,771	6,300

Days Since 11/22/1996	MTBE (ug/L)
0	21,000
182	30,000
255	15,000
368	290,000
545	3,100
727	1,600
899	328
1,264	430
1,448	125
1,622	19
1,830	50
2,009	80
2,198	25
2,380	5
2,558	1

Assumed < x = x/2



TPHg Concentrations in Groundwater (Well MW-4)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of TPHg in Well MW-4, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = b e^{ax} \implies x = \ln(y/b) / a$$

Site: **Former Chevron Site 9-0260**
Well: **MW-4**
Constituent: **TPHg**

$$y = 37687 e^{-0.0026x} \implies x = \ln(y/37687) / -0.0026$$

Given

Water Quality Objective: y **50** ug/L
Constant: b **147514**
Constant: a **-0.0002**
Date of first sample: **2/5/1988**

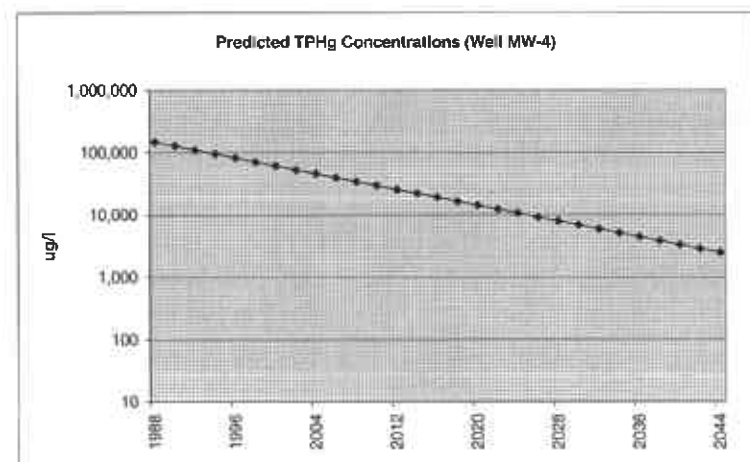
Calculate

Days from first sample: x **39,948** Days
Years from first sample: **109.4** Years
Estimated date of cleanup: **Jun-2097**

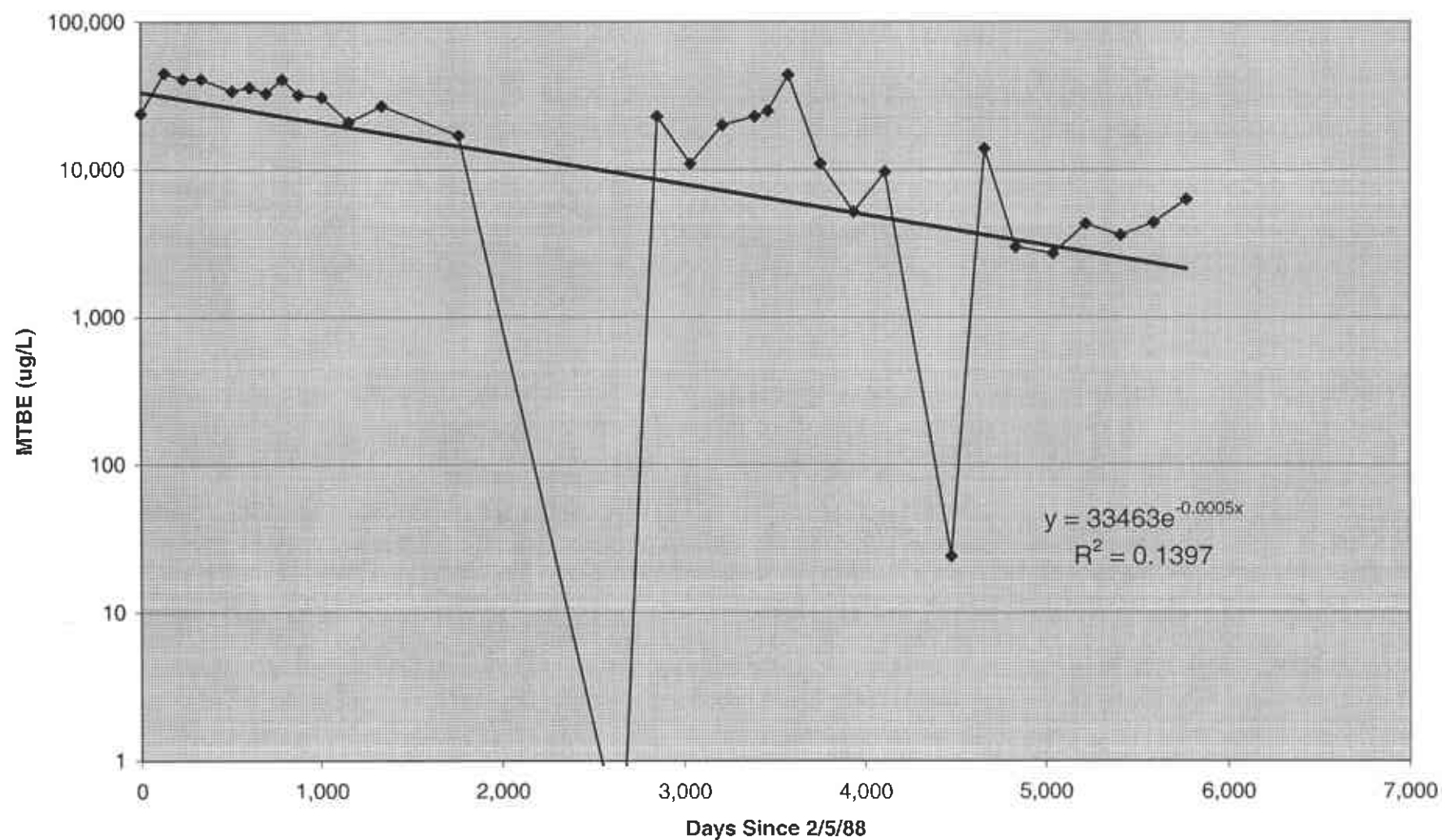
$$\text{Calculated Half Life} = \frac{-\ln(2)}{a} = \frac{-\ln(2)}{-0.0002} = \frac{0.693}{0.0002} = 3,466 \text{ Days}$$

Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
2/5/1988	0	147,514
2/5/1990	731	127,450
2/5/1992	1,461	110,137
2/5/1994	2,192	95,157
2/5/1996	2,922	82,230
2/5/1998	3,653	71,046
2/5/2000	4,383	61,395
2/5/2002	5,114	53,044
2/5/2004	5,844	45,838
2/5/2006	6,575	39,604
2/5/2008	7,305	34,224
2/5/2010	8,036	29,569
2/5/2012	8,766	25,552
2/5/2014	9,497	22,077
2/5/2016	10,227	19,078
2/5/2018	10,958	16,483
2/5/2020	11,688	14,244
2/5/2022	12,419	12,306
2/5/2024	13,149	10,635
2/5/2026	13,880	9,188
2/5/2028	14,610	7,940
2/5/2030	15,341	6,860
2/5/2032	16,071	5,928
2/5/2034	16,802	5,122
2/5/2036	17,532	4,426
2/5/2038	18,263	3,824
2/5/2040	18,993	3,305
2/5/2042	19,724	2,855
2/5/2044	20,454	2,467
2/5/2046	21,185	2,132
2/5/2048	21,915	1,842
2/5/2050	22,646	1,592
2/5/2052	23,376	1,375
2/5/2054	24,107	1,188
2/5/2056	24,837	1,027
2/5/2058	25,568	887
2/5/2060	26,298	767
2/5/2062	27,029	662
2/5/2064	27,759	572
2/5/2066	28,490	495
2/5/2068	29,220	427
2/5/2070	29,951	369
2/5/2072	30,681	319
2/5/2074	31,412	276
2/5/2076	32,142	238
2/5/2078	32,873	206



Benzene Concentrations in Groundwater (Well MW-4)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of Benzene in Well MW-4, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = b e^{ax} \implies x = \ln(y/b) / a$$

Site: **Former Chevron Site 9-0260**
 Well: **MW-4**
 Constituent: **Benzene**

$$y = 242876 e^{-0.0017x} \implies x = \ln(y/242876) / -0.0017$$

Given

Water Quality Objective:	y	1 ug/L
Constant:	b	33463
Constant:	a	-0.0005
Date of first sample:		2/5/1988

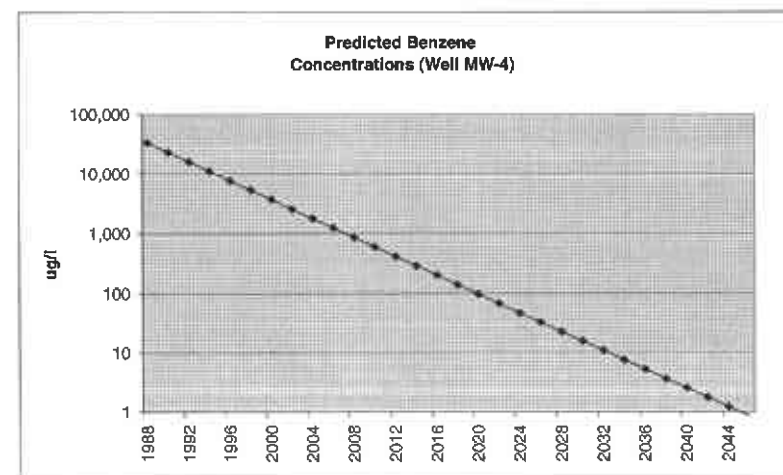
Calculate

Days from first sample:	x	20,836 Days
Years from first sample:		57.1 Years
Estimated date of cleanup:		Feb-2045

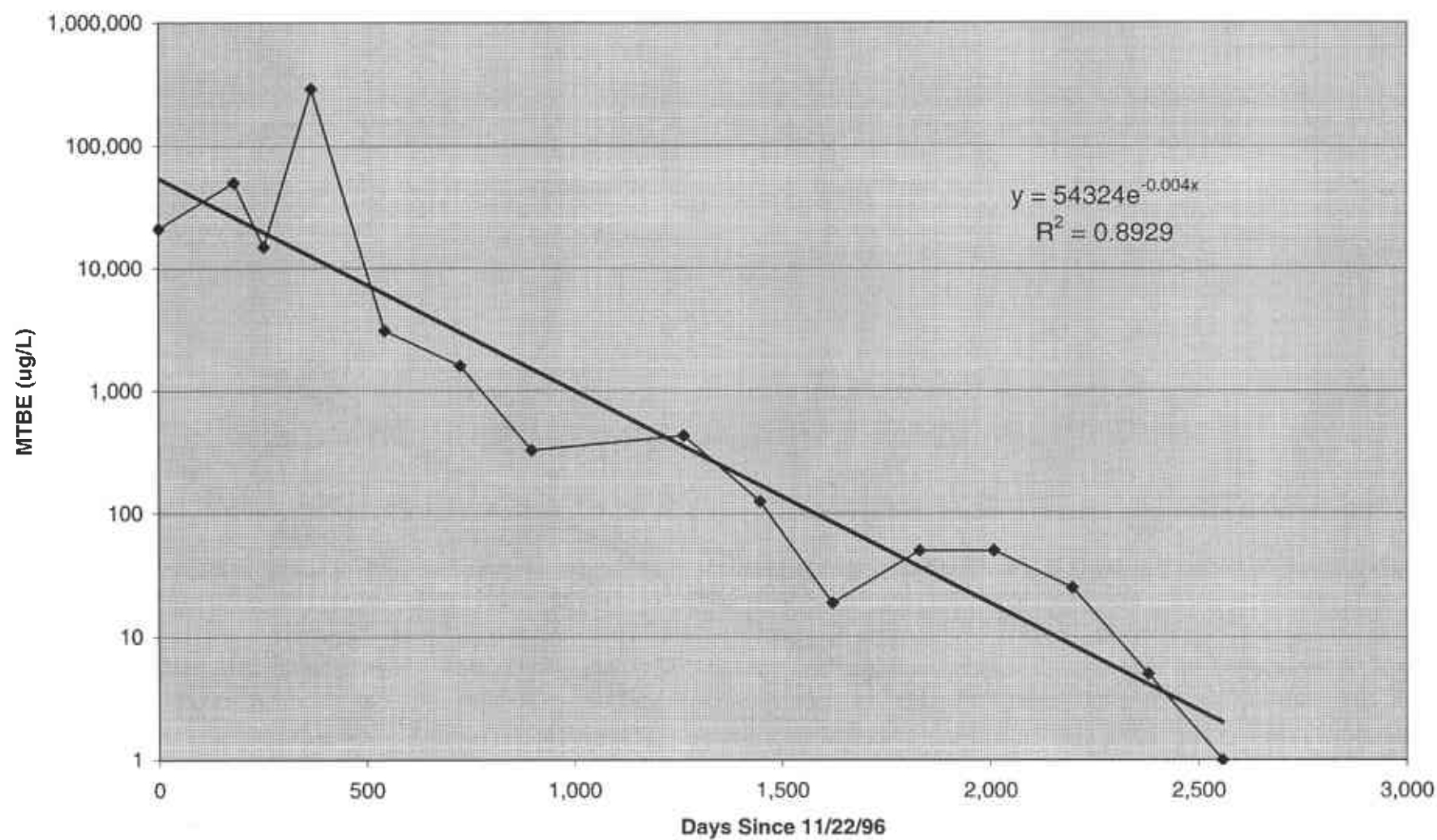
Calculated Half Life = $-\ln(2)/a$
 Days

Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
2/5/1988	0	33,463
2/5/1990	731	23,218
2/5/1992	1,461	16,118
2/5/1994	2,192	11,184
2/5/1996	2,922	7,764
2/5/1998	3,653	5,387
2/5/2000	4,383	3,739
2/5/2002	5,114	2,595
2/5/2004	5,844	1,801
2/5/2006	6,575	1,250
2/5/2008	7,305	868
2/5/2010	8,036	602
2/5/2012	8,766	418
2/5/2014	9,497	290
2/5/2016	10,227	201
2/5/2018	10,958	140
2/5/2020	11,688	97
2/5/2022	12,419	67.3
2/5/2024	13,149	46.7
2/5/2026	13,880	32.4
2/5/2028	14,610	22.5
2/5/2030	15,341	15.6
2/5/2032	16,071	10.8
2/5/2034	16,802	7.5
2/5/2036	17,532	5.2
2/5/2038	18,263	3.6
2/5/2040	18,993	2.5
2/5/2042	19,724	1.7
2/5/2044	20,454	1.2
2/5/2046	21,185	0.8



MTBE Concentrations in Groundwater (Well MW-4)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of MTBE in Well MW-4, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = b e^{ax} \implies x = \ln(y/b) / a$$

Site: **Former Chevron Site 9-0260**
Well: **MW-4**
Constituent: **MTBE**

$$y = 242876 e^{-0.0017x} \implies x = \ln(y/242876) / -0.0017$$

Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
11/22/1996	0	54,324
11/22/1997	365	12,616
11/22/1998	730	2,930
11/22/1999	1,095	680
11/22/2000	1,461	157
11/22/2001	1,826	37
11/22/2002	2,191	8
11/22/2003	2,556	2

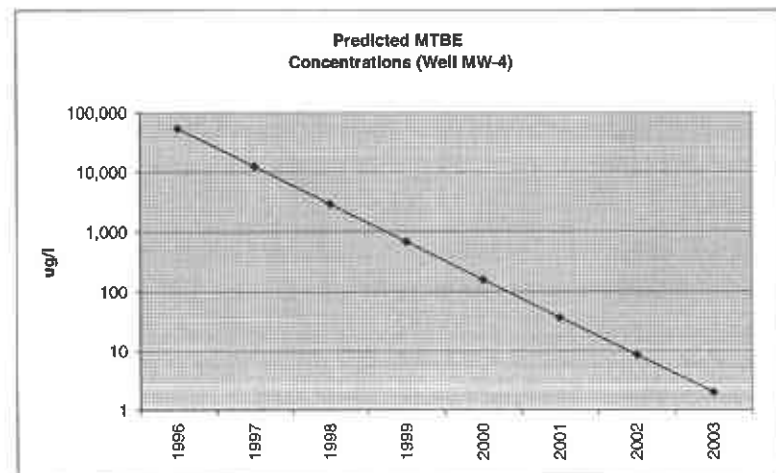
Given

Water Quality Objective: **y** **5 ug/l**
Constant: **b** **54324**
Constant: **a** **-0.004**
Date of first sample: **11/22/1996**

Calculate

Days from first sample: **x** **2,323 Days**
Years from first sample: **6.4 Years**
Estimated date of cleanup: **Apr-2003**

Calculated Half Life = $-\ln(2)/a$ **173 Days**



Concentration Data for Well MW-11, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Raw Data

Date	GWE	TPH-G (ug/L)	Benzene (ug/L)	MTBE (ug/L)
6/26/89	85.64	60,000	36,000	
10/3/89	85.36	14,000	4,200	
1/4/90	85.42	82,000	33,000	
4/3/90	86.15	78,000	35,000	
7/3/90	85.97	140,000	32,000	
4/3/91	89.22	340,000	29,000	
7/2/91	86.00	130,000	27,000	
1/2/92	85.46	77,000	18,000	
3/25/93	89.51	110,000	13,000	
8/4/95	87.75	33,000	9,400	
2/20/96	89.57	22,000	4,500	<120
8/27/96	86.44	85,000	10,000	260
2/18/97	90.34	42,000	7,100	510
8/4/97	86.72	79,000	14,000	6,900
2/25/98	82.55	34,000	5,200	5,300
11/19/98	81.22	16,000	1,200	540
2/19/99	88.15	4,200	580	<50
9/2/99	84.83	5,150	496	<250
2/3/00	87.23	14,000	3,400	<250
8/2/00	85.52	7,100	2,900	<100
2/8/01	84.68	18,100	4,300	<250
8/28/01	82.55	2,900	800	100
2/22/02	88.00	7,700	710	<20
8/29/02	84.41	14,000	1,300	<20
2/28/03	87.97	5,100	600	<50
8/22/03	85.14	25,000	3,000	7

Edited Data

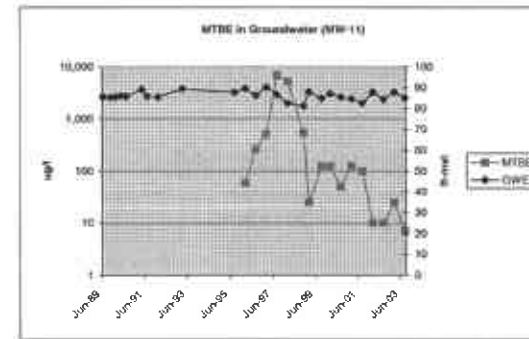
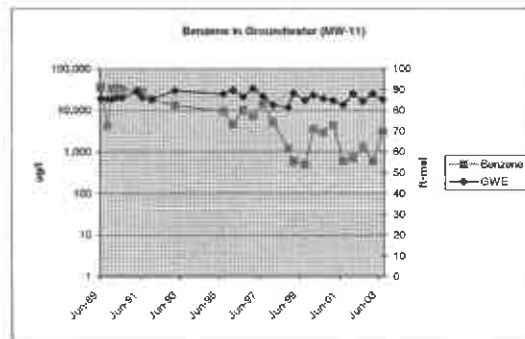
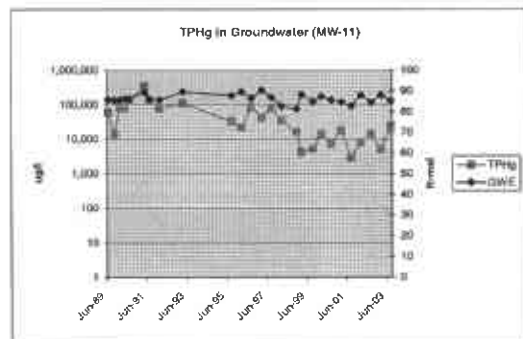
Date	GWE	TPH-G (ug/L)	Benzene (ug/L)	MTBE (ug/L)
6/26/89	85.64	60,000	36,000	
10/3/89	85.36	14,000	4,200	
1/4/90	85.42	82,000	33,000	
4/3/90	86.15	78,000	35,000	
7/3/90	85.97	140,000	32,000	
4/3/91	89.22	340,000	29,000	
7/2/91	86.00	130,000	27,000	
1/2/92	85.46	77,000	18,000	
3/25/93	89.51	110,000	13,000	
8/4/95	87.75	33,000	9,400	
2/20/96	89.57	22,000	4,500	60
8/27/96	86.44	85,000	10,000	260
2/18/97	90.34	42,000	7,100	510
8/4/97	86.72	79,000	14,000	6,900
2/25/98	82.55	34,000	5,200	5,300
11/19/98	81.22	16,000	1,200	540
2/19/99	88.15	4,200	580	25
9/2/99	84.83	5,150	496	125
2/3/00	87.23	14,000	3,400	125
8/2/00	85.52	7,100	2,900	50
2/8/01	84.68	18,100	4,300	125
8/28/01	82.55	2,900	800	100
2/22/02	88.00	7,700	710	10
8/29/02	84.41	14,000	1,300	10
2/28/03	87.97	5,100	600	25
8/22/03	85.14	25,000	3,000	7

Days Since 7/3/1990	TPH-G (ug/L)
0	140,000
274	340,000
364	130,000
548	77,000
996	110,000
1,658	33,000
2,058	22,000
2,247	85,000
2,422	42,000
2,589	79,000
2,794	34,000
3,061	16,000
3,153	4,200
3,348	5,150
3,502	14,000
3,683	7,100
3,873	18,100
4,074	2,900
4,252	7,700
4,440	14,000
4,623	5,100
4,798	25,000

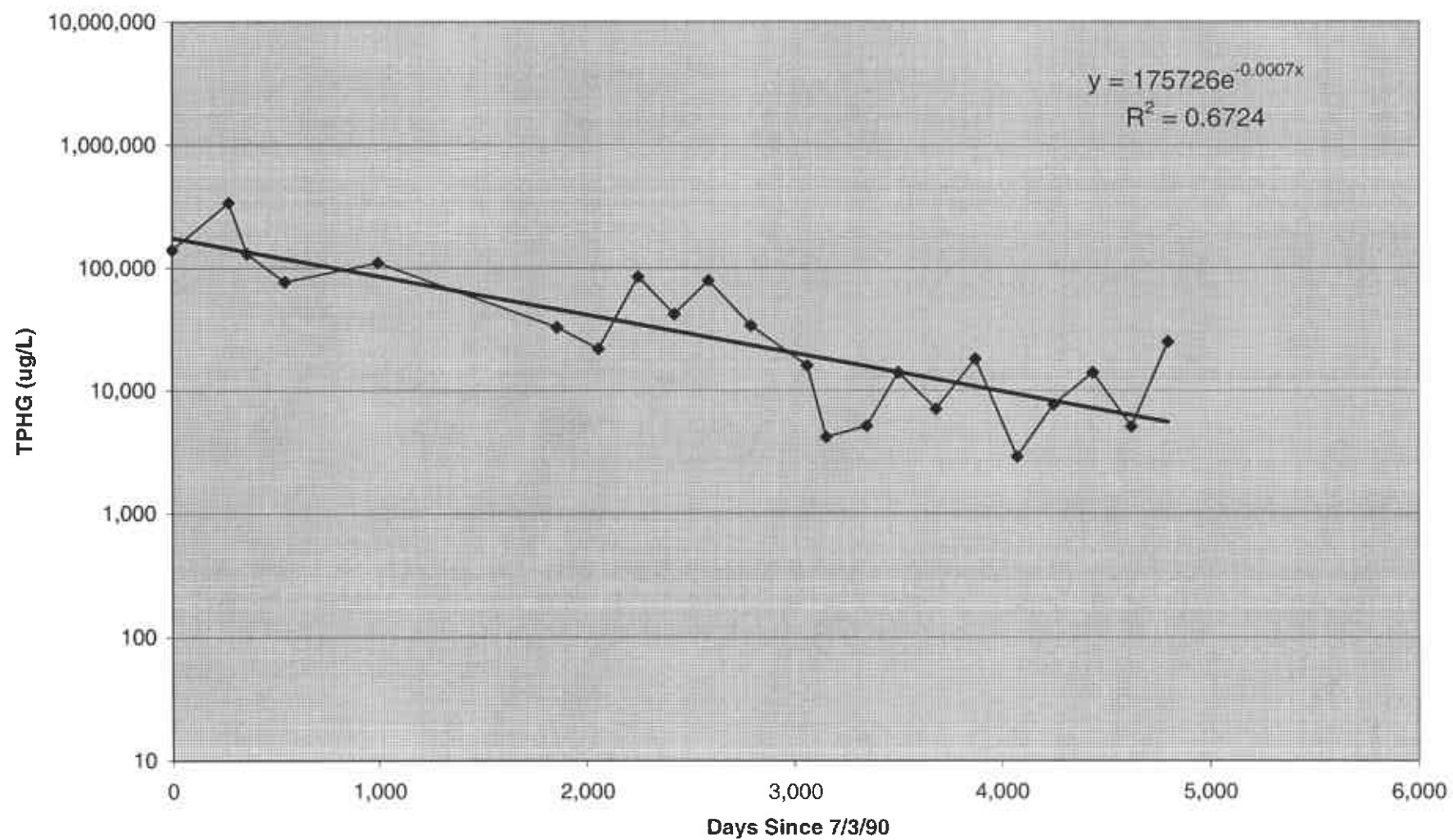
Days Since 6/28/1989	Benzene (ug/L)
0	36,000
97	4,200
190	33,000
279	35,000
370	32,000
644	29,000
734	27,000
918	18,000
1,366	13,000
2,228	9,400
2,428	4,500
2,617	10,000
2,792	7,100
2,959	14,000
3,164	5,200
3,431	1,200
3,523	580
3,718	496
3,872	3,400
4,053	2,900
4,243	4,300
4,444	600
4,622	710
4,810	1,300
4,993	600
5,168	3,000

Days Since 8/4/1997	MTBE (ug/L)
0	6,900
205	5,300
472	540
664	25
759	125
913	125
1,094	50
1,284	125
1,485	100
1,663	10
1,851	10
2,034	25
2,209	7

Assumed <x = x/2



TPHg Concentrations in Groundwater (Well MW-11)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of TPHg in Well MW-11, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = h e^{ax} \implies x = \ln(y/h) / a$$

Site: Former Chevron Site 9-0260
Well: MW-11
Constituent: TPHg

$$y = 37687 e^{-0.0026x} \implies x = \ln(y/37687) / -0.0026$$

Given

Water Quality Objective:	y	50 ug/L
Constant:	h	175726
Constant:	a	-0.0007
Date of first sample:		7/3/1990

Calculate

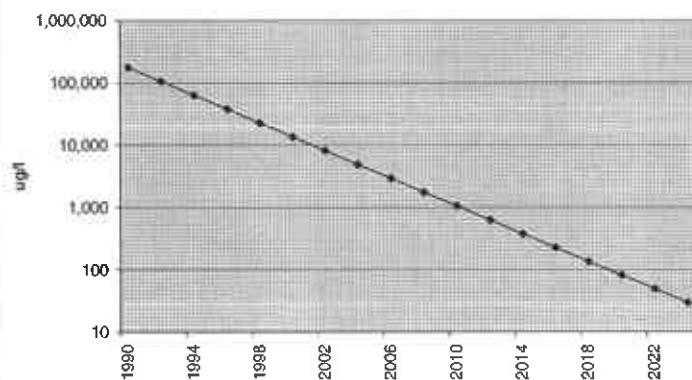
Days from first sample:	x:	11,664 Days
Years from first sample:		32.0 Years
Estimated date of cleanup:		Jun-2022

Calculated Half Life = $-\ln(2)/a$
990 Days

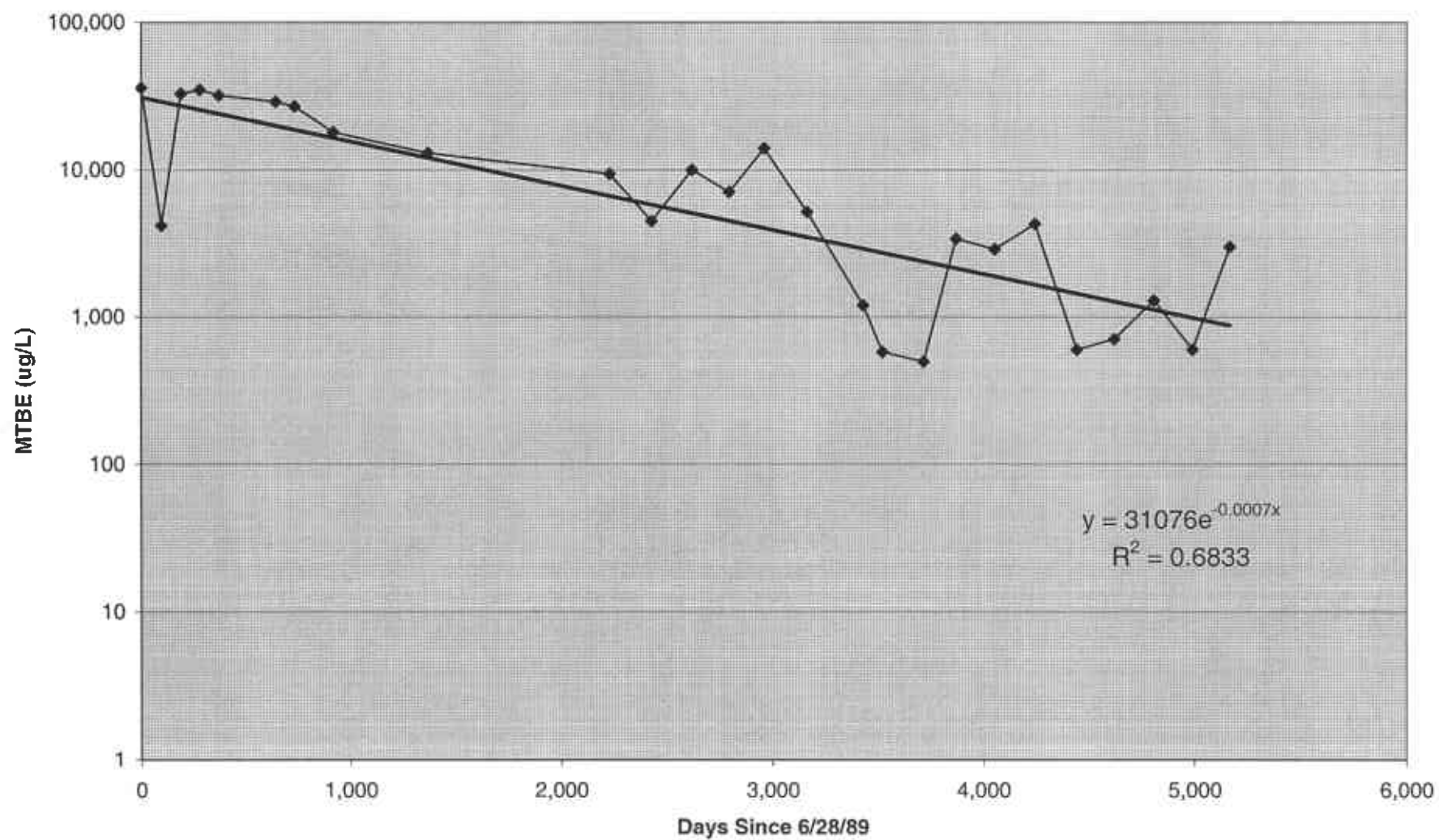
Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
7/3/1990	0	175,726
7/3/1992	731	105,343
7/3/1994	1,461	63,195
7/3/1996	2,192	37,884
7/3/1998	2,922	22,726
7/3/2000	3,653	13,624
7/3/2002	4,383	8,173
7/3/2004	5,114	4,899
7/3/2006	5,844	2,939
7/3/2008	6,575	1,762
7/3/2010	7,305	1,057
7/3/2012	8,036	634
7/3/2014	8,766	380
7/3/2016	9,497	228
7/3/2018	10,227	137
7/3/2020	10,958	82
7/3/2022	11,688	49
7/3/2024	12,419	29

Predicted TPHg Concentrations (Well MW-11)



Benzene Concentrations in Groundwater (Well MW-11)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of Benzene in Well MW-11, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = b e^{ax} \implies x = \ln(y/b) / a$$

Site: Former Chevron Site 9-0260
Well: MW-11
Constituent: Benzene

$$y = 242876 e^{-0.0017x} \implies x = \ln(y/242876) / -0.0017$$

Given:

Water Quality Objective: 1 ug/l.
Constant: 31076
Constant: -0.0007
Date of first sample: 6/28/1989

Calculate:

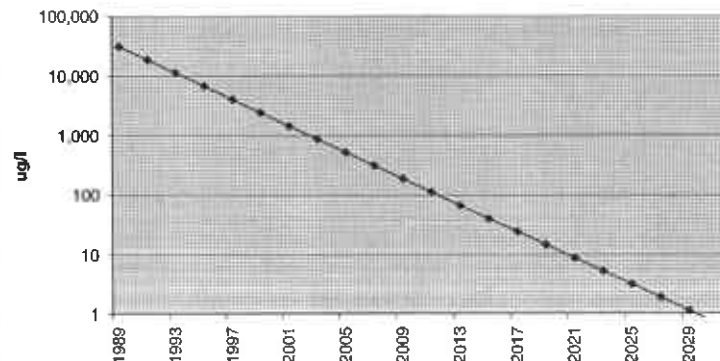
Days from first sample: 14,777 Days
Years from first sample: 40.5 Years
Estimated date of cleanup: Dec-2029

$$\text{Calculated Half Life} = -\ln(2)/a = 990 \text{ Days}$$

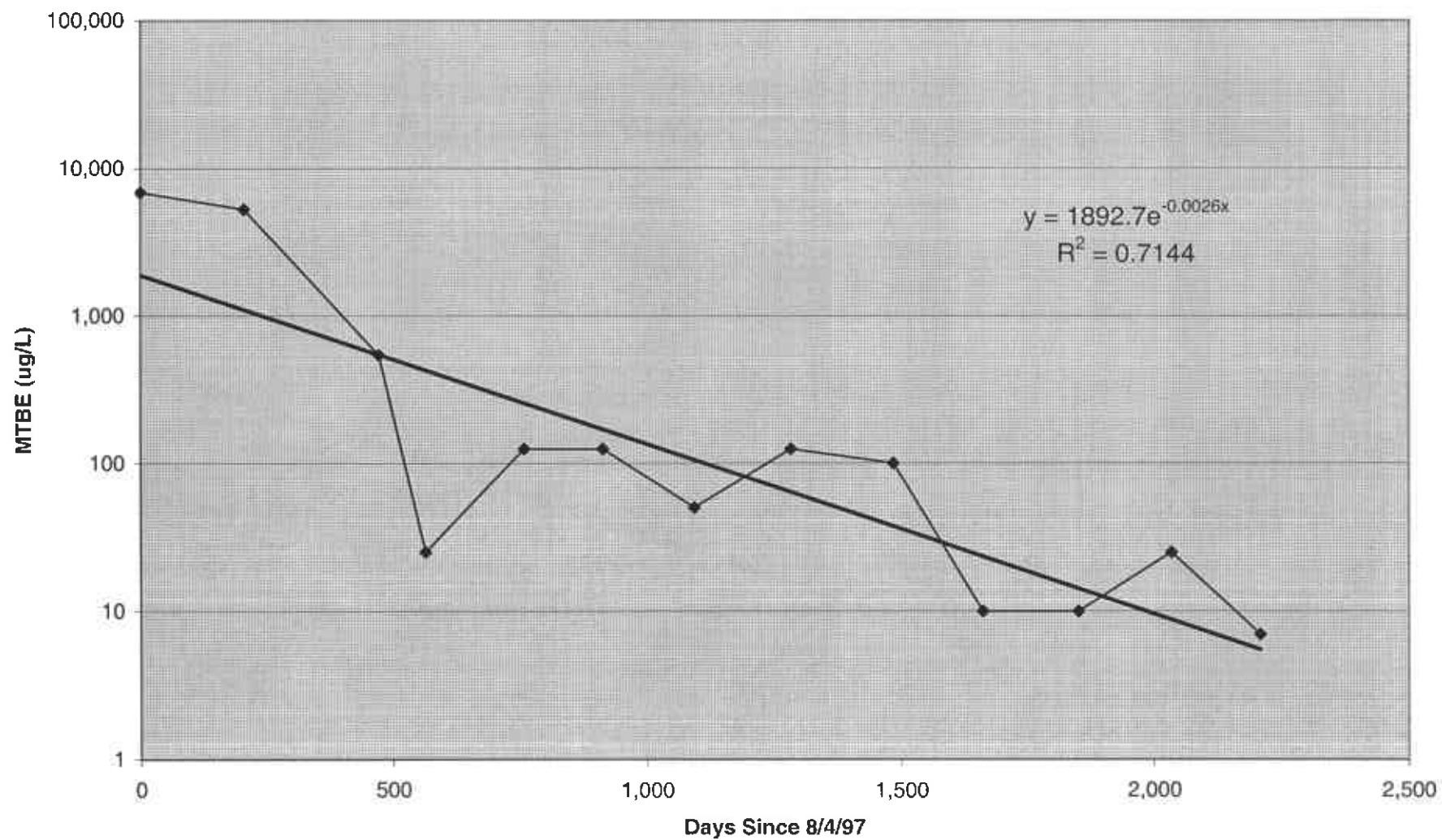
Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
6/28/1989	0	31,076
6/29/1991	731	18,629
6/28/1993	1,461	11,176
6/28/1995	2,191	6,704
6/28/1997	2,922	4,019
6/28/1999	3,652	2,411
6/28/2001	4,383	1,445
6/28/2003	5,113	867
6/28/2005	5,844	520
6/28/2007	6,574	312
6/28/2009	7,305	187
6/28/2011	8,035	112
6/28/2013	8,766	67
6/28/2015	9,496	40
6/28/2017	10,227	24
6/28/2019	10,957	15
6/28/2021	11,688	9
6/28/2023	12,418	5.2
6/28/2025	13,149	3.1
6/28/2027	13,879	1.9
6/28/2029	14,610	1.1
6/28/2031	15,340	0.7

Predicted Benzene Concentrations (Well MW-11)



MTBE Concentrations in Groundwater (Well MW-11)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of MTBE In Well MW-11, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = b e^{ax} \implies x = \ln(y/b) / a$$

Site: **Former Chevron Site 9-0260**
 Well: **MW-11**
 Constituent: **MTBE**

$$y = 242876 e^{-0.0017x} \implies x = \ln(y/242876) / -0.0017$$

Given
 Water Quality Objective: **y** **5 ug/L**
 Constant: **b** **1892.7**
 Constant: **a** **-0.0026**
 Date of first sample: **8/4/1997**

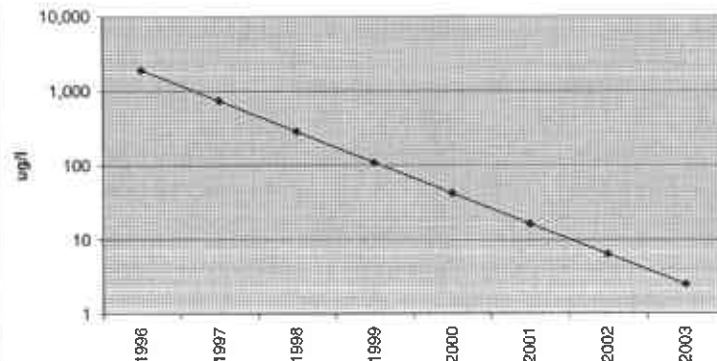
Calculate
 Days from first sample: **x** **2,283 Days**
 Years from first sample: **6.3 Years**
 Estimated date of cleanup: **Nov-2003**

$$\text{Calculated Half Life} = -\ln(2)/a = \boxed{267} \text{ Days}$$

Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
11/22/1996	0	1,893
11/22/1997	365	733
11/22/1998	730	284
11/22/1999	1,095	110
11/22/2000	1,461	42
11/22/2001	1,826	16
11/22/2002	2,191	6
11/22/2003	2,556	2

Predicted MTBE Concentrations (Well MW-11)



Concentration Data for Well MW-12, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Raw Data

Date	GWE	TPH-G (ug/L)	Benzene (ug/L)	MTBE (ug/L)
6/28/89	85.54	55,000	30,000	
10/3/89	85.34	170,000	30,000	
1/4/90	85.29	110,000	24,000	
4/3/90	86.05	89,000	41,000	
7/3/90	85.87	170,000	27,000	
11/6/90	84.48	110,000	28,000	
4/3/91		170,000	39,000	
10/2/91		170,000	27,000	
12/3/92	83.88	2,400,000	19,000	
6/23/1993	87.01	110,000	30,000	
6/13/94	86.87	62,000	6,600	
5/15/95	89.16	<50	<0.5	
11/28/95	82.59	110,000	26,000	1,100
5/29/96	87.74	120,000	18,000	710
11/22/96	86.30	160,000	24,000	980
5/23/97	87.22	130,000	27,000	6,200
8/4/97	86.64	130,000	23,000	11,000
11/25/97	85.30	290,000	53,000	35,000
5/21/98	88.04	150,000	14,000	69,000
11/19/98	81.24	68,000	15,000	14,000
5/10/99	86.75	72,600	9,920	32,500
5/9/00	86.96	27,000	7,800	6,100
11/9/00	84.73	46,400	9,550	5,150
5/2/01	83.49	94,000	8,720	3,410
11/26/01	84.27	5,000	770	230
5/24/02	84.42	52,000	5,200	990
11/29/02	84.69	40,000	4,900	1,000
5/30/03	86.97	46,000	4,300	670
11/24/03	84.62	45,000	5,200	480

Edited Data

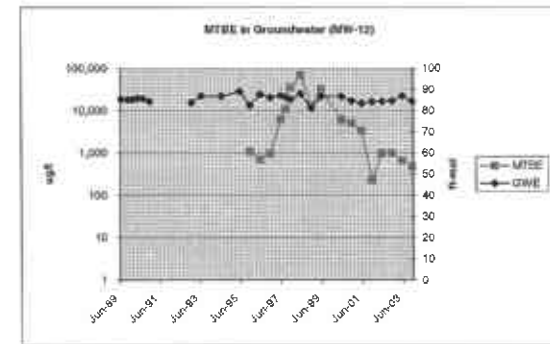
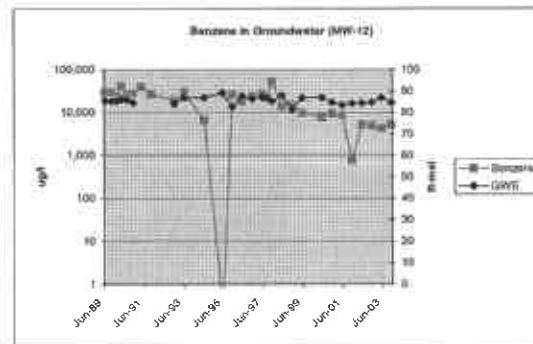
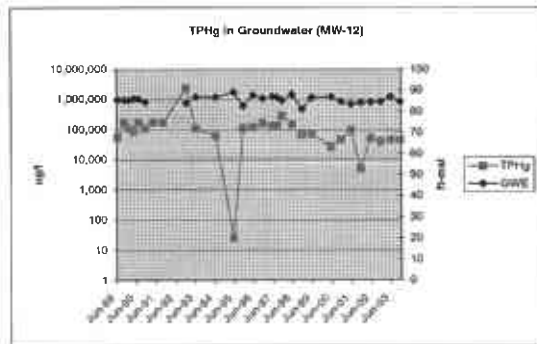
Date	GWE	TPH-G (ug/L)	Benzene (ug/L)	MTBE (ug/L)
6/28/89	85.54	55,000	30,000	
10/3/89	85.34	170,000	30,000	
1/4/90	85.29	110,000	24,000	
4/3/90	86.05	89,000	41,000	
7/3/90	85.87	170,000	27,000	
11/6/90	84.48	110,000	28,000	
4/3/91		170,000	39,000	
10/2/91		170,000	27,000	
12/3/92	83.88	2,400,000	19,000	
6/23/1993	87.01	110,000	30,000	
6/13/94	86.87	62,000	6,600	
5/15/95	89.16	25	0	
11/28/95	82.59	110,000	26,000	1,100
5/29/96	87.74	120,000	18,000	710
11/22/96	86.30	160,000	24,000	980
5/23/97	87.22	130,000	27,000	6,200
8/4/97	86.64	130,000	23,000	11,000
11/25/97	85.30	290,000	53,000	35,000
5/21/98	88.04	150,000	14,000	69,000
11/19/98	81.24	68,000	15,000	14,000
5/10/99	86.75	72,600	9,920	32,500
5/9/00	86.96	27,000	7,800	6,100
11/9/00	84.73	46,400	9,550	5,150
5/2/01	83.49	94,000	8,720	3,410
11/26/01	84.27	5,000	770	230
5/24/02	84.42	52,000	5,200	990
11/29/02	84.69	40,000	4,900	1,000
5/30/03	86.97	46,000	4,300	670
11/24/03	84.62	45,000	5,200	480

Days Since 6/28/1989	TPH-G (ug/L)
0	55,000
97	170,000
190	110,000
279	89,000
370	170,000
496	110,000
644	170,000
826	170,000
1,254	2,400,000
1,456	110,000
1,811	62,000
2,147	25
2,344	110,000
2,527	120,000
2,704	160,000
2,886	130,000
2,959	130,000
3,072	290,000
3,249	150,000
3,431	68,000
3,603	72,600
3,968	27,000
4,152	46,400
4,326	94,000
4,534	5,000
4,713	52,000
4,902	40,000
5,084	46,000
5,262	45,000

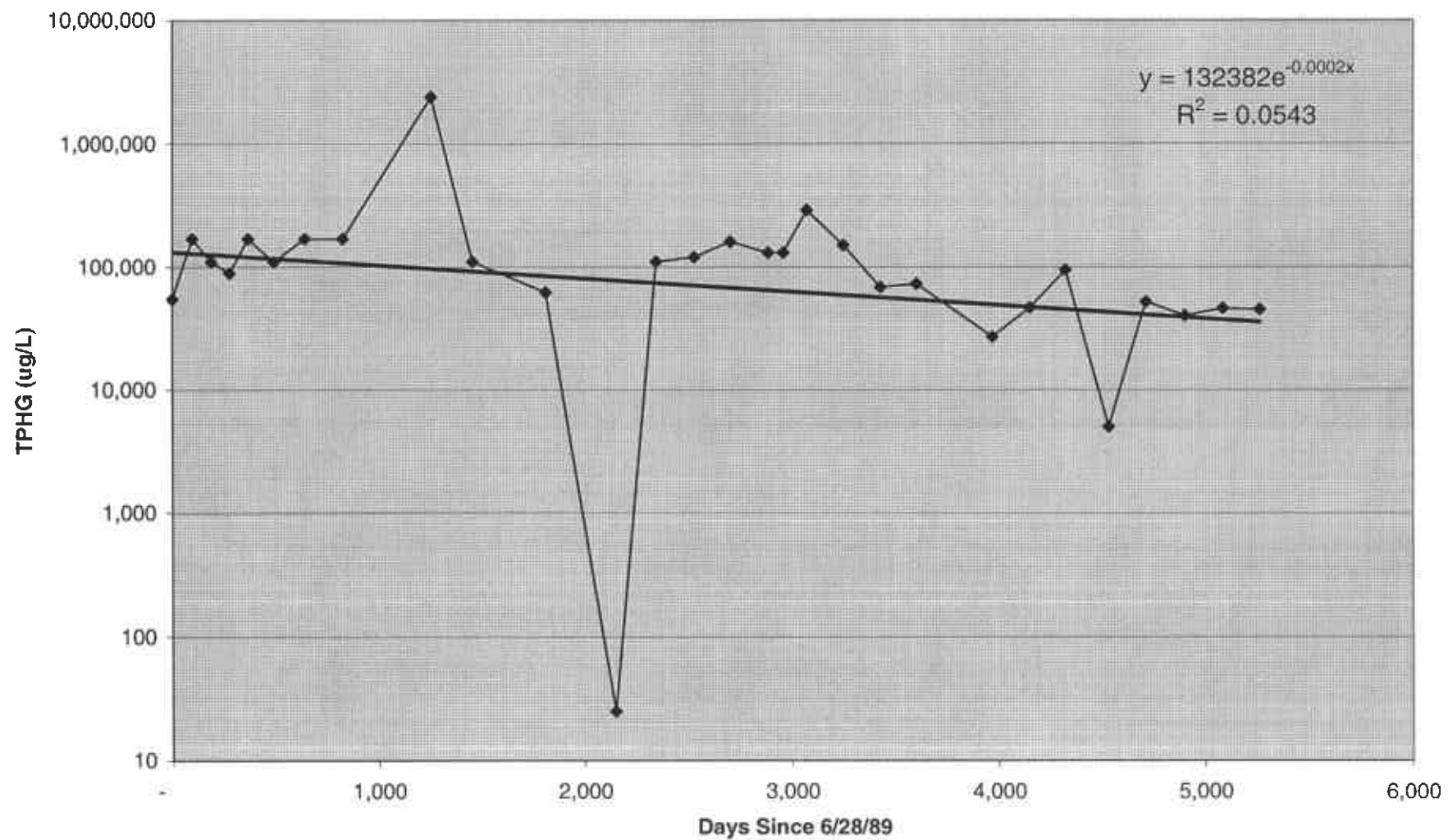
Days Since 6/28/1989	Benzene (ug/L)
0	30,000
97	30,000
190	24,000
279	41,000
370	27,000
496	28,000
644	39,000
826	27,000
1,254	19,000
1,456	30,000
1,811	6,600
2,147	0
2,344	26,000
2,527	18,000
2,704	24,000
2,886	27,000
2,959	23,000
3,072	53,000
3,249	14,000
3,431	15,000
3,603	9,920
3,968	7,800
4,152	9,550
4,326	8,720
4,534	770
4,713	5,200
4,902	4,900
5,084	4,300
5,262	5,200

Days Since 11/25/1997	MTBE (ug/L)
0	35,000
177	69,000
359	14,000
531	32,500
896	6,100
1,080	5,150
1,254	3,410
1,462	230
1,641	990
1,830	1,000
2,012	670
2,190	480

Assumed < x = x/2



TPHg Concentrations in Groundwater (Well MW-12)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of TPHg in Well MW-12, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = b e^{ax} \implies x = \ln(y/b) / a$$

Site: Former Chevron Site 9-0260
Well: MW-12
Constituent: TPHg

$$y = 37687 e^{-0.0026x} \implies x = \ln(y/37687) / -0.0026$$

Given

Water Quality Objective:	y	50 ug/L
Constant:	b	132382
Constant:	a	-0.0026
Date of first sample:		6/28/1989

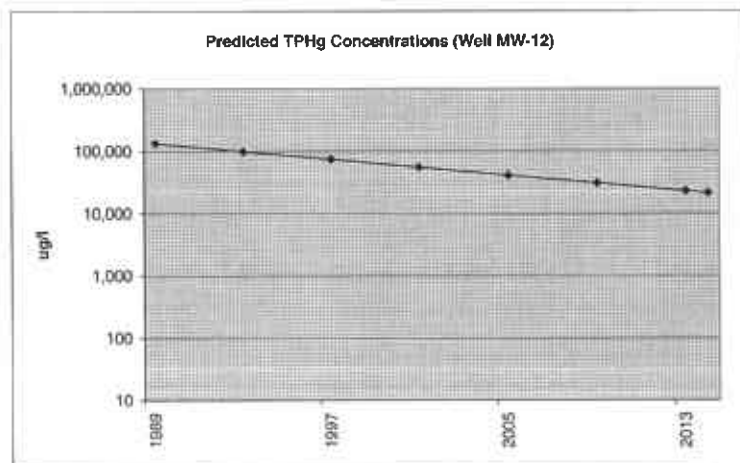
Calculate

Days from first sample:	x	39,407 Days
Years from first sample:		108.0 Years
Estimated date of cleanup:		May-2097

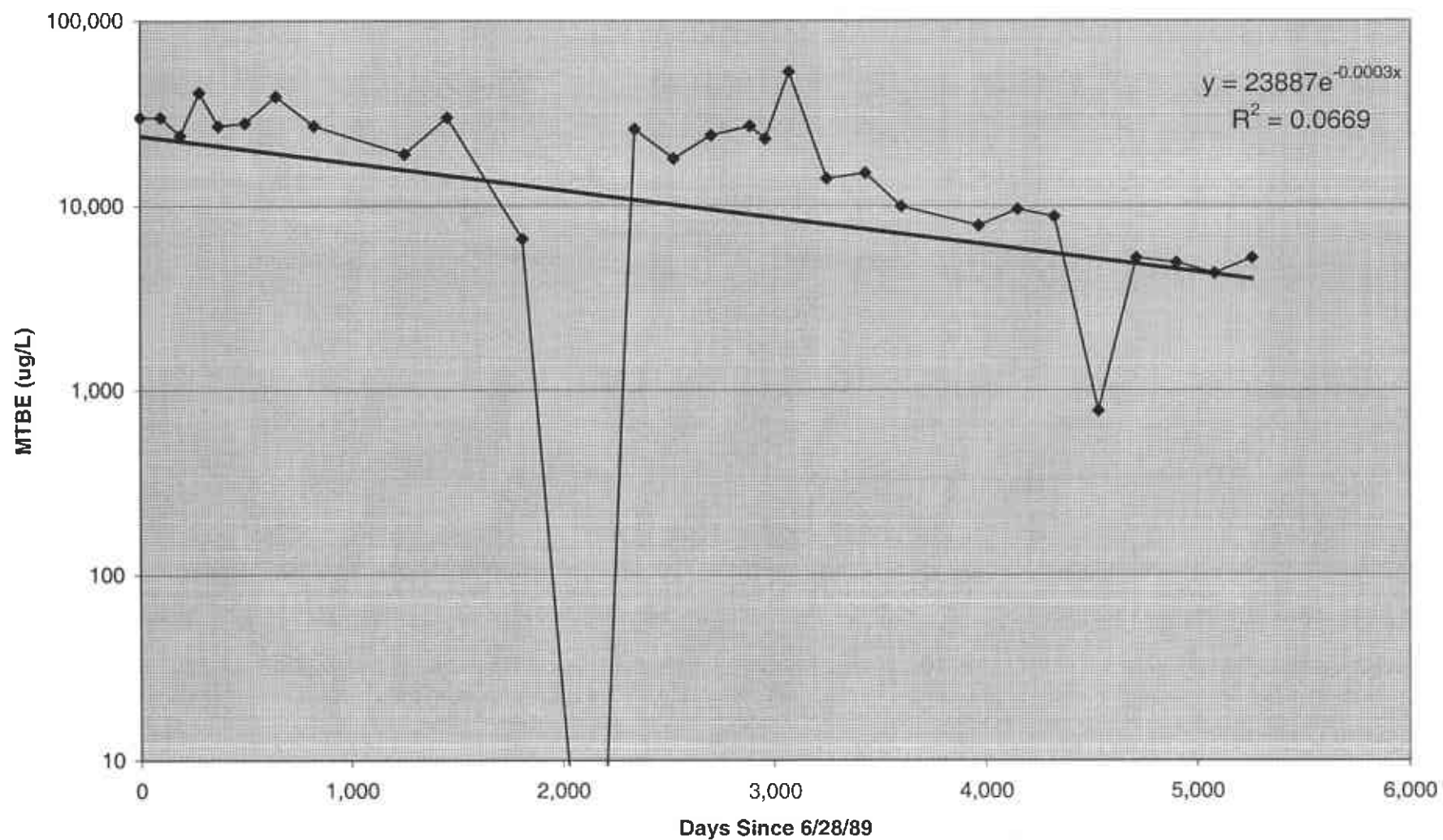
Calculated Half Life = $-\ln(2)/a$
3,466 Days

Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
6/28/1989	0	132,382
6/28/1993	1,461	98,839
6/28/1997	2,922	73,795
6/28/2001	4,383	55,097
6/28/2005	5,844	41,136
6/28/2009	7,305	30,713
6/28/2013	8,766	22,931
6/28/2014	9,131	21,317
6/28/2017	10,227	17,121
6/28/2021	11,688	12,783
6/28/2025	13,149	9,544
6/28/2029	14,610	7,126
6/28/2033	16,071	5,320
6/28/2037	17,532	3,972
6/28/2041	18,993	2,966
6/28/2045	20,454	2,214
6/28/2049	21,915	1,653
6/28/2053	23,376	1,234
6/28/2057	24,837	922
6/28/2061	26,298	688
6/28/2065	27,759	514
6/28/2069	29,220	384
6/28/2073	30,681	286
6/28/2077	32,142	214
6/28/2081	33,603	160
6/28/2085	35,064	119
6/28/2089	36,525	89
6/28/2093	37,986	66
6/28/2097	39,447	50



Benzene Concentrations in Groundwater (Well MW-12)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of Benzene In Well MW-12, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = b e^{ax} \implies x = \ln(y/b) / a$$

Site: **Former Chevron Site 9-0260**
 Well: **MW-12**
 Constituent: **Benzene**

$$y = 242876 e^{-0.0017x} \implies x = \ln(y/242876) / -0.0017$$

Given

Water Quality Objective: **y** **1 ug/L**
 Constant: **b** **23887**
 Constant: **a** **-0.0003**
 Date of first sample: **6/28/1989**

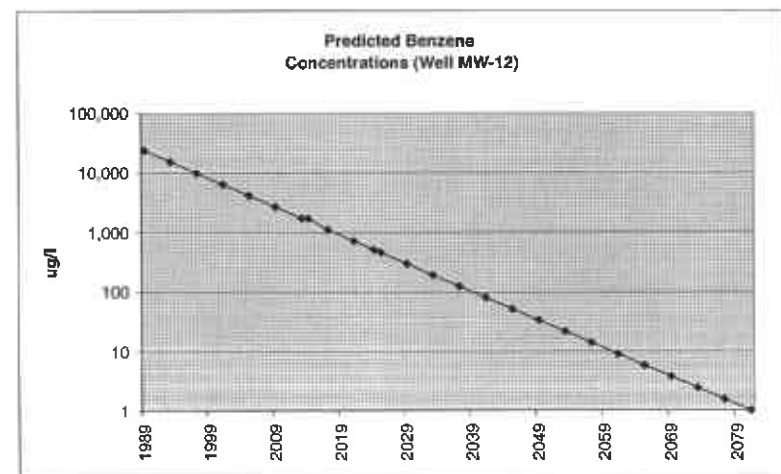
Calculate

Days from first sample: **x** **33,604 Days**
 Years from first sample: **92.1 Years**
 Estimated date of cleanup: **Jun-2081**

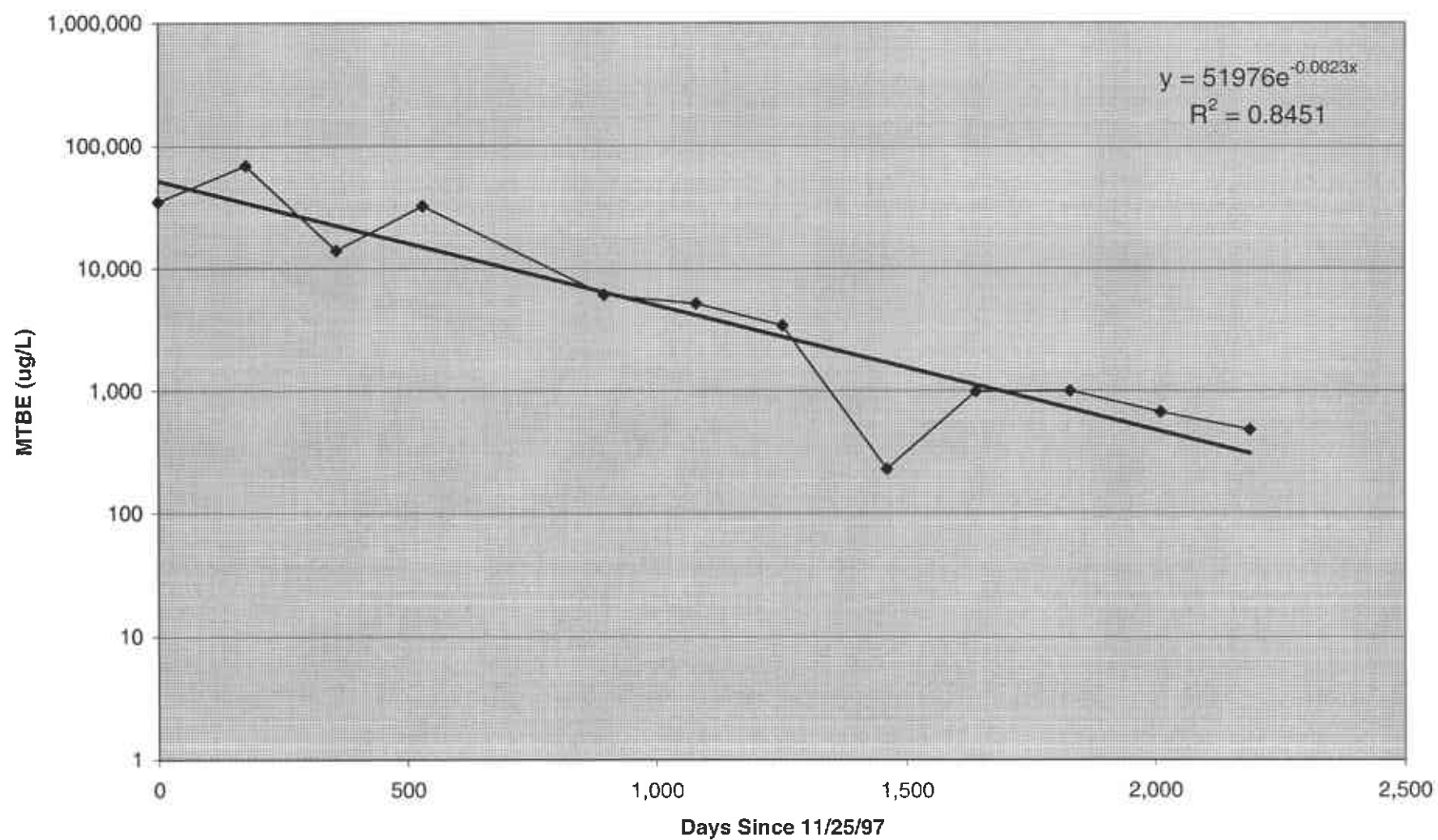
$$\text{Calculated Half Life} = -\ln(2)/a = \boxed{2,310 \text{ Days}}$$

Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
6/28/1989	0	23,887
6/28/1993	1,461	15,410
6/28/1997	2,922	9,942
6/28/2001	4,383	6,414
6/28/2005	5,844	4,138
6/28/2009	7,305	2,669
6/28/2013	8,766	1,722
6/28/2014	8,766	1,722
6/28/2017	10,227	1,111
6/28/2021	11,688	717
6/28/2024	12,784	516
6/28/2025	13,149	462
6/28/2029	14,610	298
6/28/2033	16,071	192
6/28/2037	17,532	124
6/28/2041	18,993	80
6/28/2045	20,454	52
6/28/2049	21,915	33
6/28/2053	23,376	22
6/28/2057	24,837	13.9
6/28/2061	26,298	9.0
6/28/2065	27,759	5.8
6/28/2069	29,220	3.7
6/28/2073	30,681	2.4
6/28/2077	32,142	1.6
6/28/2081	33,603	1.0



MTBE Concentrations in Groundwater (Well MW-12)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of MTBE in Well MW-12, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = b e^{ax} \implies x = \ln(y/b) / a$$

Site: **Former Chevron Site 9-0260**
 Well: **MW-12**
 Constituent: **MTBE**

$$y = 242876 e^{-0.0017x} \implies x = \ln(y/242876) / -0.0017$$

Given

Water Quality Objective:	y	5 ug/l.
Constant:	b	242876
Constant:	a	-0.0017
Date of first sample:		11/25/1997

Calculate

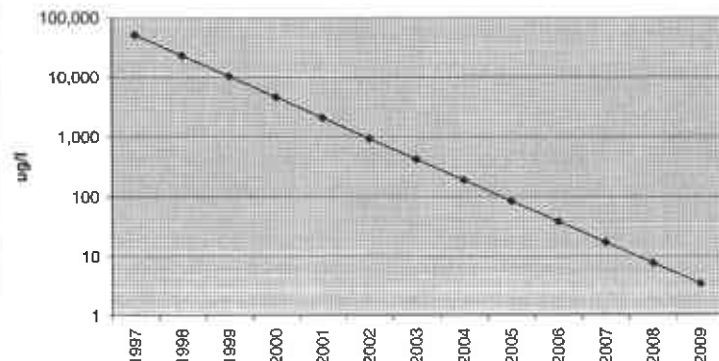
Days from first sample:	x	4,204 Days
Years from first sample:		11.5 Years
Estimated date of cleanup:		May-2009

Calculated Half Life = $-\ln(2)/a$
 315 Days

Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
11/25/1997	0	51,976
11/25/1998	365	23,284
11/25/1999	730	10,431
11/25/2000	1,096	4,663
11/25/2001	1,461	2,089
11/25/2002	1,826	936
11/25/2003	2,191	419
11/25/2004	2,557	187
11/25/2005	2,922	83.9
11/25/2006	3,287	37.6
11/25/2007	3,652	16.8
11/25/2008	4,018	7.5
11/26/2009	4,384	3.4

Predicted MTBE Concentrations (Well MW-12)



Concentration Data for Well MW-16, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Raw Data

Date	GWE	THU-G	Betome	MTBE
8/25/93	72.24	11.8000	6.8000	
11/6/93	76.68	15.0000	6.1000	
1/4/91	76.32	16.0000	6.9000	
4/3/91	78.83	45.0000	7.1000	
7/2/91	77.47	30.0000	6.4000	
10/3/91	76.97	34.0000	4.4000	
1/2/92	76.85	30.0000	4.7000	
4/7/92	72.96	40.0000	3.8000	
8/13/92	71.58	17.0000	4.3000	
12/13/92	76.71	39.0000	4.6000	
3/25/93	76.32	39.0000	5.1000	
6/23/93	78.47	39.0000	6.6000	
8/23/93	77.77	36.0000	6.3000	
12/1/93	77.31	28.0000	5.6000	
3/5/94	77.68	35.0000	6.5000	
10/4/94	72.27	39.0000	9.7000	
11/14/94	74.03	26.0000	5.9000	
5/15/95	78.99	<50	<6.3	
8/4/95	78.41	23.0000	6.2000	
11/28/95	77.75	38.0000	6.7000	<130
3/20/96	81.75	46.0000	6.6000	<250
5/29/96	79.67	34.0000	6.3000	<230
8/27/96	78.78	45.0000	4.1000	<250
11/22/96	79.19	36.0000	3.3000	280
2/16/97	80.85	42.0000	5.8000	160
5/23/97	78.67	32.0000	4.6000	<230
8/4/97	78.45	28.0000	5.1000	100
11/25/97	84.42	38.0000	3.9000	210
2/25/98	84.15	40.0000	6.4000	<100
5/31/98	80.24	71.0000	5.1000	560
8/1/98	78.90	40.0000	2.2000	<230
11/19/98	77.85	51.0000	2.9000	<130
2/12/99	80.24	11.0000	1.1000	3.000
5/10/99	78.02	32.5000	4.1000	<60
8/2/99	79.18	28.8000	1.4000	<100
2/3/00	79.50	47.0000	3.6000	450
5/30/00	83.00	15.0000	990	410
8/2/00	79.57	10.0000	11.0000	<130
11/6/00	77.63	5.1000	334	340
2/6/01	78.56	25.4000	1.3400	190
5/9/01	79.84	45.8000	2.1300	130
7/22/01	80.01	32.0000	1.3000	<50
10/4/02	79.67	13.0000	390	<20
8/24/02	78.84	8.8000	500	<30
11/29/02	76.86	23.0000	1.8000	<10
2/28/03	79.97	20.0000	1.3000	<160
5/30/03	83.74	47.8000	2.1900	<60
8/22/03	79.59	23.0000	1.3000	20
11/6/03	76.77	13.0000	860	

Edited Date

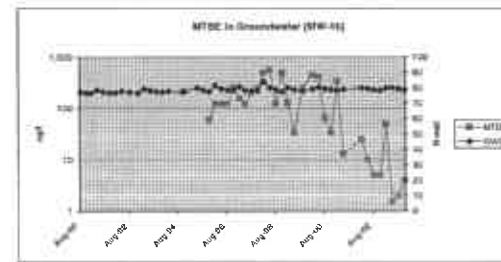
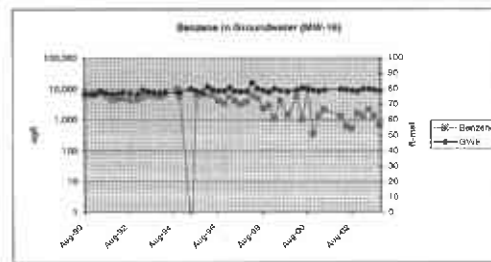
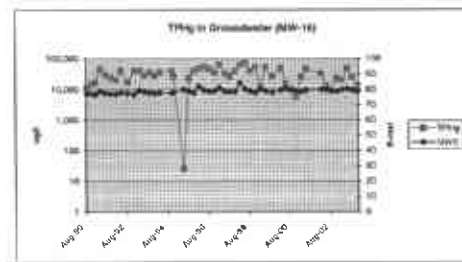
Date	GWE	TPH-G	Bourene	MUR
		(g/L)	(g/L)	
8/2/2001	77.38	14.000	8.000	
11/8/2001	78.88	15.000	8.300	
14/9/01	76.53	18.000	7.800	
4/3/01	78.83	43.000	7.200	
7/2/01	77.87	30.000	8.400	
10/2/01	76.97	34.000	8.600	
17/2/02	76.83	30.000	8.700	
4/7/00	77.96	40.000	5.000	
8/1/39/02	77.38	17.000	4.500	
12/8/02	76.71	39.000	8.400	
3/25/03	79.33	39.000	5.500	
6/23/03	78.43	25.000	6.600	
9/23/03	77.77	36.000	8.300	
1/3/03	77.31	28.000	3.600	
5/8/04	77.89	33.000	8.500	
10/4/04	77.57	39.000	8.700	
11/14/04	78.01	26.000	5.500	
6/15/05	78.99	27	7	
8/4/05	78.83	23.000	8.300	
11/28/06	77.71	20.000	8.200	
2/20/06	81.75	46.000	6.600	0
5/2/06	79.41	54.000	6.300	12
8/27/06	78.78	43.000	4.100	13
11/22/06	78.79	38.000	5.500	28
7/18/97	80.93	82.000	5.800	16
5/23/97	78.47	32.000	4.000	13
8/4/97	78.43	30.000	3.500	39
11/25/97	78.42	18.000	3.900	25
2/2/98	84.13	60.000	8.400	58
5/21/98	80.24	71.000	5.100	54
8/1/98	78.90	40.000	2.300	12
11/1/98	77.83	33.000	2.800	39
3/12/99	80.34	33.000	1.100	1
5/10/99	79.02	32.500	4.100	7
8/2/99	78.16	26.000	1.800	29
2/3/00	79.30	47.000	3.800	47
5/10/00	80.38	15.000	990	43
8/20/00	79.17	10.000	11.000	4
11/8/00	79.15	5.580	134	3
2/8/01	78.36	25.600	1.340	15
5/21/01	79.44	45.600	2.131	3
2/22/02	80.05	32.000	1.000	2
5/9/02	79.65	13.000	990	1
8/28/02	78.94	9.800	500	
11/26/02	78.86	23.800	1.600	
2/28/03	79.97	20.000	1.300	9
5/30/03	80.38	44.000	2.100	
8/22/03	78.59	25.000	1.800	
11/24/03	78.77	13.000	660	

[illegible]

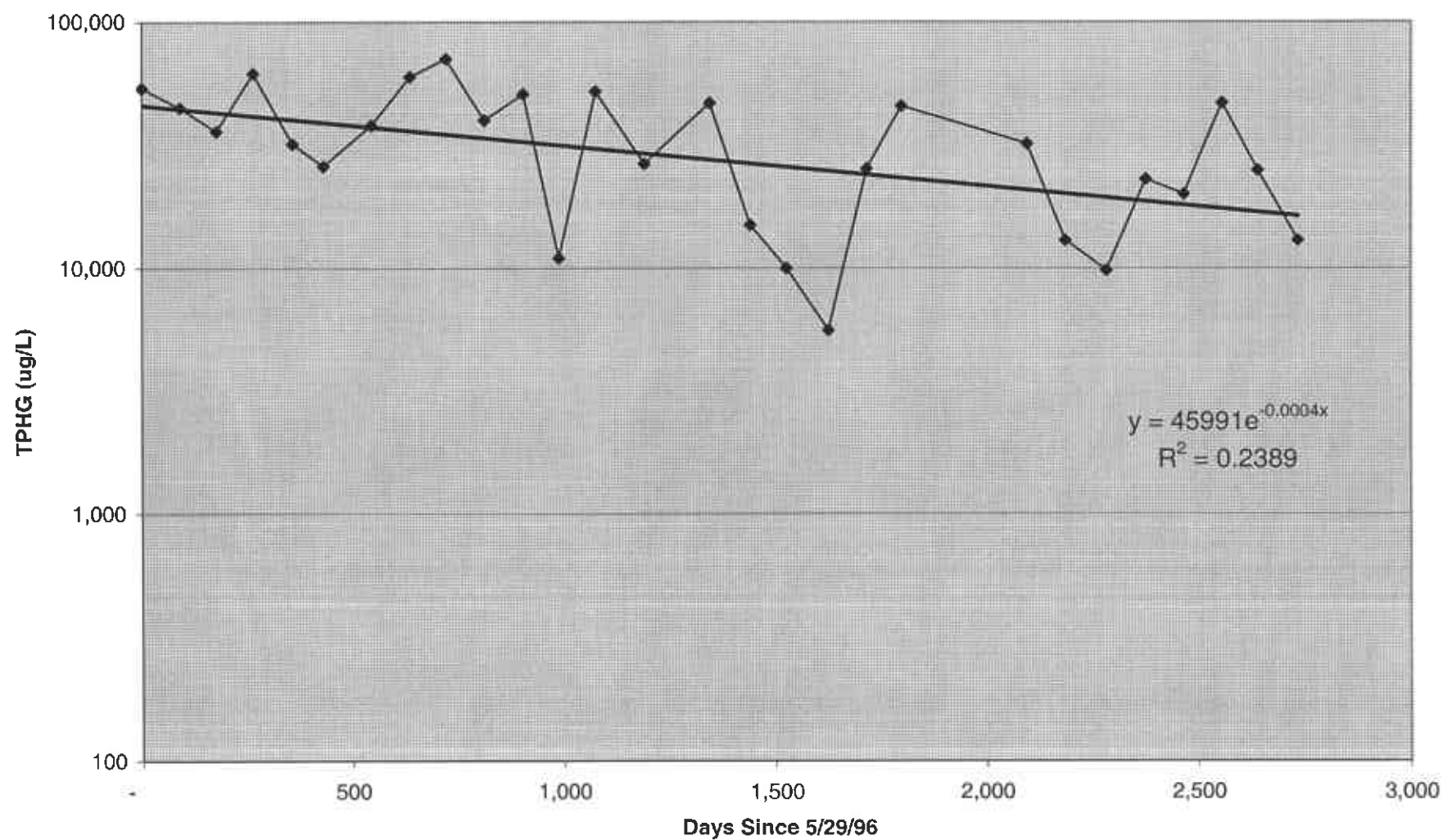
Days Since 4/22/1999	Days Since 4/22/1999	Removal [mg/L]
0	0	0.00
78	78	6.70
135	135	0.80
204	204	7.30
314	314	0.40
406	406	2.80
498	498	4.30
594	594	1.10
722	722	4.50
848	848	1.50
1,036	1,036	0.65
1,128	1,128	6.30
1,198	1,198	2.60
1,264	1,264	6.30
1,304	1,304	9.70
1,345	1,345	5.90
1,727	1,727	
1,808	1,808	8.20
1,854	1,854	8.20
2,008	2,008	
2,107	2,107	6.30
2,197	2,197	4.18
2,284	2,284	3.50
2,372	2,372	1.60
2,466	2,466	4.00
2,558	2,558	3.30
2,650	2,650	3.00
2,744	2,744	6.60
2,829	2,829	3.10
2,919	2,919	3.30
3,011	3,011	2.90
3,096	3,096	1.10
3,183	3,183	4.10
3,268	3,268	1.90
3,457	3,457	5.60
3,548	3,548	99
3,633	3,633	1,000
3,737	3,737	31
3,805	3,805	1.34
3,926	3,926	2.13
4,207	4,207	1.10
4,293	4,293	39
4,380	4,380	50
4,482	4,482	1.80
4,573	4,573	1.30
4,664	4,664	2.10
4,748	4,748	1.30
4,842	4,842	1.30

Days Since 11/22/1996	MTBE ($\mu\text{g/L}$)
0	30
85	56
175	13
267	30
352	13
439	3
554	21
700	45
804	41
889	6
998	3
1,079	34
1,162	1
1,450	2
1,549	1
1,540	1
1,738	5
1,829	1
1,920	1
2,004	1
2,088	1

Assumed $\sigma_x = x\sqrt{2}$



TPHg Concentrations in Groundwater (Well MW-16)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of TPHg in Well MW-16, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = b e^{ax} \implies x = \ln(y/b) / a$$

Site: **Former Chevron Site 9-0260**
 Well: **MW-16**
 Constituent: **TPHg**

$$y = 37687 e^{-0.0004x} \implies x = \ln(y/37687) / -0.0004$$

Given

Water Quality Objective:	y	50 ug/L
Constant:	b	45991
Constant:	a	-0.0004
Date of first sample:		5/29/1996

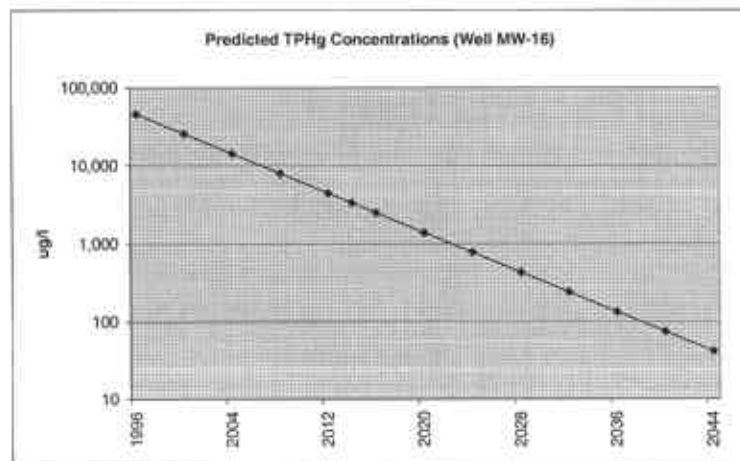
Calculate

Days from first sample:	x	17,060 Days
Years from first sample:		46.7 Years
Estimated date of cleanup:		Feb-2043

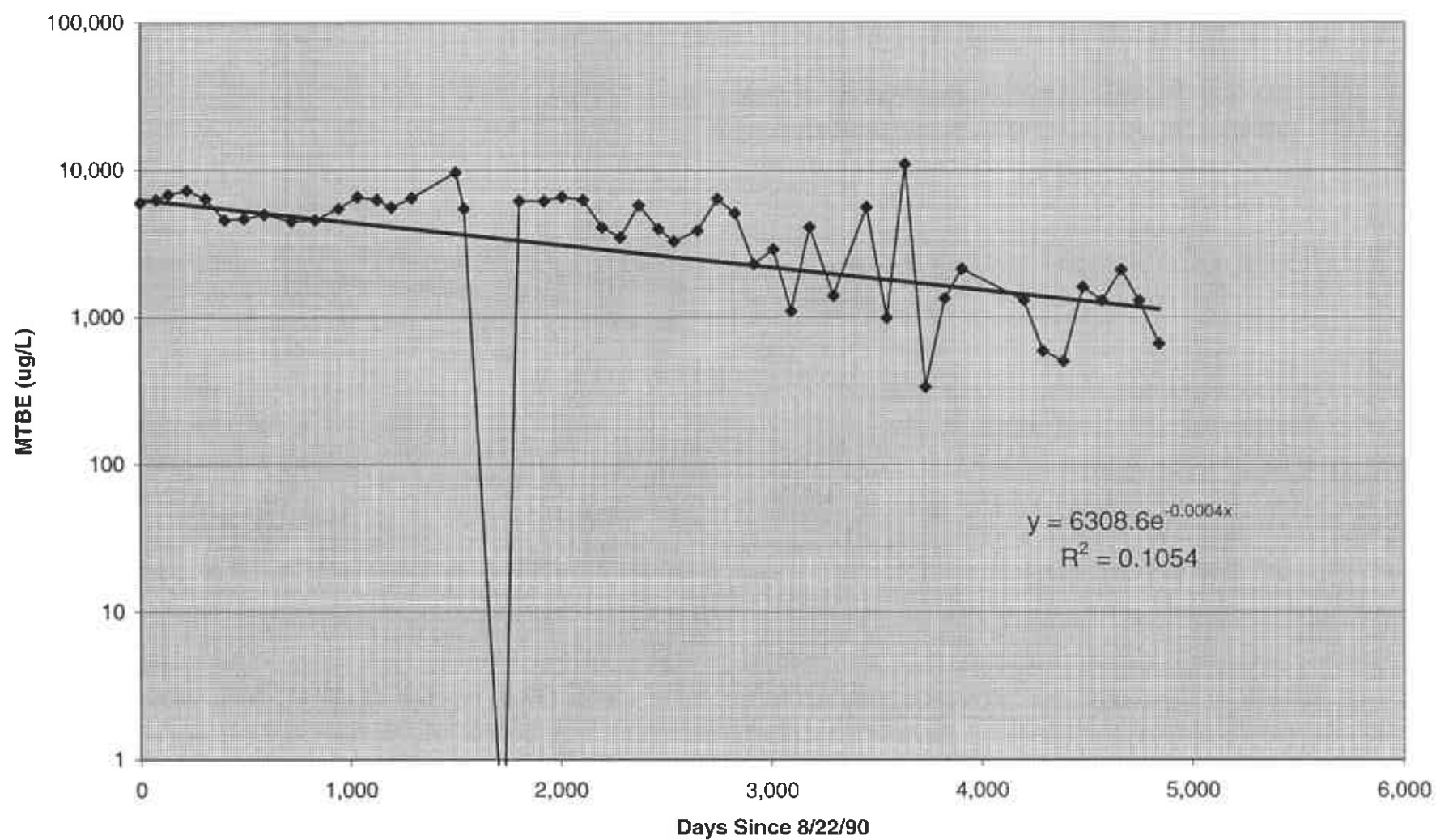
Calculated Half Life = $-\ln(2)/a$
 1,733 Days

Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
5/29/1996	0	45,991
5/29/2000	1,461	25,637
5/29/2004	2,922	14,291
5/29/2008	4,383	7,967
5/29/2012	5,844	4,441
5/29/2014	6,574	3,316
5/29/2016	7,305	2,476
5/29/2020	8,766	1,380
5/29/2024	10,227	769
5/29/2028	11,688	429
5/29/2032	13,149	239
5/29/2036	14,610	133
5/29/2040	16,071	74
5/29/2044	17,532	41



Benzene Concentrations in Groundwater (Well MW-16)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of Benzene in Well MW-16, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = b e^{ax} \implies x = \ln(y/b) / a$$

Site: Former Chevron Site 9-0260
Well: MW-16
Constituent: Benzene

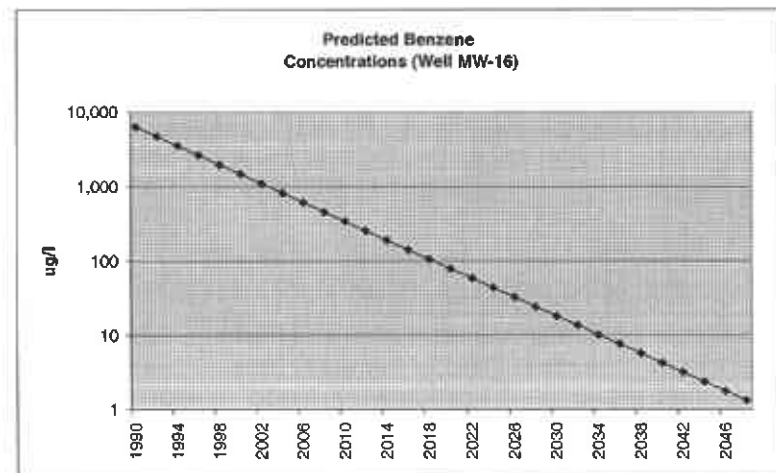
$$y = 242876 e^{-0.0017x} \implies x = \ln(y/242876) / -0.0017$$

Given
Water Quality Objective: y 1 ug/L
Constant: b 6308.6
Constant: a -0.0004
Date of first sample: 8/22/1990

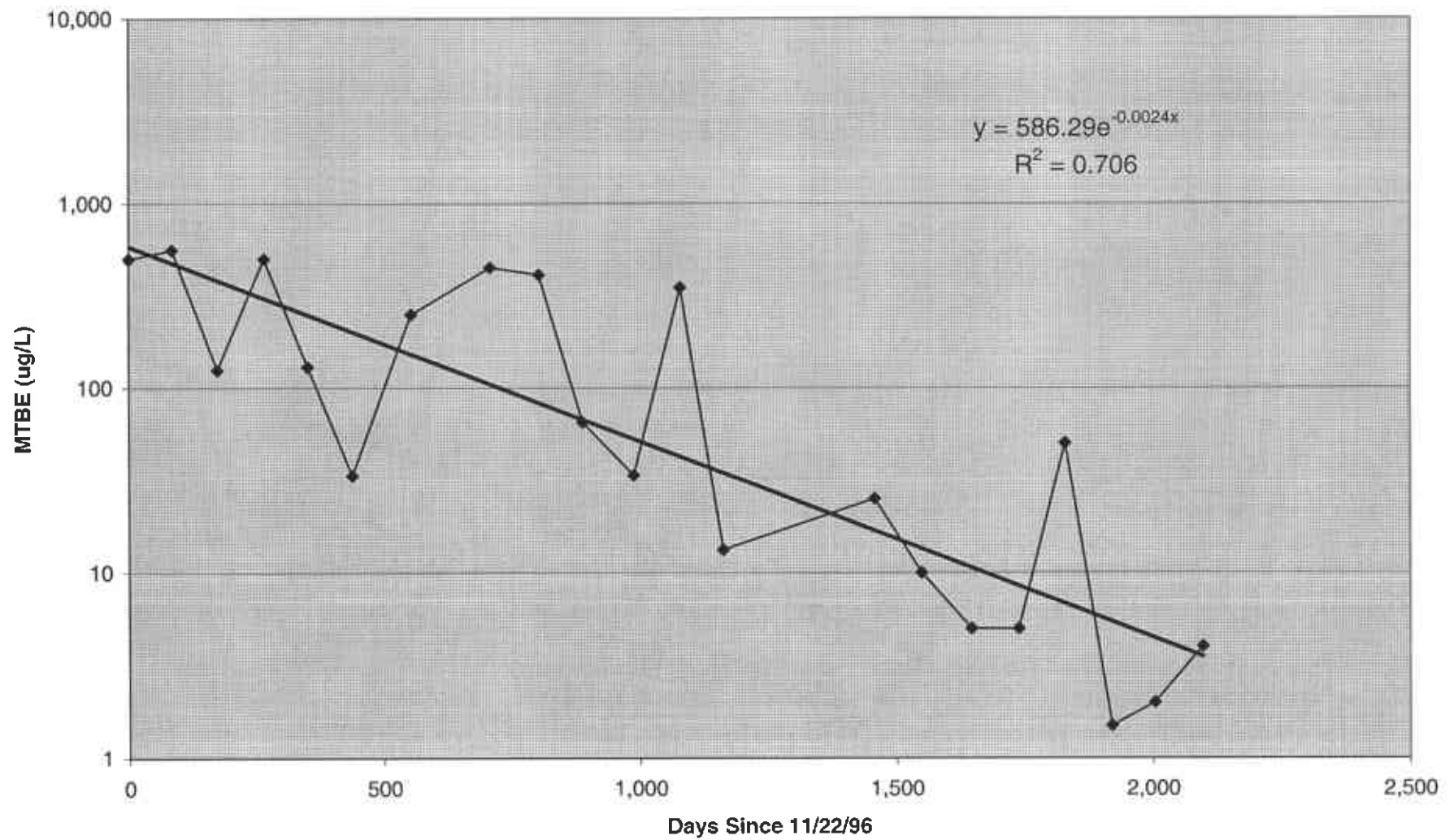
Calculate
Days from first sample: x 21,874 Days
Years from first sample: 59.9 Years
Estimated date of cleanup: Jul-2050
Calculated Half Life = $-\ln(2)/a$ 1,733 Days

Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
8/22/1990	0	6,309
8/22/1992	731	4,709
8/22/1994	1,461	3,517
8/22/1996	2,192	2,625
8/22/1998	2,922	1,960
8/22/2000	3,653	1,463
8/22/2002	4,383	1,093
8/22/2004	5,114	816
8/22/2006	5,844	609
8/22/2008	6,575	455
8/22/2010	7,305	340
8/22/2012	8,036	253
8/22/2014	8,766	189
8/22/2016	9,497	141
8/22/2018	10,227	106
8/22/2020	10,958	79
8/22/2022	11,688	59
8/22/2024	12,419	43.9
8/22/2026	13,149	32.8
8/22/2028	13,880	24.5
8/22/2030	14,610	18.3
8/22/2032	15,341	13.6
8/22/2034	16,071	10.2
8/22/2036	16,802	7.6
8/22/2038	17,532	5.7
8/22/2040	18,263	4.2
8/22/2042	18,993	3.2
8/22/2044	19,724	2.4
8/22/2046	20,454	1.8
8/22/2048	21,185	1.3
8/23/2050	21,916	1.0



MTBE Concentrations in Groundwater (Well MW-16)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of MTBE in Well MW-16, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = b e^{ax} \implies x = \ln(y/b) / a$$

Site: Former Chevron Site 9-0260
Well: MW-16
Constituent: MTBE

$$y = 242876 e^{-0.0017x} \implies x = \ln(y/242876) / -0.0017$$

Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
11/22/1996	0	586
11/22/1997	365	244
11/22/1998	730	102
11/22/1999	1,095	42
11/22/2000	1,461	18
11/22/2001	1,826	7
11/22/2002	2,191	3

Given

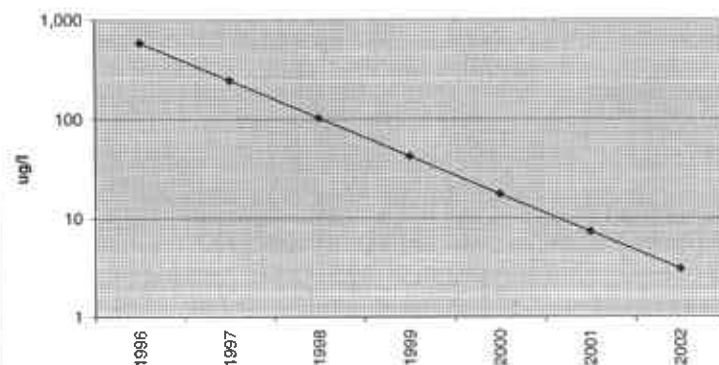
Water Quality Objective: $y = 5$ ug/L
Constant: $b = 586.29$
Constant: $a = -0.0024$
Date of first sample: 11/22/1996

Calculate

Days from first sample: $x = 1,985$ Days
Years from first sample: 5.4 Years
Estimated date of cleanup: Apr-2002

Calculated Half Life = $-\ln(2)/a$
289 Days

Predicted MTBE Concentrations (Well MW-16)



Concentration Data for Well MW-13, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Raw Data

Date	GWE	TPH-G (ug/L)	Benzene (ug/L)
6/28/89	85.25	54,000	12,000
10/3/89	84.93	120,000	10,000
1/4/90	84.83	87,000	6,800
4/3/90	85.52	53,000	12,000
7/3/90	85.42	90,000	8,400
1/4/91	85.30	72,000	5,500
7/2/91	74.34	120,000	12,000
8/13/92	84.21	84,000	7,400
3/25/93	87.74	97,000	5,200
9/21/93	85.39	80,000	7,600
3/8/94	86.72	78,000	5,300
10/4/94	84.29	39,000	2,300
8/4/95	87.39	47,000	7,700
2/20/96	88.61	59,000	5,500
8/27/96	86.50	65,000	3,500
2/18/97	89.31	69,000	4,500
8/4/97	86.32	61,000	5,700
2/25/98	87.96	42,000	3,800
8/19/98	84.47	57,000	1,600
3/26/99	89.17	30,800	473
9/2/99	87.48	87,000	2,610
2/3/00	88.02	2,900	200
8/2/00	86.69	1,600	15
2/28/03	88.48	340	<5.0
8/22/03	86.47	770	10

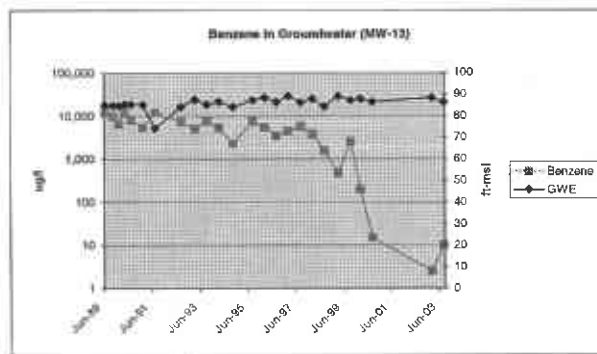
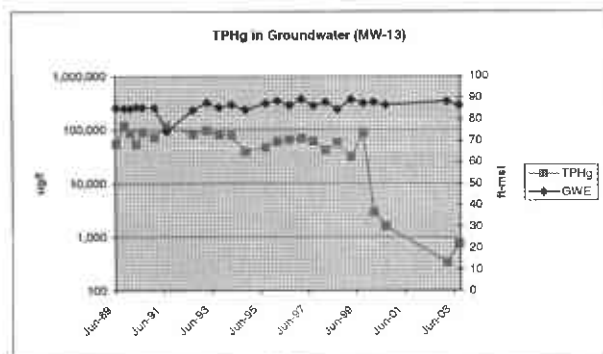
Edited Data

Date	GWE	TPH-G (ug/L)	Benzene (ug/L)
6/28/89	85.25	54,000	12,000
10/3/89	84.93	120,000	10,000
1/4/90	84.83	87,000	6,800
4/3/90	85.52	53,000	12,000
7/3/90	85.42	90,000	8,400
1/4/91	85.30	72,000	5,500
7/2/91	74.34	120,000	12,000
8/13/92	84.21	84,000	7,400
3/25/93	87.74	97,000	5,200
9/21/93	85.39	80,000	7,600
3/8/94	86.72	78,000	5,300
10/4/94	84.29	39,000	2,300
8/4/95	87.39	47,000	7,700
2/20/96	88.61	59,000	5,500
8/27/96	86.50	65,000	3,500
2/18/97	89.31	69,000	4,500
8/4/97	86.32	61,000	5,700
2/25/98	87.96	42,000	3,800
8/19/98	84.47	57,000	1,600
3/26/99	89.17	30,800	473
9/2/99	87.48	87,000	2,610
2/3/00	88.02	2,900	200
8/2/00	86.69	1,600	15
2/28/03	88.48	340	2.5
8/22/03	86.47	770	10

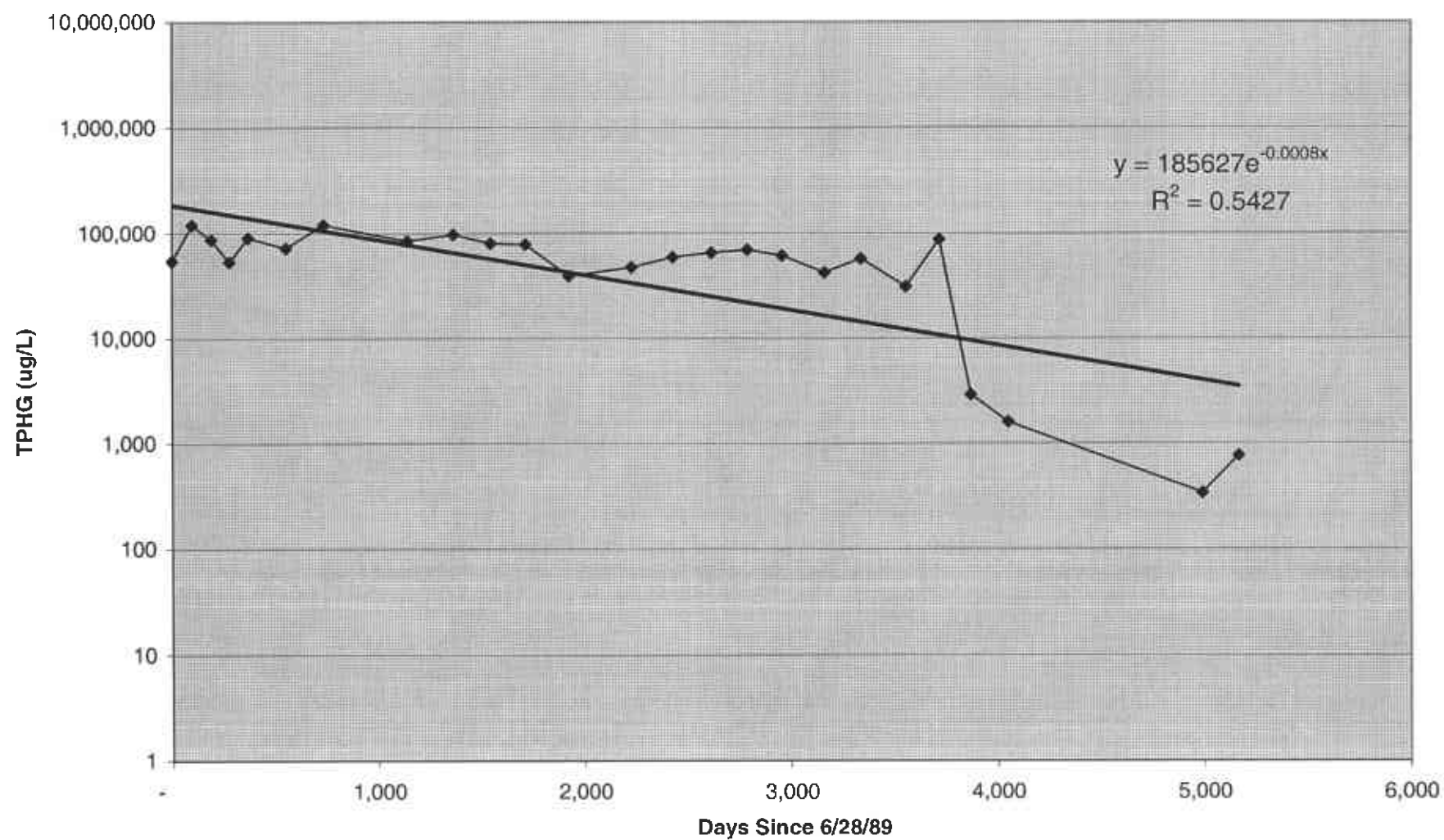
Days Since 6/28/1989	TPH-G (ug/L)
0	54,000
97	120,000
190	87,000
279	53,000
370	90,000
555	72,000
734	120,000
1,142	84,000
1,366	97,000
1,546	80,000
1,714	78,000
1,924	39,000
2,228	47,000
2,428	59,000
2,617	65,000
2,792	69,000
2,959	61,000
3,164	42,000
3,339	57,000
3,558	30,800
3,718	87,000
3,872	2,900
4,053	1,600
4,993	340
5,168	770

Days Since 6/28/1989	Benzene (ug/L)
0	12,000
97	10,000
190	6,800
279	12,000
370	8,400
555	5,500
734	12,000
1,142	7,400
1,366	5,200
1,546	7,600
1,714	5,300
1,924	2,300
2,228	7,700
2,428	5,500
2,617	3,500
2,792	4,500
2,959	5,700
3,164	3,800
3,339	1,600
3,558	473
3,718	2,610
3,872	200
4,053	15
4,993	2.5
5,168	10

Assumed $<x = x/2$



TPHg Concentrations in Groundwater (Well MW-13)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of TPHg in Well MW-13, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = b e^{ax} \implies x = \ln(y/b) / a$$

Site: **Former Chevron Site 9-0260**
Well: **MW-13**
Constituent: **TPHg**

$$y = 37687 e^{-0.0026x} \implies x = \ln(y/37687) / -0.0026$$

Given

Water Quality Objective:	y	50 ug/L
Constant:	b	185627
Constant:	a	-0.0008
Date of first sample:		6/28/1989

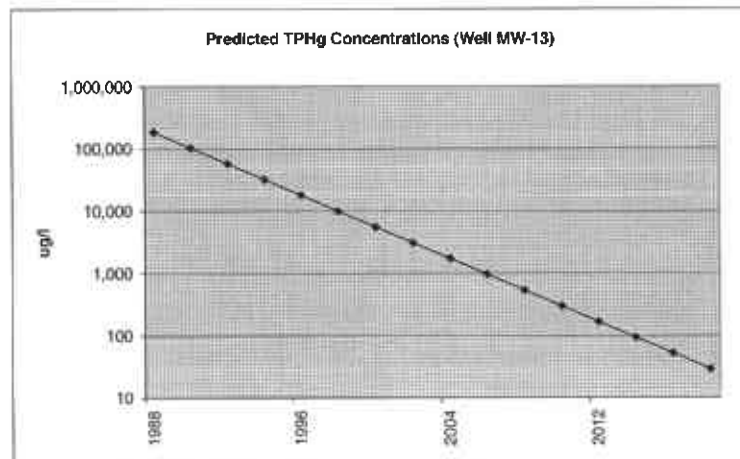
Calculate

Days from first sample:	x	10,274 Days
Years from first sample:		28.1 Years
Estimated date of cleanup:		Aug-2017

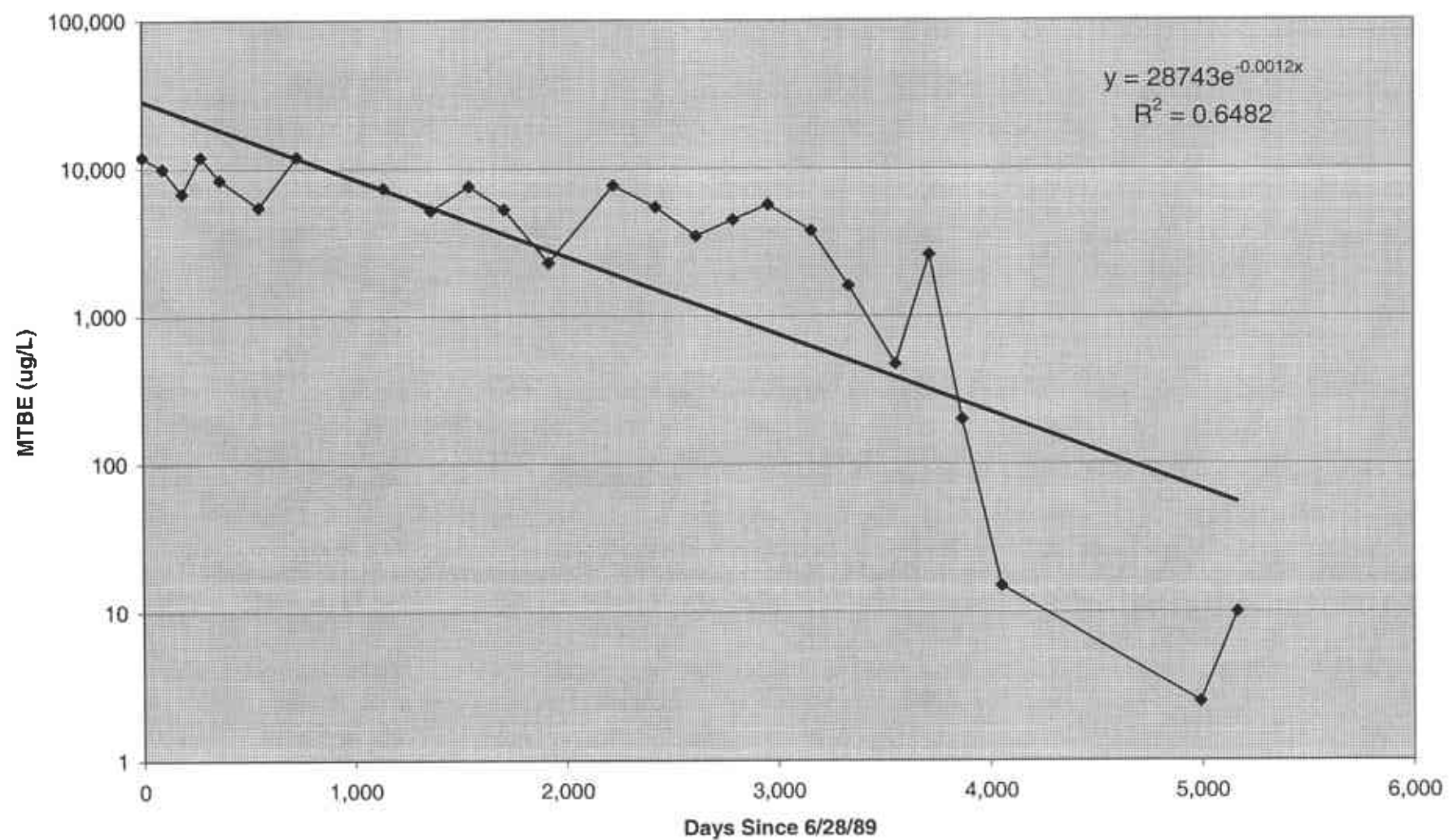
Calculated Half Life = $-\ln(2)/a$
866 Days

Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
2/5/1988	0	185,627
2/5/1990	731	103,435
2/5/1992	1,461	57,682
2/5/1994	2,192	32,141
2/5/1996	2,922	17,924
2/5/1998	3,653	9,988
2/5/2000	4,383	5,570
2/5/2002	5,114	3,104
2/5/2004	5,844	1,731
2/5/2006	6,575	964
2/5/2008	7,305	538
2/5/2010	8,036	300
2/5/2012	8,766	167
2/5/2014	9,497	93
2/5/2016	10,227	52
2/5/2018	10,958	29



Benzene Concentrations in Groundwater (Well MW-13)
Former Chevron Station 9-0260, 21995 Foothill Boulevard, Hayward, CA



Predicted Time to Cleanup of Benzene in Well MW-13, Former Chevron Site 9-0260, 21995 Foothill Boulevard, Hayward, California

Calculate "time to cleanup" given the first-order decay equation:

$$y = be^{ax} \implies x = \ln(y/b) / a$$

Site: Former Chevron Site 9-0260
 Well: MW-13
 Constituent: Benzene

$$y = 242876 e^{-0.0017x} \implies x = \ln(y/242876) / -0.0017$$

Given

Water Quality Objective:	y	1 ug/L
Constant	b	28743
Constant	a	-0.0017
Date of first sample:		6/28/1989

Calculate

Days from first sample:	x	8,535 Days
Years from first sample:		23.4 Years
Estimated date of cleanup:		Nov. 2012

Calculated Half Life = $-\ln(2)/a$
 578 Days

Concentration Trend Prediction

Date	Days from First Sample	Predicted Concentration (ug/l)
6/28/1989	0	28,743
6/29/1991	731	11,956
6/28/1993	1,461	4,979
6/29/1995	2,192	2,071
6/28/1997	2,922	862
6/29/1999	3,653	359
6/28/2001	4,383	149
6/29/2003	5,114	62
6/28/2005	5,844	26
6/29/2007	6,575	11
6/28/2009	7,305	4
6/29/2011	8,036	2
6/28/2013	8,766	1

