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December 6, 2000

Ms. Eva Chu
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Department of Environmental health
1153 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

Subject: *Site Closure Request Using Risk-Based Corrective Action Analysis and Appendix B Guidelines*
Chevron Service Station No. 9-5542
7007 San Ramon Road
Dublin, California
Delta Project No. DG95-442

Dear Ms. Chu:

Please find enclosed Delta's *Site Closure Request Using Risk-Based Corrective Action Analysis and Appendix B Guidelines* for the subject site. This report presents a request for closure based on guidelines presented in *Appendix B Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites and Requests For Closure*, dated March 1, 1994.

If you have questions or comments regarding this report, please contact me at (916) 638-2765.

Sincerely,

DELTA ENVIRONMENTAL CONSULTANTS, INC.

for

James R. Brownell R.G.
Portfolio Manager

JWS (Rpt001.5542.doc)
Enclosures

cc: Mr. Tom Bauhs – Chevron Products Company
Mr. Will Speth – Delta Environmental Consultants, Inc.
Mr. Steve Meeks - Delta Environmental Consultants, Inc.

SITE CLOSURE REQUEST USING
RISK-BASED
CORRECTIVE ACTION ANALYSIS
AND
APPENDIX B GUIDELINES

CHEVRON SERVICE STATION NO. 9-5542
7007 SAN RAMON ROAD
DUBLIN, CALIFORNIA
DELTA PROJECT NO. DG95-442

December 6, 2000

Prepared For:

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SITE CLOSURE REQUEST USING RISK-BASED CORRECTIVE ACTION ANALYSIS AND APPENDIX B GUIDELINES

CHEVRON STATION NO. 9-5542

7007 SAN RAMON ROAD

DUBLIN, CALIFORNIA

DELTA PROJECT NO. DG95-442

1.0 INTRODUCTION

1.1 Purpose

Delta Environmental Consultants, Inc. (Delta) has been authorized by Chevron Products Company (Chevron) to review investigative work conducted at Chevron Station No. 9-5542 located at 7007 San Ramon Road, Dublin, California (Figure 1) and to evaluate if residual concentrations of petroleum hydrocarbons in the subsurface are present at levels which would be considered detrimental to human health and environment. The closure evaluation was performed utilizing *Appendix B of the Tri-Regional Board Staff Recommendations for Preliminary Investigation and Evaluation of Underground Tank Sites, and Requests For Closure*, dated March 1, 1994 and under guidance from the *Standard Guide for Risk-Based Corrective Action Applied to Petroleum Release Sites* (ASTM E 1739 - 91) and *Tier 2 Guidance Manual for Risk-Based Corrective Action* (Conner, et al., 1995).

2.0 BACKGROUND INFORMATION

2.1 Site Description

The site is located on the northeast corner of the intersection of San Ramon Road and Dublin Boulevard as depicted on the site location map (Figure 1). Neighboring properties primarily consist of commercial businesses. Located to the west, across San Ramon Road, was a Unocal service station, currently a Petco, and beyond are residential homes. Located to the southwest is a Shell service station and to the south is a shopping center that is composed of retail shops and a restaurant. To the north and east are vacant lots with commercial businesses consisting of retail shops and restaurants beyond (Figure 2). The site elevation is approximately 360 feet above mean sea level as depicted on the Dublin, California U.S. Geological Survey 7.5-minute quadrangle map (Figure 1).

2.2 Site History

Four, single wall steel underground storage tanks (USTs) were installed at the site in 1965. The USTs consisted of two 10,000-gallon tanks containing leaded gasoline, one 4,000-gallon tank containing leaded gasoline, and one 500-gallon used oil tank. In 1983, a hole was discovered in the regular leaded tank and the tank was lined with fiberglass. In December 1983, five monitoring wells were installed at the site to approximately 20-feet below surface grade (bsg). Groundwater was not encountered in any of these wells. In January 1984, monitoring well MW-3 was deepened to a depth of 25-feet bsg. Motor oil was observed and bailed from the well. No further separate phase hydrocarbons (SPH) were observed during biweekly monitoring through October 1984.

In September 1984, a corroded section of product piping was replaced, and cathodic protection was installed. In November 1984, the regular leaded product line failed a leak test and was subsequently repaired.

In February 1990, the station was completely remodeled. During this time, USTs and product lines were excavated and replaced. Three, 12,000-gallon fiberglass USTs were installed in a new tank basin located southeast of the former tank basin. During removal of the old USTs, soil was overexcavated to a depth of between 16 feet bsg on the north end and 22 feet bsg on the south end. Analytical results from soil samples collected by Blaine Tech Services, Inc. within the former tank basin and along the product distribution lines indicated the presence of petroleum hydrocarbons.

In March 1990, the five original monitoring wells were destroyed and four new monitoring wells (MW-1 through MW-4) were installed at the site by Burlington Environmental Inc. Analytical results for soil samples collected from borings MW-1, MW-3, and MW-4 indicated the presence of petroleum hydrocarbons.

In June 1991, three offsite groundwater monitoring wells (MW-5 through MW-7) were installed by Sierra Environmental Services. Analytical results from a soil sample collected from boring MW-6 reported detectable concentrations of petroleum hydrocarbons. In December 1991 an additional

groundwater monitoring well MW-8 was installed offsite by GeoStrategies, Inc. in Regional Street. Analytical results from the soil sample submitted for chemical analysis did not indicate detectable concentrations of petroleum hydrocarbons at or above the laboratory reporting limits.

During November 1992, Geraghty & Miller, Inc. installed two vapor extraction wells (VW-1 and VW-2) and reinstalled MW-1 from 40 feet to a new depth of 50 feet bsg. Analytical results from soil samples collected from borings VW-1 and VW-2 indicate the presence of petroleum hydrocarbons. Samples collected from the deepening of MW-1 were not analyzed. Information supplied to Delta by Chevron indicates that VW-1 and VW-2 were never used as vapor extraction wells.

On June 8, 1994, Sierra Environmental Services, Inc. advanced three borings (B-1, B-2, and MW-9) in the vicinity of the site. Petroleum hydrocarbon constituents were reported in samples collected from each boring location.

On July 12, 1995, Groundwater Technology, Inc. advanced three GeoProbe® soil borings (SB-1 through SB-3) along Dublin Boulevard for the collection of grab groundwater samples. No soil samples were submitted for chemical analysis. Petroleum hydrocarbon constituents were reported in each of the groudwater grab samples collected.

On June 12, 1996, Gettler-Ryan, Inc. advanced three soil borings (B-3, B-4, and MW-10) in the vicinity of the site. Soil samples collected from borings B-3 and B-4 were submitted for geotechnical and chemical analysis, and soil samples from boring MW-10 were not analyzed. No petroleum hydrocarbon constituents were reported in samples from B-3 and B-4. Results from geotechnical analysis were used to replace default settings as site specific data for RBCA analysis.

Soil boring and monitoring well locations are illustrated on Figure 2. Soil sample analytical results from drilling events are summarized in Table 1 and geotechnical results are summarized in Table 2.

During September 1998, Gettler-Ryan, Inc. was onsite to collect soil samples beneath the product distribution lines and product dispenser during replacement of the lines. Analytical results from soil samples collected beneath the product lines and dispenser did not indicate the presence of of petroleum hydrocarbons. Location of soil samples are illustrated in Figure 3. Soil sample analytical results from UST removal and line sampling are summarized in Table 3.

Groundwater monitoring has been performed at the site since April 1990. The historical groundwater flow direction has been to the east. and the historical depth to water beneath the site has ranged from a high of 19.72 feet to a low of 28.12 feet below the top of casings. Cumulative groundwater data are summarized in Appendix A.

2.3 Regional Geology

The site is located in the north central portion of the Livermore Valley, within the Coast Range Geomorphic Province. The Livermore Valley slopes gently towards the west. Livermore Valley is underlain by non-water bearing rocks, and water bearing rock and sediments (DWR, 118-2, 1996, 1974). The non-water bearing rocks are of marine origin and consists of sandstone, shale and conglomerate and are Eocene to Miocene age. These rocks are exposed at higher elevations surrounding Livermore Valley and are found at depths greater that 1,000 feet beneath the valley floor.

The Plio-Pleistocene age Livermore Formation overlaps the Tassajara Formation beneath the north portion of the valley and is exposed over broad region south of the valley. Sediments of this formation consist primarily of clayey gravel in a sandy clay matrix. Sedimentary units south of the valley dip gently north, and are nearly level beneath the valley floor, and dip gently south beneath the north edge of the valley. Depth to the top of the Livermore Formation beneath the valley range from a few feet to greater than 40 feet (DWR, 118-2 1996, 1974).

2.4 Site Geology

Based on the boring logs from wells and soil borings drilled at the site to date, the material underlying the site is described as a silt to silty clay extending from the surface to a depth of approximately 7 feet

bsg, underlain by sequences of sandy clay, clay, and silty sand to an approximate depth of 26 feet bsg, which is underlain by sandy gravel to approximately 29 feet bsg. Beneath the sandy gravel lens are sequences of clayey sand to sandy clay with silt to the total depth explored of 51.5 feet bsg. The boring logs and monitoring well construction details are included in Appendix B. Cross-sections have been prepared using the boring logs and monitoring well construction details to illustrate the subsurface conditions. Figure 4 shows the traces of the geologic cross-sections A-A' and B-B', which are included as Figures 5 and 6, respectively.

2.5 Regional Hydrogeology

Groundwater beneath the area of investigation is located within the Livermore groundwater basin. The sediments and water bearing units comprising the Livermore Valley groundwater basin included valley-fill materials, the Tassajara Formation, and the Livermore Formation (DWR 118-2, 1966, 1974). The Livermore Valley groundwater basin is characterized by hydrological discontinuities, and is segregated into sub-basins on the basis of localized faults. The Livermore Valley groundwater system is a multi-layered system with an unconfined aquifer overlying sequential partially confined aquifers. Groundwater in the basin generally flows to the west (DWR 118-2, 1996, 1974).

2.6 Site Hydrogeology

Depth to groundwater data has been collected since April 1990 and measurements indicate a range from approximately 19 to 28 feet bsg. Groundwater flow direction established from the monitoring events has generally been to the east and southeast. A groundwater elevation contour map, (Figure 7) using March 17, 2000 data, indicates a hydraulic gradient of 0.016 towards the east-southeast. Appendix A contains a summary of groundwater elevation data.

2.7 Water Well Search

A representative from Sierra Environmental Services, Inc. visited the DWR to conduct a well search for the site. The records indicate that twenty four water wells may exist within a 2,000-foot radius of the subject site. Figure 8 presents the site locations of the wells, which were plotted using descriptions recorded on the well driller's logs provided by the DWR. Information obtained from the DWR records

regarding the water wells are summarized in Table 4. The closest water well to the site was a domestic well located approximately 1,000 feet southwest of the site, located at 6600 Donolon Way (hydraulically cross-gradient to the site) owned by Dublin Heritage Center. Per a telephone conversation conducted on July 26, 2000 between a representative of Delta and the Dublin Heritage Center, this well was cemented up. A municipal well was also identified within the 2,000-foot radius of the site. The municipal well, was located near the intersection of Amador Valley Boulevard and San Ramon Road approximately 1,100 feet north of the site (hydraulically up-gradient to the site). The municipal well was owned by Alameda County Flood Control and Water Conversation District (Zone-7). Delta contacted Zone-7 to verify the location and status of the well and found that the well had been destroyed. The remaining water well located within the 2,000-foot radius are groundwater monitoring wells associated with service stations. Based on information supplied to Delta from Zone-7, no know active domestic or municipal water wells are located within a 2,000 foot radius of the site.

3.0 SOIL AND GROUNDWATER ASSESSMENT RESULTS

3.1 Soil Sample Analytical Results

Soil samples collected within the former UST tank basin, used oil tank basin, and product distribution line trenchs were analyzed for benzene, toluene, ethylbenzene and total xylenes (BTEX) using EPA Method 8020 and total petroleum hydrocarbons (TPH) as gasoline using EPA Method 8015 Modified. The soil sample collected from the former used oil tank basin was additionally analyzed for total oil and grease by Standard Method 503E, volatile organic compounds by EPA Method 8240, semi-volatile organics by EPA Method 8270, and various metals using a variety of EPA Methods. Soil samples collected during the product line upgrade in September 1998, were additionally analyzed for methyl tertiary butyl ether (MTBE) by EPA Method 8020. Analytical results are summarized in Table 3.

Soil samples collected during the drilling of borings for MW-1 through MW-9, VW-1, VW-2, B-1, B-2, B3, and B4 were submitted for laboratory analysis of BTEX and TPH as gasoline using previously mentioned methods. Soil samples from boring MW-4 were additionally analyzed for TPH as diesel using EPA Method 8015 Modified and total oil and grease using Standard Method 503E. Selected soil samples

were additionally analyzed for various metals by their respective EPA Methods. Analytical results are summarized in Table 1.

The highest concentration of benzene was reported at 38 milligrams per kilogram (mg/kg) in soil sample MW-1 collected at a depth of 25 feet bsg. The highest concentration of TPH as gasoline was reported at 1,600 mg/kg in soil sample B-1 collected at a depth of 20.5 feet bsg. Soil sample locations from drilling are illustrated in Figure 2 and soil samples collected from UST and product line removal are illustrated in Figure 3.

The inferred vertical distribution of TPH as gasoline and benzene in soil is illustrated in cross-sections A-A' and B-B' (Figures 5 and 6). Concentrations of benzene and TPH as gasoline appear to be limited to the vicinity of the former UST basin. The inferred lateral and vertical extent of benzene and TPH as gasoline are illustrated in Figure 12 and 13, respectively.

3.2 Installation of Groundwater Monitoring Wells

Onsite groundwater monitoring wells MW-1 through MW-4 and vapor extraction wells VW-1 and VW-2 were installed by Burlington Environmental Inc. and Geraghty & Miller, Inc. between March 1990 and November 1992. Offsite wells MW-5 through MW-10 were installed by Sierra Environmental Services, Inc., GeoStrategies, Inc. and Gettler-Ryan Inc. between June 1991 and June 1996. Monitoring wells MW-1, and MW-2 through MW-10 are 4-inch and 2-inch diameter, respectively. Vapor extraction wells VW1 and VW2 are 2-inch diameter wells. All are constructed using Schedule 40 PVC casing. The wells are installed to approximate depths ranging from 29 feet to 50 feet bsg screened with 0.010 or 0.020-inch machine slotted casings. Screen intervals range in length from 5 to 20 feet. Construction details for each well are summarized in Table 5. Well completion diagrams are included in Appendix B.

3.4 Groundwater Level Measurements, Flow Direction and Hydraulic Gradient

Depth to groundwater beneath the site has been measured in monitoring wells since April 1990. Groundwater level data collected to date is summarized in Appendix A. The inferred direction of groundwater flow beneath the site has historically been toward the east with a gradient of approximately

0.005. A groundwater elevation contour map using the March 17, 2000 (first quarter 2000 monitoring data) is illustrated in Figure 7.

3.5 Groundwater Sample Analytical Results

Periodic groundwater sampling has been conducted at the site from April 1990. Groundwater samples have been analyzed for BTEX using EPA Method 8020 and TPH as gasoline using EPA Method 8015 Modified or Department of Health services LUFT Method. Samples collected since December 1995 have been analyzed for MTBE by EPA Method 8020 or EPA Method 8260. Selected groundwater samples collected have been analyzed for 1,2 DCA and EDB using EPA Method 8260, total oil and grease using Standard Method 5520, and halogenated volatile organic compounds using EPA Method 8010. Cumulative groundwater analytical results are presented in Appendix A.

Graphs illustrating groundwater elevations and concentrations of benzene, MTBE and TPH as gasoline over time for monitoring wells MW-1 through MW-4, MW-6, MW-9, and MW-10 are included in Appendix C. The concentrations of benzene, TPH as gasoline and MTBE in groundwater samples collected from the site have shown a general decrease or stabilization with time.

3.6 Distribution of Petroleum Hydrocarbons in Groundwater

Based on the March 17, 2000, quarterly sampling event, dissolved MTBE concentrations were not detected at or above the laboratory reporting limits in groundwater samples from MW-1, MW-4, MW-9 and MW-10. Residual petroleum hydrocarbon constituents have shown a general decrease over time and appear to be limited to the area bounded by MW-1 MW-4 and MW-9. Figures 9, 10 and 11 present the inferred distribution of benzene, TPH as gasoline and MTBE in groundwater using an average of the last four events of groundwater sampling results, respectively.

4.0 MASS BALANCE CALCULATIONS

4.1 Mass Balance Calculations, Soil

Based on the soil boring logs and analytical data collected to date, (as discussed in section 3.1) it has been calculated that 909 pounds of TPH quantified as gasoline and 8.2 pounds of benzene were present

in the soil matrix at the site. The calculations are considered to conservative, because they do not take in any biodegradation Table 6 presents these calculations. Figures 12 and 13 present layered descriptions of benzene and TPH as gasoline impacted soil.

4.2 Mass Balance Calculations, Groundwater

An estimate of the remaining TPH as gasoline and benzene in groundwater was based on the average concentration of the last four groundwater monitoring events. The estimated total amount of TPH as gasoline and benzene remaining in the groundwater was calculated to be 10.2 and 3.6 pounds, respectively. The calculations for the estimated amount of TPH as gasoline and benzene remaining in groundwater at the site are included in Table 7.

5.0 RISK-BASED CORRECTIVE ACTION

A risk-based corrective action (RBCA) analysis of the site was conducted using investigative results collected to date. This analysis was performed to assess if existing petroleum hydrocarbon impacted soil and groundwater underlying the subject site warrants further corrective action. This analysis has been prepared using the *Guidance Manual for RBCA Tool Kit for Chemical Releases* (Guidance Manual) (Conner, et al., 1998). The Guidance Manual is designed to complete all the calculations required for Tiers 1 and 2 of the RBCA planning process, as defined in ASTM PS-104, *Standard Provisional Guide for Risk-Based Corrective Action (ASTM, 1998)*. Using the Guidance Manual, baseline risk levels and/or cleanup standards for soil and groundwater remediation are calculated based on site specific information input by Delta.

The area near former and current UST basins (for soil) and monitoring wells MW-1 through MW-10 (for groundwater) is considered the source area for the RBCA evaluation. The vertical extent of the impacted vadose-zone soil is characterized by soil borings MW-2, MW-3, VW-1, VW-2 B-1, B4, and samples collected from the former UST basin and product line samples P1 through P6. Vadose-zone samples were collected at depths between 3 and 16 feet bsg. All soil samples collected within the interpreted source area and groundwater samples collected over the last four sampling events were considered in assessing a representative source concentration for each BTEX constituent and MTBE for the RBCA

10^{-5} Risk? Yes

analysis. Analytical results for the source area soil samples are summarized in Table 8 and analytical results for source area groundwater samples are summarized in Table 9. Samples with increased laboratory limits of detection were assigned a value equal to one-half the detection limit concentration in the calculation of the representative source area concentration. As requested by Alameda County Health Care Services, a value equivalent to 95 percent of the upper confidence limit (UCL) on the arithmetic mean concentration of the source area samples were used as a representative source concentration in the Tier 2 analysis. The calculated maximum, mean, and UCL representative concentration for soil and groundwater are summarized in Table 8 and Table 9, respectively. SSTL values for benzene have been modified using the California correction factor of 0.29. This was accomplished by manually revising the slope factor for benzene in the Guidance Manual's chemical database (Appendix D) from 0.029 to 0.1.

6.0 BACKGROUND OF PRIMARY SOURCES

6.1 Potential Primary Sources

The USTs and product piping have been identified as primary sources at this site. The USTs and associated product distribution system were removed and replaced in 1990, additionally the product lines and dispensers were upgraded in 1998.

6.2 Potential Chemicals of Concern

The potential chemicals of concern (COCs) associated with the primary sources are BTEX and MTBE. Appendix D provides chemical characteristics of these compounds (Conner, et al., 1998).

7.0 SECONDARY SOURCES

7.1 Affected Surface Soil Less than 3 Feet in Depth

Based on the depth of the soil samples collected to date at the site, combined with the fact that the site is predominately paved, the potential for residual surface soil, less than 3 feet in depth, to be impacted with BTEX or MTBE constituents is minimal.

7.1.1 Soil Dermal Contact and Ingestion

The *Guidance Manual* model (Conner, et al., 1998) was used to establish SSTLs for the soil dermal contact and ingestion pathway. The model results computed a soil SSTL for a construction worker's potential exposure to benzene of 140 mg/kg; toluene of 7,600 mg/kg; ethylbenzene of 4,600 mg/kg; total xylenes of 87,000 mg/kg, and for MTBE of 380 mg/kg. Representative source concentrations for benzene (0.05 mg/kg), toluene (0.38 mg/kg), ethylbenzene (0.34 mg/kg), total xylenes (2.1 mg/kg) and MTBE (0.025 mg/kg) are below the Tier 2 SSTLs for these exposure pathways. The SSTL modeling results are provided in Appendix F and are summarized in Table 10. Additionally, the majority of the site is currently paved and is anticipated to remain paved in the future, further reducing the potential dermal contact and ingestion.

85 mg/kg

7.2 Affected Subsurface Soil Greater than 3 Feet in Depth

The lateral and vertical extent of BTEX impacted soil present at the site is addressed in Section 3.1. Soil sample analytical results are summarized in Tables 1 through 3. The soil sample locations are presented on Figure 2 and 3 and the source area soil analytical results are summarized in Table 8.

7.2.1 Volatilization to Outdoor Air

The *Guidance Manual* model (Conner, et al., 1998) was used to establish SSTLs for subsurface soil volatilization and soil particulate vapors to ambient air pathway. Two potential exposure pathways exist for this pathway: a commercial worker at the site and a construction worker visiting the site. For each, the model computed an SSTL for benzene of greater than 30,000 mg/kg; for toluene of greater than 20,000 mg/kg; ethylbenzene of greater than 18,000 mg/kg; total xylenes of greater than 14,000 mg/kg, and for MTBE of 180,000 mg/kg. Representative source concentrations for benzene (0.05 mg/kg), toluene (0.38 mg/kg), ethylbenzene (0.34 mg/kg), total xylenes (2.1 mg/kg) and MTBE (0.025 mg/kg) are below the Tier 2 SSTLs for these exposure pathways. The SSTL modeling results are provided in Appendix F and are summarized in Table 10. Additionally, the majority of the site is currently paved and is anticipated to remain paved in the future, further reducing the potential of volatilization and atmospheric dispersion.

77 mg/kg

7.2.2 Volatilization and Indoor Space Accumulation

Currently, one commercial building exists on-site and is anticipated to remain onsite. The Guidance Manual model (Conner, et al., 1998) was used to estimate SSTLs for soil volatilization to enclosed spaces pathway. The model results calculated a soil vapor SSTLs for benzene of 280 mg/kg; toluene of greater than 20,000 mg/kg; ethylbenzene of greater than 18,000 mg/kg; xylenes of greater than 14,000 mg/kg, and MTBE of 17,000 mg/kg. Representative source concentrations for benzene (0.05 mg/kg), toluene (0.38 mg/kg); ethylbenzene (0.34 mg/kg); total xylenes (2.1 mg/kg) and MTBE (0.025 mg/kg) are below the SSTL for this exposure pathway. The SSTL modeling results are provided in Appendix F and are summarized in Table 10.

22 ppm

The Guidance Manual model is conservative because it assumes vapor is in equilibrium with soils, no decay of COCs and an infinite source. The model also assumes that a building is placed directly above the impacted soils.

7.2.3 Soil Leaching To Groundwater Ingestion

The *Guidance Manual* model (Conner, et al., 1998) was used to establish the SSTLs for BTEX and MTBE in soil leaching to groundwater pathway and migrating to an offsite receptor. The model calculated SSTLs for benzene of 400 mg/kg; for toluene of greater than 20,000 mg/kg; ethylbenzene of greater than 18,000 mg/kg; total xylenes of greater than 14,000 mg/kg and for MTBE 3,100 mg/kg. Representative source concentrations for benzene (0.05 mg/kg), toluene (0.38 mg/kg), ethylbenzene (0.34 mg/kg), total xylenes (2.1 mg/kg) and MTBE (0.025 mg/kg) are below the Tier 2 calculated SSTLs for this exposure pathway. The RBCA modeling results are provided in Appendix F and are summarized in Table 10.

6.5×10^{-3} mg/kg

7.3 Dissolved Groundwater Plume

Ten groundwater monitoring wells (MW-1 through MW-10) and two vapor extraction wells (VW-1 and VW-2) currently exist at the site. The locations of the wells are illustrated in Figure 2. The average depth to water in the monitoring wells over the last four monitoring events is 22.61 feet below top of the

casings. The lateral and vertical extent of BTEX and MTBE impacted groundwater and water level elevation data associated with the site is summarized in section 3.6 of this report.

The 95 percent UCL of the mean for BTEX and MTBE concentrations reported during the last four sampling events in monitoring wells MW-1, MW-2, MW-3, MW-4, MW-6, MW-9, and MW-10 were used as the representative source area concentration in the Tier 2 analysis. Analytical results for the source area groundwater samples and the calculated maximum, mean and 95 percent UCL, BTEX and MTBE concentrations are summarized in Table 9.

7.3.1 Volatilization and Atmospheric Dispersion

The Guidance Manual model (Conner, et al., 1998) was used to establish SSTLs for impacted groundwater volatilization to the outdoor air pathway. The model calculated a groundwater SSTL of greater than 1,800 milligrams per liter (µg/L) or 1,800,000 µg/L for benzene. The representative source concentration for benzene of 2.6 µg/L or 2,600 µg/L is below the calculated SSTL. Representative source concentrations for toluene, ethylbenzene, total xylenes and MTBE are also below the SSTLs for this exposure pathway. The SSTL modeling results are provided in Appendix F and are summarized in Table 11.

7.3.2 Volatilization to Indoor Air

Currently, one commercial building exists on-site. The building is anticipated to remain on-site. No petroleum hydrocarbon vapors have been reported to be present in the building. The Guidance Manual model (Conner, et al., 1998) was used to estimate SSTLs for impacted groundwater volatilization to the onsite commercial building. The model estimated an SSTL of 92 µg/L or 92,000 µg/L for benzene. The representative source concentration at the site of 2.9 µg/L or 2,900 µg/L is below the SSTL for benzene. The representative source concentrations for toluene, ethylbenzene, total xylenes and MTBE are also below the SSTLs. The SSTL modeling results are provided in Appendix F and are summarized in Table 11.

7.3.3 Groundwater Transport and Ingestion

Groundwater flow is to the east and southeast with an average gradient (computed from the last four quarters of monitoring data) of approximately 0.005.

7.3.3.1 Groundwater, Potable Water Use (Tier 2)

The site and surrounding properties obtain drinking water from the Alameda County Flood Control and Water Conversation District (Zone-7), which obtains its water supply from groundwater sources. No drinking water wells are located on the subject property. DWR records indicate that a domestic water well and a municipal water well were located within a 2,000-foot radius of the site. The nearest well was a former domestic well located approximately 1,000 feet southwest and hydraulically cross gradient of the site. Dublin Heritage Center owns the well, and reports that the well has been cemented up. The other well, located approximately 1100 feet north of the site, was owned by Zone 7 and was destroyed. The site is serviced by the municipal water supply, and no drinking water wells are expected to be installed at the site in the future.

To evaluate the potential for impact to the domestic well, the Guidance Manual (Conner, et al., 1998) was used to estimate SSTLs for this exposure pathway. To be conservative, the Guidance Manual default model uses the steady-state Domenico analytical solute transport model to account for dispersion between the groundwater source zone and off-site receptor locations in an infinitely thick aquifer. This model also assumes no biodegradation.

The model estimated an SSTL of 8.8 mg/L or 8,800 µg/L for benzene. The representative source concentration at the site of 2.6 mg/L or 2,600 µg/L is below the SSTL for benzene. The representative source concentrations for toluene, ethylbenzene, total xylenes and MTBE are also below the SSTLs. The SSTL modeling results are provided in Appendix F and are summarized in Table 11.

7.3.3.2 Surface Water, Recreational Use / Sensitive Habitat (Tier 2)

The Dublin Creek, which is concrete lined and flows intermittently throughout the year, exists approximately 700 feet south and hydraulically cross-gradient of the site. Based on this information, this pathway was not further evaluated.

7.4 Free-Phase Liquid Plume

No free-phase COCs have been observed at the site. This source does not exist.

8.0 CONCLUSIONS/RECOMMENDATIONS

Based on the information available to Delta to date, the following conclusions are presented:

- The primary source of petroleum hydrocarbons was removed when the former tanks and piping were replaced.
- The groundwater sample analytical results from monitoring wells MW-1, MW-2, MW-3, MW-6, MW-9, and MW-10 indicate that the hydrocarbon concentrations in groundwater have stabilized or are decreasing.
- The RBCA analysis indicates that the site does not pose a significant threat to human health based on information available to date, current land use at the site and surrounding area, current use of groundwater in the area, and conditions related to petroleum hydrocarbons beneath the site.
- Active remedial action does not appear to be warranted at this time. Natural attenuation and passive biodegradation have shown a decrease in hydrocarbon concentrations over time and have shown to be acceptable available technologies for the remaining hydrocarbons at this site.
- Delta recommends a "no further action" be issued for this site.

9.0 LIMITATIONS

The interpretations contained in this report represent our professional opinions and are based, in part, on information supplied by the client. These opinions are based on currently available information and are

arrived at in accordance with currently accepted hydrogeologic and engineering practices at this time and location. Other than this, no warranty is implied or intended.

10.0 REFERENCES

American Industrial Health Council, 1994, Exposure Factors Sourcebook.

American Society of Testing Materials (ASTM), 1991. Standard Guide for Risk-Based Corrective Action Applied at Petroleum Release Sites, ASTM E-1739, Philadelphia, PA.

American Society of Testing Materials (ASTM), 1998. Provisional Guide for Risk-Based Corrective Action, ASTM, Philadelphia, PA.

California Department of Health Services, June 1992, Recommended Limits in Water for Petroleum-Based Fuel Components to Protect the Beneficial Use of Municipal and Domestic Supply.

California Department of Water Resources, California's Groundwater, 1966, 1974, Bulletin No. 118-2

Conner, J.A., J.P. Nevin, M. Malander, C. Stanley, G. DeVaull, 1995, Tier 2 RBCA Guidance Manual for Risk Based Corrective Action, Groundwater Services, Inc.

USEPA, 1989, Exposure Factors Handbook, EPA / 600 / 8-89 / 043, NTIS No. PB90-10677.

USEPA, 1991, Risk Assessment Guidance for Superfund, Volume I, Human Health Evaluation Manual Supplemental Guidance: Standard Default Exposure Factors, Interim Final, OSWER Directive 9285.6-03, NTIS NO. PB91-921314.

USEPA, 1992, Dermal Exposure Assessment: Principles and Applications, Interim Report, EPA / 600 / 8-91 / 011B.

USEPA, 1994, How to Evaluate Alternative Clean Up Technologies for Underground Storage Tank Sites-A Guide for Corrective Action Plan Reviewers, EPA 510-B-94-003, Chapter IX.

Blaine Tech Services, Inc., March 7, 1990, Multiple Event Sampling Report.

Burlington Environmental, Inc. Chempro Division, July 19, 1991, Soil and Groundwater Investigation.

Sierra Environmental Services, Inc., July 22, 1991, Subsurface Investigation Report.

GeoStrategies, Inc., January 16, 1992, Well Installation Report.

Geraghty & Miller, Inc., January 5, 1993, Letter Report for the Installation of Ground-Water and Vapor-Extraction Well and Vacuum-Monitoring Wells.

Sierra Environmental Services, Inc., September 20, 1994, Monitoring Well Installation.

Groundwater Technology, Inc., September 28, 1995, Environmental Assessment Report.

Gettler-Ryan, Inc., August 29, 1996, Soil Boring And Well Installation Report.

Pacific Environmental Group, Inc., March 4, 1998, Tier 2 Risk-Based Corrective Action.

REFERENCES-Continued

International Technology Corporation, May 12, 1998, Tier 2 Risk-Based Corrective Action.

Gettler-Ryan, Inc., November 10, 1998, Soil Sampling During Product Dispenser and Piping Replacement.

Blaine Tech Services, Inc., April 24, 2000, 1st Quarter 2000 Monitoring at 9-5542.

TABLE 1

CUMULATIVE SOIL ANALYTICAL RESULTS FROM DRILLING

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Sample ID	Sample Depth (ft)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH as gasoline (mg/kg)	TPH as diesel (mg/kg)	TOG (mg/kg)
MW-1	25.0	03/27/90	38	150	34	180	1,300	NA	NA
	30.0	03/27/90	1	4	4	1	270	NA	NA
MW-2	15.0	03/26/90	<0.005	<0.005	<0.005	<0.005	<10	NA	NA
MW-3	15.0	03/26/90	<0.005	<0.005	<0.005	<0.005	<10	NA	NA
	20.0	03/26/90	<0.005	0.01	0.01	0.12	<10	NA	NA
	25.0	03/26/90	<0.005	0.02	0.05	0.28	51	NA	NA
MW-4	15.0	03/28/90	NA	NA	NA	NA	<10	<10	NA
	20.0	03/28/90	NA	NA	NA	NA	NA	<10	NA
	25.0	03/28/90	2.7	23	5.6	46	<10	<10	39
MW-5	28.5	06/11/91	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
MW-6	26.0	06/12/91	0.006	0.006	0.006	0.12	<5.0	NA	NA
MW-7	26.0	06/11/91	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
MW-8	20.0	12/06/91	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
MW-9	24.5	06/08/94	0.07	0.11	0.58	3.4	<1.0	NA	NA
	33.5	06/09/94	0.038	<0.005	<0.005	0.008	<1.0	NA	NA
VW-1	5.0	11/24/92	<0.005	0.006	<0.005	<0.005	<1.0	NA	NA
	14.0	11/24/92	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
	14.5	11/24/92	<0.005	0.058	0.029	1.4	2	NA	NA
	19.5	11/24/92	0.001	5.6	3.4	20	250	NA	NA
	24.0	11/24/92	2.4	60	15	99	990	NA	NA
	27.0	11/24/92	2	15	5.4	27	230	NA	NA
	31.0	11/24/92	<0.005	0.73	1	3.9	130	NA	NA
VW-2	5.0	11/25/92	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
	10.0	11/25/92	0.006	<0.005	<0.005	<0.005	<1.0	NA	NA
	15.0	11/25/92	<0.005	<0.005	<0.005	0.009	<1.0	NA	NA
	20.0	11/25/92	0.65	8.1	26	13	220	NA	NA
	25.0	11/25/92	2.7	23	9	49	650	NA	NA
	30.0	11/25/92	0.07	0.001	0.012	0.025	1	NA	NA
B-1	5.5	06/08/94	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
	10.5	06/08/94	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
	15.5	06/08/94	0.081	0.19	0.02	0.13	2	NA	NA
	20.5	06/08/94	5.3	72	23	120	1,600	NA	NA

TABLE 1

CUMULATIVE SOIL ANALYTICAL RESULTS FROM DRILLING

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Sample ID	Sample Depth (ft)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH as gasoline (mg/kg)	TPH as diesel (mg/kg)	TOG (mg/kg)
B-2	20.5	06/08/94	0.06	0.026	0.031	0.19	2	NA	NA
	23.5	06/08/94	0.13	0.037	0.12	0.83	8	NA	NA
B3	6.0	06/12/96	NA	NA	NA	NA	NA	NA	NA
	12.0	06/12/96	NA	NA	NA	NA	NA	NA	NA
	16.0	06/12/96	NA	NA	NA	NA	NA	NA	NA
	18.0	06/12/96	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA
B4	6.0	05/04/92	NA	NA	NA	NA	NA	NA	NA
	12.0	05/04/92	<0.005	<0.005	<0.005	<0.005	<0.50	NA	NA
	18.0	05/04/92	NA	NA	NA	NA	NA	NA	NA

METALS

Sample ID	Sample Depth (ft)	Sample Date	Cadium (mg/kg)	Chromium (mg/kg)	Lead (mg/kg)	Zinc (mg/kg)
MW-4	15.0	03/28/90	<3	26	37	39
	20.0	03/28/90	<3	25	41	44
	25.0	03/28/90	<3	13	26	28
MW-5	28.5	06/11/91	NA	NA	<10	NA
MW-6	26.0	06/12/91	NA	NA	<10	NA
MW-7	26.0	06/12/91	NA	NA	<10	NA

TPH = Total petroleum hydrocarbons using EPA Method 8015 Modified, or DHS-LUFT Method.
TOG = Total oil and grease.
mg/kg = milligrams per kilogram.
Ft = Feet below surface grade.
NA = Not analyzed.

TABLE 2

GEOTECHNICAL SOIL RESULTS

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Sample Location	Date	Depth (ft)	Organic Carbon (%)	Bulk Density Dry (gm/cc)	Density Wet (gm/cc)	Porosity (%)
B3	06/12/96	6	<1.0	1.65	2.03	38.0
		12	<1.0	1.65	2.17	30.2
		16	<1.0	1.65	2.17	29.9
		18	<1.0	1.65	2.13	32.3
B4	06/12/96	6	<1.0	1.76	2.10	33.6
		12	<1.0	1.87	2.17	30.1
		18	<1.0	NA	NA	NA

ft= feet below surface grade.
%= percent.
gm/cc =grams per cubic centermeter.
NA= not analyzed.

TABLE 3

CUMULATIVE SOIL ANALYTICAL RESULTS FROM UST AND PRODUCT LINE REMOVAL

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Sample ID	Sample Depth (ft)	Sample Date	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH as gasoline (mg/kg)	MTBE (mg/kg)	TOG (mg/kg)	VOCs (mg/kg)	Semi-VOC's (mg/kg)
AF	16.0	02/13/90	0.26	2.5	2.5	15	190	NA	NA	NA	NA
Aop	22.0	02/13/90	60	219	69	355	3,100	NA	NA	NA	NA
BF	16.0	02/13/90	0.046	0.4	0.13	1.2	86	NA	NA	NA	NA
Bop	22.0	02/14/90	20	98	33	160	1,300	NA	NA	NA	NA
CF	15.0	02/13/90	0.12	0.4	0.11	1.1	12	NA	NA	NA	NA
Cop	22.0	02/13/90	3	5	0.5	3	18	NA	NA	NA	NA
Sidewall-1	13.5	02/13/90	0.022	0.013	0.023	0.07	1.1	NA	NA	NA	NA
Sidewall-2	8.3	02/13/90	<0.5	<0.005	<0.005	0.0068	<0.05	NA	NA	NA	NA
Sidewall-3	7.5	02/13/90	18	0.89	0.4	2.8	18	NA	NA	NA	NA
WoM	8.5	02/13/90	0.0046	0.019	<0.005	0.49	0.55	NA	12	ND	ND
WoM	10.5	02/13/90	<0.5	<0.005	<0.005	0.02	<0.5	NA	12	ND	ND
PL1	1.5	02/08/90	0.85	0.017	0.2	1.2	9	NA	NA	NA	NA
PL2	3.0	02/08/90	<0.005	<0.005	<0.005	0.012	<0.5	NA	NA	NA	NA
PL3	3.0	02/08/90	0.0095	0.011	0.16	0.15	3.9	NA	NA	NA	NA
PL4	3.0	02/08/90	<0.005	<0.005	0.16	0.072	2.8	NA	NA	NA	NA
P1	3.0	09/16/98	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA	NA	NA
P2	3.0	09/16/98	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA	NA	NA
P3	3.0	09/16/98	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA	NA	NA
P4	3.0	09/16/98	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA	NA	NA
P5	3.0	09/16/98	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA	NA	NA
P6	3.0	09/16/98	<0.005	<0.005	<0.005	<0.005	<1.0	NA	NA	NA	NA

TABLE 3

CUMULATIVE SOIL ANALYTICAL RESULTS FROM UST AND PRODUCT LINE REMOVAL

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Sample ID	Sample Depth (ft)	Sample Date	Antimony (mg/kg)	Arsenic (mg/kg)	Beryllium (mg/kg)	Cadium (mg/kg)	Chromium (mg/kg)	Copper (mg/kg)	Lead (mg/kg)	Mercury (mg/kg)	Nickel (mg/kg)	Selenium (mg/kg)	Silver (mg/kg)	Thallium (mg/kg)	Zinc (mg/kg)
WoM	8.5	02/13/90	<25	140	<1	<3	8	21	15	0.02	23	<50	<5	25	19
WoM	10.5	02/13/90	<25	85	<1	<3	5	16	12	<0.02	16	<50	<5	20	17

TPH = Total petroleum hydrocarbons using EPA Method 8015 Modified, or DHS-LUFT Method.
Ft = Feet below surface grade.
mg/kg = milligrams per kilogram.
TOG = Total oil and grease.
VOC's = Volatile organic compounds.
Semi-VOC's = Semi volatile organic compounds.

TABLE 4

WATER WELLS WITHIN A 2,000 FOOT RADIUS

Chevron Station No. 9-5542
7007San Ramon Road
Dublin, California

NUMBER	WELL TYPE	WELL OWNER	OWNER ADDRESS	WELL STATUS	WELL ID
19	Municipal	A.D. Selditch & Associates, Inc.	6267E Joaquin Manela Avenue Newark, Ca.	Unknown	---
10	Municipal	Zone-7	5997 Parkside Drive Pleasanton, Ca.	Destroyed	3S/1W-2A1
11	Municipal	Dougherty Regional Fire Authority	9399 Firecrest Lane San Ramon, Ca.	Unknown	---
12 15	Monitoring	Texaco	7540 Amador Valley Road Dublin, Ca.	Active	---
16-19	Monitoring	Chevron Products Company	P.O. Box 5004 San Ramon, Ca.	Active	---
20	Domestic	Dublin Heritage Center	6600 Donolan Way Dublin, Ca.	Destroyed	3S/1W-2K6
21 24	Monitoring	Unocal	2000 Crow Canyon Place San Ramon, Ca.	Active	---

TABLE 5

WELL CONSTRUCTION DETAILS

Chevron Station No. 9-5542
7007San Ramon Road
Dublin, California

Well ID	Date Installed	Total Drilled Depth (ft bsg.)	Well Diameter	Screen Type	Screen Interval (ft bsg.)	Filter Pack Interval (ft bsg.)	Bentonite Seal Interval (ft bsg.)	Grout Interval (ft bsg.)
MW-1[a]	11/25/92	51	4-inch	0.010	30-50	32-51	31-32	1-31
MW-2	03/26/90	38.5	2-inch	0.020	22-37	20-37	17-20	1-17
MW-3	03/26/90	36.5	2-inch	0.020	20-35	19-35	16-19	1-16
MW-4	03/28/90	37	2-inch	0.020	20-35	19-35	16-19	1-16
MW-5	06/11/91	37	2-inch	0.020	21-36	19.5-36	17-19.5	1.5-17
MW-6	06/11/91	35	2-inch	0.020	20-35	18.5-35	17-18.5	1.5-17
MW-7	06/12/91	35	2-inch	0.020	20-35	18.5-35	17-18.5	1.5-17
MW-8	05/20/92	35.5	2-inch	0.020	15-35	13-35	11-13	1.5-11
MW-9	06/08/94	34.5	2-inch	0.020	19.5-34.5	18.5-34.5	17.5-18.5	1-17.5
MW-10	08/14/92	35	2-inch	0.010	15-35	13-35	12-13	0.5-13
VW-1	11/24/92	31.5	2-inch	0.010	25-30	23-31.5	20-23	1.5-23
VW-2	11/25/92	31.5	2-inch	0.01	24-29	22-31.5	20-22	1.5-22

a = monitoring well orginaly installed on 3/27/90 to 35-feet.
bsg. = below surface grade.

TABLE 6

TPHg and BENZENE MASS CALCULATIONS
SITE CLOSURE REQUEST

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

SOIL MASS CALCS

TPHg

TPHg (lb) = (Volume (ft3) x Soil Density (lb/ft3) x Concentration (mg/Kg)) / (1,000,000 (mg/Kg))

Sample Area	Concentration (mg/Kg)	Area (ft^2)	Depth 1 (ft)	Depth 2 (ft)	Volume (ft^3)	Soil Density (lb/ft^3)	**TPHg (lb)**
1	3.35	257.9	0	5	1,289.5	110.0	**0.48**
2	9	103	0	5	515.0	110.0	**0.51**
3	138	215.6	11	16	1,078.0	110.0	**16.36**
4	86	251.3	11	16	1,256.5	110.0	**11.89**
5	2	940.7	11	16	4,703.5	110.0	**1.03**
6	1600	363.7	16.5	20.5	1,454.8	110.0	**256.04**
7	235	635.4	16.5	20.5	2,541.6	110.0	**65.70**
8	2	693.4	16.5	20.5	2,773.6	110.0	**0.61**
9	3100	81	21	25	324.0	110.0	**110.48**
10	1300	283.8	21	25	1,135.2	110.0	**162.33**
11	820	540.4	21	25	2,161.6	110.0	**194.98**
12	51	2061.1	21	25	8,244.4	110.0	**46.25**
13	8	2633.5	21	25	10,534.0	110.0	**9.27**
14	210	257.1	25.5	31	1,414.1	110.0	**32.66**
15	1	640.3	25.5	31	3,521.7	110.0	**0.39**
						TOTAL POUNDS TPHg:	**908.99**

BENZENE

Benzene (lb) = (Volume (ft3) x Soil Density (lb/ft3) x Concentration (mg/Kg)) / (1,000,000 (mg/Kg))

Sample Area	Concentration (mg/Kg)	Area (ft^2)	Depth 1 (ft)	Depth 2 (ft)	Volume (ft^3)	Soil Density (lb/ft^3)	**BENZENE (lb)**
1	0.85	126.4	0	5	632	110	**0.0591**
2	0.0095	119.8	0	5	599	110	**0.0006**
3	0.006	335.4	5.5	10.5	1677	110	**0.0011**
4	0.127	873.4	11	16	4367	110	**0.0610**
5	5.3	285.5	16.5	20.5	1142	110	**0.6658**
6	0.35	1082.4	16.5	20.5	4329.6	110	**0.1667**
7	39.3	304.5	21	25	1218	110	**5.2654**
8	2.8	1381.9	21	25	5527.6	110	**1.7025**
9	0.13	856.8	21	25	3427.2	110	**0.0490**
10	1.5	243	25.5	31	1336.5	110	**0.2205**
11	0.07	609.5	25.5	31	3352.25	110	**0.0258**
						TOTAL POUNDS BENZENE:	**8.2176**

TABLE 7

TPHg and BENZENE MASS CALCULATIONS
SITE CLOSURE REQUEST

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

GROUNDWATER MASS CALCS

TPHg

TPHg (lb) = (Volume (ft^3) x Density (lb/ft^3) x Concentration (ug/L) x Porosity) / (1,000,000,000 (ug/L))

Sample Area	Concentration (ug/L)	Area (ft^2)	Thickness (ft)	Porosity (unitless)	Volume (ft^3)	Water Density (lb/ft^3)	**TPHg (lb)**
1	5,000	7149.1	10	0.3	71,491	62.42	**6.694**
2	500	35752.1	10	0.3	357,521	62.42	**3.347**
3	50	12,523.30	10	0.3	125,233	62.42	**0.117**
						TOTAL POUNDS TPHg:	**10.158**

BENZENE

Benzene (lb) = (Volume (ft^3) x Density (lb/ft^3) x Concentration (ug/L) x Porosity) / (1,000,000,000 (ug/L))

Sample Area	Concentration (ug/L)	Area (ft^2)	Thickness (ft)	Porosity (unitless)	Volume (ft^3)	Water Density (lb/ft^3)	**BENZENE (lb)**
1	5,000	2405.91	10	0.3	24,059	62.42	**2.252654**
2	500	11994.08	10	0.3	119,941	62.42	**1.123006**
3	50	21002.78	10	0.3	210,028	62.42	**0.196649**
4	5	23183.09	10	0.3	231,831	62.42	**0.021706**
						TOTAL POUNDS BENZENE:	**3.594015**

TABLE 8

SOURCE AREA SOIL ANALYTICAL SUMMARY

Chveron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Sample ID	Date	Depth (ft)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)
AF	02/13/90	16	0.26	2.5	2.5	15	NA
BF	02/13/90	16	0.046	0.4	0.13	1.2	NA
CF	02/13/90	15	0.12	0.4	0.11	1.1	NA
Don't use → MW-2	03/26/90	15	<0.005	<0.005	<0.005	0.014	NA
Don't use → MW-3	03/26/90	15	<0.005	<0.005	<0.005	<0.005	NA
VW-1	11/24/92	5	<0.005	0.006	<0.005	<0.005	NA
VW-1	11/24/92	14	<0.005	<0.005	<0.005	<0.005	NA
VW-1	11/24/92	14.5	<0.005	0.058	0.029	1.4	NA
VW-2	11/25/92	5	<0.005	<0.005	<0.005	<0.005	NA
VW-2	11/25/92	10	0.006	<0.005	<0.005	<0.005	NA
VW-2	11/25/92	15	<0.005	<0.005	<0.005	0.009	NA
B-1	06/08/94	5.5	<0.005	<0.005	<0.005	<0.005	NA
B-1	06/08/94	10.5	<0.005	<0.005	<0.005	<0.005	NA
B-1	06/08/94	15.5	0.081	0.19	0.02	0.13	NA
Don't use — B4	06/12/96	12	<0.005	<0.005	<0.005	<0.005	NA
Do not use Not in source Area — P1	09/16/98	3	<0.005	<0.005	<0.005	<0.005	<0.05
P2	09/16/98	3	<0.005	<0.005	<0.005	<0.005	<0.05
P3	09/16/98	3	<0.005	<0.005	<0.005	<0.005	<0.05
P4	09/16/98	3	<0.005	<0.005	<0.005	<0.005	<0.05
P5	09/16/98	3	<0.005	<0.005	<0.005	<0.005	<0.05
P6	09/16/98	3	<0.005	<0.005	<0.005	<0.005	<0.05
	Maximum		0.26	2.5	2.5	15	0.00
21 Samples	Mean[a]		0.026	0.17	0.13	0.9	0.025
	UCL[b]		0.05	0.38	0.34	2.1	0.025
also use Sidewall-1	2/13/90	13.5'	0.022	0.013	0.023	0.07	NA
-2		8.3'	<0.5	<.005	<.005	.0068	NA
-3		7.5'	18	0.89	0.4	2.8	NA
WoM		8.5'	.0046	0.019	<005	0.49	NA
		10.5'	<0.5	<.005	<.005	.02	

[a] = Assuming lognormal distribution.

[b] = UCL = 95 percent upper confidence limit on the mean concentration.

MTBE = Methyl tertiary butyl ether.
mg/kg = Milligrams per kilogram.
NA = Not analyzed.

ONSITE use data from MW-1, MW-4

TABLE 9

SOURCE AREA GROUND WATER ANALYTICAL SUMMARY

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Sample ID	Date	Benzene (mg/L)	Toluene (mg/L)	Ethyl benzene (mg/L)	Total Xylenes (mg/L)	MTBE (mg/L)
MW-1	10/01/97	8.4	12	1.2	5.7	0.25
	09/12/98	10	13	1.7	7.6	0.143
	09/29/99	0.065	0.0488	0.0124	0.0437	0.008
	03/17/00	10.2	15.3	1.89	8.54	1
MW-2	03/29/98	0.002	0.012	0.0043	0.014	0.0054
	09/12/98	<0.0005	<0.0005	<0.0005	<0.0005	<0.0025
	03/26/99	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
	09/29/99	<0.0005	<0.0005	<0.0005	<0.0005	<0.005
MW-3	03/29/98	0.00084	0.0014	0.0013	0.00068	0.1
	09/12/98	<0.0005	<0.0005	<0.0005	<0.0005	0.0054
	03/26/99	<0.0005	0.0349	0.000848	0.00136	0.00568
	09/29/99	0.000975	0.00058	<0.0005	0.000618	<0.005
MW-4	06/10/97	2.9	0.79	0.75	1.7	0.05
	10/01/97	3.6	1.4	1.3	2.7	0.025
	09/29/99	3.77	0.844	1.29	2.97	0.25
	03/17/00	2.56	0.942	0.688	1.98	0.5
MW-6	03/29/98	<0.0005	<0.0005	<0.0005	<0.0005	0.003
	09/12/98	<0.0005	<0.0005	<0.0005	<0.0005	<0.0025
	03/26/99	<0.0005	<0.0005	<0.0005	<0.0005	<0.002
	09/29/99	<0.0005	<0.0005	<0.0005	<0.0005	<0.005
MW-9	09/12/98	0.9	0.0066	0.15	0.44	0.068
	03/26/99	0.441	0.0107	0.121	0.135	0.0336
	09/29/99	0.455	0.01	0.0665	0.0466	0.1
	03/17/00	0.51	0.005	0.146	0.528	0.05
MW-10	09/12/98	<0.0005	<0.0005	<0.0005	<0.0005	0.0043
	03/26/99	<0.0005	<0.0005	<0.0005	<0.002	0.0038
	09/29/99	0.547	0.005	0.0796	0.0495	0.05
	03/17/00	<0.0005	<0.0005	<0.0005	<0.0005	<0.005
	Maximum	10	15	1.9	8.5	1
28 Samples	Mean[a]	1.6	1.6	0.34	1.2	0.093
	UCL[b]	2.6	2.9	0.52	1.9	0.16

DO NOT USE NOT in source area

DO NOT USE

[a] = Assuming lognormal distribution.

[b] = UCL = 95 percent upper confidence limit on the mean concentration.

MTBE = Methyl tertiary butyl ether.

mg/L = Milligrams per liter.

TABLE 10

SOIL SITE SPECIFIC TARGET LEVEL SUMMARY

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Chemical of Concern	Exposure Pathway	Representative Concentrations (mg/kg)	SSTL (mg/kg)	Exceed?	CRF
Benzene	Surface Soil ~~Dermal~~ Contact	0.26[a]/0.05[b]	9.7	No	NA
	Surface Soil ~~Dermal~~ Contact-Construction Worker		140	No	NA
	Soil leaching to ground water ingestion		400	No	NA
	Volatilization to indoor air		280	No	NA
	Volatilization to outdoor air		>30,000	No	NA
	Volatilization to outdoor air-Construction Worker		>30,000	No	NA
Toluene	Surface Soil ~~Dermal~~ Contact	2.5[a]/0.38[b]	5,600	No	NA
	Surface Soil ~~Dermal~~ Contact-Construction Worker		7,600	No	NA
	Soil leaching to ground water ingestion		>20,000	No	NA
	Volatilization to indoor air		>20,000	No	NA
	Volatilization to outdoor air		>20,000	No	NA
	Volatilization to outdoor air-Construction Worker		>20,000	No	NA
Ethylbenzene	Surface Soil Dermal Contact	2.5[a]/0.34[b]	3,400	No	NA
	Surface Soil Dermal Contact-Construction Worker		4,600	No	NA
	Soil leaching to ground water ingestion		>18,000	No	NA
	Volatilization to indoor air		>18,000	No	NA
	Volatilization to outdoor air		>18,000	No	NA
	Volatilization to outdoor air-Construction Worker		>18,000	No	NA
Total Xylenes	Surface Soil Dermal Contact	15[a]/2.1[b]	64,000	No	NA
	Surface Soil Dermal Contact-Construction Worker		87,000	No	NA
	Soil leaching to ground water ingestion		>14,000	No	NA
	Volatilization to indoor air		>14,000	No	NA
	Volatilization to outdoor air		>14,000	No	NA
	Volatilization to outdoor air-Construction Worker		>14,000	No	NA
MTBE	Surface Soil Dermal Contact	<0.05[a]/0.025[b]	280	No	NA
	Surface Soil Dermal Contact-Construction Worker		380	No	NA
	Soil leaching to ground water ingestion		3,100	No	NA
	Volatilization to indoor air		17,000	No	NA
	Volatilization to outdoor air		>180,000	No	NA
	Volatilization to outdoor air-Construction Worker		>180,000	No	NA

[a] = Maximum representative source area concentrations.

[b] = 95 percent upper confidence limit representative source area concentration.

SSTL = Site specific target level.

mg/kg = Milligrams per kilogram.

NA = Not Applicable.

TABLE 11

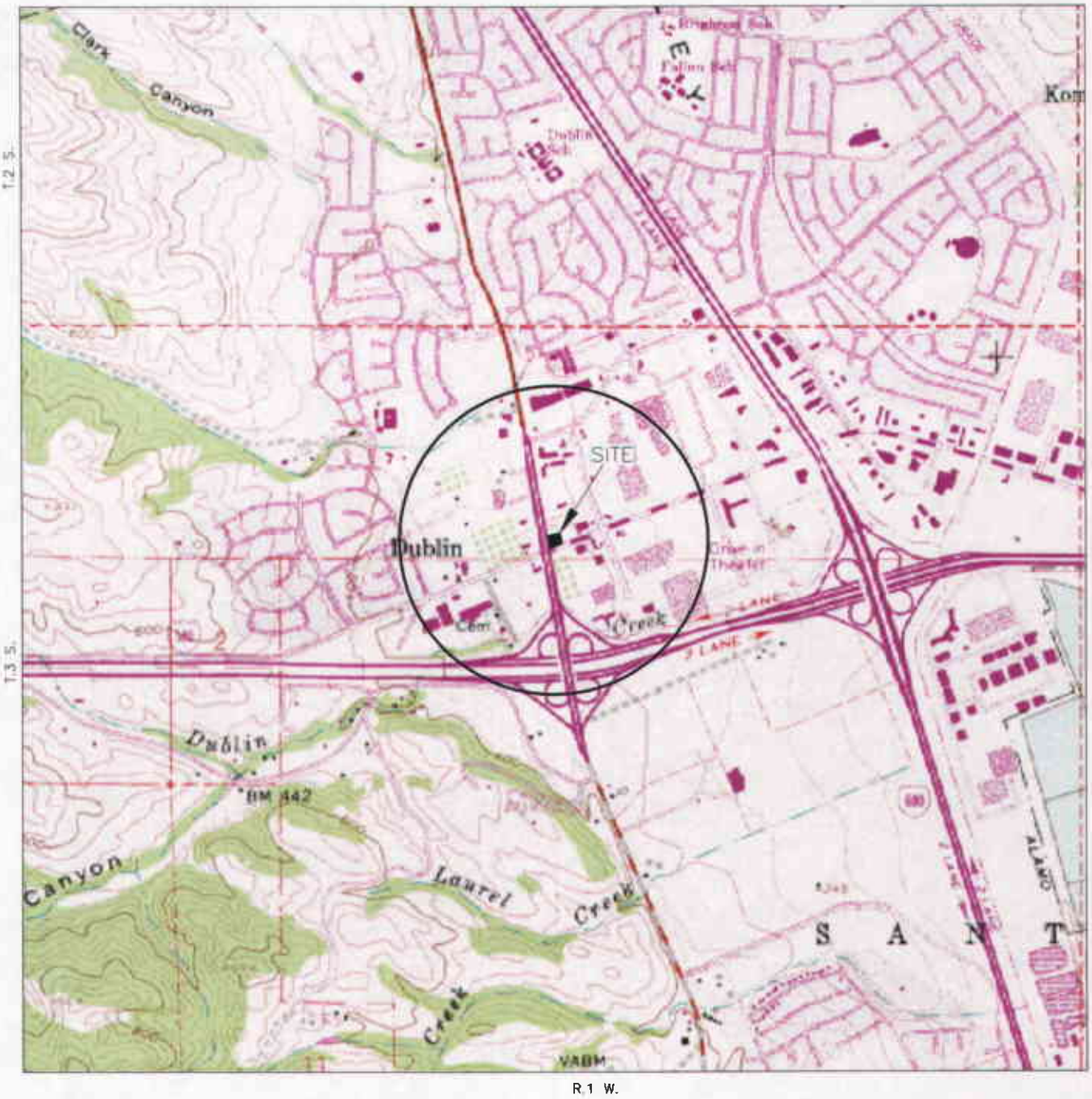
GROUND WATER SITE SPECIFIC TARGET LEVEL SUMMARY

Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

Chemical of Concern	Exposure Pathway	Representative Concentrations (mg/L)	SSTL (mg/L)	Exceed?
Benzene	Ground water ingestion	10a/2.6b	8.8	No
	Volatilization to indoor air		92	No
	Volatilization to outdoor air		>1,800	No
Toluene	Ground water ingestion	15a/2.9b	>520	No
	Volatilization to indoor air		>520	No
	Volatilization to outdoor air		>520	No
Ethylbenzene	Ground water ingestion	1.9a/0.52b	>170	No
	Volatilization to indoor air		>170	No
	Volatilization to outdoor air		>170	No
Total Xylenes	Ground water ingestion	8.5a/1.9b	>200	No
	Volatilization to indoor air		>200	No
	Volatilization to outdoor air		>200	No
MTBE	Ground water ingestion	1a/0.16b	310	No
	Volatilization to indoor air		12,000	No
	Volatilization to outdoor air		>48,000	No

a = Maximum representative source are concentrations.
b = 95 percent upper confidence limit representative source area concentration.

mg/L = Milligrams per Liter.
NA = Not Applicable.
MTBE = Methyl tertiary butyl ether.



North

GENERAL NOTES:
BASE MAP FROM U.S.G.S.
DUBLIN, CA
7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1980

QUADRANGLE LOCATION

0 2000 FT

SCALE 1:24,000

FIGURE 1
SITE LOCATION MAP
CHEVRON SERVICE STATION NO. 9-5542
7007 SAN RAMON ROAD
DUBLIN, CA.

PROJECT NO. DG95-542	DRAWN BY M.L. 8/10/00
FILE NO. DG95542A	PREPARED BY JWS
REVISION NO. 1	REVIEWED BY

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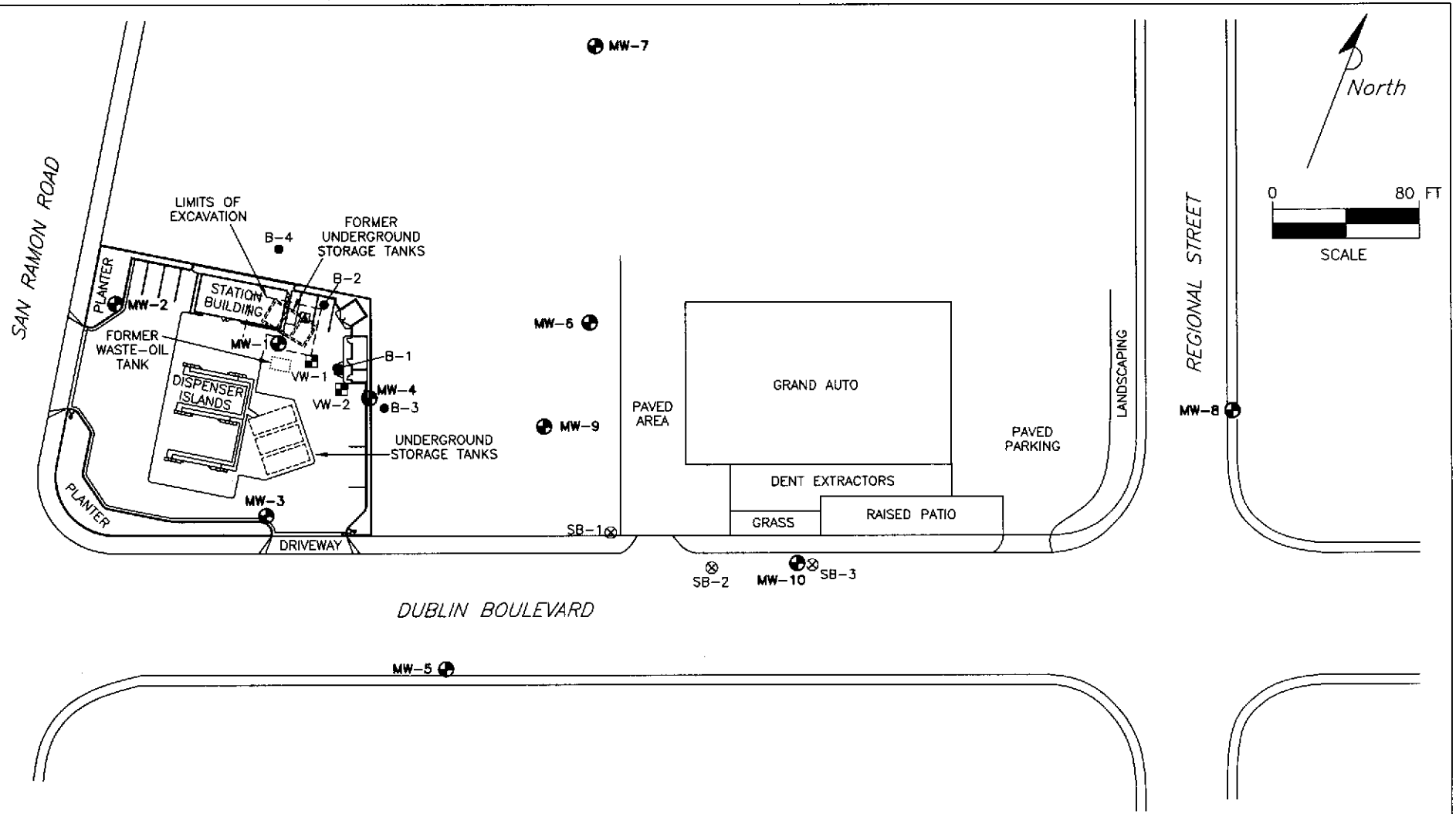

LEGEND:

- • B-4 SOIL BORING
- MW-10 GROUND WATER MONITORING WELL LOCATION
- VW-2 VADOSE MONITORING WELL LOCATION
- ⊗ SB-3 GEOPROBE WATER SAMPLING LOCATION

Source: Figure Modified From Drawings Provided By Groundwater Technology And Sierra Environmental.

FIGURE 2

SITE VICINITY MAP

CHEVRON SERVICE STATION NO. 9-5542

7007 SAN RAMON ROAD

DUBLIN, CA.

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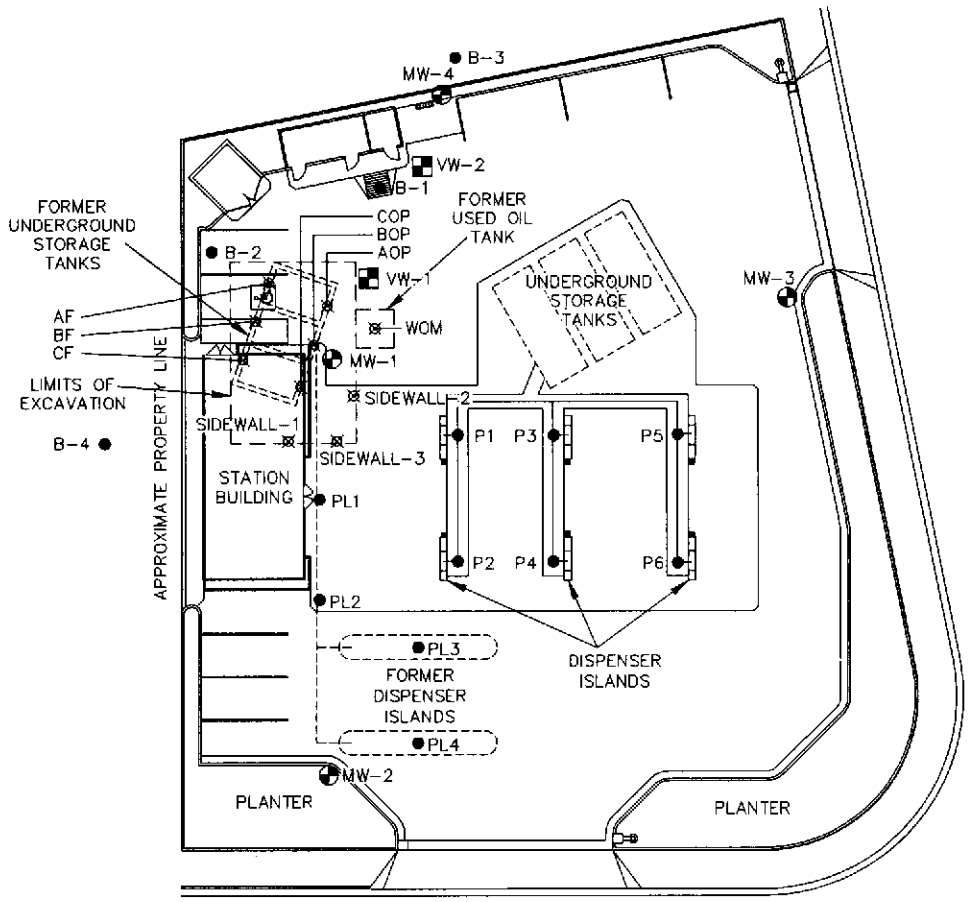

LEGEND:

MW-1	MONITORING WELL LOCATION
VW-2	VADOSE MONITORING WELL LOCATION
B-1	SOIL BORING LOCATION
P1	SOIL SAMPLE LOCATION
CF	EXCAVATION SOIL SAMPLE LOCATION

North

0 40 FT

SCALE

NOTE: FORMER PUMP ISLANDS LOCATED FROM A BLAIN TECH SERVICES HAND SKETCH DRAWING.

FIGURE 3

SOIL SAMPLE LOCATION MAP

CHEVRON SERVICE STATION NO. 9-5542

7007 SAN RAMON ROAD

DUBLIN, CA.

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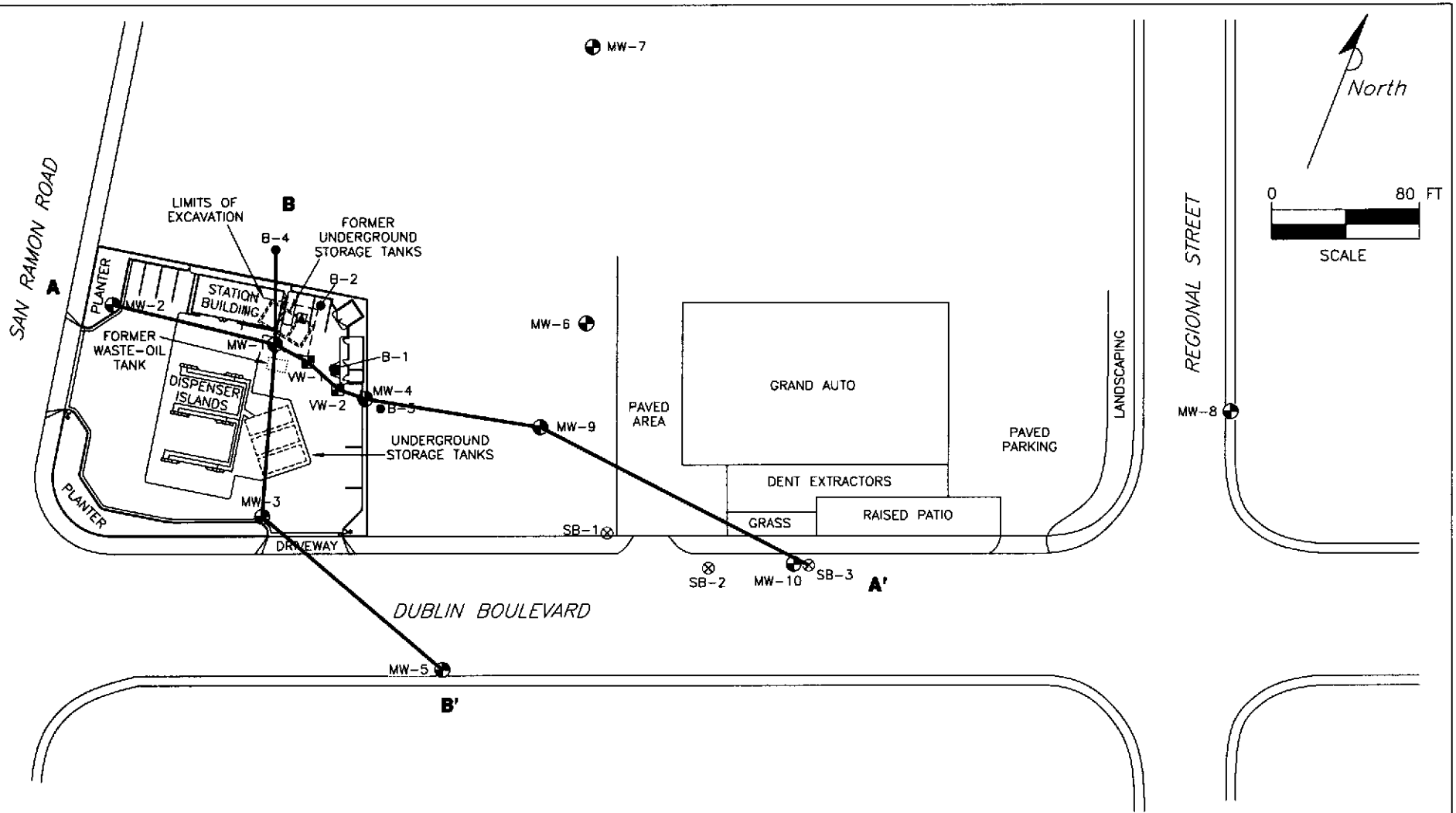

LEGEND:

- • B-4 SOIL BORING
- ⊕ MW-10 GROUND WATER MONITORING WELL LOCATION
- ▪ VW-2 VADOSE MONITORING WELL LOCATION
- ⊗ SB-3 GEOPROBE WATER SAMPLING LOCATION

Source: Figure Modified From Drawings Provided By Groundwater Technology And Sierra Environmental.

FIGURE 4

GEOLOGIC CROSS SECTION LOCATION MAP

CHEVRON SERVICE STATION NO. 9-5542

7007 SAN RAMON ROAD

DUBLIN, CA.

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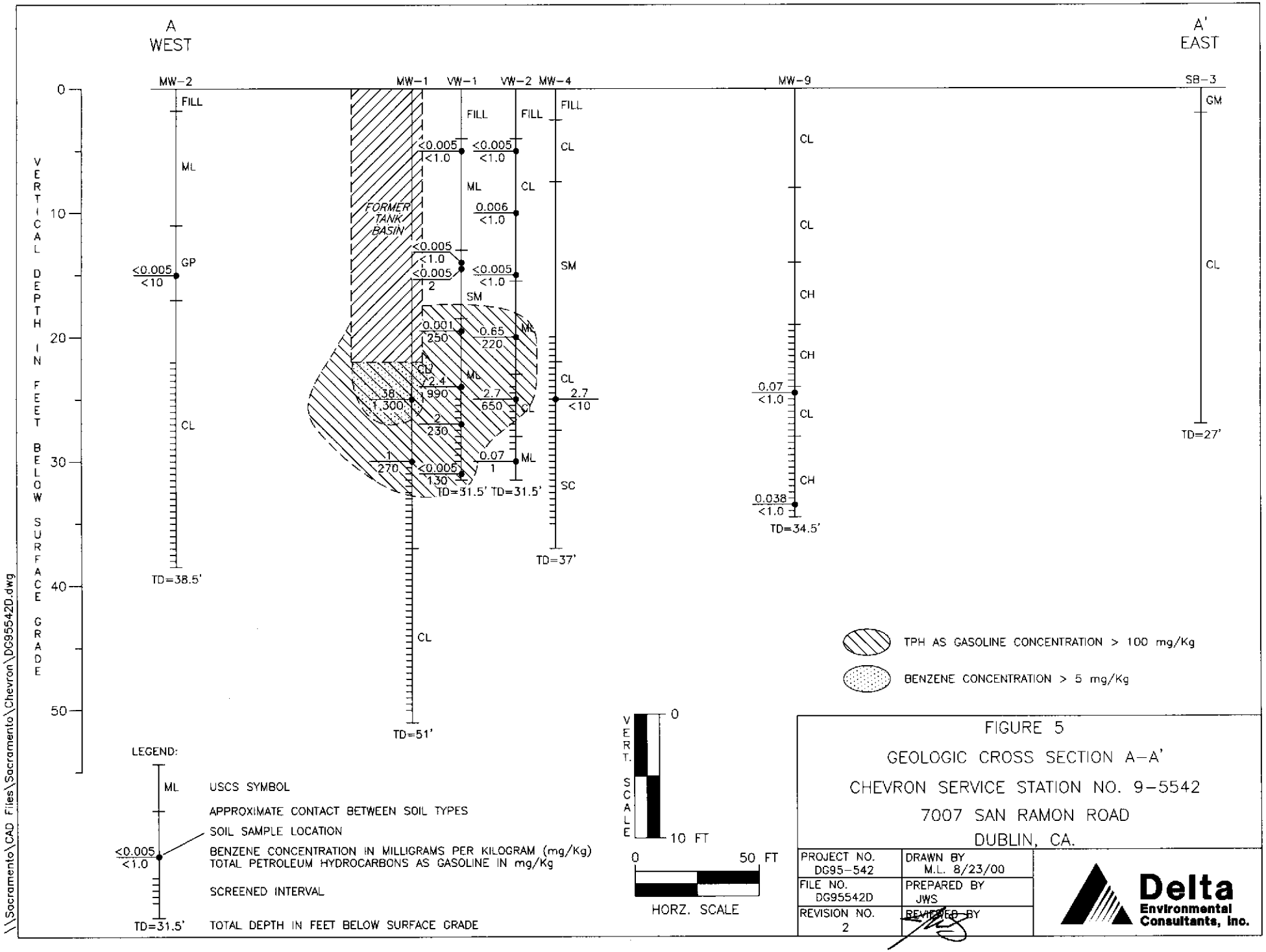

FIGURE 5

GEOLOGIC CROSS SECTION A–A'

CHEVRON SERVICE STATION NO. 9–5542

7007 SAN RAMON ROAD

DUBLIN, CA.

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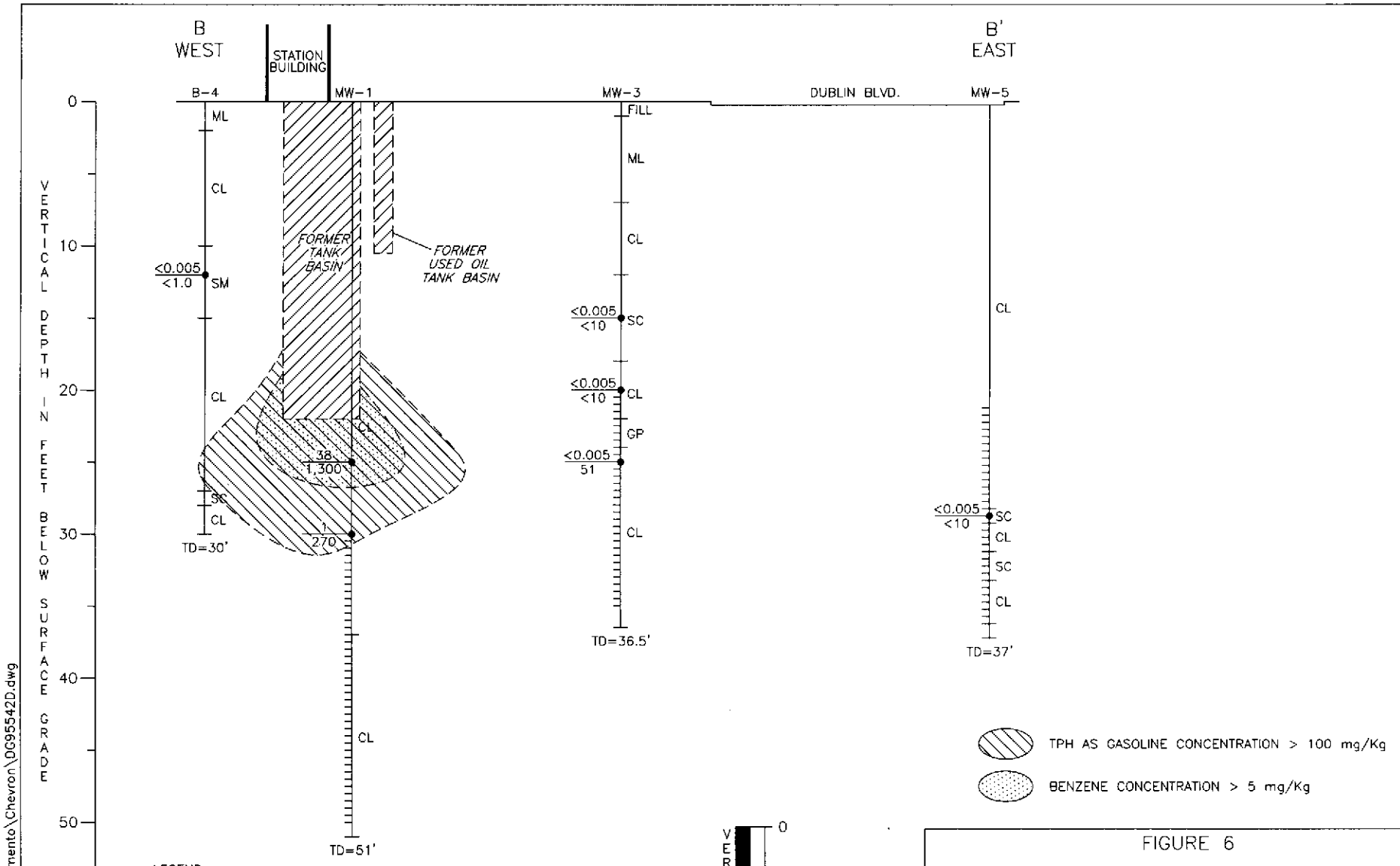

FIGURE 6

GEOLOGIC CROSS SECTION B–B'

CHEVRON SERVICE STATION NO. 9–5542

7007 SAN RAMON ROAD

DUBLIN, CA.

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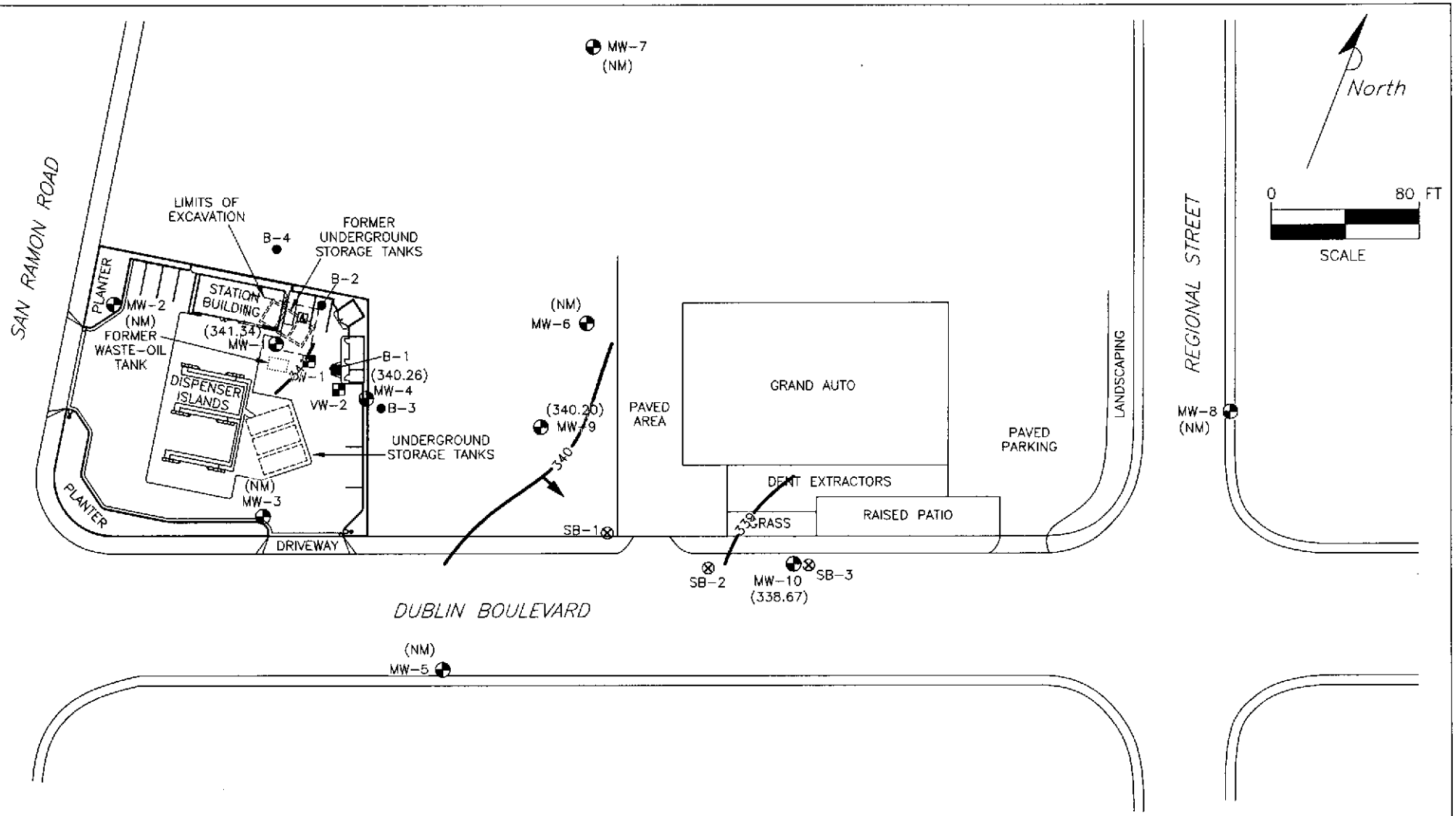

LEGEND:

• B-4	SOIL BORING
MW-10	GROUND WATER MONITORING WELL LOCATION
VW-2	VADOSE MONITORING WELL LOCATION
SB-3	GEOPROBE WATER SAMPLING LOCATION
(341.34)	GROUND WATER ELEVATION IN FEET RELATIVE TO MEAN SEA LEVEL (MSL)
—340—	WATER TABLE CONTOUR IN FEET RELATIVE TO MSL
	GROUND WATER FLOW DIRECTION
*	MONITORING WELL(S) NOT USED IN CONTOUR CONSTRUCTION DUE TO ANOMOLOUS READINGS

Source: Figure Modified From Drawings Provided By Groundwater Technology And Sierra Environmental.

FIGURE 7
GROUND WATER ELEVATION CONTOUR MAP
3/17/00
CHEVRON SERVICE STATION NO. 9-5542
7007 SAN RAMON ROAD
DUBLIN, CA.

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North

GENERAL NOTES:
BASE MAP FROM U.S.G.S.
DUBLIN, CA
7.5 MINUTE TOPOGRAPHIC
PHOTOREVISED 1980

LEGEND:
① WATER WELL LOCATION

0 1000 FT
SCALE

QUADRANGLE LOCATION

FIGURE 8
WATER WELL LOCATION MAP
WITHIN A 2,000 FOOT RADIUS OF SITE
CHEVRON SERVICE STATION NO. 9-5542
7007 SAN RAMON ROAD
DUBLIN, CA.

PROJECT NO. DG95-542	DRAWN BY M.L. 8/10/00
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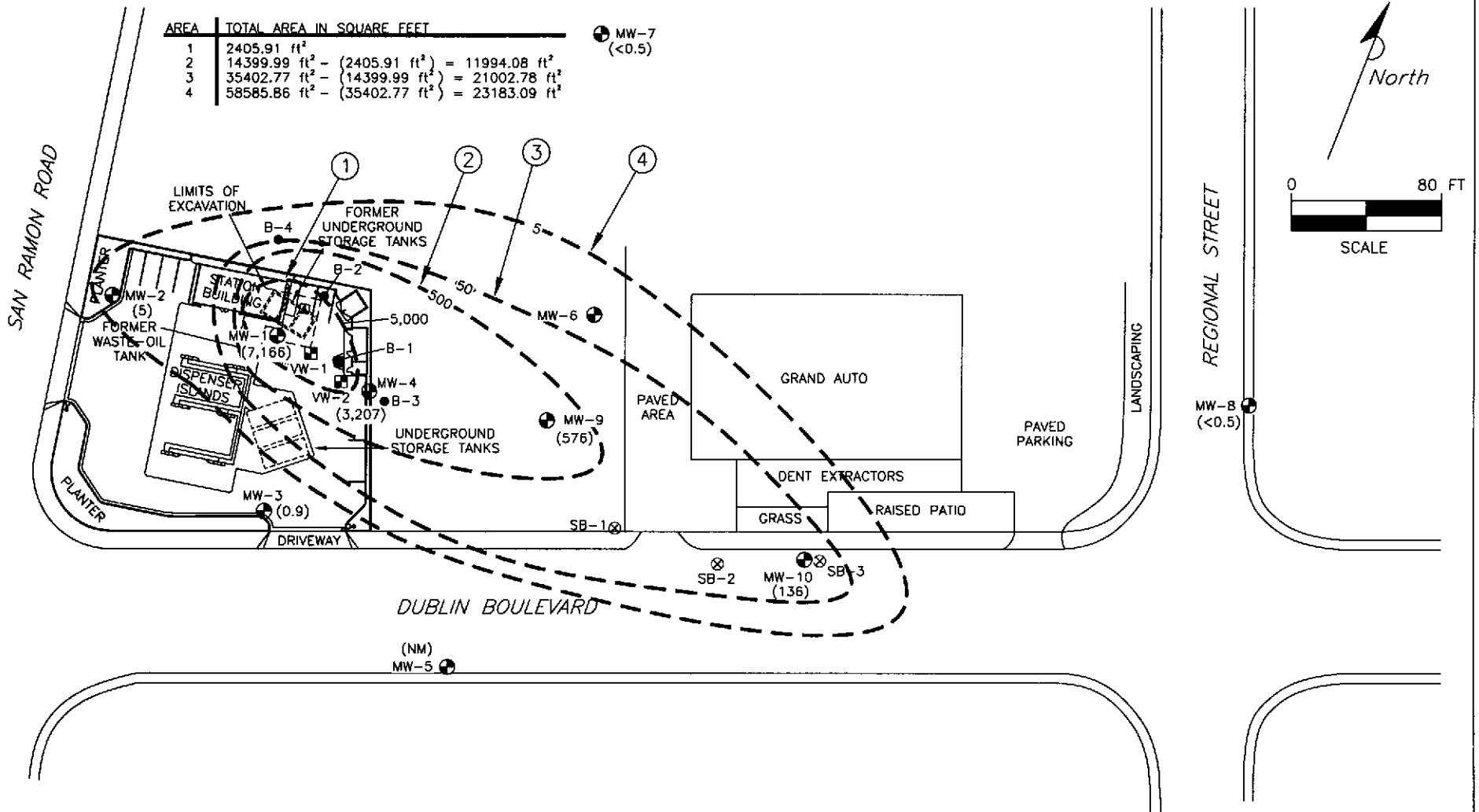

LEGEND:

- • B-4 SOIL BORING
- MW-10 GROUND WATER MONITORING WELL LOCATION
- VW-2 VADOSE MONITORING WELL LOCATION
- SB-3 GEOPROBE WATER SAMPLING LOCATION
- (576) BENZENE CONCENTRATION IN MICROGRAMS PER LITER (ug/L)
- --5-- BENZENE ISO-CONCENTRATION CONTOUR

NOTE: CONCENTRATIONS AVERAGED OVER THE LAST FOUR SAMPLING EVENTS.

Source: Figure Modified From Drawings Provided By Groundwater Technology And Sierra Environmental.

FIGURE 9

BENZENE ISO-CONCENTRATION MAP

CHEVRON SERVICE STATION NO. 9-5542

7007 SAN RAMON ROAD

DUBLIN, CA.

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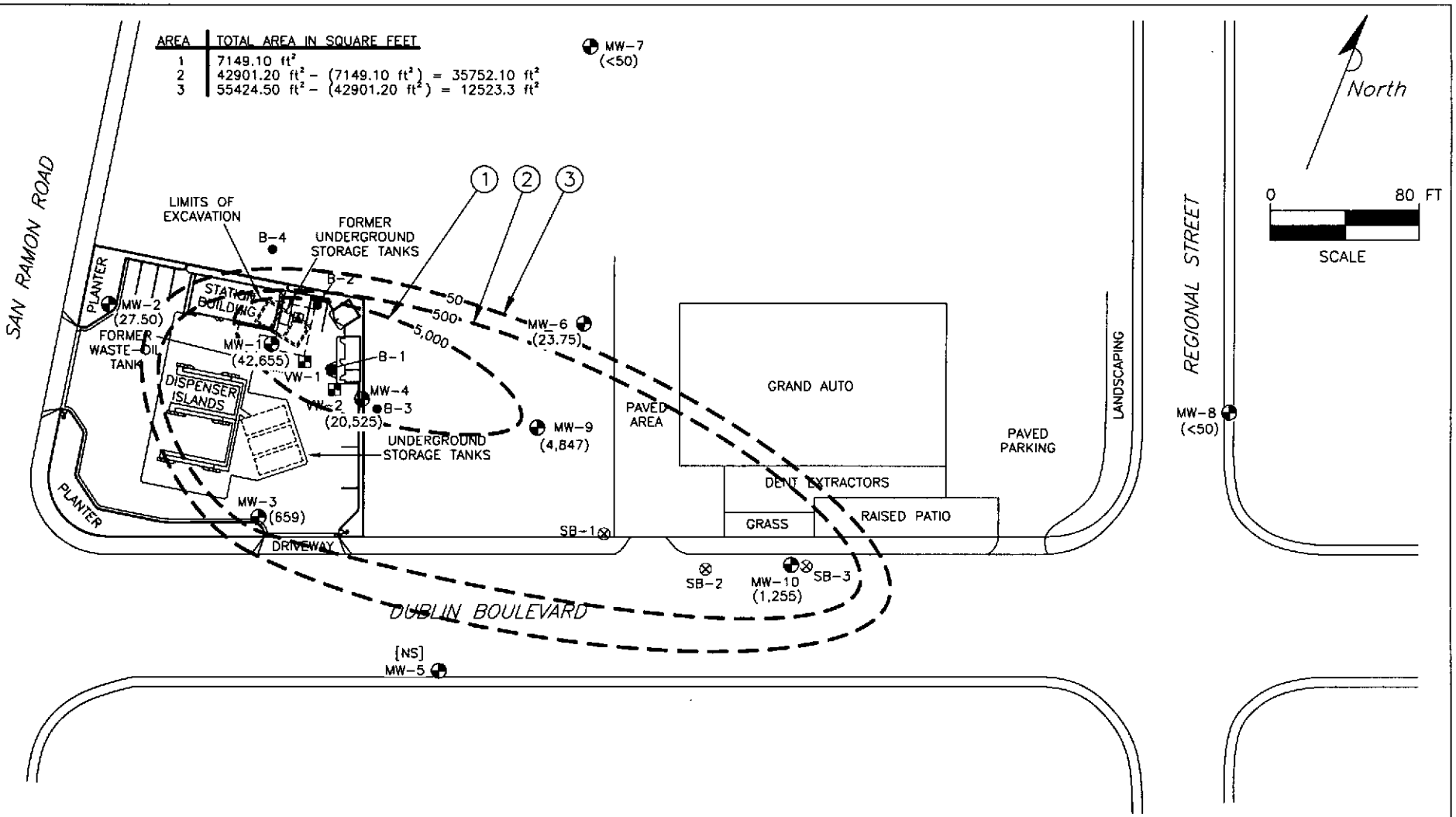

LEGEND:

- •B-4 SOIL BORING
- MW-10 GROUND WATER MONITORING WELL LOCATION
- VW-2 VADOSE MONITORING WELL LOCATION
- SB-3 GEOPROBE WATER SAMPLING LOCATION
- (576) TPH AS GASOLINE CONCENTRATION IN MICROGRAMS PER LITER (ug/L)
- --50-- TPHg ISO-CONCENTRATION CONTOUR

NOTE: CONCENTRATIONS AVERAGED OVER THE LAST FOUR SAMPLING PERIODS.

Source: Figure Modified From Drawings Provided By Groundwater Technology And Sierra Environmental.

FIGURE 10

TPH AS GASOLINE ISO-CONCENTRATION MAP

CHEVRON SERVICE STATION NO. 9-5542

7007 SAN RAMON ROAD

DUBLIN, CA.

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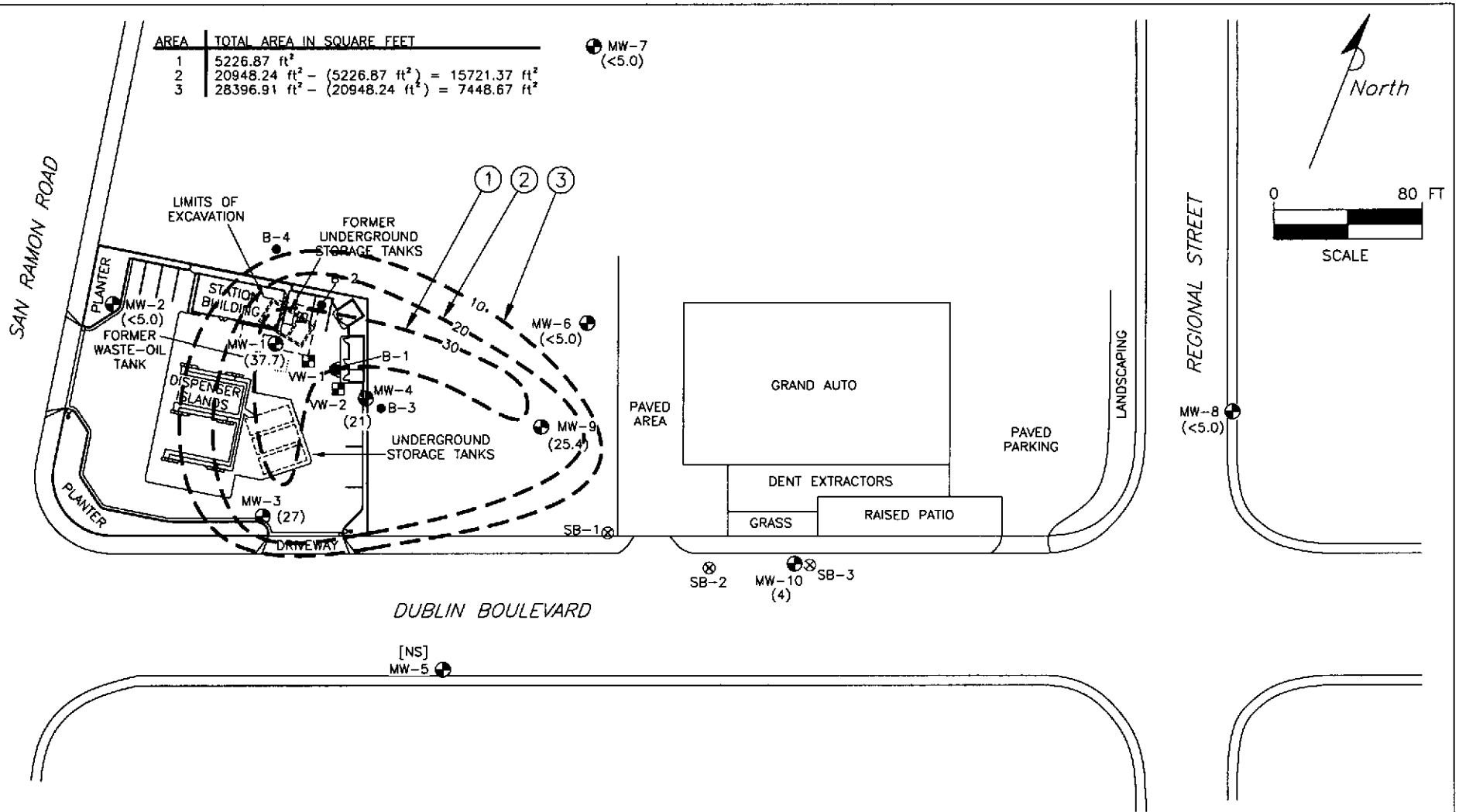

LEGEND:

- • B-4 SOIL BORING
- MW-10 GROUND WATER MONITORING WELL LOCATION
- VW-2 VADOSE MONITORING WELL LOCATION
- SB-3 GEOPROBE WATER SAMPLING LOCATION
- (576) MTBE CONCENTRATION IN MICROGRAMS PER LITER (ug/L)
- --50-- MTBE ISO-CONCENTRATION CONTOUR

NOTE: CONCENTRATIONS AVERAGED OVER THE LAST FOUR SAMPLING PERIODS.

Source: Figure Modified From Drawings Provided By Groundwater Technology And Sierra Environmental.

FIGURE 11

MTBE ISO-CONCENTRATION MAP

CHEVRON SERVICE STATION NO. 9-5542

7007 SAN RAMON ROAD

DUBLIN, CA.

PROJECT NO. DG95-542	DRAWN BY M.L. 8/29/00
FILE NO. DG95542C	PREPARED BY JWS
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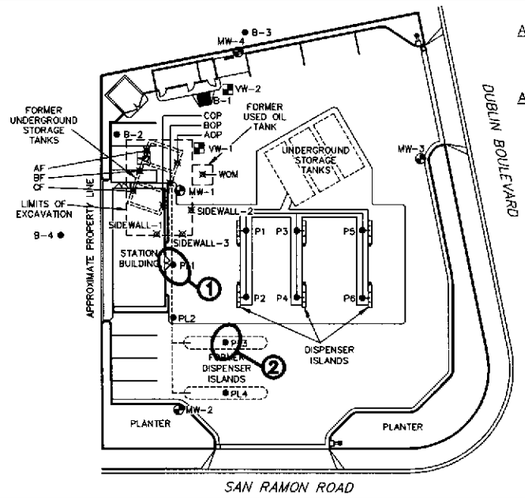
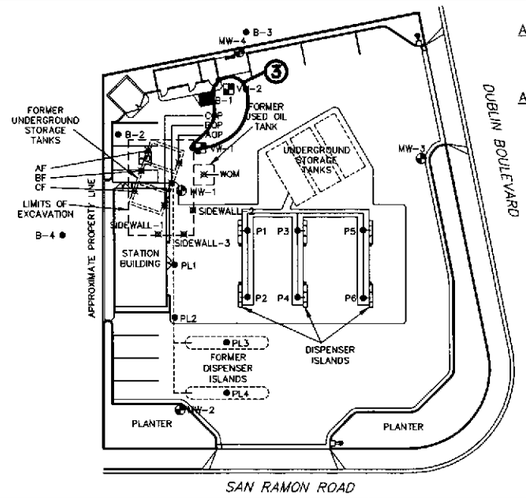


AREA	TOTAL AREA IN SQUARE FEET
1	126.4 ft²
2	119.8 ft²

AREA	CONCENTRATION IN mg/Kg
1	0.85 mg/Kg
2	0.0095 mg/Kg

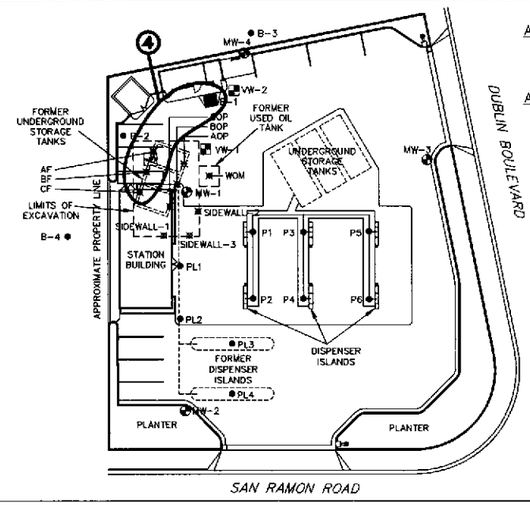
LAYER A: 0' to 5'



AREA	TOTAL AREA IN SQUARE FEET
3	335.4 ft²

AREA	CONCENTRATION IN mg/Kg
3	0.006 mg/Kg

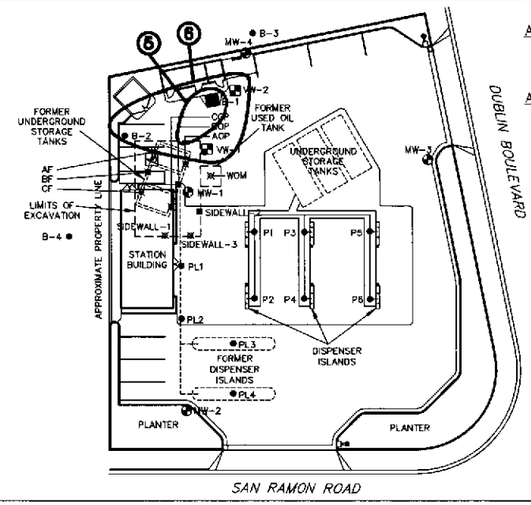
LAYER B: 5.5' to 10.5'



AREA	TOTAL AREA IN SQUARE FEET
4	873.4 ft²

AREA	CONCENTRATION IN mg/Kg
4	0.127 mg/Kg

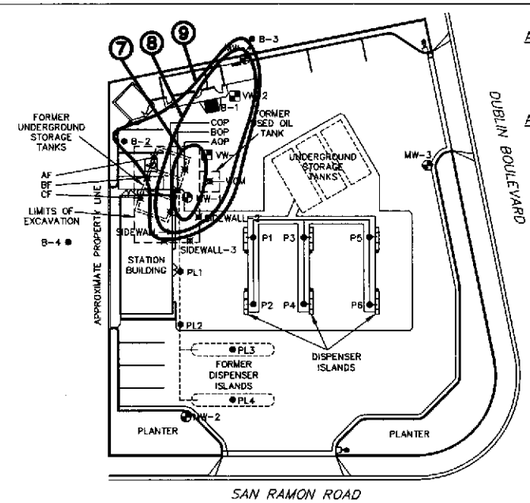
LAYER C: 11' to 16'



AREA	TOTAL AREA IN SQUARE FEET
5	285.5 ft²
6	1367.9 ft² – (285.5 ft²) = 1082.4 ft²

AREA	CONCENTRATION IN mg/Kg
5	5.3 mg/Kg
6	0.35 mg/Kg

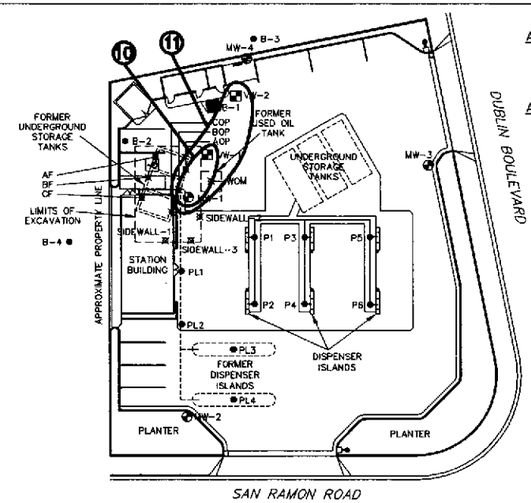
LAYER D: 16.5' to 20.5'



AREA	TOTAL AREA IN SQUARE FEET
7	304.5 ft²
8	1686.4 ft² – (304.5 ft²) = 1381.9 ft²
9	2543.2 ft² – (1686.4 ft²) = 856.8 ft²

AREA	CONCENTRATION IN mg/Kg
7	39.3 mg/Kg
8	2.8 mg/Kg
9	0.13 mg/Kg

LAYER E: 21' to 25'



AREA	TOTAL AREA IN SQUARE FEET
10	243.0 ft²
11	852.5 ft² – (243 ft²) = 609.5 ft²

AREA	CONCENTRATION IN mg/Kg
10	1.5 mg/Kg
11	0.07 mg/Kg

LAYER F: 25.5' to 31'

LEGEND:

- MW-1 MONITORING WELL LOCATION
- VW-2 VADOSE MONITORING WELL LOCATION
- B-1 SOIL BORING LOCATION
- P1 SOIL SAMPLE LOCATION
- CF EXCAVATION SOIL SAMPLE LOCATION
- INFERRED EXTENT OF BENZENE REMAINING IN SOIL

NOTE: FORMER PUMP ISLANDS LOCATED FROM A BLAINE TECH SERVICES HAND SKETCH DRAWING.

North

0 60 FT

SCALE

FIGURE 12

BENZENE REMAINING IN SOIL

CHEVRON SERVICE STATION NO. 9-5542

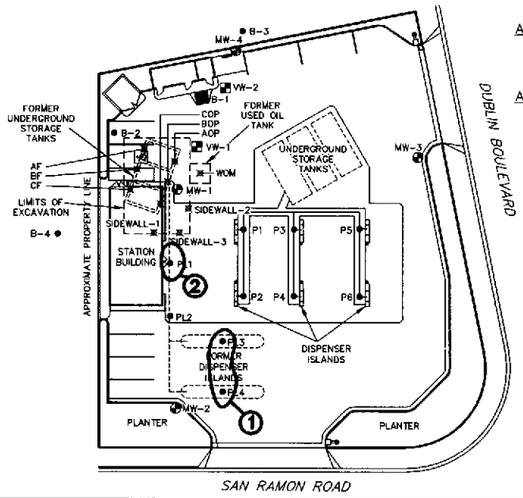
7007 SAN RAMON ROAD

DUBLIN, CA.

PROJECT NO. DG95-542	DRAWN BY M.L. 9/13/00
FILE NO. DG95542E	PREPARED BY JWS
REVISION NO. 2	REVIEWED BY

Delta Environmental Consultants, Inc.

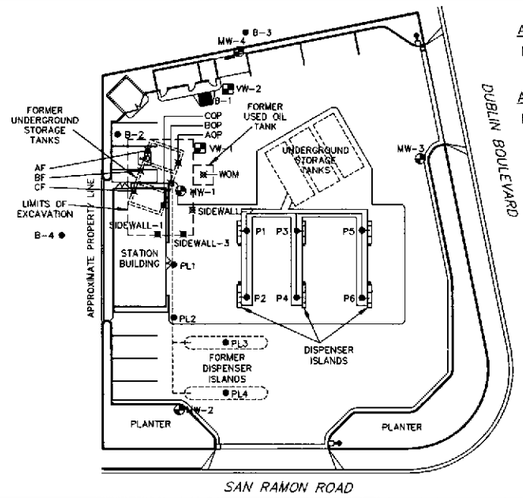
\\Sacramento\CAD Files\Sacramento\Chevron\DG95542E.dwg



AREA	TOTAL AREA IN SQUARE FEET
1	257.9 ft²
2	103.0 ft²

AREA	CONCENTRATION IN mg/Kg
1	3.35 mg/Kg
2	9.0 mg/Kg

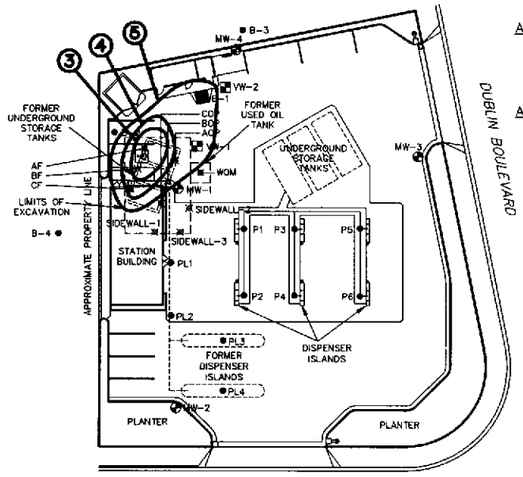
LAYER A: 0' to 5'



AREA	TOTAL AREA IN SQUARE FEET
N/A	N/A

AREA	CONCENTRATION IN mg/Kg
N/A	N/A

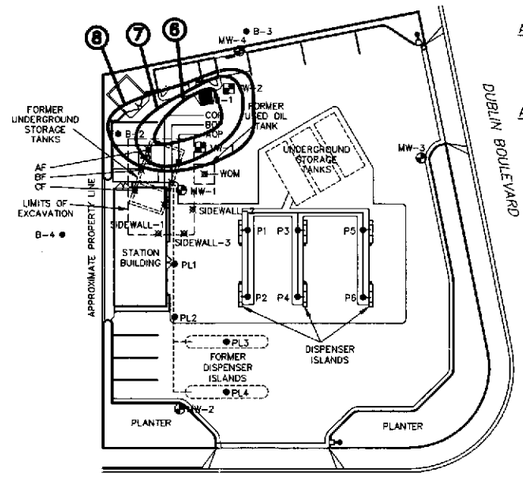
LAYER B: 5.5' to 10.5'



AREA	TOTAL AREA IN SQUARE FEET
3	215.6 ft²
4	466.9 ft² – (215.6 ft²) = 251.3 ft²
5	1407.6 ft² – (466.9 ft²) = 940.7 ft²

AREA	CONCENTRATION IN mg/Kg
3	138 mg/Kg
4	86 mg/Kg
5	2.0 mg/Kg

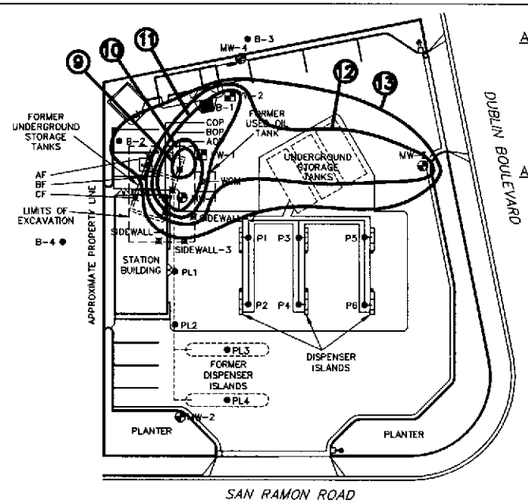
LAYER C: 11' to 16'



AREA	TOTAL AREA IN SQUARE FEET
6	363.7 ft²
7	999.1 ft² – (363.7 ft²) = 635.4 ft²
8	1,692.5 ft² – (999.1 ft²) = 693.4 ft²

AREA	CONCENTRATION IN mg/Kg
6	1,600 mg/Kg
7	235 mg/Kg
8	2.0 mg/Kg

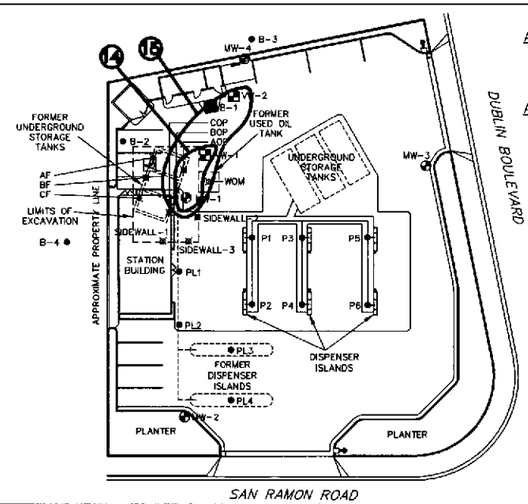
LAYER D: 16.5' to 20.5'



AREA	TOTAL AREA IN SQUARE FEET
9	81.0 ft²
10	364.8 ft² – (81 ft²) = 283.8 ft²
11	905.2 ft² – (364.8 ft²) = 540.4 ft²
12	2,966.3 ft² – (905.2 ft²) = 2061.1 ft²
13	5,599.8 ft² – (2,966.3 ft²) = 2633.5 ft²

AREA	CONCENTRATION IN mg/Kg
9	3,100 mg/Kg
10	1,300 mg/Kg
11	820 mg/Kg
12	51 mg/Kg
13	8.0 mg/Kg

LAYER E: 21' to 25'



AREA	TOTAL AREA IN SQUARE FEET
14	257.1 ft²
15	897.4 ft² – (257.1 ft²) = 640.3 ft²

AREA	CONCENTRATION IN mg/Kg
14	210 mg/Kg
15	1.0 mg/Kg

LAYER F: 25.5' to 31'

LEGEND:

- MW-1 MONITORING WELL LOCATION
- VW-2 VADOSE MONITORING WELL LOCATION
- B-1 SOIL BORING LOCATION
- P1 SOIL SAMPLE LOCATION
- CF EXCAVATION SOIL SAMPLE LOCATION
- INFERRED EXTENT OF BENZENE REMAINING IN SOIL

NOTE: FORMER PUMP ISLANDS LOCATED FROM A BLAINE TECH SERVICES HAND SKETCH DRAWING.

North

0 60 FT

SCALE

FIGURE 13

TPH AS GASOLINE REMAINING IN SOIL

CHEVRON SERVICE STATION NO. 9-5542

7007 SAN RAMON ROAD

DUBLIN, CA.

PROJECT NO. DG95-542	DRAWN BY M.L. 9/13/00
FILE NO. DG95542E	PREPARED BY JWS
REVISION NO. 2	REVIEWED BY

Delta Environmental Consultants, Inc.

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APPENDIX A

Historical Ground Water Monitoring Data

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-1														
4/3-4/90	363.98	--	--	--	46,000	8400	7400	860	5600	--	--	--	1.04	--
4/3-4/90	363.98	--	--	Duplicate	43,000	8400	7200	840	5200	--	--	--	1.1	--
05/31/91	363.98	338.31	25.67	--	31,000	7400	2500	630	2100	--	--	2.0	--	ND***
05/31/91	363.98	--	--	--	--	--	--	--	--	--	<5000	--	--	--
06/21/91	363.98	337.75	26.23	--	--	--	--	--	--	--	--	--	--	--
07/17/91	363.98	337.45	26.53	--	--	--	--	--	--	--	--	--	--	--
09/20/91	363.98	--	--	--	31,000	3000	2800	610	3100	--	--	0.6	--	ND***
10/04/91	363.98	336.08	27.90	--	--	--	--	--	--	--	--	--	--	--
12/19/91	363.98	335.86	28.12	--	20,000	5200	1700	560	2000	--	--	3.3	--	ND***
03/19/92	363.98	339.35	24.63	--	30,000	8500	3600	590	2400	--	--	2.7	--	ND***
06/19/92	364.32	338.09	26.23	--	25,000	1100	2000	520	1800	--	--	--	--	--
09/22/92	364.32	336.59	27.73	--	21,000	8000	3500	670	2900	--	--	--	--	--
12/18/92	364.32	337.56	26.76	--	79,000	12,000	12,000	1600	8500	--	--	--	--	--
03/10/93	364.32	--	--	*	45,000	16,000	14,000	1100	5500	--	--	--	--	--
03/22/93	364.32	--	--	**	--	--	--	--	--	--	--	--	--	--
06/14/93	364.32	--	--	**	--	--	--	--	--	--	--	--	--	--
07/25/93	364.32	--	--	**	--	--	--	--	--	--	--	--	--	--
09/23/93	364.32	--	--	**	--	--	--	--	--	--	--	--	--	--
03/21/94	364.32	338.16	26.16	--	5900	1600	560	140	330	--	--	--	--	--
07/06/94	364.32	337.12	27.20	--	--	--	--	--	--	--	--	--	--	--
08/26/94	364.32	--	--	--	20,000	5300	4900	610	2900	--	--	--	--	--
09/22/94	364.32	336.88	27.44	--	42,000	10,000	8300	1000	4900	--	--	--	--	--
12/08/94	364.32	337.62	26.70	--	38,000	9000	7700	830	3800	--	--	--	--	--
03/06/95	364.32	340.64	23.68	--	47,000	9400	7100	750	3400	--	--	--	--	--
06/08/95	364.32	341.64	22.68	--	170,000	29,000	29,000	2600	13,000	--	--	--	--	--
09/13/95	364.32	339.22	25.10	--	39,000	11,000	10,000	1100	4900	--	--	--	--	--
12/16/95	364.32	338.24	26.08	--	40,000	7000	6300	570	2500	<2.5	--	--	--	--
03/28/96	364.32	342.12	22.20	--	16,000	3700	3200	330	1500	<120	--	--	--	--
06/27/96	364.32	340.12	24.20	--	40,000	6900	8700	830	4000	<120	--	--	--	--
09/30/96	364.32	338.70	25.62	--	190,000	24,000	31,000	2900	14,000	380	--	--	--	--
12/30/96	364.32	340.11	24.21	--	130,000	25,000	32,000	2900	15,000	<500	--	--	--	--

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* Top of casing elevation surveyed by Ron Miller, PE #15816, on January 13, 1994.
** Monitoring well part of remediation system.
*** Other HVOCs were not detected at detection limits ranging from 0.5 to 1 ppb.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-1 (CONT'D)														
03/11/97	364.32	340.60	23.72	--	76,000	11,000	13,000	1000	6500	<500	--	--	--	--
06/10/97	364.32	339.00	25.32	--	63,000	9900	15,000	1400	7000	<500	--	--	--	--
10/01/97	364.32	338.31	26.01	--	48,000	8400	12,000	1200	5700	<500	--	--	--	--
12/17/97	364.32	--	--	--	--	--	--	--	--	--	--	--	--	--
03/29/98	364.32	--	--	Discontinued	--	--	--	--	--	--	--	--	--	--
09/12/98	364.32	340.10	24.22	*	61,000	10,000	13,000	1700	7600	<125	--	--	--	--
09/12/98	364.32	340.10	24.22	Confirmation R	--	--	--	--	--	143	--	--	--	--
09/29/99	364.32	339.04	25.28	**	423	65	48.8	12.4	43.7	8.0	--	<2.0	<2.0	--
03/17/00	364.32	341.34	22.98	--	61,200	10,200	15,300	1890	8540	<2000	--	--	--	--

** Sample analyzed for volatile organic compounds by EPA method 8260A. MTBE was detected at 10.1 (ppb), all other VOC's were ND ranging from <2.0 to <1000.

Oxygenate compounds were not detected.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-2 (CONT'D)														
4/3-4/90	364.19	--	--	--	<50	<0.3	<0.3	<0.3	<0.6	--	--	--	<0.02	--
05/31/91	364.19	338.68	25.51	--	100	3.1	4.2	0.7	2.0	--	--	<0.5	--	ND*
05/31/91	364.19	--	--	--	--	--	--	--	--	--	<5000	--	--	--
06/21/91	364.19	338.06	26.13	--	--	--	--	--	--	--	--	--	--	--
07/17/91	364.19	337.73	26.46	--	--	--	--	--	--	--	--	--	--	--
09/20/91	364.19	--	--	--	68	1.3	1.6	0.8	3.0	--	--	--	--	--
10/04/91	364.19	336.40	27.79	--	--	--	--	--	--	--	--	--	--	--
12/19/91	364.19	336.13	28.06	--	<50	0.6	1.2	0.8	2.5	--	--	--	--	--
03/19/92	364.19	339.73	24.46	--	<50	2.5	2.0	1.1	2.4	--	--	--	--	--
06/19/92	364.64	338.54	26.10	--	<50	<0.5	0.6	0.7	1.2	--	--	--	--	--
09/22/92	364.64	337.04	27.60	--	200	16	42	6.1	32	--	--	--	--	--
12/18/92	364.64	338.32	26.32	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/22/93	364.64	343.29	21.39	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/14/93	364.64	339.49	25.15	--	--	--	--	--	--	--	--	--	--	--
07/25/93	364.64	340.12	24.52	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/23/93	364.64	339.01	25.63	--	72	12	4.0	6.0	8.0	--	--	--	--	--
12/22/93	364.64	338.30	26.34	--	1600	25	<0.5	3.8	4.8	--	--	--	--	--
03/21/94	364.64	338.81	25.83	--	<50	0.7	3.3	<0.5	1.9	--	--	--	--	--
06/29/94	364.64	--	--	--	52	0.8	0.9	0.8	1.9	--	--	--	--	--
07/06/94	364.64	337.94	26.70	--	--	--	--	--	--	--	--	--	--	--
09/22/94	364.64	337.82	26.82	--	<50	0.7	<0.5	<0.5	0.6	--	--	--	--	--
12/08/94	364.64	338.36	26.28	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/06/95	364.64	341.37	23.27	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/08/95	364.64	342.26	22.38	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/13/95	364.64	339.95	24.95	--	<50	<0.5	0.8	<0.5	0.8	--	--	--	--	--
12/16/95	364.64	338.86	25.78	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	--	--
03/28/96	364.64	343.30	21.34	--	<50	0.8	5.6	1.0	6.2	<5.0	--	--	--	--
06/27/96	364.64	340.65	23.99	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
09/30/96	364.64	339.50	25.14	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
12/30/96	364.64	341.03	23.61	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
03/11/97	364.64	341.47	23.17	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
06/10/97	364.64	339.92	24.72	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
10/01/97	364.64	338.79	25.85	--	<50	1.0	1.2	<0.5	1.7	<5.0	--	--	--	--
12/17/97	364.64	339.66	24.98	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	--	--

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* Other HVOCs were not detected at detection limits ranging from 0.5 to 1 ppb.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-2														
03/29/98	364.64	344.30	20.34	--	110	20	12	4.3	14	5.4	--	--	--	--
09/12/98	364.64	341.05	23.59	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	--	--
03/26/99	364.64	341.30	23.34	--	<50	<0.5	<0.5	<0.5	<0.5	<2.0	--	--	--	--
09/29/99	364.64	339.63	25.01	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--

NO LONGER MONITORED OR SAMPLED

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-3														
4/3-4/90	361.92	--	--	--	2200	36	5.0	6.0	17	--	--	--	<0.02	--
05/31/91	361.92	338.72	23.20	--	2200	130	11	31	78	--	--	19	--	ND*
05/31/91	361.92	--	--	--	--	--	--	--	--	--	<5000	--	--	--
06/21/91	361.92	337.79	24.13	--	--	--	--	--	--	--	--	--	--	--
07/17/91	361.92	337.73	24.59	--	--	--	--	--	--	--	--	--	--	--
09/20/91	361.92	335.94	25.98	--	2200	190	6.0	24	32	--	--	--	--	--
12/19/91	361.92	335.68	26.24	--	640	73	27	17	56	--	--	--	--	--
03/19/92	361.92	339.46	22.46	--	4500	1000	15	91	240	--	--	--	--	--
06/19/92	362.26	337.94	24.32	--	1100	89	3.3	9.1	13	--	--	--	--	--
09/22/92	362.26	336.42	25.84	--	1400	81	51	15	49	--	--	--	--	--
12/18/92	362.26	337.86	24.40	--	1100	2.0	1.1	53	38	--	--	--	--	--
03/22/93	362.26	342.54	19.72	--	1600	96	9.0	14	91	--	--	--	--	--
06/14/93	362.26	338.74	23.52	--	--	--	--	--	--	--	--	--	--	--
07/25/93	362.26	339.05	23.21	--	1200	19	6.0	2.0	5.0	--	--	--	--	--
09/23/93	362.26	338.24	24.02	--	1500	35	<0.5	5.0	13	--	--	--	--	--
12/22/93	362.26	337.59	24.67	--	1500	26	<0.5	3.9	4.9	--	--	--	--	--
03/21/94	362.26	338.21	24.05	--	1400	22	14	1.1	5.3	--	--	--	--	--
06/29/94	362.26	--	--	--	1700	90	6.1	20	81	--	--	--	--	--
07/06/94	362.26	337.18	25.08	--	--	--	--	--	--	--	--	--	--	--
09/22/94	362.26	337.48	24.78	--	2600	72	7.6	110	370	--	--	--	--	--
12/08/94	362.26	337.91	24.35	--	2700	32	<0.5	100	140	--	--	--	--	--
03/06/95	362.26	340.79	21.47	--	1000	4.0	9.9	8.8	7.7	--	--	--	--	--
06/08/95	362.26	341.27	20.99	--	1500	13	3.2	12	17	--	--	--	--	--
09/13/95	362.26	338.75	23.51	--	2100	12	79	76	420	--	--	--	--	--
12/16/95	362.26	338.26	24.00	--	650	<0.5	<0.5	4.4	6.5	12	--	--	--	--
03/28/96	362.26	342.36	19.90	--	1500	4.3	6.5	60	100	15	--	--	--	--
06/27/96	362.26	340.28	21.98	--	1200	<0.5	<0.5	1.9	2.0	13	--	--	--	--
09/30/96	362.26	338.44	23.82	--	620	<0.5	<0.5	<0.5	0.8	10	--	--	--	--
12/30/96	362.26	339.96	22.30	--	1200	0.6	<0.5	0.6	0.7	12	--	--	--	--
03/11/97	362.26	340.75	21.51	--	1400	<0.5	3.1	<0.5	0.7	32	--	--	--	--
06/10/97	362.26	338.66	23.60	--	1400	1.8	4.8	0.8	1.1	18	--	--	--	--
10/01/97	362.26	337.53	24.73	--	1100	0.6	2.2	1.0	1.3	7.8	--	--	--	--
12/17/97	362.26	338.99	23.27	--	450**	7.9	1.2	<1.0	1.5	11	--	--	--	--

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* Other HVOCs were not detected at detection limits ranging from 0.5 to 1 ppb.
** Chromatogram pattern indicated an unidentified hydrocarbon.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-3 (CONT'D)														
03/29/98	362.26	342.01	20.25	--	890	0.84	1.4	1.3	0.68	100	--	--	--	--
09/12/98	362.26	340.38	21.88	--	740**	<0.5	<0.5	<0.5	<0.5	5.4	--	--	--	--
03/26/99	362.26	339.83	22.43	--	661	<0.5	34.9	0.848	1.36	5.68	--	--	--	--
09/29/99	362.26	338.63	23.63	--	348	0.975	0.58	<0.5	0.618	<5.0	--	--	--	--

NO LONGER MONITORED OR SAMPLED

** Chromatogram pattern indicated an unidentified hydrocarbon.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-4														
4/3-4/90	362.70	--	--	--	43,000	4000	5000	790	5500	--	18,000	--	<0.02	--
4/3-4/90	362.70	--	--	--	--	6000	8200	1500	--	--	--	--	--	--
05/31/91	362.70	338.03	24.67	--	34,000	2900	2900	680	3300	--	--	<0.5	--	ND*
05/31/91	362.70	--	--	--	<5000	--	--	--	--	--	--	--	--	--
06/21/91	362.70	337.39	25.31	--	--	--	--	--	--	--	--	--	--	--
07/17/91	362.70	336.97	25.73	--	--	--	--	--	--	--	--	--	--	--
09/20/91	362.70	--	--	--	37,000	4000	3200	580	3000	--	--	9.2	--	ND*
10/04/91	362.70	335.62	27.08	--	--	--	--	--	--	--	--	--	--	--
12/19/91	362.70	335.46	27.24	--	41,000	5500	4900	1000	4400	--	--	17	--	ND*
03/19/92	362.70	339.04	23.66	--	21,000	3800	2900	500	3200	--	--	15	--	ND**
06/19/92	363.07	337.74	25.33	--	27,000	1800	1600	570	1900	--	<5000	--	--	--
09/22/92	363.07	336.17	26.90	--	20,000	4100	2700	670	3200	--	<5000	--	--	--
12/18/92	363.07	337.45	25.62	--	15,000	2200	2000	370	1600	--	<5000	--	--	--
03/22/93	363.07	342.27	20.80	--	41,000	3900	5100	840	4500	--	5000	--	--	--
06/14/93	363.07	337.34	25.73	--	--	--	--	--	--	--	--	--	--	--
07/25/93	363.07	339.05	24.02	--	94,000	18,000	30,000	2400	14,000	--	<5000	--	--	--
09/23/93	363.07	338.07	25.00	--	23,000	4700	2000	900	4600	--	<5000	--	--	--
12/22/93	363.07	337.35	25.72	--	18,000	2800	1300	420	1700	--	<5000	--	--	--
03/21/94	363.07	337.98	25.09	--	21,000	2800	1700	540	1900	--	<5000	--	--	--
06/29/94	363.07	--	--	--	25,000	4000	2600	960	3300	--	<5000	--	--	--
07/06/94	363.07	336.96	26.11	--	--	--	--	--	--	--	--	--	--	--
09/22/94	363.07	336.53	26.54	--	45,000	11,000	8800	1000	5100	--	<5000	--	--	--
12/08/94	363.07	337.52	25.55	***	6700	1200	720	34	1100	--	<5000	--	--	--
03/06/95	363.07	340.43	22.64	--	8900	1400	540	350	940	--	--	--	--	--
06/08/95	363.07	341.06	22.01	--	15,000	2000	1500	400	1500	--	--	--	--	--
09/13/95	363.07	338.65	24.42	--	10,000^	3100	670	500	1400	--	--	--	--	--
12/16/95	363.07	337.89	25.18	--	15,000	2900	960	420	1200	<2.5	--	--	--	--
03/28/96	363.07	342.10	20.97	--	8600	1300	920	330	1100	<10	--	--	--	--
06/27/96	363.07	341.44	21.63	--	18,000	2600	1500	740	2400	<50	--	--	--	--
09/30/96	363.07	338.22	24.85	--	24,000	3200	1200	710	2200	87	--	--	--	--
12/30/96	363.07	339.79	23.28	--	15,000	2300	1000	600	1900	84	--	--	--	--

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* Other HVOCs were not detected at detection limits ranging from 0.5 to 1 ppb.
** Chloroform and bromodichloromethane were detected at 1.3 and 0.9 ppb, respectively. Other HVOCs were not detected at detection limits ranging from 0.5 to 1 ppb.
*** TPH(G) and BTEX results are estimated concentrations. Due to laboratory error, sample was analyzed past the recommended holding time. (GTEL).
^ Laboratory report indicates uncategorized compound is not included in gasoline concentration.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-4 (CONT'D)														
03/11/97	363.07	340.45	22.62	--	23,000	2600	920	780	2200	84	--	--	--	--
06/10/97	363.07	338.58	24.49	--	17,000	2900	790	750	1700	<100	--	--	--	--
10/01/97	363.07	337.57	25.50	--	21,000	3600	1400	1300	2700	<50	--	--	--	--
12/17/97	363.07	--	--	--	--	--	--	--	--	--	--	--	--	--
03/29/98	363.07	--	--	Discontinued	--	--	--	--	--	--	--	--	--	--
09/29/99	363.07	337.75	25.32	*	26,700	3770	844	1290	2970	<500	--	<40	<40	--
03/17/00	363.07	340.26	22.81	--	17,400	2560	942	688	1980	<1000	--	--	--	--

* Sampled analyzed for volatile organic compounds by EPA method 8260A, all results were ND ranging from <40 to <20,000.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-5														
06/21/91	359.95	336.78	23.17	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/21/91	359.95	--	--	--	--	--	--	--	--	--	--	--	--	--
07/17/91	359.95	336.27	23.68	--	--	--	--	--	--	--	--	<0.5	--	ND**
09/20/91	359.95	--	--	--	170*	0.8	0.9	<0.5	1.5	--	--	--	--	--
10/04/91	359.95	334.75	25.20	--	--	--	--	--	--	--	--	--	--	--
12/19/91	359.95	334.75	25.20	--	<50	0.7	0.7	<0.5	1.4	--	--	--	--	--
03/19/92	359.95	338.74	21.21	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/19/92	360.28	336.86	23.42	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/22/92	360.28	335.31	24.97	--	150	13	34	5.0	26	--	--	--	--	--
12/18/92	360.28	336.76	23.52	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/10/93	360.28	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/22/93	360.28	341.18	19.10	--	--	--	--	--	--	--	--	--	--	--
06/14/93	360.28	337.57	22.71	--	--	--	--	--	--	--	--	--	--	--
07/25/93	360.28	338.29	21.99	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/23/93	360.28	336.80	23.48	--	<50	3.0	1.0	1.0	2.0	--	--	--	--	--
12/22/93	360.28	336.30	23.98	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/21/94	360.28	337.10	23.18	--	<50	2.4	1.4	<0.5	2.0	--	--	--	--	--
06/29/94	360.28	--	--	--	<50	<0.5	<0.5	<0.5	1.0	--	--	--	--	--
07/06/94	360.28	335.87	24.41	--	--	--	--	--	--	--	--	--	--	--
09/22/94	360.28	335.50	24.78	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/08/94	360.28	336.86	23.42	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/06/95	360.28	339.63	20.65	--	67	1.9	2.5	4.7	19	--	--	--	--	--
06/08/95	360.28	339.52	20.76	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/13/95	360.28	337.12	23.16	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/16/95	360.28	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
03/28/96	360.28	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
06/27/96	360.28	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
09/30/96	360.28	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
12/30/96	360.28	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
03/11/97	360.28	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
06/10/97	360.28	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
10/01/97	360.28	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
12/17/97	360.28	--	--	Discontinued	--	--	--	--	--	--	--	--	--	--
03/26/99	360.28	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--

NO LONGER MONITORED OR SAMPLED

* Chromatogram pattern indicated an unidentified hydrocarbon.
** Other HVOCs were not detected at detection limits ranging from 0.5 to 1 ppb.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-6														
06/21/91	360.22	336.67	23.55	--	3700	50	2.6	150	340	--	--	--	--	--
06/21/91	360.22	--	--	--	--	--	--	--	--	--	--	--	--	--
07/17/91	360.22	336.22	24.00	--	--	--	--	--	--	--	--	<0.5	--	ND**
09/20/91	360.22	--	--	--	3200	28	<0.5	140	100	--	--	--	--	--
10/04/91	360.22	334.93	25.29	--	--	--	--	--	--	--	--	--	--	--
12/19/91	360.22	334.88	25.34	--	380	2.7	4.0	15	10	--	--	--	--	--
03/19/92	360.22	338.17	22.05	--	3400	57	4.5	330	360	--	--	--	--	--
06/19/92	360.58	337.06	23.52	--	980	11	4.2	57	38	--	--	--	--	--
09/22/92	360.58	334.98	25.60	--	1100	22	41	77	58	--	--	--	--	--
12/18/92	360.58	336.40	24.18	--	1900	3.2	1.3	58	47	--	--	--	--	--
03/10/93	360.58	--	--	--	1400	30	9.0	8.0	22	--	--	--	--	--
03/22/93	360.58	341.22	19.36	--	--	--	--	--	--	--	--	--	--	--
06/14/93	360.58	337.10	23.48	--	--	--	--	--	--	--	--	--	--	--
07/25/93	360.58	338.28	22.30	--	83*	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/23/93	360.58	337.38	23.20	--	200	6.0	2.0	3.0	3.0	--	--	--	--	--
12/22/93	360.58	336.67	23.91	--	130	<0.5	1.8	1.2	1.5	--	--	--	--	--
03/21/94	360.58	337.31	23.27	--	290	3.0	10	1.6	4.7	--	--	--	--	--
06/29/94	360.58	--	--	--	300	0.6	1.2	2.4	4.6	--	--	--	--	--
07/06/94	360.58	336.31	24.27	--	--	--	--	--	--	--	--	--	--	--
09/22/94	360.58	335.74	24.84	--	2300	58	3.6	100	290	--	--	--	--	--
12/08/94	360.58	336.73	23.85	--	<50	<0.5	<0.5	<0.5	0.9	--	--	--	--	--
03/06/95	360.58	339.67	20.91	--	360	2.0	3.6	0.9	2.3	--	--	--	--	--
06/08/95	360.58	340.40	20.18	--	230	<0.5	<0.5	1.0	1.6	--	--	--	--	--
09/13/95	360.58	337.05	23.53	--	88	<0.5	<0.5	<0.5	1.1	--	--	--	--	--
12/16/95	360.58	337.20	23.38	--	<50	<0.5	<0.5	<0.5	<0.5	7.3	--	--	--	--
03/28/96	360.58	341.21	19.37	--	130	<0.5	<0.5	<0.5	<0.5	9.2	--	--	--	--
06/27/96	360.58	338.92	21.66	--	<50	<0.5	<0.5	<0.5	<0.5	5.7	--	--	--	--
09/30/96	360.58	337.52	23.06	--	50	<0.5	<0.5	<0.5	<0.5	6.3	--	--	--	--
12/30/96	360.58	339.12	21.46	--	90	<0.5	<0.5	<0.5	<0.5	5.5	--	--	--	--
03/11/97	360.58	339.67	20.91	--	80	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
06/10/97	360.58	337.93	22.65	--	<50	1.6	2.3	<0.5	1.2	<5.0	--	--	--	--
10/01/97	360.58	336.95	23.63	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
12/17/97	360.58	337.81	22.77	--	92	0.98	<0.5	0.72	1.6	2.7	--	--	--	--

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* Uncategorized compound not included in gasoline total.
** Other HVOCs were not detected at detection limits ranging from 0.5 to 1 ppb.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-6 (CONT'D)														
03/29/98	360.58	342.24	18.34	--	95*	<0.5	<0.5	<0.5	<0.5	3.0	--	--	--	--
09/12/98	360.58	338.90	21.68	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	--	--
03/26/99	360.58	339.42	21.16	--	<50	<0.5	<0.5	<0.5	<0.5	<2.0	--	--	--	--
09/29/99	360.58	337.73	22.85	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--

NO LONGER MONITORED OR SAMPLED

* Chromatogram pattern indicates an unidentified hydrocarbon.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-7														
06/21/91	360.63	337.18	23.45	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/21/91	360.63	--	--	--	--	--	--	--	--	--	--	<0.5	--	ND**
07/17/91	360.63	336.73	23.90	--	--	--	--	--	--	--	--	--	--	--
09/20/91	360.63	--	--	--	69	4.4	3.3	1.2	3.9	--	--	--	--	--
10/04/91	360.63	335.60	25.03	--	--	--	--	--	--	--	--	--	--	--
12/19/91	360.63	335.53	25.10	--	<50	0.9	2.8	1.7	5.9	--	--	--	--	--
03/19/92	360.63	337.89	22.74	--	<50	1.1	0.6	0.9	2.5	--	--	--	--	--
06/19/92	360.99	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
09/22/92	360.99	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
12/18/92	360.99	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
03/22/93	360.99	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
06/14/93	360.99	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
07/25/93	360.99	--	--	Inaccessible	--	--	--	--	--	--	--	--	--	--
12/23/93	361.68	338.01	23.67	*	<50	0.9	0.5	<0.5	<0.5	--	--	--	--	--
03/21/94	361.68	337.55	24.13	--	<50	0.5	1.1	<0.5	1.4	--	--	--	--	--
06/29/94	361.68	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
07/06/94	361.68	335.23	26.45	--	--	--	--	--	--	--	--	--	--	--
09/22/94	361.68	334.28	27.40	--	11,000	1900	230	310	970	--	--	--	--	--
12/08/94	361.68	335.45	26.23	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/06/95	361.68	338.49	23.19	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/08/95	361.68	339.54	22.14	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/13/95	361.68	337.13	24.55	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/16/95	361.68	335.94	25.74	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	--	--
03/28/96	361.68	339.96	21.72	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
06/27/96	361.68	338.18	23.50	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
09/30/96	361.68	336.48	25.20	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
12/30/96	361.68	337.80	23.88	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
03/11/97	361.68	338.69	22.99	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
06/10/97	361.68	336.98	24.70	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
10/01/97	361.68	335.98	25.70	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
12/17/97	361.68	--	--	Discontinued	--	--	--	--	--	--	--	--	--	--

* Top of casing elevation surveyed by Ron Miller, PE #15816, on January 13, 1994.
** Other HVOCs were not detected at detection limits ranging from 0.5 to 1 ppb.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-8														
12/12/91	354.89	--	22.54	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/19/92	354.89	334.42	20.47	--	<50	1.2	1.4	0.5	2.9	--	--	--	--	--
09/22/92	354.89	325.09	29.80	--	180	17	42	6.0	31	--	--	--	--	--
12/18/92	354.89	333.71	21.18	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/10/93	354.89	--	--	--	<50	0.8	2.0	<0.5	2.0	--	--	--	--	--
03/22/93	354.89	337.98	16.91	--	--	--	--	--	--	--	--	--	--	--
06/14/93	354.89	330.59	24.30	--	--	--	--	--	--	--	--	--	--	--
07/25/93	354.89	331.12	23.77	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/23/93	354.89	334.49	20.40	--	<50	1.0	0.9	0.7	1.0	--	--	--	--	--
12/22/93	354.89	333.97	20.92	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/21/94	354.89	334.70	20.19	--	<50	0.9	1.5	<0.5	2.0	--	--	--	--	--
06/29/94	354.89	--	--	--	<50	<0.5	<0.5	<0.5	0.8	--	--	--	--	--
07/06/94	354.89	333.84	21.05	--	--	--	--	--	--	--	--	--	--	--
09/22/94	354.89	333.05	21.84	--	9600	1600	180	260	840	--	--	--	--	--
10/14/94	354.89	333.05	21.84	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/08/94	354.89	334.18	20.71	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/06/95	354.89	336.78	18.11	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/08/95	354.89	337.10	17.79	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/13/95	354.89	335.09	19.80	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/16/95	354.89	334.43	20.46	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/28/96	354.89	339.47	15.42	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	--	--
06/27/96	354.89	335.81	19.08	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
09/30/96	360.58	340.28	20.30	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
12/30/96	360.58	341.55	19.03	--	<50	<0.5	<0.5	<0.5	0.6	<5.0	--	--	--	--
03/11/97	360.58	342.17	18.41	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
06/10/97	360.58	340.67	19.91	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
10/01/97	360.58	339.87	20.71	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
12/17/97	360.58	--	--	Discontinued	--	--	--	--	--	--	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-9														
07/06/94	361.23	336.08	25.15	*	--	--	--	--	--	--	--	--	--	--
08/26/94	361.23	--	--	--	12,000	1700	240	410	1400	--	--	--	--	--
09/22/94	361.23	335.49	25.74	--	10,000	1900	290	320	1200	--	--	--	--	--
12/08/94	361.23	336.39	24.84	--	18,000	2400	780	450	4600	--	--	--	--	--
03/06/95	361.23	339.40	21.83	--	6100	1400	260	420	1500	--	--	--	--	--
06/08/95	361.23	339.94	21.29	--	14,000	2100	220	540	1700	--	--	--	--	--
09/13/95	361.23	337.85	23.65	--	11,000	1900	120	490	1400	--	--	--	--	--
12/16/95	361.23	336.91	24.32	--	16,000	1900	<0.5	680	1200	<2.5	--	--	--	--
03/28/96	361.23	340.78	20.45	--	960	120	5.9	33	70	18	--	--	--	--
06/27/96	361.23	338.39	22.84	--	10,000	1200	46	340	1000	66	--	--	--	--
09/30/96	361.59	337.47	24.12	--	15,000	1300	36	390	950	100	--	--	--	--
12/30/96	361.59	338.95	22.64	--	12,000	1200	54	470	1300	100	--	--	--	--
03/11/97	361.59	339.50	22.09	--	13,000	850	37	310	930	63	--	--	--	--
06/10/97	361.59	337.81	23.78	--	9000	800	7.7	220	360	86	--	--	--	--
10/01/97	361.59	338.06	23.53	--	7000	770	13	270	540	99	--	--	--	--
12/17/97	361.59	--	--	--	--	--	--	--	--	--	--	--	--	--
03/29/98	361.59	341.11	20.48	--	4900	400	850	160	720	170	--	--	--	--
09/12/98	361.59	338.86	22.73	--	7400	900	6.6	150	440	68	--	--	--	--
03/26/99	361.59	339.34	22.25	--	3490	441	10.7	121	135	33.6	--	--	--	--
09/29/99	361.59	337.67	23.92	--	3820	455	<20	66.5	46.6	<200	--	<2.0	<2.0	--
03/17/00	361.59	340.20	21.39	--	4680	510	<10	146	528	<100	--	--	--	--

* Monitoring well surveyed by Ron Miller, PE #15816, on July 5, 1994.
** Sample analyzed for volatile organic compounds by EPA method 8260. MTBE was detected at 5.91 (ppb), all other VOC's were ND ranging from <2.0 to <1000.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
MW-10														
06/27/96	358.02	--	20.74	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
09/30/96	358.02	335.99	22.03	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
12/30/96	358.02	337.46	20.56	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
03/11/97	358.02	338.09	19.93	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
06/10/97	358.02	336.37	21.65	--	<50	<0.5	<0.5	<0.5	<0.5	7.0	--	--	--	--
10/01/97	358.02	335.50	22.52	--	<50	<0.5	<0.5	<0.5	<0.5	5.3	--	--	--	--
12/17/97	358.02	--	--	--	--	--	--	--	--	<5.0	--	--	--	--
03/29/98	358.02	340.55	17.47	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/12/98	358.02	337.39	20.63	--	<50	<0.5	<0.5	<0.5	<0.5	4.3	--	--	--	--
03/26/99	358.02	337.98	20.04	--	<50	<0.5	<0.5	<0.5	<0.5	3.8	--	--	--	--
09/29/99	358.02	336.30	21.72	--	5020	547	<10	79.6	49.5	4.15	--	--	--	--
03/17/00	358.02	338.67	19.35	--	<50	<0.5	<0.5	<0.5	<0.5	<100	--	--	--	--
										<5.0	--	--	--	--

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
TRIP BLANK														
05/31/91	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/21/91	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/20/91	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/19/91	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/19/92	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/19/92	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/22/92	--	--	--	--	92*	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/18/92	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/10/93	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/22/93	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
07/25/93	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/23/93	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/22/93	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/21/94	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/29/94	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
07/01/94	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
07/06/94	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/22/94	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/08/94	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/06/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/08/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/13/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/16/95	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/28/96	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	--	--
06/27/96	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
09/30/96	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
12/30/96	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
03/11/97	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
06/10/97	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
10/01/97	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
12/17/97	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<5.0	--	--	--	--
03/29/98	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	--	--
09/12/98	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	--	--
03/26/99	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	--	--
09/29/99	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	<2.0	--	--	--	--
										<5.0	--	--	--	--

*Gasoline range concentration reported. The chromatogram shows only a single peak in the gasoline range.

Cumulative Table of Well Data and Analytical Results

Vertical Measurements are in feet. Analytical values are in parts per billion (ppb)

DATE	Well Head Elev.	Ground Water Elev.	Depth to Water	Notes	TPH-Gasoline	Benzene	Toluene	Ethyl-Benzene	Xylene	MTBE	Total Oil & Grease	1,2-DCA	EDB	Other HVOCs
BAILER BLANK														
05/31/91	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/21/91	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/20/91	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/19/91	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/19/92	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
06/19/92	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
09/22/92	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/21/92	--	--	--	--	<50	<0.5	<0.5	<0.5	0.8	--	--	--	--	--
03/10/93	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/22/93	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
07/25/93	--	--	--	--	<50	<0.5	<0.5	<0.5	0.6	--	--	--	--	--
09/23/93	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
12/22/93	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--
03/21/94	--	--	--	--	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	--	--

NOTES: Blaine Tech Services, Inc. began routine monitoring of the ground water wells at this site March 26, 1999.
Earlier field data and analytical results were drawn from the September 12, 1998 Gettler-Ryan, Inc. report.
Groundwater elevation data and laboratory analytical results prior to March 6, 1995, were compiled from the Quarterly Groundwater Monitoring Reports prepared for Chevron by Sierra Environmental Services.
Top of casing elevations for monitoring wells MW-1 through MW-7 were surveyed by Ron Miller, Professional Engineer #15816 on June 26, 1991.
Top of casing elevations for monitoring wells MW-1 through MW-8 were surveyed by Kier & Wright of Pleasanton, California on December 12, 1991. Survey data received by SES on April 30, 1992.
Wells MW-4, MW-8, MW-9, and MW-10 surveyed by Virgil Chavez Land Surveying on 10/15/96, elevations based on previous TOC data.

ABBREVIATIONS:
1,2-DCA = 1,2-Dichloroethane
EDB = Ethylene dibromide
HVOCs = Halogenated Volatile Organic Compounds
MTBE = Methyl tertiary-butyl ether
TPH = Total Petroleum Hydrocarbons

APPENDIX B

Soil Boring Logs and Well Construction Details

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1196 — BORING NO. MW-1

PROJECT NAME CHEVRON SERVICE STATION NO. 9-5542 — PAGE 1 OF 2

BY K. RAHMAN — DATE 3/27/90 — SURFACE ELEV. 364.25 ft.

PID (ppm)	RECOVERY (in./in.)	BLOW CT. (blws/ft)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							FILL.	
164	8/18	19 31 refusal		5			FILL: GRAVELLY SILT (ML), dark brown (10YR, 3/3); 50-60% low plasticity fines; 5-10% fine to medium sand; 15-25% fine to medium gravel; trace iron-oxide staining of clasts; hard; dry; no product odor.	
73	10/18	14 20 33		10			@ 10': hard; dry; no product odor.	
				15			@ 17': cobbles; drainage baserock; fill in former tank excavation.	
				20				

REMARKS

Boring was drilled using 8-inch diameter hollow-stem augers. Soil samples were collected using a 2-inch diameter modified-California split-spoon sampler. A 2-inch diameter groundwater monitor well was installed. The wellhead was completed roughly 1 foot above grade prior to resurfacing.

David C. Tigler RG#4603 Exp. 6/30/92

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1196 — BORING NO. MW-1

PROJECT NAME CHEVRON SERVICE STATION NO. 9-5542 — PAGE 2 OF 2

BY K. RAHMAN DATE 3/27/90 — SURFACE ELEV. 364.25 ft.

PID (ppm)	RECOVERY (in./in.)	BLOW CT. (blws/ft)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							FILL, continued.	
							CLAY (CL), dark brown (10YR, 3/3); 90-95% moderate plasticity fines; 5-10% fine sand; damp; moderate product odor.	
1175	16/18	7 12 15	4/2/90 ▼	25			@25': abundant caliche; trace iron-oxide staining; trace manganese-oxide staining; damp; very stiff; moderate product odor.	
288	18/18	3 7 10		30			SANDY CLAY (CL), dark grayish brown (10YR, 4/2); 60-70% moderate plasticity fines; 25-35% fine to medium sand; trace fine gravel; abundant caliche; trace iron-oxide and manganese-oxide staining; very stiff; damp; moderate product odor.	
89.1	18/24	6 10 15		35			@35': mottled dark grayish brown (10YR, 4/2) and dark brown (10YR,3/3); very stiff; wet; no product odor.	
							BORING TERMINATED AT 35 FEET AND SAMPLED TO 37 FEET.	
				40				

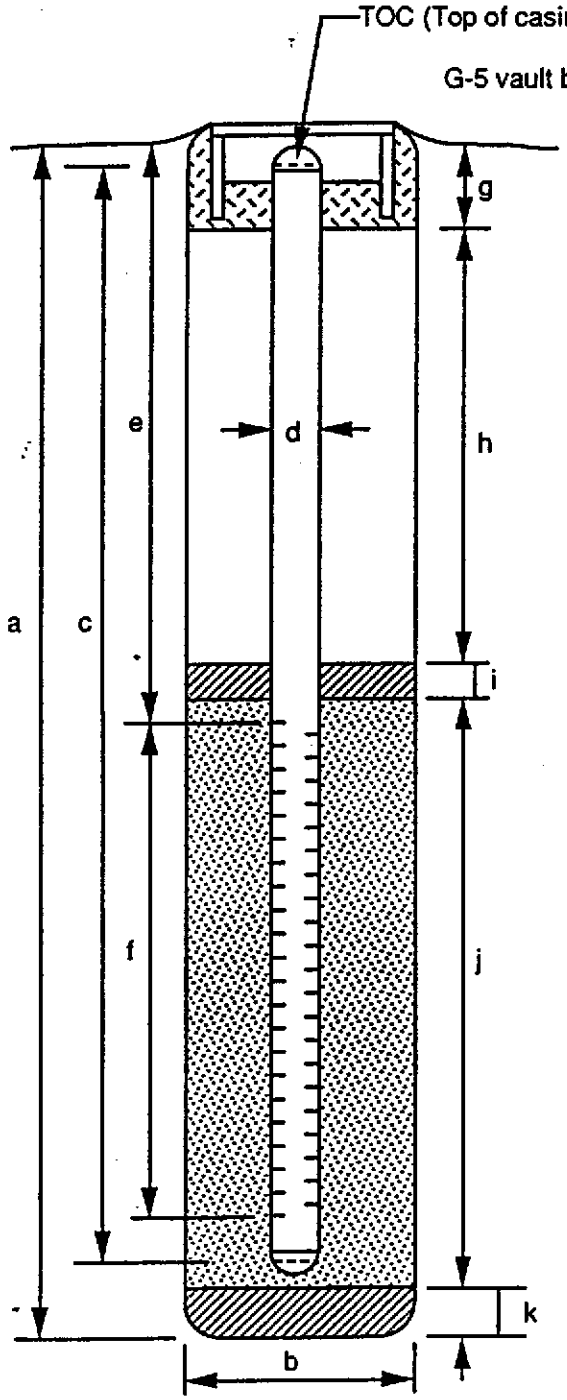
REMARKS

Boring was drilled using 8-inch diameter hollow-stem augers. Soil samples were collected using a 2-inch diameter modified-California split-spoon sampler. A 2-inch diameter groundwater monitor well was installed. The wellhead was completed roughly 1 foot above grade prior to resurfacing.

WELL DETAILS

PROJECT NUMBER 1196
PROJECT NAME Chevron SS No. 9-5542
LOCATION 7007 San Ramon Road, Dublin
WELL PERMIT NO. 90182

BORING / WELL NO. MW-1
TOP OF CASING ELEV. 364.25'
GROUND SURFACE ELEV. _____
DATUM MSL
INSTALLATION DATE 3/27/90



EXPLORATORY BORING

a. Total depth 37 ft.
b. Diameter 8 in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION *

c. Total casing length 37 ft.
Material Schedule 40 PVC
d. Diameter 2 in.
e. Depth to top perforations 20 ft.
f. Perforated length 15 ft.
Perforated interval from 20 to 35 ft.
Perforation type Machine Slotted
Perforation size 0.020 inch
g. Surface seal 1 ft.
Material Concrete (above grade)
h. Backfill 16 ft.
Material Bentonite-Cement Grout
i. Seal 3 ft.
Material Bentonite
j. Gravel pack 16 ft.
Gravel pack interval from 19 to 35 ft.
Material # 3 Sand
k. Bottom seal/fill 2.0 ft.
Material Bentonite

* Wellhead completed roughly 1-foot above grade prior to asphalting. Depth measurements taken 1-foot below final grade.

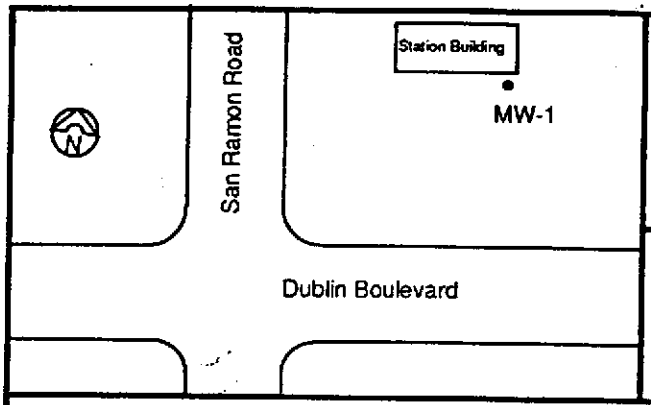
DCT ✓

Form prepared by KBR

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED



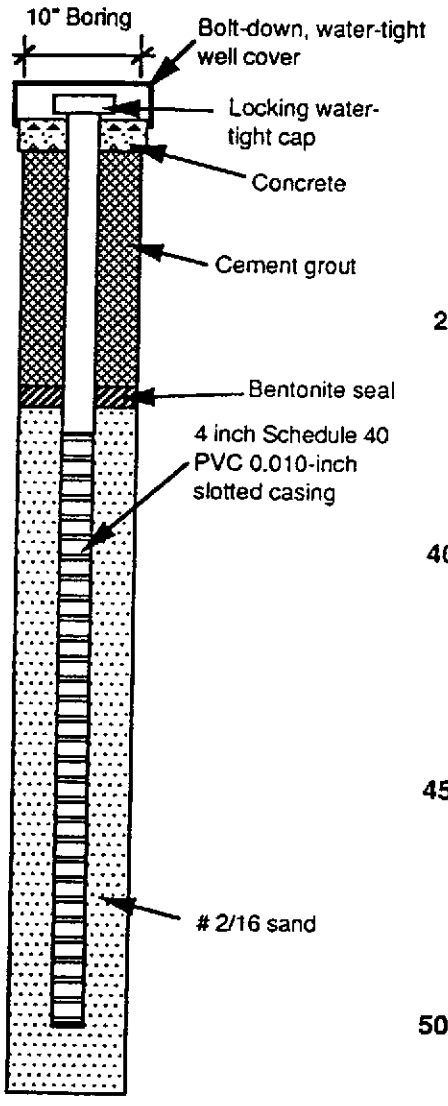
LOG OF BORING MW-1

Chevron Service Station #9-5542
7007 San Ramon Road
Dublin, California

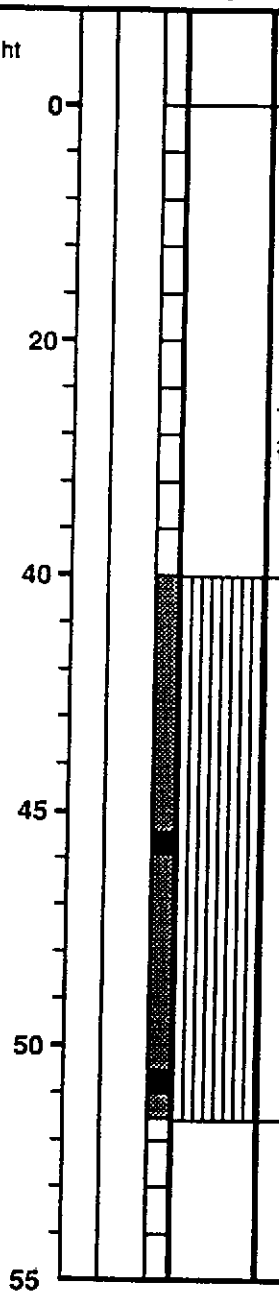
Project No.: RC09303
Logged By: M. M. Bessette
Drilling Co.: Great Sierra
Driller: Scott Irwin

Date Drilled: November 25, 1992
Drilling Method: 10" hollow-stem auger
Sampling Method: Continuous
Inclination: Vertical

WELL CONSTRUCTION



Depth (ft.) | Blows/ft. | Samples | Graphic



DESCRIPTION

Surface Elevation: 364.89 feet
Casing Elevation: 364.53 feet

0 - 40 FEET BELOW GROUND SURFACE:

Geologic description of soil from ground surface to 40 feet below ground surface (BGS) previously logged by Chempro during the installation of the original Monitor Well MW-1 which was destroyed and rebored by Geraghty & Miller on this date to the depth of 50-feet below ground surface.

SILTY CLAY (CL); dark yellowish brown (10 YR 5/3); 25-35% silt; trace coarse-grained sand; medium firm; damp.

@ 47 feet; SANDY CLAY (CL); brown (10YR, 5/3); 30-40% fine-grained sand; 5-10% medium-grained sand; very stiff; damp.

@ 50 feet; SILTY SANDY CLAY (CL); brown (10YR, 5/3); 40-50% clay; 35-45% fine to medium-grained sand; 10-20% silt; medium firm; damp.

Bottom of boring: 51.5 feet BGS

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1196 — BORING NO. MW-2

PROJECT NAME CHEVRON SERVICE STATION NO. 9-5542 — PAGE 1 OF 2

BY K. Rahman — DATE 3/26/90 — SURFACE ELEV. 364.58 ft.

PID (ppm)	RECOVERY (in./in.)	BLOW CT. (blws/ft)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							FILL.	
							SILT (ML), very dark brown (10YR, 2/2); 80-85% low plasticity fines; 10-15% fine sand; trace fine gravel; damp; no product odor.	
6.0	15/18	8 15 22		5			SILT (ML), very dark grayish brown (2.5Y, 3/2); 90-95% low plasticity fines; 5-10% fine to medium sand; trace roothole; trace rootlets; hard; damp; no product odor.	
7.9	13/18	8 10 29		10			@10': trace coarse sand; trace iron-oxide staining; hard; damp; no product odor. SANDY GRAVEL (GP), very dark grayish brown (2.5Y, 4/2); 5-10% low plasticity fines; 30-40% fine to coarse sand; 50-60% fine to medium gravel, angular to subrounded; abundant iron-oxide staining; dense; dry; no product odor.	
12.2	13/18	21 18 25		15			@15': dark grayish brown (2.5Y, 4/2); dense; damp; no product odor.	
				20			SILTY CLAY (CL).	

REMARKS

Boring was drilled using 8-inch diameter hollow stem augers. Soil samples were collected using a 2-inch diameter modified-California split-spoon sampler. A 2-inch diameter groundwater monitor well was installed. The wellhead was completed roughly 1 foot above grade prior to landscaping.

David C. Tight RG#4603 Exp. 6/30/92

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1196 BORING NO. MW-2

PROJECT NAME CHEVRON SERVICE STATION NO. 9-5542 PAGE 2 OF 2

BY K. Rahman DATE 3/26/90 SURFACE ELEV. 364.58 ft.

PID (ppm)	RECOVERY (in./in.)	BLOW CT. (blws/ft)	DESCRIPTION
12.7	13/18	7 6 8	SILTY CLAY (CL), dark grayish brown (2.5Y, 4/2); 90-95% moderate to high plasticity fines; trace fine sand; trace fine gravel; trace caliche; stiff; damp; faint organic odor.
9.0	14/24		@25': dark olive gray (5Y, 3/2); stiff; damp; faint organic odor.
8.1	18/18	6 9 8	@30': olive (5Y, 4/3); 5-10% fine to coarse sand; trace wood fragments; trace iron-oxide and manganese-oxide staining; very stiff; wet; no product odor.
-	13/18	7 6 12	@35': very stiff; wet; no product odor.
5.6		3 6 7	@37': stiff; wet; no product odor.

BORING TERMINATED AT 37 FEET AND SAMPLED TO 38.5.

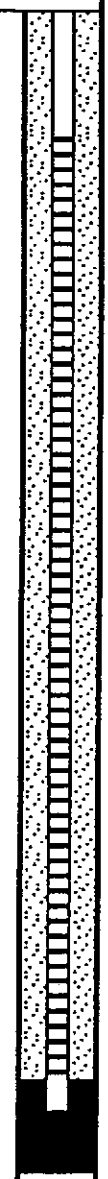
GROUND WATER LEVELS: 4/2/90 ▼, 3/26/90 ▽

DEPTH IN FT.: 25, 30, 35, 40

SAMPLES

LITHO-GRAPHIC COLUMN

WELL DETAIL



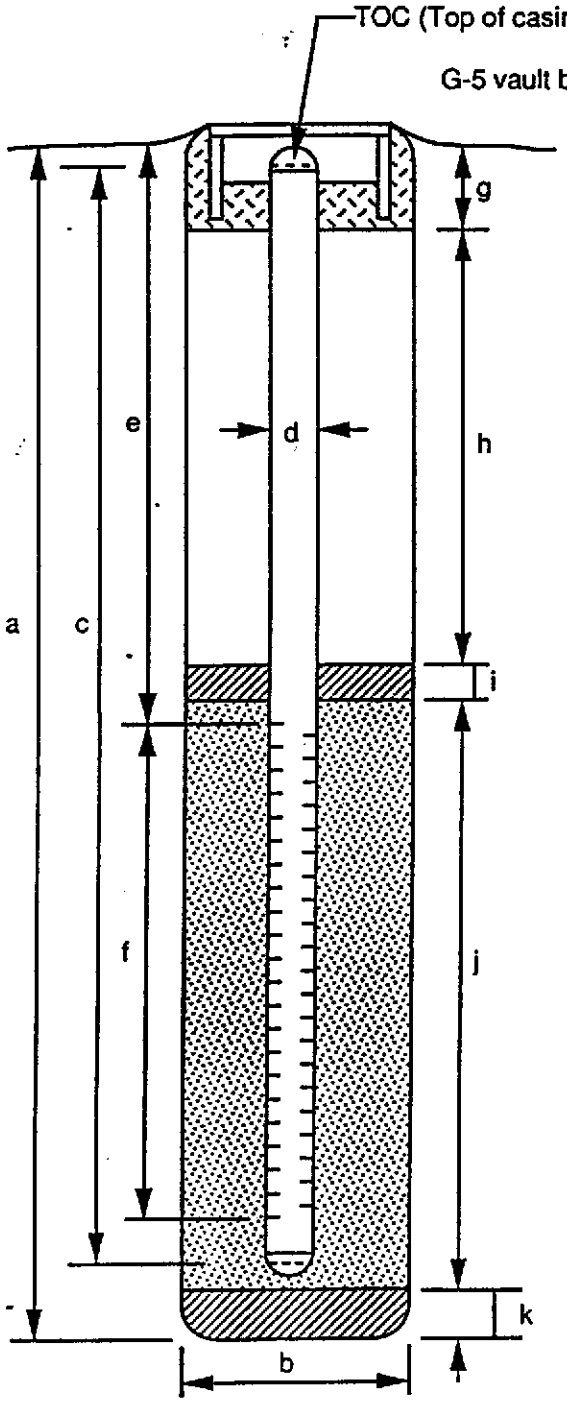
REMARKS

Boring was drilled using 8-inch diameter hollow stem augers. Soil samples were collected using a 2-inch diameter modified-California split-spoon sampler. A 2-inch diameter groundwater monitor well was installed. The wellhead was completed roughly 1 foot above grade prior to landscaping.

WELL DETAILS

PROJECT NUMBER 1196
PROJECT NAME Chevron SS No. 9-5542
LOCATION 7007 San Ramon Road, Dublin
WELL PERMIT NO. 90182

BORING / WELL NO. MW-2
TOP OF CASING ELEV. 364.58'
GROUND SURFACE ELEV. _____
DATUM MSL
INSTALLATION DATE 3/26/90



EXPLORATORY BORING

a. Total depth 38.5 ft.
b. Diameter 8 in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION *

c. Total casing length 38.8 ft.
Material Schedule 40 PVC
d. Diameter 2 in.
e. Depth to top perforations 22 ft.
f. Perforated length 15 ft.
Perforated interval from 22 to 37 ft.
Perforation type Machine Slotted
Perforation size 0.020 inch
g. Surface seal 1 ft.
Material Concrete (above grade)
h. Backfill 17 ft.
Material Bentonite-Cement Grout
i. Seal 3 ft.
Material Bentonite
j. Gravel pack 17 ft.
Gravel pack interval from 20 to 37 ft.
Material # 3 Sand
k. Bottom seal/fill 1.5 ft.
Material Bentonite

*Wellhead completed roughly 1-foot above grade prior to landscaping. Depth measurements taken 1-foot below final grade.

DCT

Form prepared by KBR

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1196 — BORING NO. MW-3

PROJECT NAME CHEVRON SERVICE STATION NO. 9-5542 — PAGE 1 OF 2

BY K. RAHMAN — DATE 3/26/90 — SURFACE ELEV. 362.18 ft.

PID (ppm)	RECOVERY (in./in.)	BLOW CT. (blws/ft)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							FILL, gravel; silt.	
-	8/18	12 17 25		5			**SILT (ML)**, olive (5Y, 4/3); 90-95% low plasticity fines; 5-10% fine sand; thinly laminated; hard; dry; no product odor.	
5.5	11/18	11 15 17		10			**SANDY CLAY (CL)**, olive (5Y, 4/3); 70-80% moderate plasticity fines; 15-25% fine to coarse sand; trace fine gravel; trace rootholes; trace caliche; hard; dry; no product odor.	
11.5	13/18	8 16 16		15			**CLAYEY SAND (SC)**, olive gray (5Y, 4/2); 25-35% moderate plasticity fines; 50-60% fine to coarse sand; 10-15% fine to medium gravel; dense; damp; faint organic odor.	
				20			**CLAY (CL)**.	

REMARKS

Boring was drilled using 8-inch diameter hollow-stem augers. Soil samples were collected using a 2-inch diameter modified-California split-spoon sampler. A 2-inch diameter groundwater monitor well was installed. The wellhead was completed roughly 1 foot above grade prior to landscaping.

David C. Tisdale RG#4603 Exp. 6/30/92

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1196 — BORING NO. MW-3

PROJECT NAME CHEVRON SERVICE STATION NO. 9-5542 — PAGE 2 OF 2

BY K. RAHMAN — DATE 3/26/90 — SURFACE ELEV. 362.18 ft.

PID (ppm)	RECOVERY (in./in.)	BLOW CT. (blws/ft)	DESCRIPTION
160	14/18	6 12 18	CLAY (CL), mottled olive gray (5Y, 4/2) and olive (5Y, 5/2); 90-95% moderate plasticity fines; 5-10% fine sand; some caliche; abundant rootholes; very stiff; damp; faint product odor.
197	15/18	8 10 34	SILTY SAND (SM), dark gray (5Y, 4/1); 20-30% low plasticity fines; 70-80% fine to coarse sand; dense; wet; faint product odor.
			SANDY GRAVEL (GP), dark gray (5Y, 4/3); trace low plasticity fines; 15-25% fine to coarse sand; 70-80% fine to medium gravel; dense; faint product odor.
4.6	15/18	6 8 11	SANDY CLAY (CL), olive (5Y, 4/3); 80-90% moderate plasticity fines; 10-20% fine to coarse sand; trace caliche; very stiff; wet; no product odor.
5.9	14/18	14 14 29	@35': trace manganese-oxide and iron-oxide staining; hard; wet; no product odor.
			BORING TERMINATED AT 35 FEET AND SAMPLED TO 36.5 FEET.

GROUND WATER LEVELS: 4/2/90; 3/26/90

DEPTH IN FT.: 25, 30, 35, 40

SAMPLES

LITHO-GRAPHIC COLUMN

WELL DETAIL

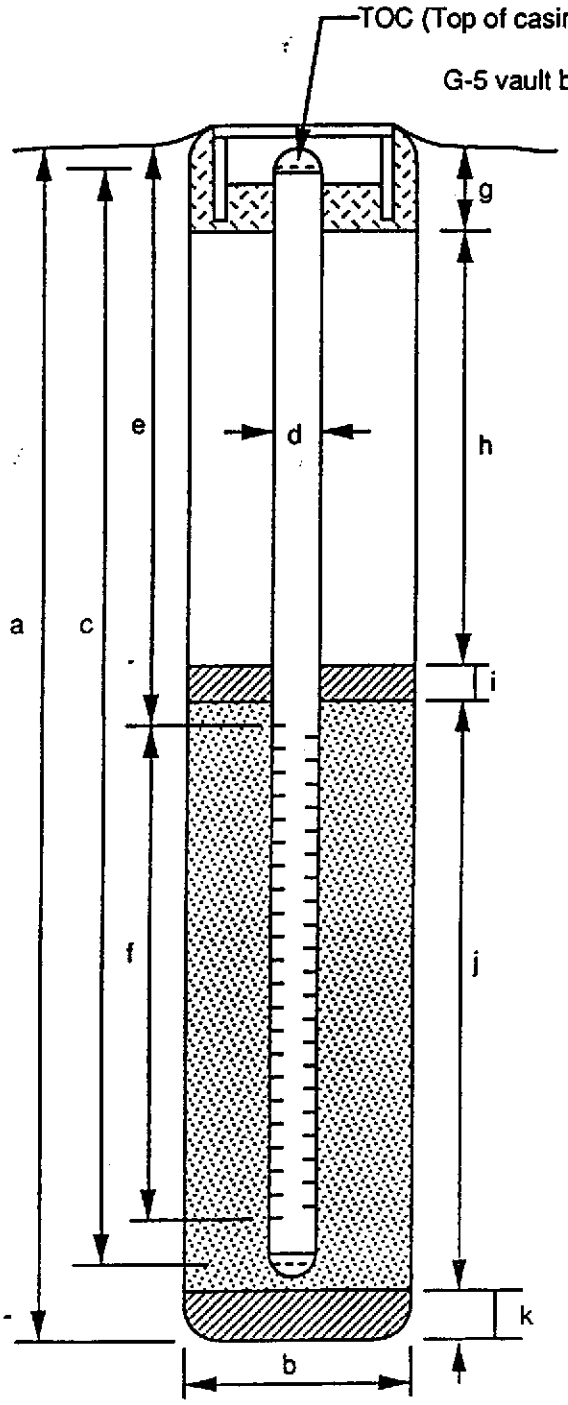
REMARKS

Boring was drilled using 8-inch diameter hollow-stem augers. Soil samples were collected using a 2-inch diameter modified-California split-spoon sampler. A 2-inch diameter groundwater monitor well was installed. The wellhead was completed roughly 1 foot above grade prior to landscaping.

WELL DETAILS

PROJECT NUMBER 1196
PROJECT NAME Chevron SS No. 9-5542
LOCATION 7007 San Ramon Road, Dublin
WELL PERMIT NO. 90182

BORING / WELL NO. MW-3
TOP OF CASING ELEV. 362.18'
GROUND SURFACE ELEV. _____
DATUM MSL
INSTALLATION DATE 3/26/90



EXPLORATORY BORING

a. Total depth 36.5 ft.
b. Diameter 8 in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION *

c. Total casing length 36 ft.
Material Schedule 40 PVC
d. Diameter 2 in.
e. Depth to top perforations 20 ft.
f. Perforated length 15 ft.
Perforated interval from 20 to 35 ft.
Perforation type Machine Slotted
Perforation size 0.020 inch
g. Surface seal 1 ft.
Material Concrete (above grade)
h. Backfill 16 ft.
Material Bentonite-Cement Grout
i. Seal 3 ft.
Material Bentonite
j. Gravel pack 16 ft.
Gravel pack interval from 19 to 35 ft.
Material # 3 Sand
k. Bottom seal/fill 1.5 ft.
Material Bentonite

*Wellhead completed roughly 1-foot above grade prior to landscaping. Depth measurements taken 1-foot below final grade.

DCT ✓

Form prepared by KBR

CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1196 — BORING NO. MW-4

PROJECT NAME CHEVRON SERVICE STATION NO. 9-5542 — PAGE 1 OF 2

BY K. RAHMAN — DATE 3/28/90 — SURFACE ELEV. 362.97 ft.

PID (ppm)	RECOVERY (in./in.)	BLOW CT. (blws/ft)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
							FILL, gravelly silt.	
59	10/24	6 11 17		5			**SANDY CLAY (CL)**, very dark grayish brown (2.5Y, 3/2); 70-80% low to moderate plasticity fines; 15-25% fine to medium sand; trace fine gravel; trace iron-oxide staining; very stiff; dry; no product odor.	
40.6	15/18	12 14 23		10			**SILTY SAND (SM)**, very dark grayish brown (2.5Y, 3/2); 10-20% low plasticity fines; 70-80% fine to coarse sand; 5-10% fine gravel; trace iron-oxide staining; some rootlets; hard; dry; no product odor.	
38	10/18	9 15 19		15			@15': olive (5Y, 5/3); 75-85% fine to coarse sand, predominantly medium; trace fine gravel; abundant caliche; trace iron-oxide staining; hard; dry; no product odor.	
				20				

REMARKS

Boring was drilled using 8-inch diameter hollow-stem augers. Soil samples were collected using a 2-inch diameter modified-California split-spoon sampler. A 2-inch diameter groundwater monitor well was installed. The wellhead was completed roughly 1 foot above grade prior to landscaping.

David C. Tiglet RG#4603 Exp. 6/30/92

LOG OF EXPLORATORY BORING

PROJECT NUMBER 1196 — BORING NO. MW-4

PROJECT NAME CHEVRON SERVICE STATION NO. 9-5542 — PAGE 2 OF 2

BY K. RAHMAN — DATE 3/28/90 — SURFACE ELEV. 362.97 ft.

PID (ppm)	RECOVERY (in./in.)	BLOW CT. (blws/ft)	GROUND WATER LEVELS	DEPTH IN FT.	SAMPLES	LITHO-GRAPHIC COLUMN	DESCRIPTION	WELL DETAIL
383	15/18	7 10 15					SILTY SAND (SM), continued @20': olive gray (5Y, 4/2); some caliche; trace manganese-oxide staining; very stiff; damp; faint product odor.	
			4/2/90	25				
749	15/18	7 9 12					SANDY CLAY (CL), mottled dark olive gray (5Y, 3/2) and olive gray (5Y, 4/2); 90-95% moderate plasticity fines; 5-10% predominantly fine to medium sand; trace caliche; very stiff; damp; moderate product odor.	
			3/28/90					
				30				
51.1	18/18	4 5 10					CLAYEY SAND (SC), olive gray (5Y, 4/2); 20-30% moderate plasticity fines; 70-80% fine to coarse sand, predominantly medium; abundant rootholes, coated with caliche; stiff; wet; no product odor.	
				35				
43.6	10/24	15 21 29					@35': hard; wet; no product odor.	
							BORING TERMINATED AT 35 FEET AND SAMPLED TO 37 FEET.	
				40				

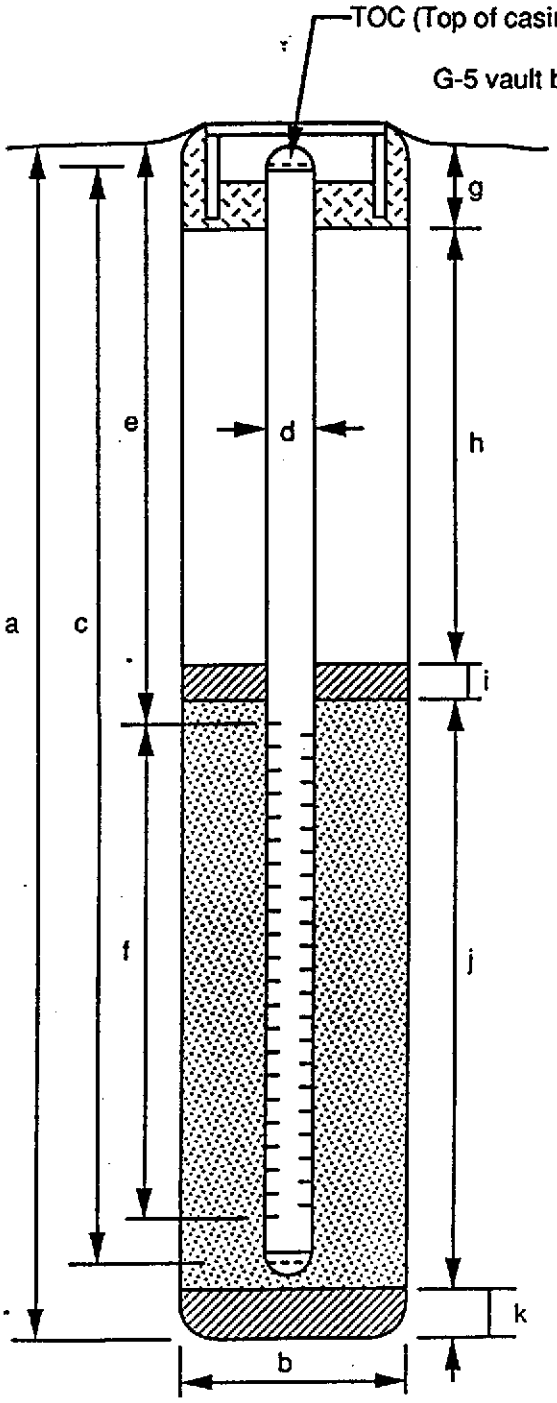
REMARKS

Boring was drilled using 8-inch diameter hollow-stem augers. Soil samples were collected using a 2-inch diameter modified-California split-spoon sampler. A 2-inch diameter groundwater monitor well was installed. The wellhead was completed roughly 1 foot above grade prior to landscaping.

WELL DETAILS

PROJECT NUMBER 1196
PROJECT NAME Chevron SS No. 9-5542
LOCATION 7007 San Ramon Road, Dublin
WELL PERMIT NO. 90182

BORING / WELL NO. MW-4
TOP OF CASING ELEV. 362.97'
GROUND SURFACE ELEV. _____
DATUM MSL
INSTALLATION DATE 3/28/90



EXPLORATORY BORING

a. Total depth 37 ft.
b. Diameter 8 in.
Drilling method Hollow-Stem Auger

WELL CONSTRUCTION *

c. Total casing length 36 ft.
Material Schedule 40 PVC
d. Diameter 2 in.
e. Depth to top perforations 20 ft.
f. Perforated length 15 ft.
Perforated interval from 20 to 35 ft.
Perforation type Machine Slotted
Perforation size 0.020 inch
g. Surface seal 1 ft.
Material Concrete (above grade)
h. Backfill 16 ft.
Material Bentonite-Cement Grout
i. Seal 3 ft.
Material Bentonite
j. Gravel pack 16 ft.
Gravel pack interval from 19 to 35 ft.
Material # 3 Sand
k. Bottom seal/fill 2 ft.
Material Bentonite

* Wellhead completed roughly 1-foot above grade prior to landscaping. Depth measurements taken 1-foot below final grade.

DcT ✓

Form prepared by KBB

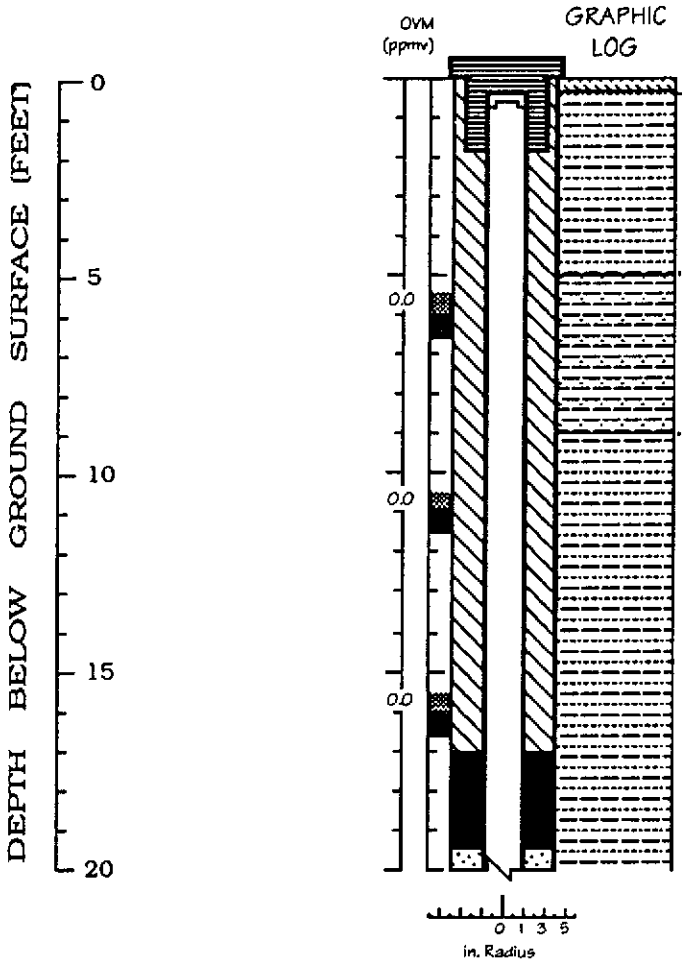
CONFIDENTIAL

STATE OF CALIFORNIA DWR
WELL COMPLETION REPORT
(WELL LOGS)

REMOVED

WELL MW-5

SIERRA



4" Asphalt/Baserock

Silty CLAY (CL): dark brown; 10-15% silt; 5-10% fine sand; low est K

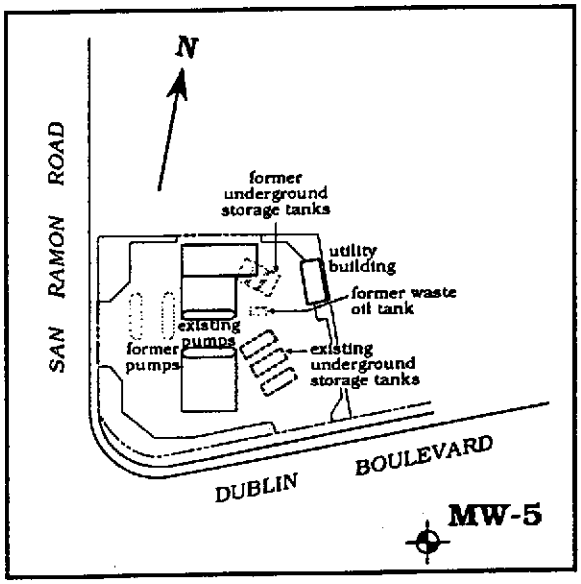
Sandy CLAY (CL): olive green-brown; damp; firm; ~30% fine sand; 10-15% silt; 10% small gravel; low est K

Silty CLAY (CL): olive green-brown; damp; firm; ~10% silt; ~5% fine sand; low est K

Well Construction and Boring Log – Well MW-5

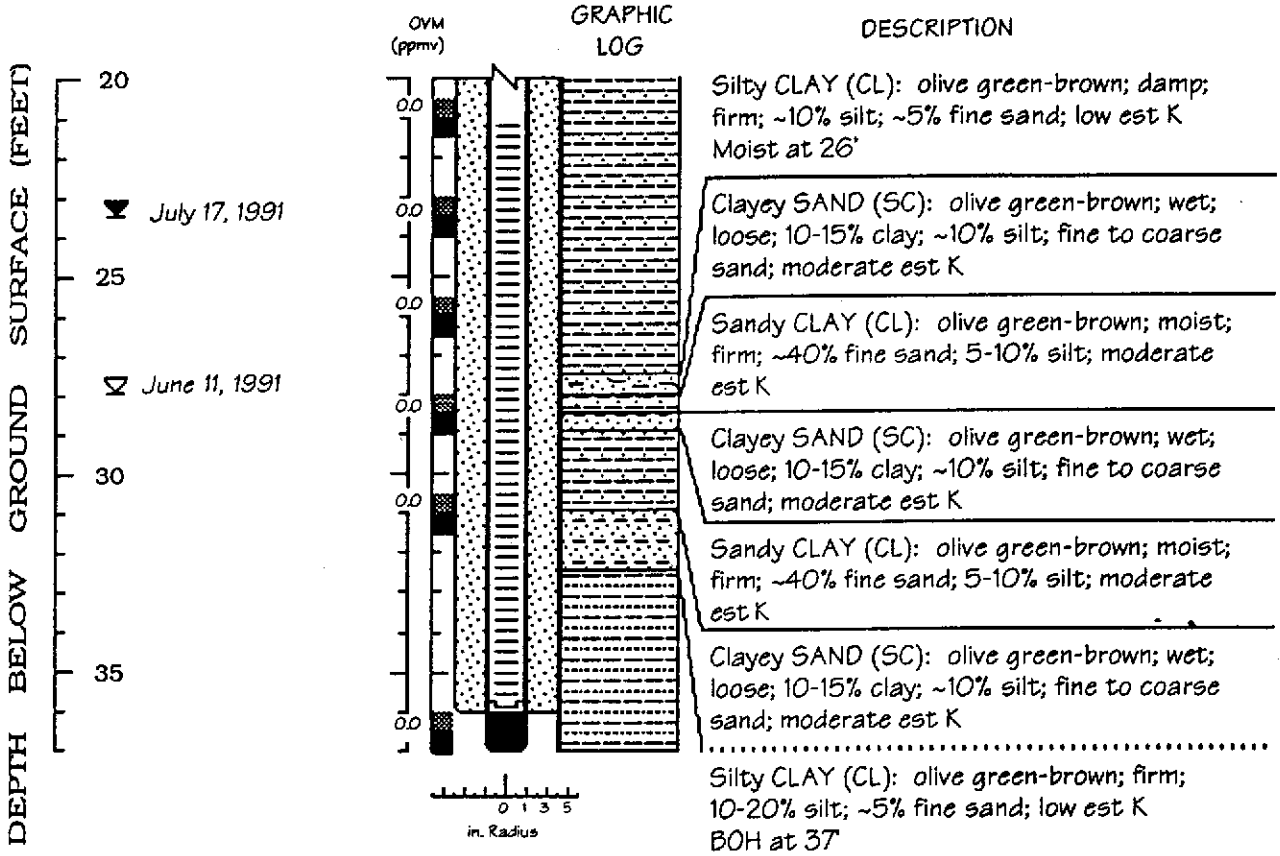
Chevron S. S. #9-5542
7007 San Ramon Road
Dublin, California

Logged by:	Eric Gross
Supervisor:	R. Greenefelder RG#003011
Drilling Company:	Soils Exploration Services
C-57#:	582696
Driller:	Mike Duffy
Drilling Method:	Hollow stem auger
Date Drilled:	June 11, 1991
Well Head Completion:	Locking cap & traffic-rated vault
Type of sampler:	Split barrel (2" ID)



WELL MW-5
(continued)

SIERRA

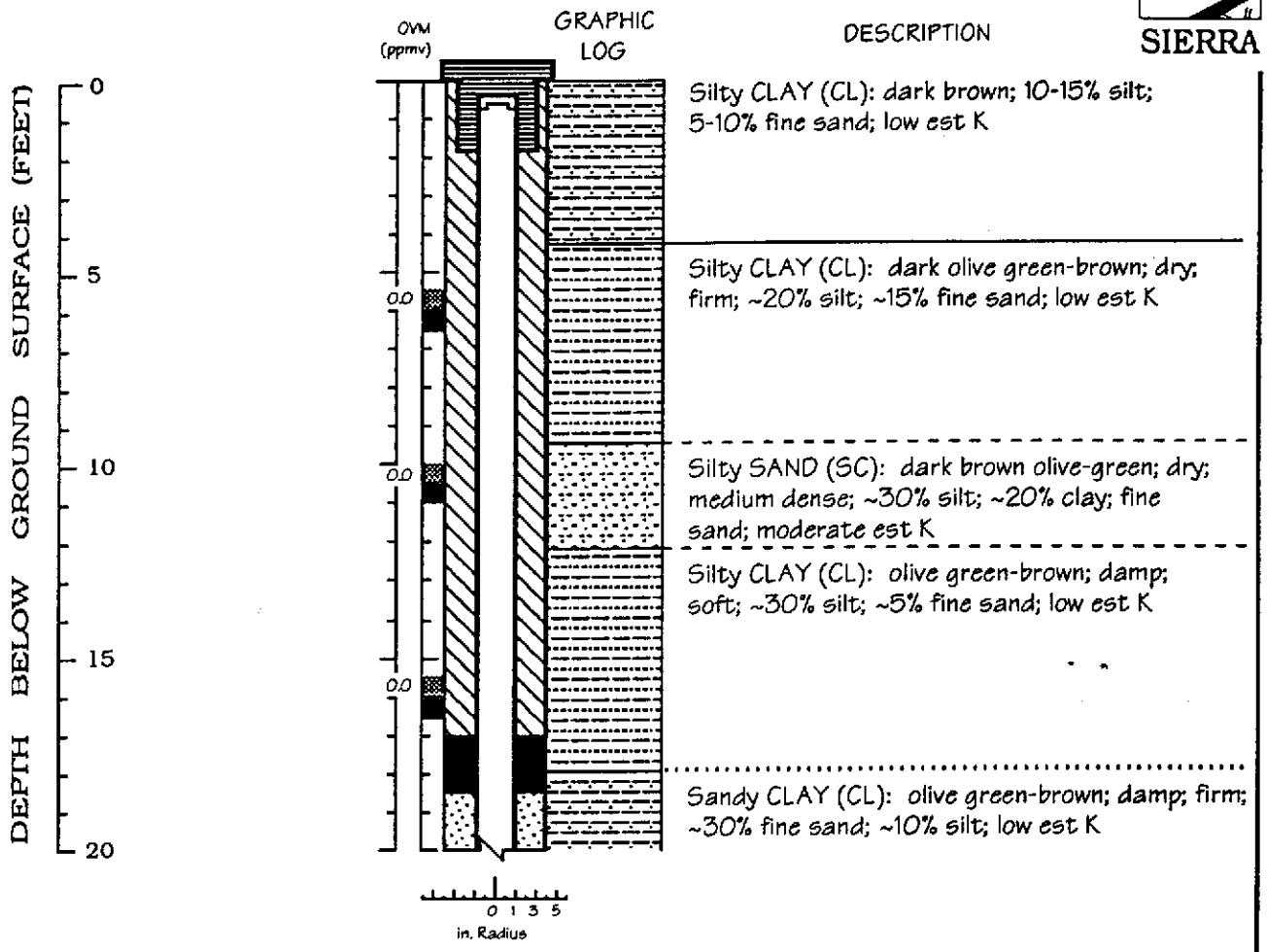


Well Construction and Boring Log – Well MW-5

Chevron S. S. #9-5542
7007 San Ramon Road
Dublin, California

WELL MW-6

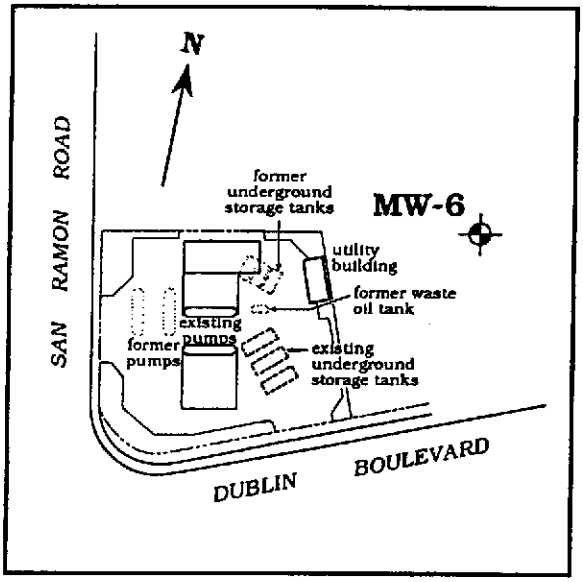
SIERRA



Well Construction and Boring Log – Well MW-6

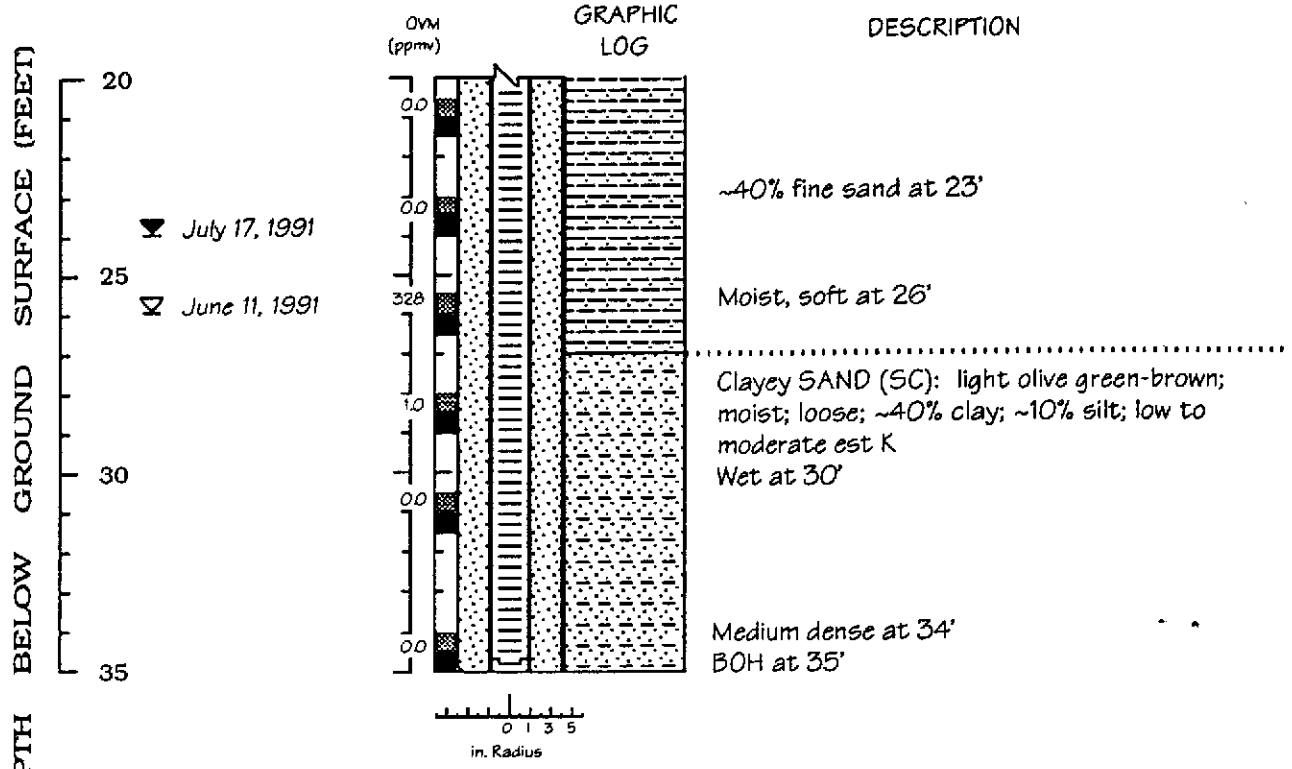
Chevron S. S. #9-5542
7007 San Ramon Road
Dublin, California

Logged by:	Eric Grose
Supervisor:	R. Greenefelder RG#003011
Drilling Company:	Soils Exploration Services
C-57#:	582696
Driller:	Mike Duffy
Drilling Method:	Hollow stem auger
Date Drilled:	June 11, 1991
Well Head Completion:	Locking cap & traffic-rated vault
Type of sampler:	Split barrel (2" ID)



WELL MW-6
(continued)

SIERRA

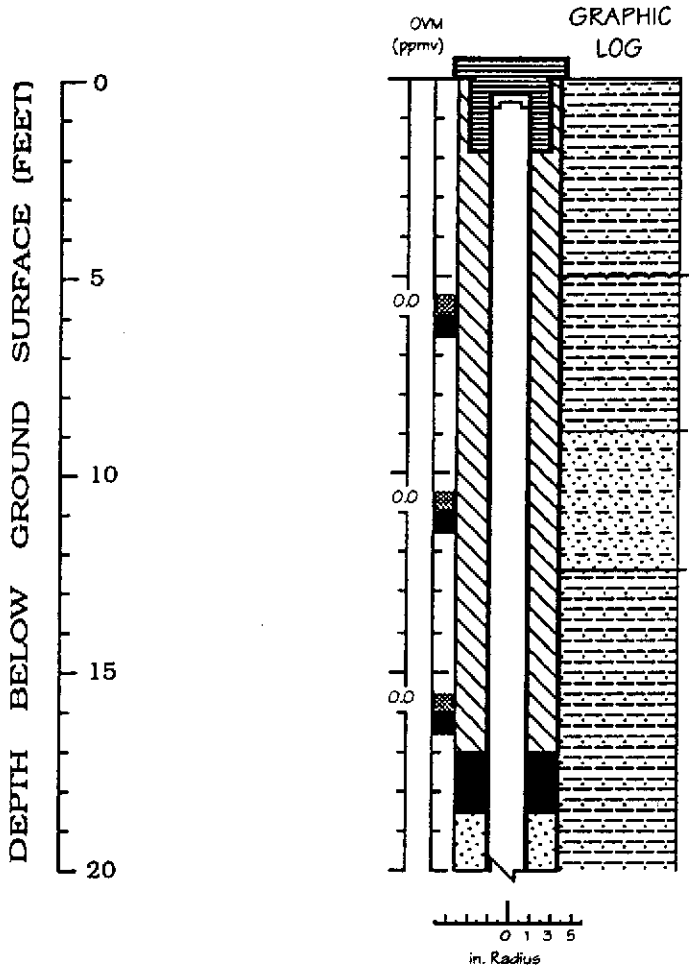


Well Construction and Boring Log – Well MW-6

Chevron S. S. #9-5542
7007 San Ramon Road
Dublin, California

WELL MW-7

SIERRA



Silty CLAY (CL): dark brown; 10-15% silt; 5-10% fine sand; low est K

Sandy CLAY (CL): dark olive green-brown; damp; firm; ~20% fine sand; 10-15% silt; low est K

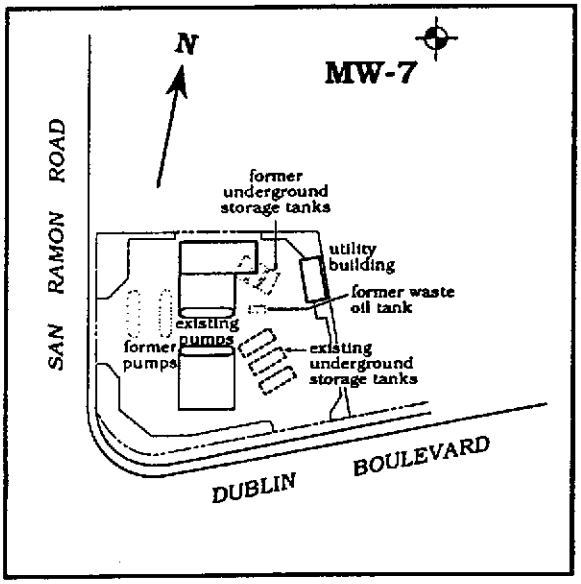
Clayey SAND/SAND (SC/SP): light brown-yellow; damp; loose; ~5% clay; ~5% silt; fine sand; moderate to high est K

Sandy CLAY (CL): light olive green-brown; damp; firm; ~5% silt; ~5% fine sand; low est K

Well Construction and Boring Log – Well MW-7

Chevron S. S. #9-5542
7007 San Ramon Road
Dublin, California

Logged by:	Eric Gross
Supervisor:	R. Greensfelder RG#003011
Drilling Company:	Soils Exploration Services
C-57#:	582696
Driller:	Mike Duffy
Drilling Method:	Hollow stem auger
Date Drilled:	June 12, 1991
Well Head Completion:	Locking cap & traffic-rated vault
Type of sampler:	Split barrel (2" ID)



WELL MW-7
(continued)

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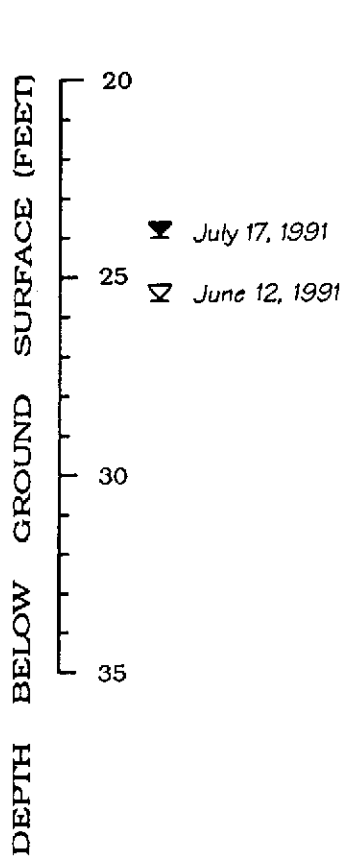
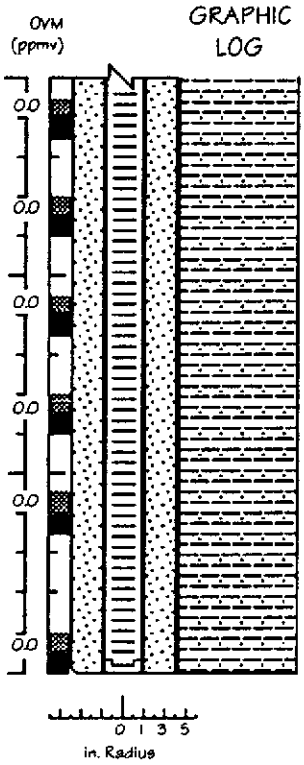




DESCRIPTION

5-10% silt, 10-15% fine sand at 23'

Moist at 26'

Lighter olive green-brown, wet, 5-10% silt; ~40% fine sand, moderate est K at 28'

20-30% fine sand, moderate est K at 31'

5-10% silt, 40-45% fine sand, moderate est K at 34'
BOH at 35'

Well Construction and Boring Log – Well MW-7

Chevron S. S. #9-5542
7007 San Ramon Road
Dublin, California

Field location of boring:

(See Plate 2)

Project No.: 729001	Date: 12/6/91	Boring No.: MW-8	
Client: Chevron Service Station No. 5542			
Location: 7007 San Ramon Road			
City: Dublin, California		Sheet 1 of 2	
Logged by: R.S.Y.	Driller: Hazmat		

Casing installation data:

Drilling method: Hollow Stem Auger

Hole diameter: 8-inches

Top of Box Elevation: 355.54 Datum: MSL

Water Level	23'			
Time	11:30			
Date	12/6/91			

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				1				Concrete Sidewalk - 6 inches
				2				SILTY CLAY (CL) - very dark gray (10YR 2/1), medium stiff, moist; low plasticity; trace fine sand; roots, voids.
				3				
				4				
				5				
			MW-8-	6				SANDY SILT (ML) - dark yellow brown (10YR 4/4), stiff, moist; low plasticity; 30% fine sand; roots.
0	19	S&H	6.5	7				
				8				
				9				
			MW-8-	10				COLOR CHANGE to dark gray (7.5YR 4/0), sand from fine to 30% coarse; trace fine subround gravel.
0	15	S&H	10.5	11				
				12				
				13				
				14				CLAY (CL) - olive gray (5Y 4/2), hard, moist; medium plasticity; minor silt; calcareous stringers.
			MW-8-	15				
0	51	S&H	15.5	16				
				17				
				18				SILTY CLAY (CL) - olive gray (5Y 4/2), very stiff, moist; low to medium plasticity; trace fine sand.
				19				
			MW-8-	20				
0	27	S&H	20					

Remarks:

* Converted to equivalent Standard Penetration blows/ft.

Log of Boring

BORING NO.

GeoStrategies Inc.

MW-8

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
729001		12/91		

Field location of boring: (See Plate 2)	Project No.: 729001	Date: 12/6/91	Boring No.: MW-8
	Client: Chevron Service Station No. 5542		
	Location: 7007 San Ramon Road		
	City: Dublin, California		Sheet 2 of 2
	Logged by: R.S.Y.	Driller: Hazmat	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inches	Top of Box Elevation:	Datum:	

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Water Level / Time / Date	Description
				21					
				22					
				23		▽			10% medium sand, saturated at 23 ft.
				24					
			MW-8-	25					
0	53	S&H	25.5	26					
				27					
				28					
				29					
			MW-8-	30					
0	23	S&H	30.5	31					
				32					
				33					
				34					
			MW-8-	35					lenses of sand 1-2 inches thick interfingered with clay and clayey sand.
0	15	S&H	35.5	36					
				37					Bottom of Boring at 35.5 ft. 12/6/91
				38					
				39					
				40					

Remarks:

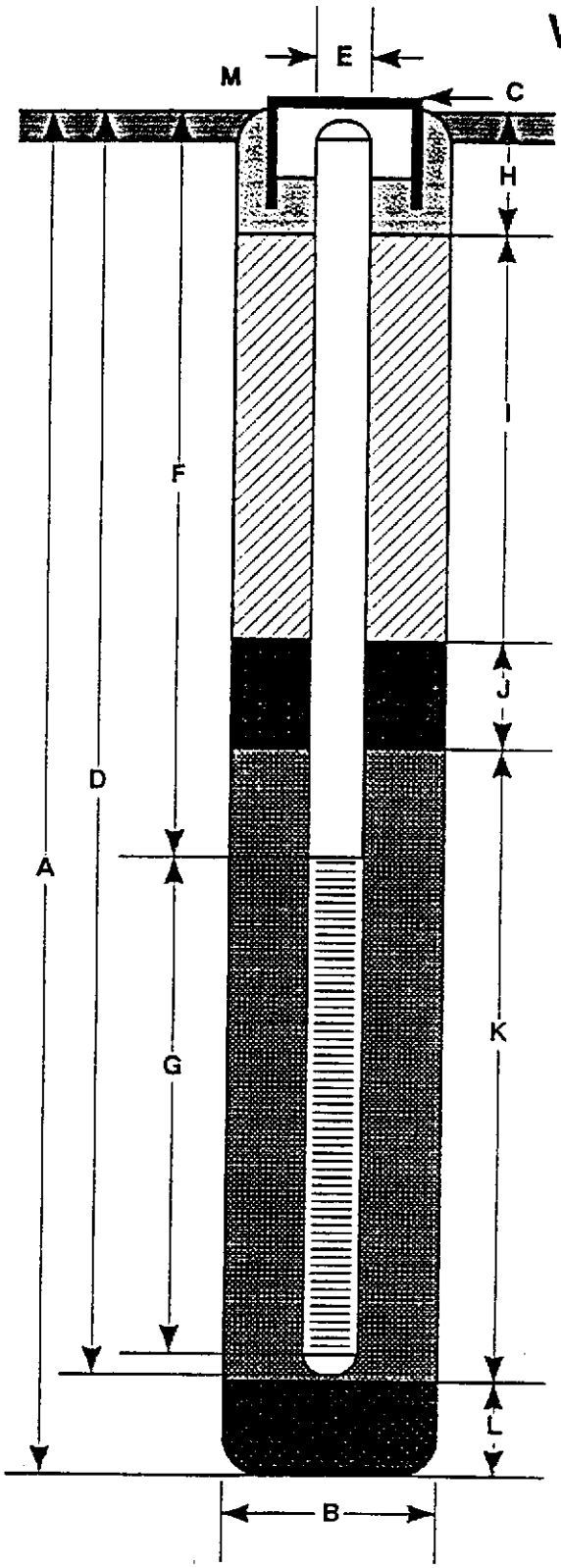
GeoStrategies Inc.

Log of Boring

BORING NO. MW-8

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
729001	MCC	12/91		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 35.5 ft.

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

C Top of Box Elevation 355.54 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 35 ft.
Material Schedule 40 PVC

E Casing Diameter 2 in.

F Depth to Top Perforations 15 ft.

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

H Surface Seal from 0.0 to 1.5 ft.
Seal Material Concrete grout

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

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

K Gravel Pack from 13 to 35 ft.
Pack Material Lonestar #2/12 sand

L Bottom Seal 0.5 ft.
Seal Material Native material

M Traffic-rated box with locking well cap and lock.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

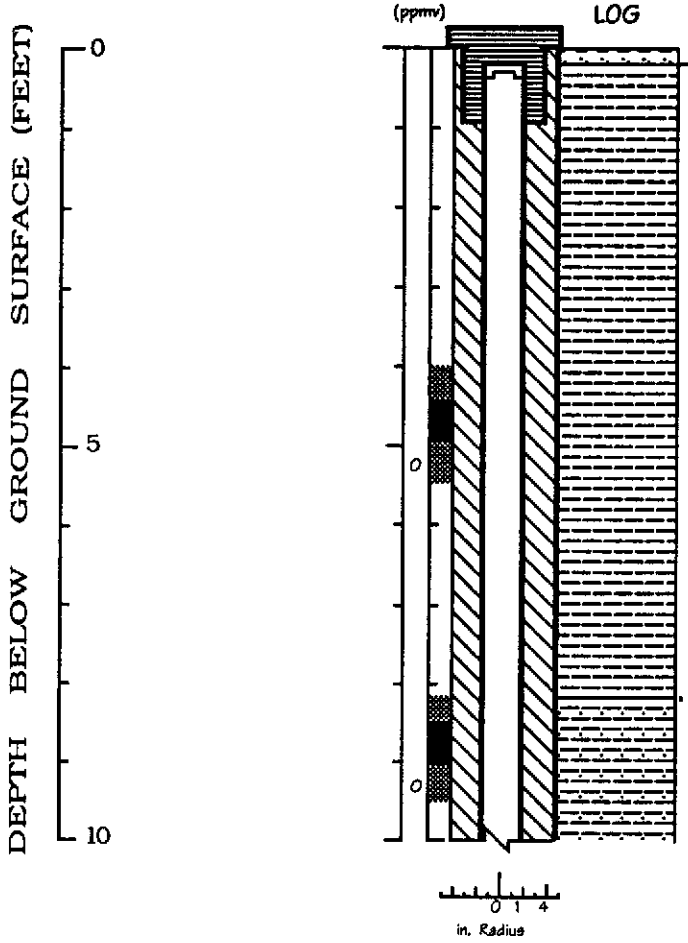
Well Construction Detail

WELL NO.
MW-8

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
729001	MCC	12/91		

WELL MW-9

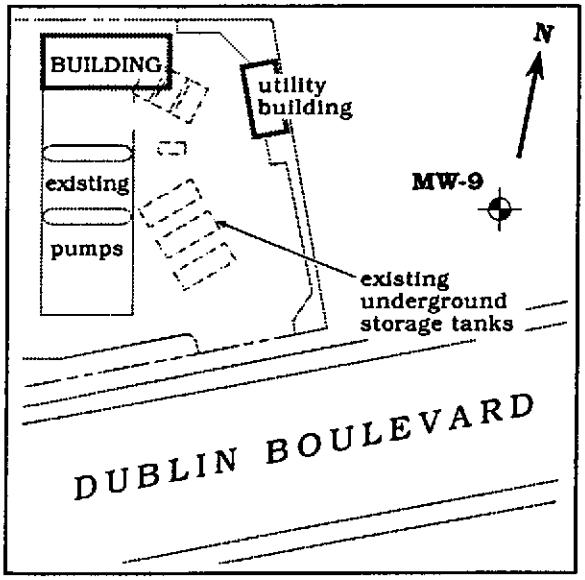
SIERRA



Well Construction and Boring Log - Well MW-9

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

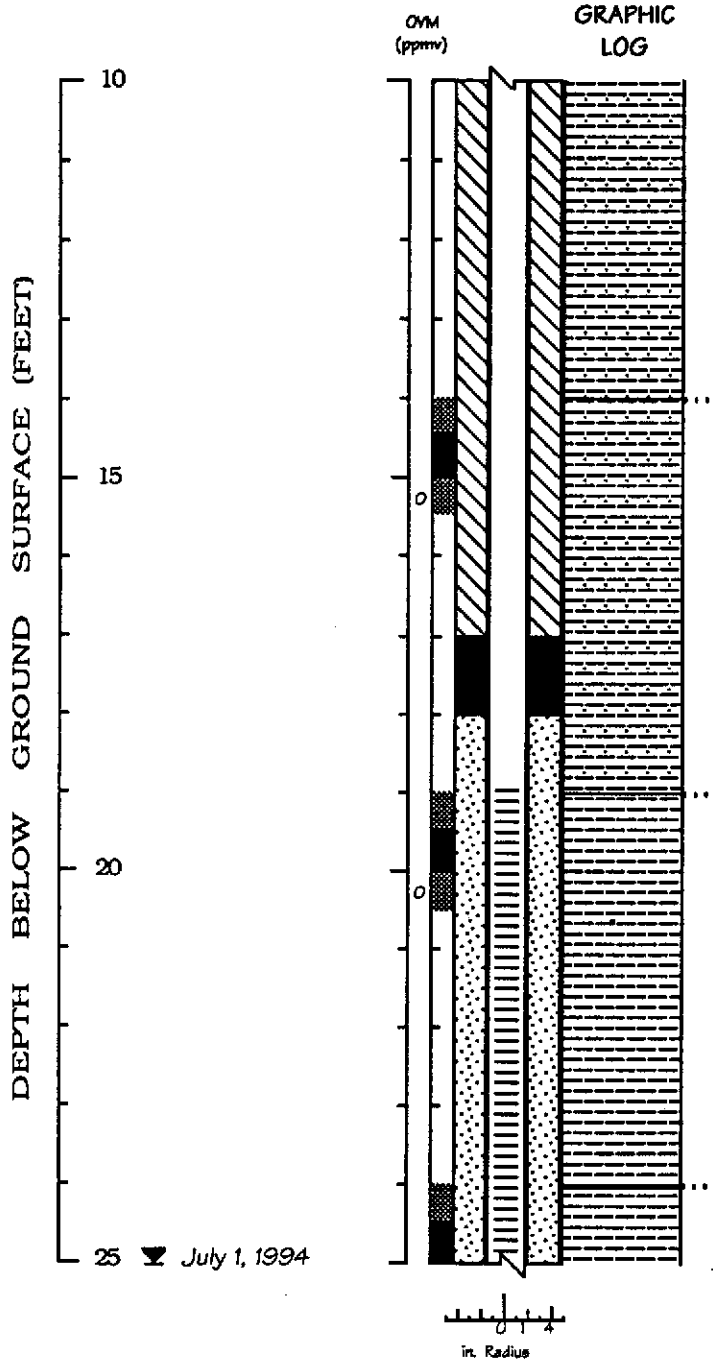
Logged by:	Argy Mena
Supervisor:	C. Bramer P.E. #C48846
Drilling Company:	Soils Exploration Services
C-57#:	582696
Driller:	Morris Petersen
Drilling Method:	Hollow stem auger
Date Drilled:	June 8, 1994
Well Head Completion:	Locking cap & traffic-rated vault
Type of sampler:	Split barrel (2" ID)



WELL MW-9

(continued)

SIERRA



Sandy Lean CLAY with Gravel (CL): *continued*

Sandy Fat CLAY (CH): *brown; moist; stiff; ~50% clay; ~10% silt; ~30% very fine to fine sand; ~10% gravel to 1/8" diameter; trace angular gravel to 1" diameter; low est K; high plasticity*

Fat CLAY with Sand (CH): *olive brown; moist; firm; ~60% clay; ~20% silt; ~20% fine sand; low est K; micaceous, trace caliche nodules; high plasticity*

Lean CLAY (CL): *olive brown; moist; firm; ~80% clay; ~20% silt; trace gravels; low est K; trace caliche nodules, micaceous*

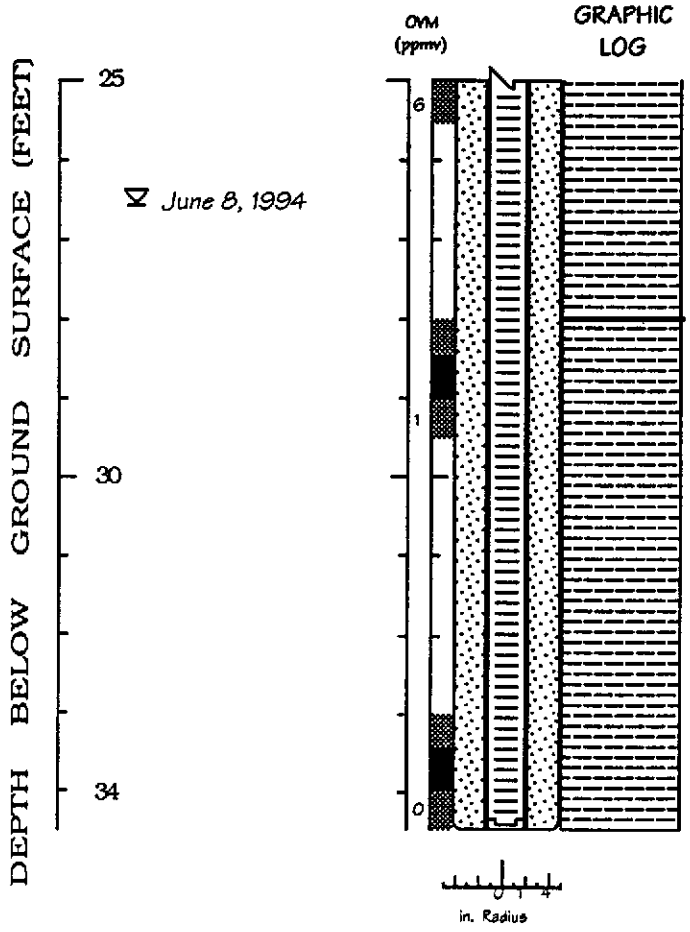
Well Construction and Boring Log - Well MW-9

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

WELL MW-9

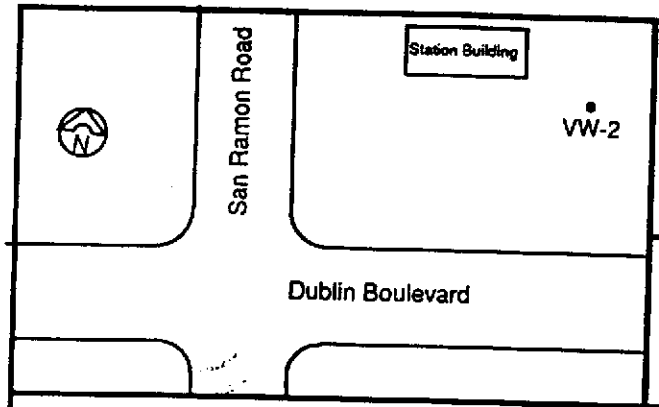
(continued)

SIERRA



Well Construction and Boring Log - Well MW-9

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

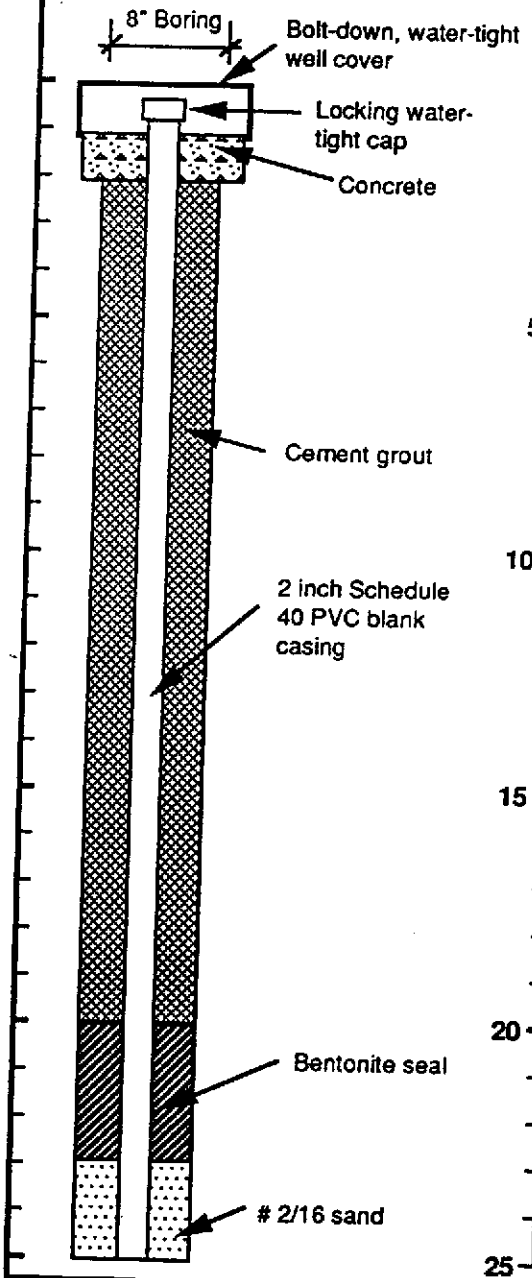


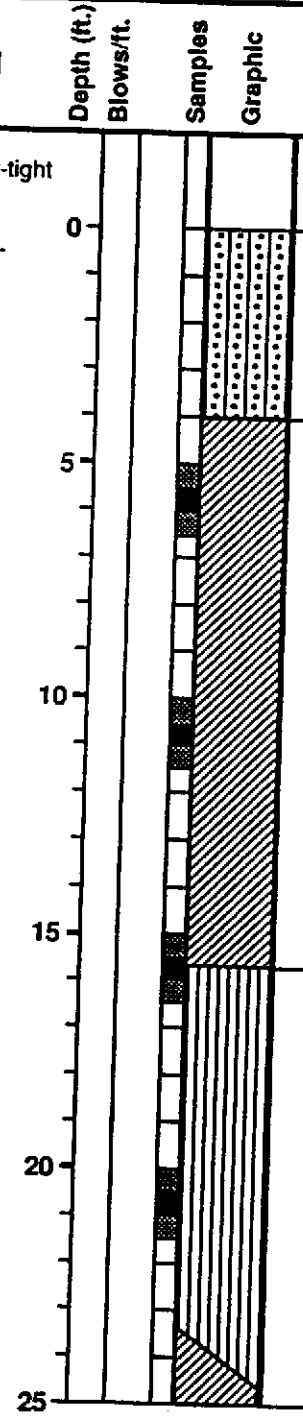
LOG OF BORING VW-2

Chevron Service Station #9-5542
7007 San Ramon Road
Dublin, California

Project No.: RC09303
Logged By: M. M. Bessette
Drilling Co.: Great Sierra
Driller: Scott Irwin

Date Drilled: November 25, 1992
Drilling Method: 8" hollow-stem auger
Sampling Method: Split Spoon
Inclination: Vertical





DESCRIPTION

Surface Elevation: 363.39 feet
Casing Elevation: 363.10 feet

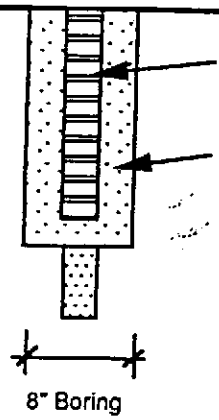
SILTY GRAVEL (GM); Backfill material; dark brown (10YR, 4/3); poorly sorted; 50-60% fine-gravel; 40-50% silt; dense; dry.

SILTY CLAY (CL); dark brown (10YR, 3/3); 60-70% clay; 15-25% fine-grained sand; 10-20% silt; roots; very stiff; dry.

SANDY SILT (ML); brown (10YR 5/3); poorly sorted; 50-60% silt; 30-40% fine-grained sand; trace coarse-grained sand; roots; stiff; damp.

@ 20 feet: same as above with moderate sorting; 15-25% fine-grained sand; trace medium-grained sand; stiff; damp.

WELL CONSTRUCTION



Depth (ft.) | Blows/ft. | Samples | Graphic

LOG OF BORING VW-2 (continued)

DESCRIPTION

SILTY CLAY (CL); dark grayish brown (2.5Y, 4/2); 55-65% clay; 20-30% silt; 10-20% fine-grained sand; stiff; damp.

30

SANDY SILT (ML); dark greenish gray (5GY, 4/1); 50-60% silt; 35-45% fine-grained sand; 5-10% medium-grained sand; trace coarse-grained sand; stiff; damp.

Bottom of boring: 31.5 feet BGS

35

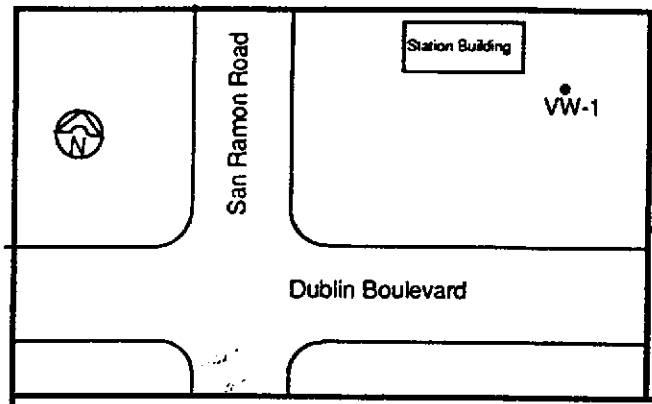
40

45

50

55

60

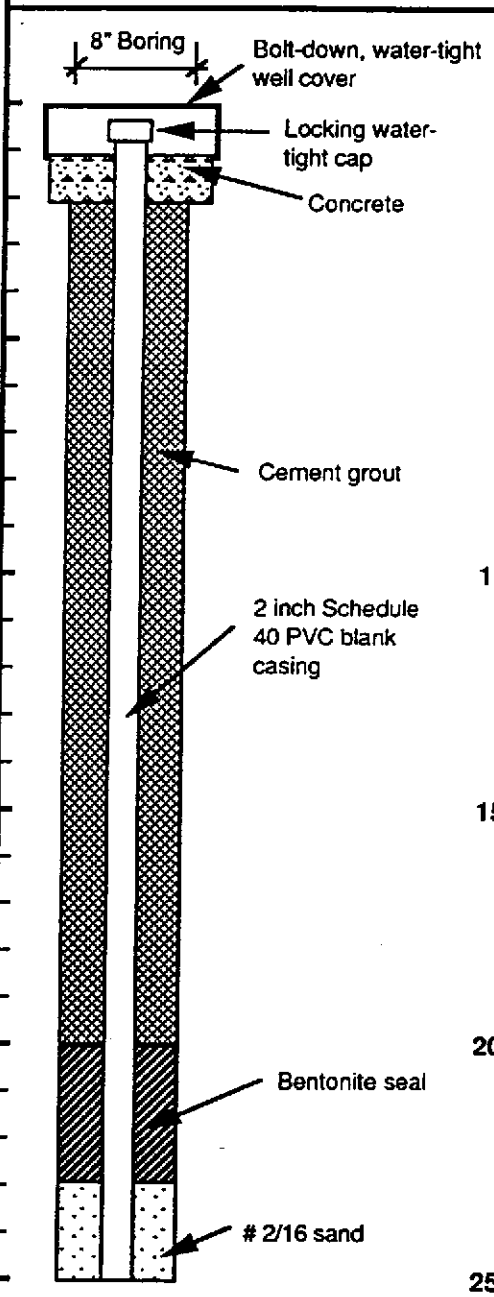


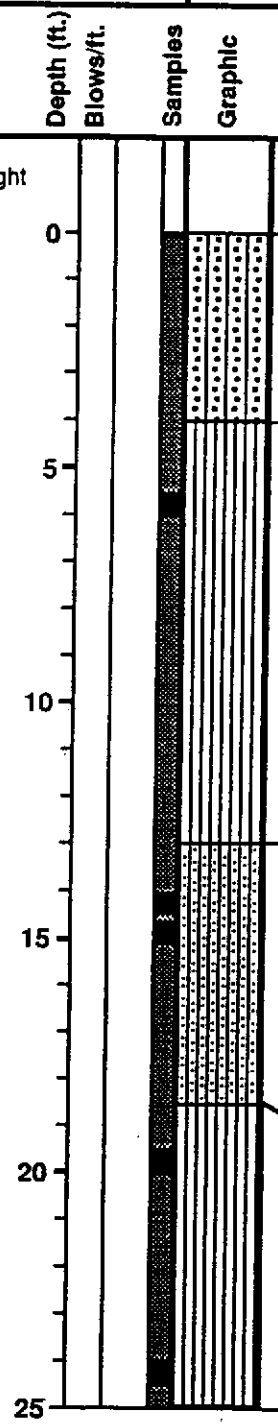
LOG OF BORING VW-1

Chevron Service Station #9-5542
7007 San Ramon Road
Dublin, California

Project No.: RC09303
Logged By: M. M. Bessette
Drilling Co.: Great Sierra
Driller: Scott Irwin

Date Drilled: November 24, 1992
Drilling Method: 10" hollow-stem auger
Sampling Method: Continuous
Inclination: Vertical





DESCRIPTION

Surface Elevation: 363.80 feet
Casing Elevation: 363.57 feet

SILTY GRAVEL (GM); Backfill material; dark brown (10YR, 4/3); poorly sorted; 50-60% fine-gravel; 40-50% silt; dense; dry.

CLAYEY SILT (ML); dark brown (10YR, 3/3); 5-15% fine-grained sand; 5-10% clay; 5-10% fine gravel; dense; dry; roots.

@ 8 feet: dark yellowish brown (10YR, 4/4); 75-85% silt; 15-25% fine-grained sand; trace coarse-grained sand; dry; dense; extensive root galleries.

@ 10 feet: very dark greyish brown (10YR, 5/4); 15-20% clay; trace fine-grained sand; hard; damp.

SILTY SAND (SM); brown (10YR 5/3); moderate sorting; 70-80% fine-grained sand; 20-30% silt; loose; damp.

@ 15 feet: trace coarse-grained sand.

@ 17.5 feet: dark brown (10YR 4/3); poorly sorted; 60-70% fine-grained sand; 15-25% coarse gravel; 5-10% silt; 5-10% coarse-grained sand; damp.

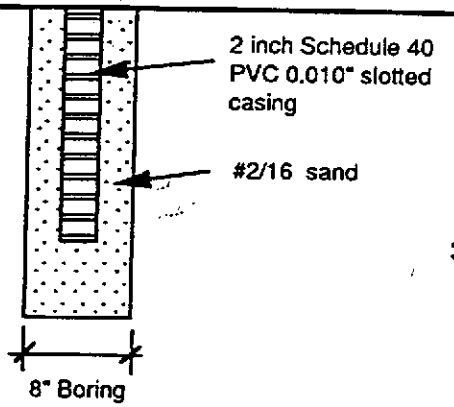
SILT (ML); yellowish brown (10YR, 5/4); soft; damp.

@ 22 feet; dark brown (10YR, 4/3); 70-80% silt; 20-30% clay; trace fine-grained sand; stiff; damp.

@ 24 feet: dark grey; 60-70% silt; 15-25% clay; 10-15% fine-grained sand; stiff; damp.

LOG OF BORING VW-1 (continued)

WELL CONSTRUCTION



Depth (ft.) | Blows/ft. | Samples | Graphic

DESCRIPTION

@ 28 feet: dark greyish brown (5GY, 4/1); 60-70% silt; 20-25% very fine-grained sand; 5-15% clay; medium firm; damp.

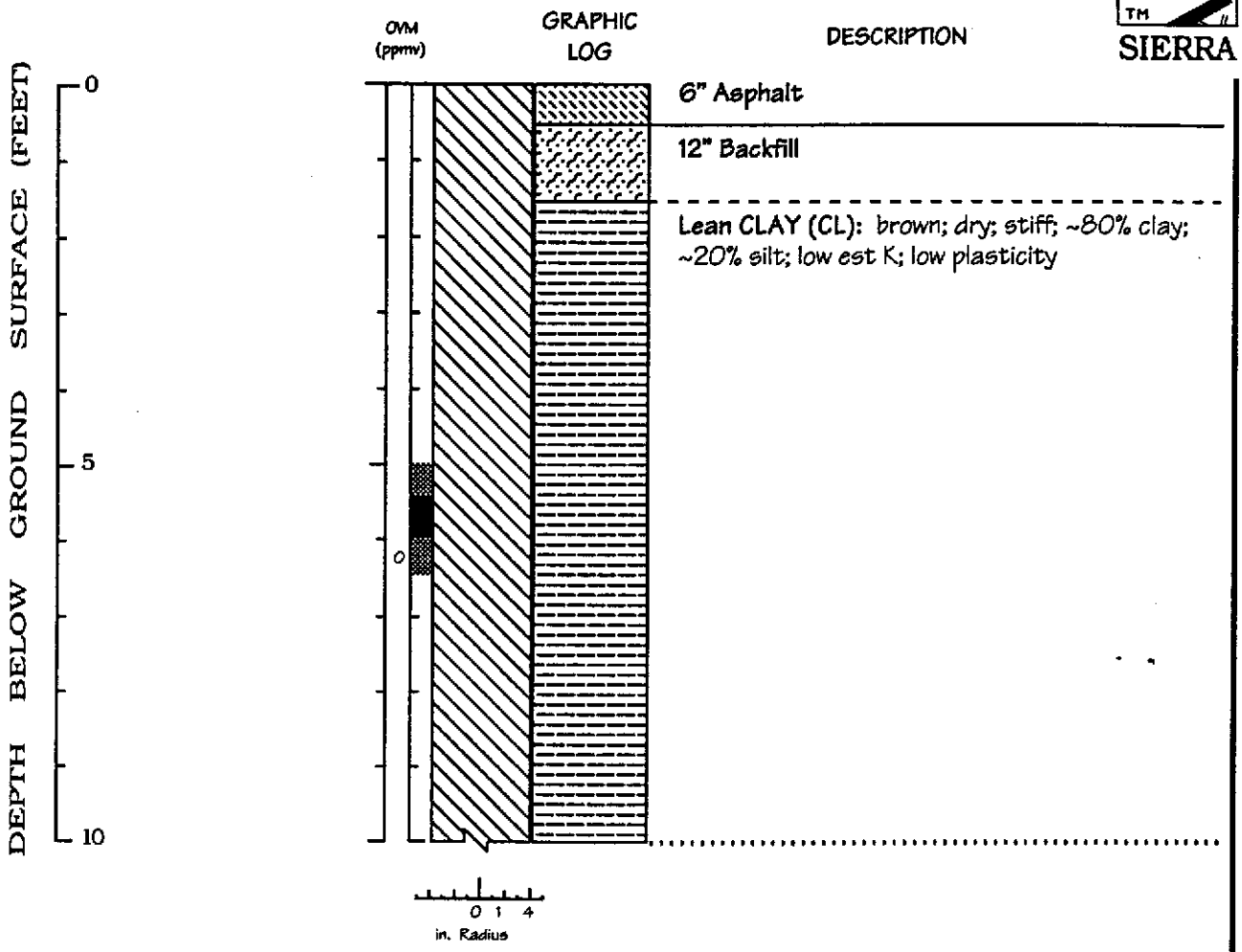
11/24/92

Bottom of boring: 31.5 feet.

30
35
40
45
50
55
60

BORING B-1

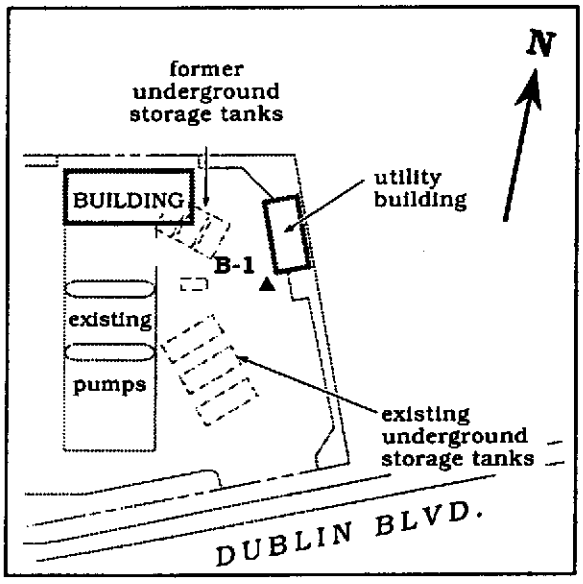
SIERRA



Boring Log - Boring B-1

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

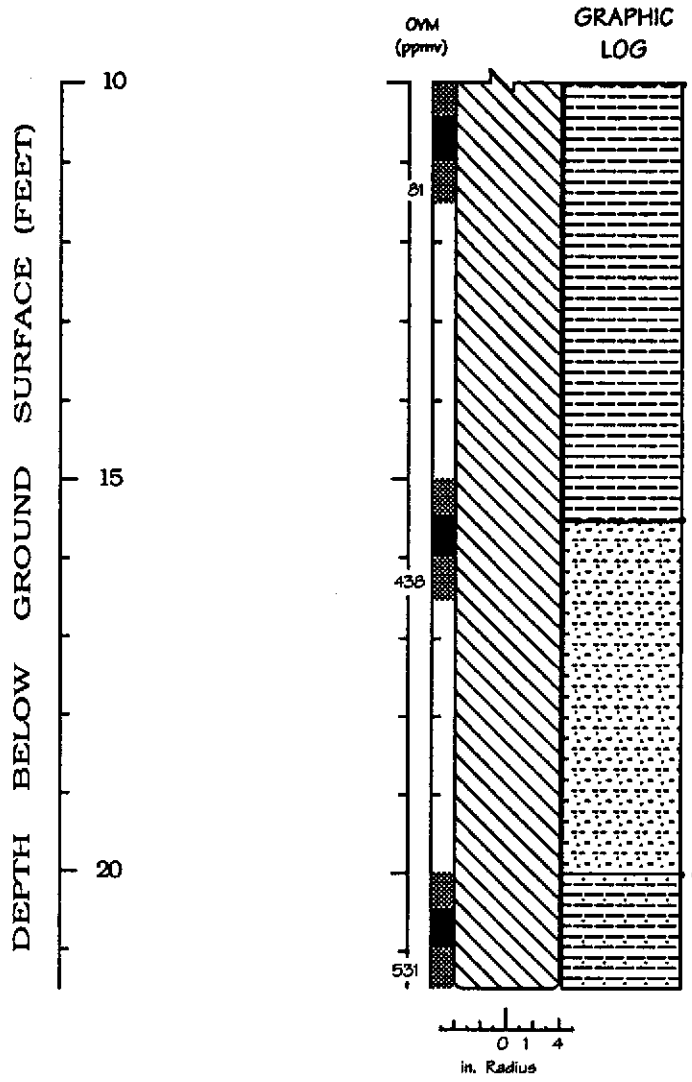
Logged by:	Argy Mena
Supervisor:	C. Bramer P.E. #C48846
Drilling Company:	Soils Exploration Services
C-57#:	582696
Driller:	Morris Petersen
Drilling Method:	Hollow stem auger
Date Drilled:	June 8, 1994
Well Head Completion:	Grouted to surface
Type of sampler:	Split barrel (2" ID)



BORING B-1

(continued)

SIERRA



Lean CLAY with Sand (CL): *dark brown; dry; very stiff; ~70% clay; ~10% silt; ~20% fine sand; low est K; local gravel to 1/8" diameter; trace organic matter*

Silty SAND (SM): *brown; moist; loose; ~10% clay; ~15% silt; ~75% fine to coarse sub-angular to rounded sand; trace gravel to 1/4" diameter; low to moderate est K; trace organics*

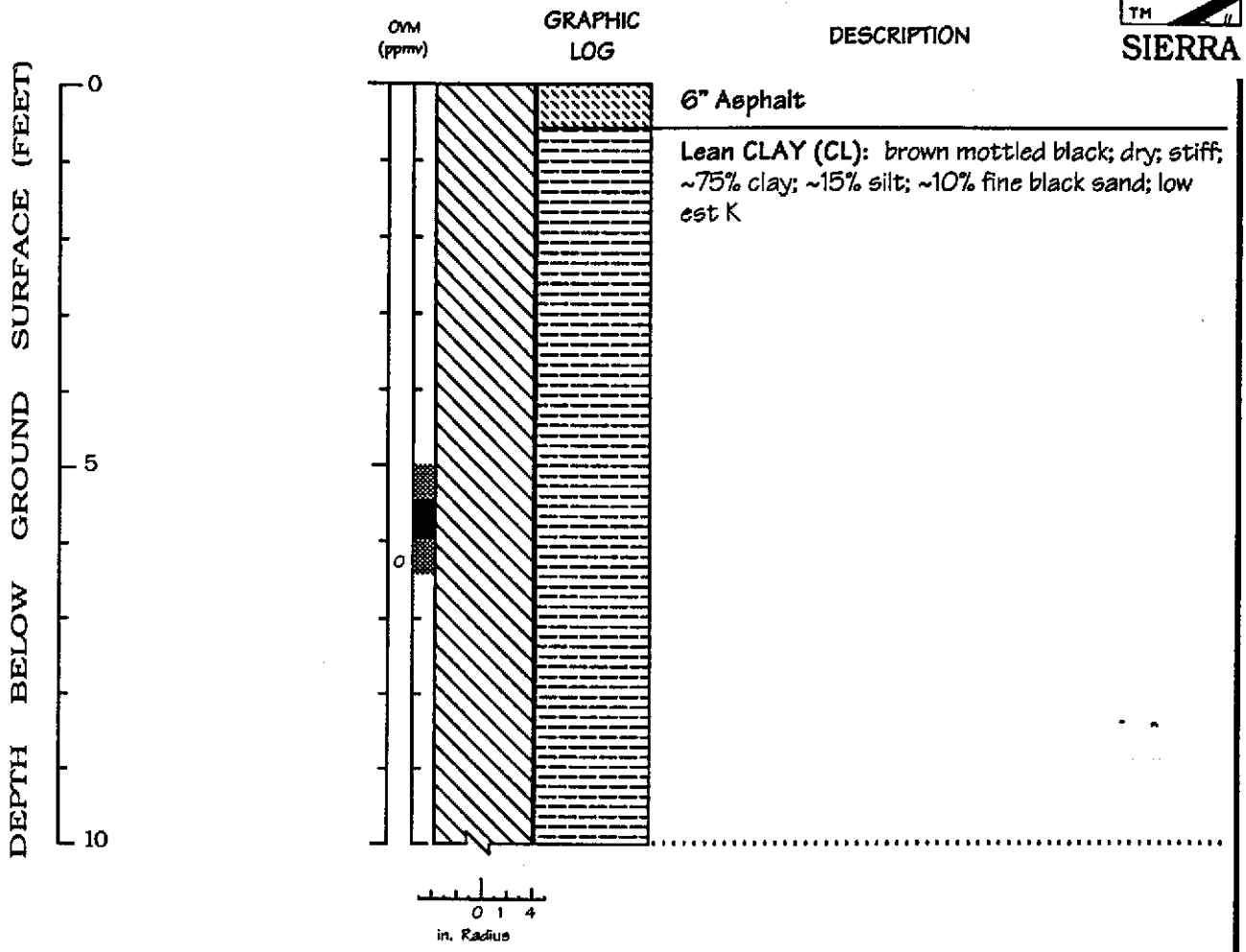
Sandy Lean CLAY (CL): *brown; moist; firm; ~50% clay; ~20% silt; ~30% fine micacious sand; low est K; trace organics*
BOH at 21.5'

Boring Log - Boring B-1

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

BORING B-2

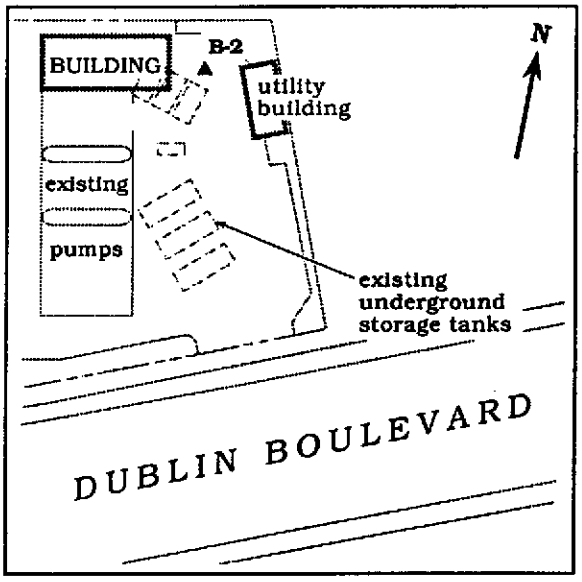
SIERRA



Boring Log – Boring B-2

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

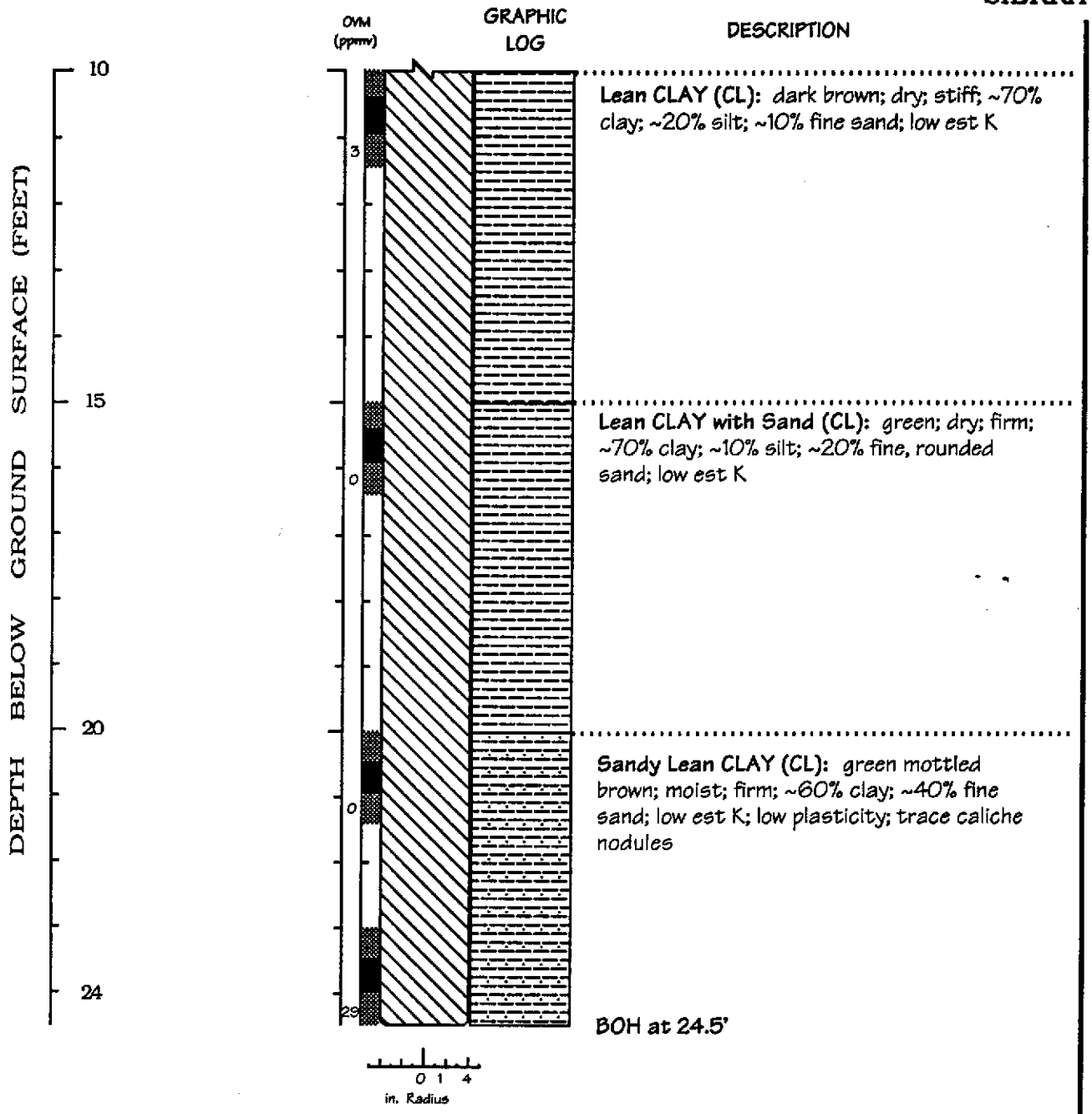
Logged by:	Argy Mena
Supervisor:	C. Bramer P.E. #C48846
Drilling Company:	Soils Exploration Services
C-57#:	582696
Driller:	Morris Petersen
Drilling Method:	Hollow stem auger
Date Drilled:	June 8, 1994
Well Head Completion:	Grouted to surface
Type of sampler:	Split barrel (2" ID)



BORING B-2

(continued)

SIERRA



Boring Log – Boring B-2

Chevron Service Station #9-5542
7007 San Ramon Valley Blvd.
Dublin, California

Gettler-Ryan, Inc.

Log of Boring B-3

PROJECT: *Chevron SS# 9-5542*	LOCATION: *7007 San Ramon Road, Dublin, CA*
G-R PROJECT NO. : *5290.01*	SURFACE ELEVATION: *feet MSL*
DATE STARTED: *06/12/96*	WL (ft. bgs): *23.3* DATE: *06/12/96* TIME: *14:30*
DATE FINISHED: *06/12/96*	WL (ft. bgs): DATE: TIME:
DRILLING METHOD: *6 in. Hollow Stem Auger*	TOTAL DEPTH: *30 Feet*
DRILLING COMPANY: *Bay Area Exploration, Inc.*	GEOLOGIST: *B. Sieminski*

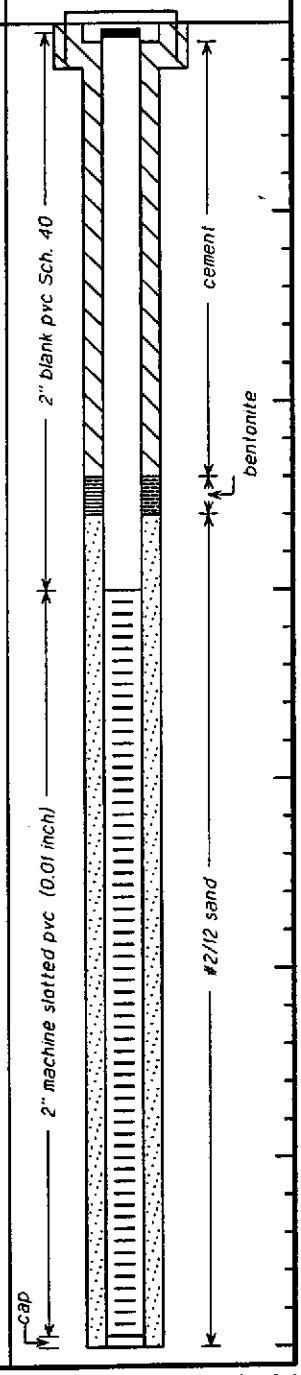
DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION	REMARKS
				ML	GRAVELLY SILT (ML) - brown (7.5YR 5/2), damp; 50% silt, 30% fine gravel, 20% fine to coarse sand.	Boring backfilled with neat cement with 2% bentonite.
				CL	CLAY WITH SAND (CL) - dark grayish brown (2.5Y 4/2), damp, low plasticity; 85% clay, 15% fine to coarse sand, trace fine gravel.	
5	0		B3-6			
				CL	SANDY CLAY (CL) - dark grayish brown (2.5Y 4/2), moist, low plasticity ; 65% clay, 30% fine to coarse sand, 5% fine gravel.	
10	0		B3-10			
	0		B3-12			
	0		B3-14			
15	0		B3-16	SC	CLAYEY SAND (SC) - dark grayish brown (2.5Y 4/2), moist; 60% fine sand , 40% clay.	
	0		B3-18	CL	CLAY WITH SAND (CL) - olive (5Y4/3) with white (5Y 8/1) and brown (10 YR 5/3) mottling, moist, low plasticity; 85% clay, 15% fine to coarse sand.	
20	0		B3-20			
	320		B3-22			
					▽ Becomes saturated at 23.3 feet.	
	980		B3-24	SC	CLAYEY SAND (SC) - dark greenish gray (5GY 4/1), saturated; 60% fine sand, 40% clay; product odor.	
25	1050		B3-26	CL	SANDY CLAY (CL) - dark greenish gray (5GY 4/1), saturated, low plasticity; 60% fine to coarse sand, 40% clay, trace fine gravel; product odor.	
	370		B3-28		Color changes to olive (5Y 4/3) with white mottling (5Y 8/1), sand decreases to 30%, becomes moist.	
	760		B3-29.5			
30					Bottom of boring at 30 feet, 06/12/96.	
					(* = not applicable - sampling performed using 5-foot core barrel.)	
35						

JOB NUMBER: *5290.01*

Gettler-Ryan, Inc.	Log of Boring MW-10
PROJECT: *Chevron SS# 9-5542*	LOCATION: *7007 San Ramon Road, Dublin, CA*
G-R PROJECT NO. : *5290.01*	SURFACE ELEVATION: *feet MSL*
DATE STARTED: *06/12/96*	WL (ft. bgs): *21.0* DATE: *06/12/96* TIME: *12:50*
DATE FINISHED: *06/12/96*	WL (ft. bgs): DATE: TIME:
DRILLING METHOD: *8 in. Hollow Stem Auger*	TOTAL DEPTH: *35 Feet*
DRILLING COMPANY: *Bay Area Exploration, Inc.*	GEOLOGIST: *B. Sieminski*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
5							Boring MW-10 was not sampled because it was located approximately 5 feet from boring SB-3.
10							
15							
20							▽
25							
30							
35							Bottom of boring at 35 feet, 06/12/96.

WELL DIAGRAM



JOB NUMBER: *5290.01*

Gettler-Ryan, Inc.

Log of Boring B-4

PROJECT: *Chevron SS# 9-5542*	LOCATION: *7007 San Ramon Road, Dublin, CA*
G-R PROJECT NO. : *5290.01*	SURFACE ELEVATION: *feet MSL*
DATE STARTED: *06/12/96*	WL (ft. bgs): *24.5* DATE: *06/12/96* TIME: *16:10*
DATE FINISHED: *06/12/96*	WL (ft. bgs): DATE: TIME:
DRILLING METHOD: *6 in. Hollow Stem Auger*	TOTAL DEPTH: *30 Feet*
DRILLING COMPANY: *Bay Area Exploration, Inc.*	GEOLOGIST: *B. Sieminski*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION	REMARKS
				ML	GRAVELLY SILT (ML) - grayish brown (10YR 5/2), damp, low plasticity; 50% silt, 30% fine gravel, 20% fine to coarse sand.	Boring backfilled with neat cement with 2% bentonite.
				CL	SANDY CLAY (CL) - dark grayish brown (2.5Y 4/2), damp, low plasticity; 70% clay, 30% fine to coarse sand.	
5	0		B4-6			
10	0		B4-10			
	0		B4-12	SM	SILTY SAND WITH GRAVEL (SM) - light olive brown (2.5Y 5/4), damp; 50% fine to coarse sand, 30% silt, 20% fine gravel.	
15				CL	CLAY (CL) - olive gray (5Y 4/2), moist, low plasticity; 90% clay, 10% fine sand; soil description based on sample B4-18 collected from drill cuttings.	
	0		B4-18			
20				CL	SANDY CLAY (CL) - dark greenish gray (5GY 4/1), moist, low to medium plasticity; 55-70% clay, 30-40% fine sand; 0-5% fine gravel; soil description based on sample B4-24 recovered using a split spoon sampler.	
	0		B4-24		▽ Becomes saturated at 24.5 feet.	
25	0		B4-26			
	0		B4-27			
	0		B4-28	SC	CLAYEY SAND (SC) - light olive brown (2.5Y 5/4), saturated; 60% fine to coarse sand, 30% clay, 10% fine gravel.	
	0		B4-29.5	CL	SANDY CLAY (CL) - olive brown (2.5Y 4/2), saturated, low plasticity; 50% clay, 40% fine to coarse sand, 10% fine gravel; color changes to olive gray (5Y 5/2) at 29 feet; sand increases to 50%, no gravel.	
30					Bottom of boring at 30 feet, 06/12/96.	
					(* = not applicable - sampling performed using 5-foot core barrel.)	
35						

JOB NUMBER: *5290.01*

Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring SB-1

Project Chevron - Dublin — Owner Chevron U.S.A. Products Company
Location 7007 San Ramon Road, Dublin, CA — Proj. No. 02070 0156
Surface Elev. ____ — Total Hole Depth 27 ft. — Diameter 2 in.
Top of Casing ____ — Water Level Initial 21.8 ft. — Static ____
Screen: Dia ____ — Length ____ — Type/Size ____
Casing: Dia ____ — Length ____ — Type ____
Fill Material Neat Cement — Rig/Core Geoprobe/Polytube HDP
Drill Co. Kvilhaug — Method Geoprobe
Driller Mike Crocker — Log By Brian McAloon — Date 07/12/95 — Permit # 95361
Checked By Ed Simonis — License No. RG#4422

See Site Map For Boring Location

COMMENTS:

Collected "GRAB" groundwater samples.

Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
-2						
0					GM	Silty GRAVEL (40,60): backfill.
2					CL	Silty CLAY (40,60): brown, dry, no hydrocarbon odor.
4						
6	0	SB-1 -7.0'			CL	Gravelly silty CLAY (10,30,60): brown, dry to damp, no hydrocarbon odor.
8						
10						Silty CLAY (40,60): brown, with white mottling, dry to damp, no hydrocarbon odor.
12	0	SB-1 -12.0'			CL	
14						
16						Clayey sandy SILT (20,30,50): brown grading to silty CLAY (30,70): brown, damp, no hydrocarbon odor.
18	0	SB-1 -17.0'			ML/CL	
20						Sandy silty CLAY (10,30,60): olive-gray with 10% white mottling, 5% rust-brown rootlet cast, damp, no hydrocarbon odor.
22	0	SB-1 -22.0'			CL	*Encountered Water (Drillers Call)*
24						

GROUNDWATER TECHNOLOGY

Drilling Log

Soil Boring SB-1

Project Chevron - Dublin Owner Chevron U.S.A. Products Company
Location 7007 San Ramon Road, Dublin, CA Proj. No. 02070 0156

Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24					CL	Sandy clayey SILT (20,30,50): olive-gray grading to clayey SILT (40,60): damp to moist, strong hydrocarbon odor.
26	60	SB-1 -27.0'	80		ML	
28						End of Boring. Backfilled with neat cement 07/12/95.
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						

GROUNDWATER TECHNOLOGY

Drilling Log

Soil Boring SB-2

Project Chevron - Dublin — Owner Chevron U.S.A. Products Company
Location 7007 San Ramon Road, Dublin, CA — Proj. No. 02070 0156
Surface Elev. ____ Total Hole Depth 27 ft. Diameter 2 in.
Top of Casing ____ Water Level Initial 21.8 ft. Static ____
Screen: Dia ____ Length ____ Type/Size ____
Casing: Dia ____ Length ____ Type ____
Fill Material Neat Cement — Rig/Core Geoprobe/Polytube HDP
Drill Co. Kvilhaug — Method Geoprobe
Driller Mike Crocker — Log By Brian McAloon — Date 07/12/95 — Permit # 95361
Checked By Ed Simonis — License No. RG#4422

See Site Map For Boring Location

COMMENTS:

Collected "GRAB" groundwater samples.

Depth (ft.)	PID (ppm)	Sample ID	Blow Count / % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) — Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0					GM	3" Asphalt Silty GRAVEL (40,60): brown, dry, no hydrocarbon odor (backfill).
2						Silty CLAY: brown.
4					CL	
6	0	SB-2 -7.0'				Sandy silty CLAY (10,30,60): brown, damp, no hydrocarbon odor.
8						
10						
12	0	SB-2 -12.0'			CL	
14						
16	0	SB-2 -17.0'				
18						Clayey SILT (40,60): olive-gray, damp to moist, no hydrocarbon odor.
20					ML	
22	0	SB-2 -22.0'				*Encountered Water (Drillers Call)*
24					CL	Silty CLAY (30,70): olive-gray, damp, no hydrocarbon odors.

GROUNDWATER TECHNOLOGY

Drilling Log

Soil Boring SB-2

Project Chevron - Dublin Owner Chevron U.S.A. Products Company
Location 7007 San Ramon Road, Dublin, CA Proj. No. 02070 0156

Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24						Silty CLAY (cont)
26	2	SB-2 -27.0'			CL	
						End of Boring. Backfilled with neat cement 07/12/95.
28						
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						

Drilling Log

GROUNDWATER TECHNOLOGY

Soil Boring SB-3

Project Chevron - Dublin Owner Chevron U.S.A. Products Company
Location 7007 San Ramon Road, Dublin, CA Proj. No. 02070 0156
Surface Elev. ____ Total Hole Depth 27 ft. Diameter 2 in.
Top of Casing ____ Water Level Initial 21.8 ft. Static ____
Screen: Dia ____ Length ____ Type/Size ____
Casing: Dia ____ Length ____ Type ____
Fill Material Neat Cement Rig/Core Geoprobe/Polytube HDP
Drill Co. Kvilhaug Method Geoprobe
Driller Mike Crocker Log By Brian McAloon Date 07/12/95 Permit # 95361
Checked By Ed Simonis License No. RG#4422

See Site Map For Boring Location

COMMENTS:

Collected "GRAB" groundwater samples.

Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
0						3" Asphalt
2					GM	Silty GRAVEL (40,60): brown, dry.
4					CL	Silty CLAY (35,65): brown, dry, no hydrocarbon odor.
6						Gravelly silty CLAY (10,30,60): brown, dry to damp, no hydrocarbon odor.
8	0	SB-3 -7.0'			CL	
10						Sandy silty CLAY (10,40,50): brown, damp, no hydrocarbon odor.
12	0	SB-3 -12.0'			CL	
14						Sandy silty CLAY (10,30,60): brown with 5% white mottling, damp, no hydrocarbon odor.
16	0	SB-3 -17.0'				
18					CL	
20						
22	0	SB-3 -22.0'				*Encountered Water (Drillers Call)*
24						

GROUNDWATER TECHNOLOGY

Drilling Log

Soil Boring SB-3

Project Chevron - Dublin Owner Chevron U.S.A. Products Company
Location 7007 San Ramon Road, Dublin, CA Proj. No. 02070 0156

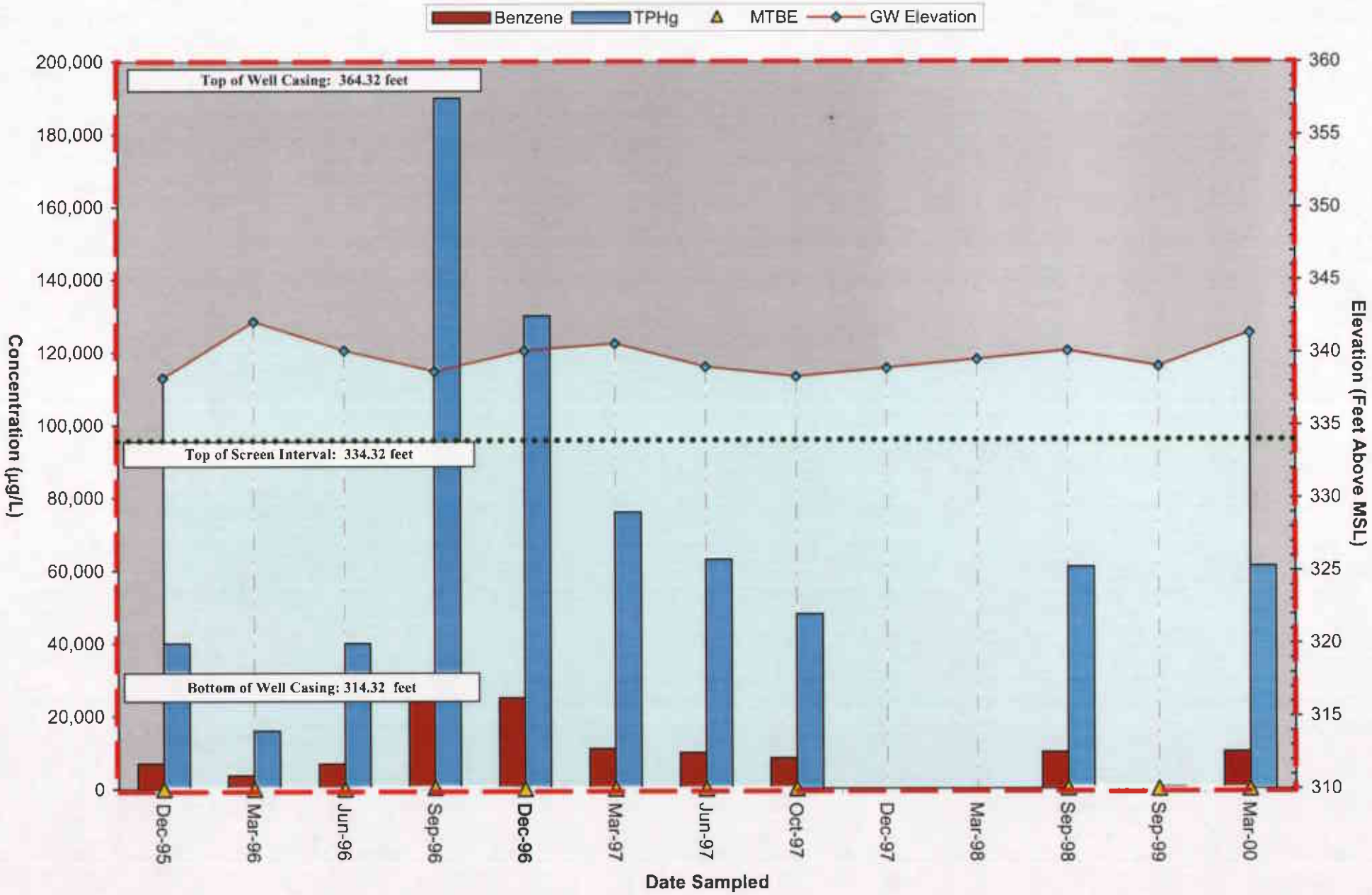
Depth (ft.)	PID (ppm)	Sample ID	Blow Count/ % Recovery	Graphic Log	USCS Class.	Description (Color, Texture, Structure) Trace < 10%, Little 10% to 20%, Some 20% to 35%, And 35% to 50%
24						Sandy silty CLAY (20,20,60): brown, damp to moist, no hydrocarbon odor.
26	0	SB-3 -27.0'			CL	
28						End of Boring. Backfilled with neat cement 07/12/95.
30						
32						
34						
36						
38						
40						
42						
44						
46						
48						
50						
52						
54						
56						

APPENDIX C

Graphs of Groundwater Elevations, TPH as Gasoline, Benzene and MTBE Concentrations versus Time

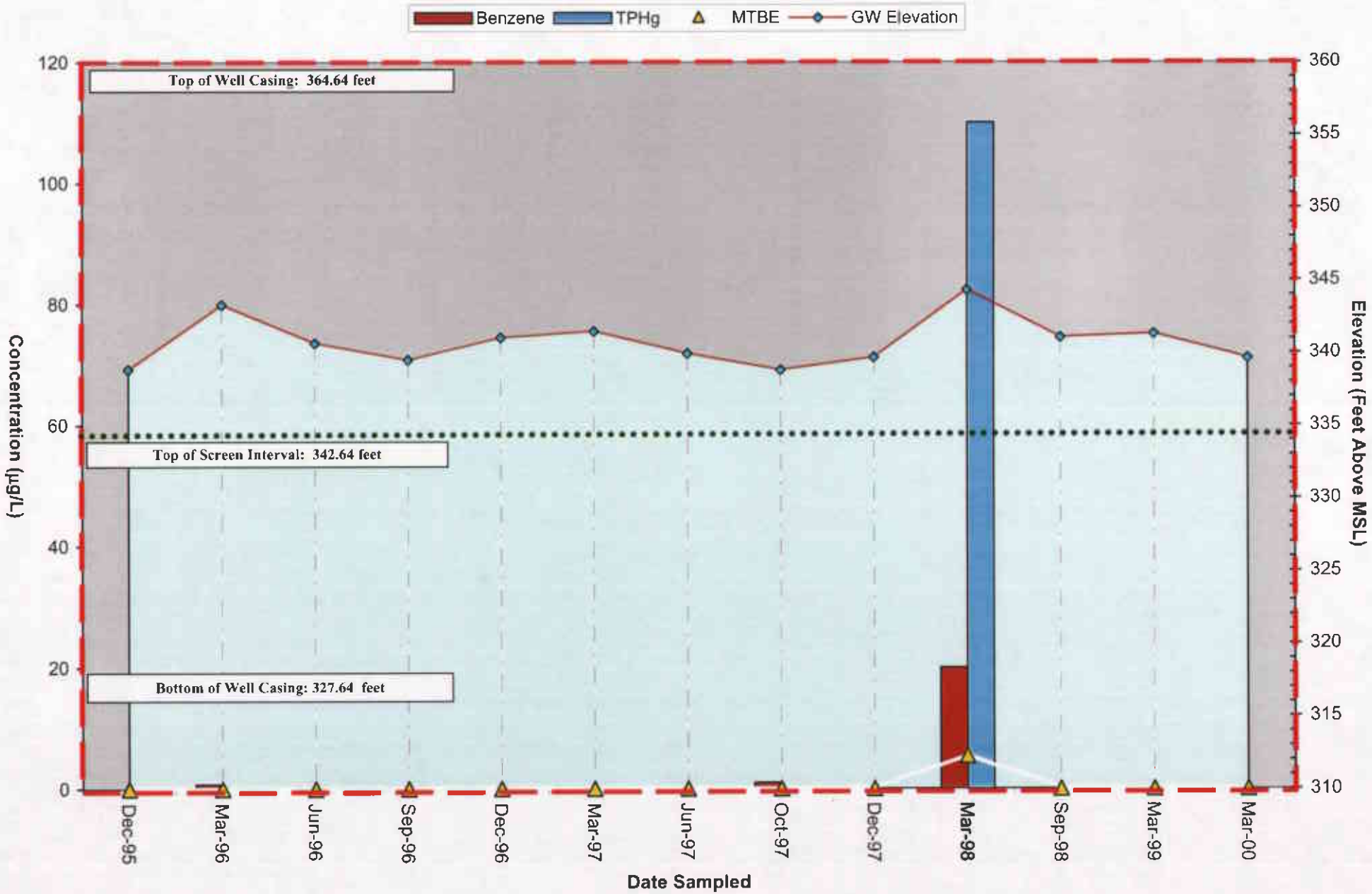
Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

MW-1



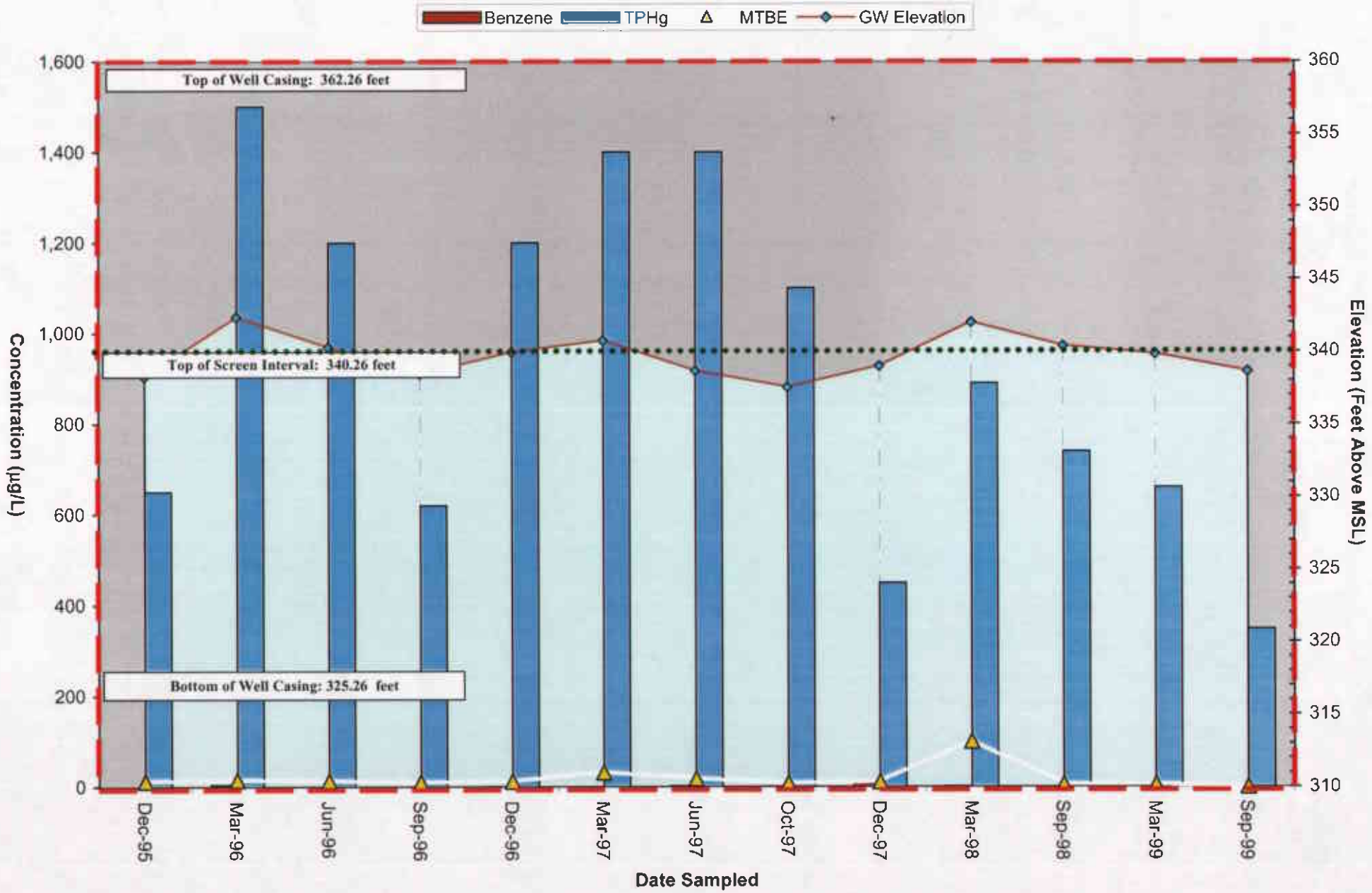
Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

MW-2



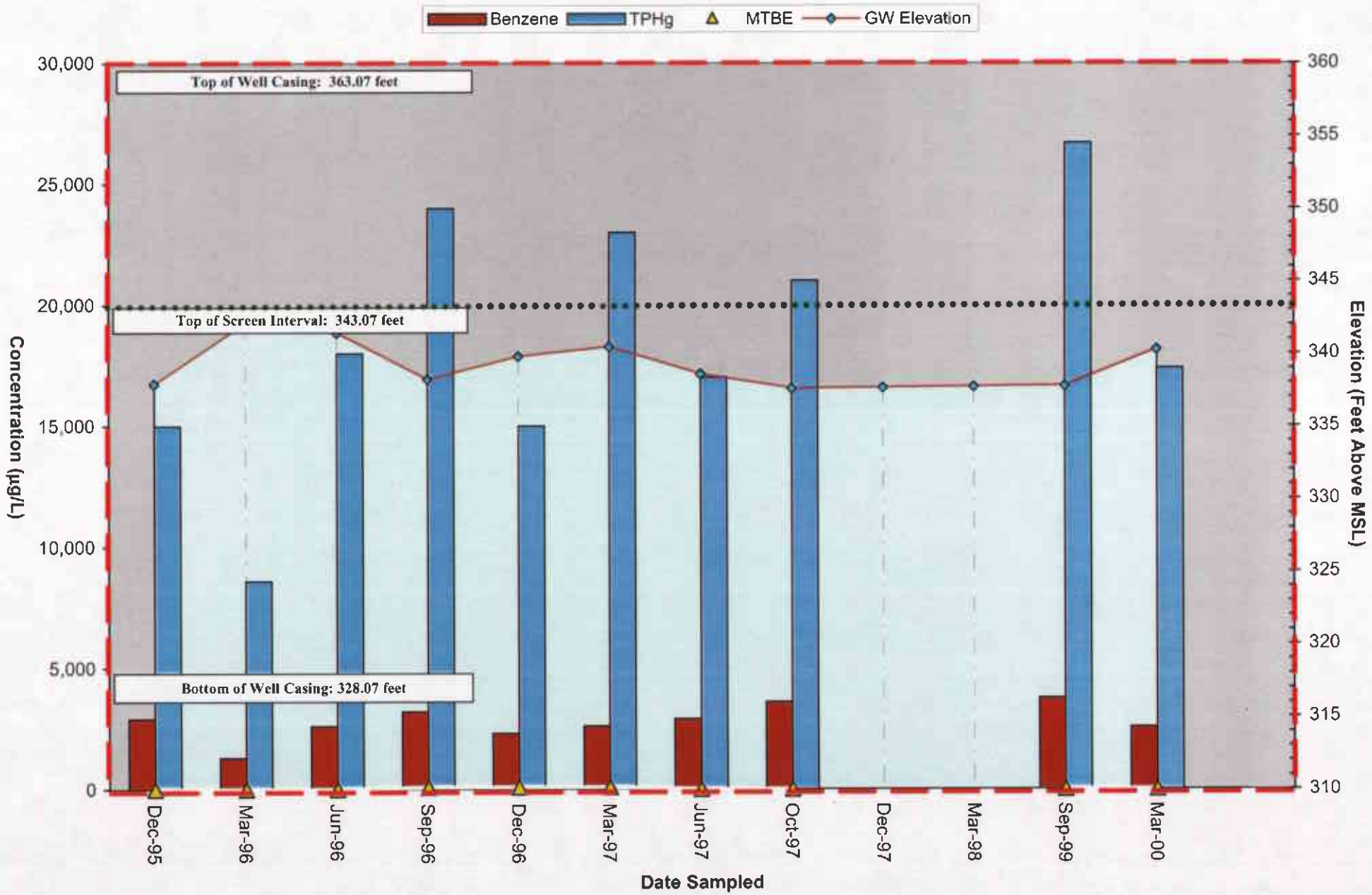
Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

MW-3



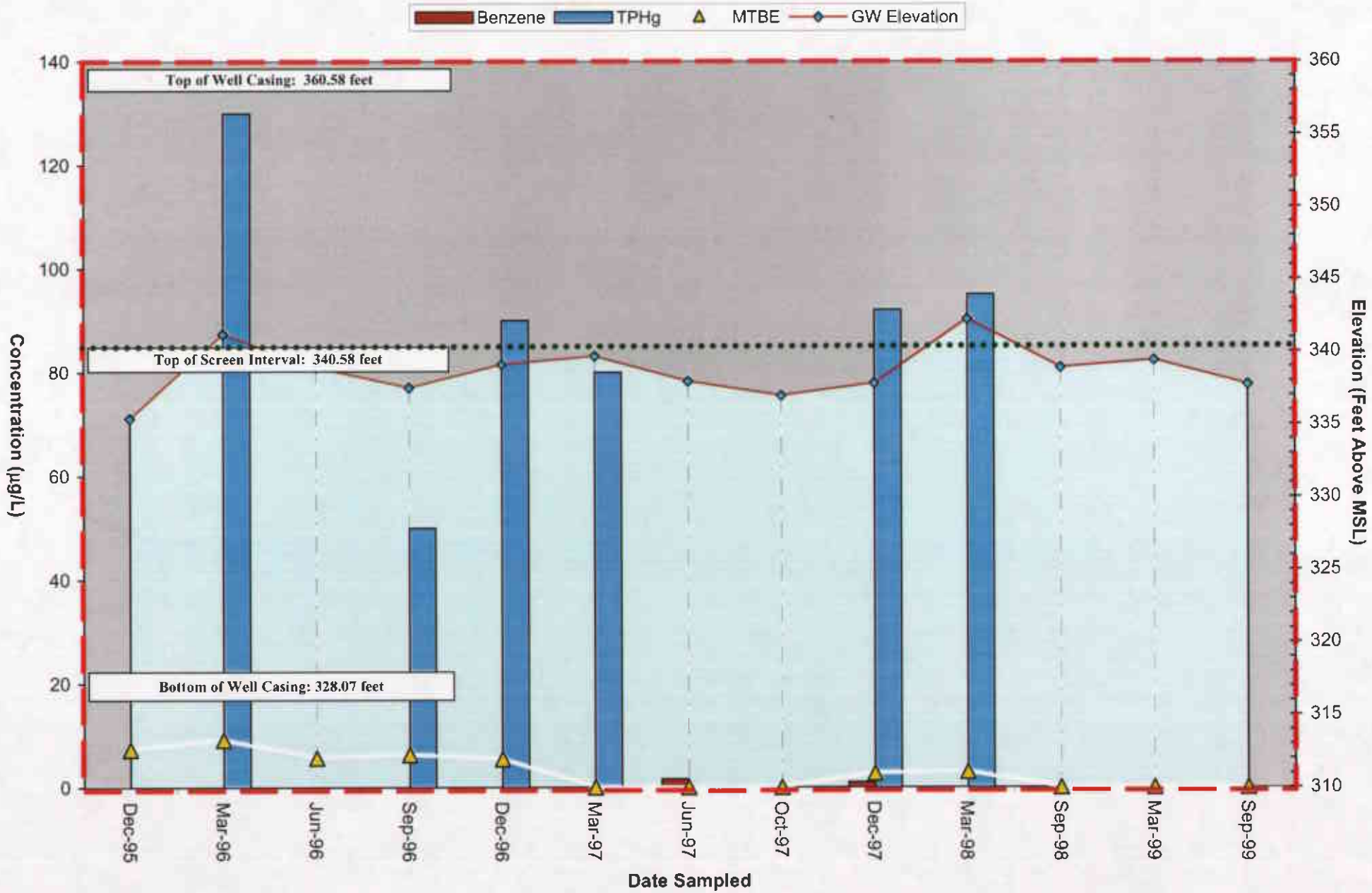
Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

MW-4



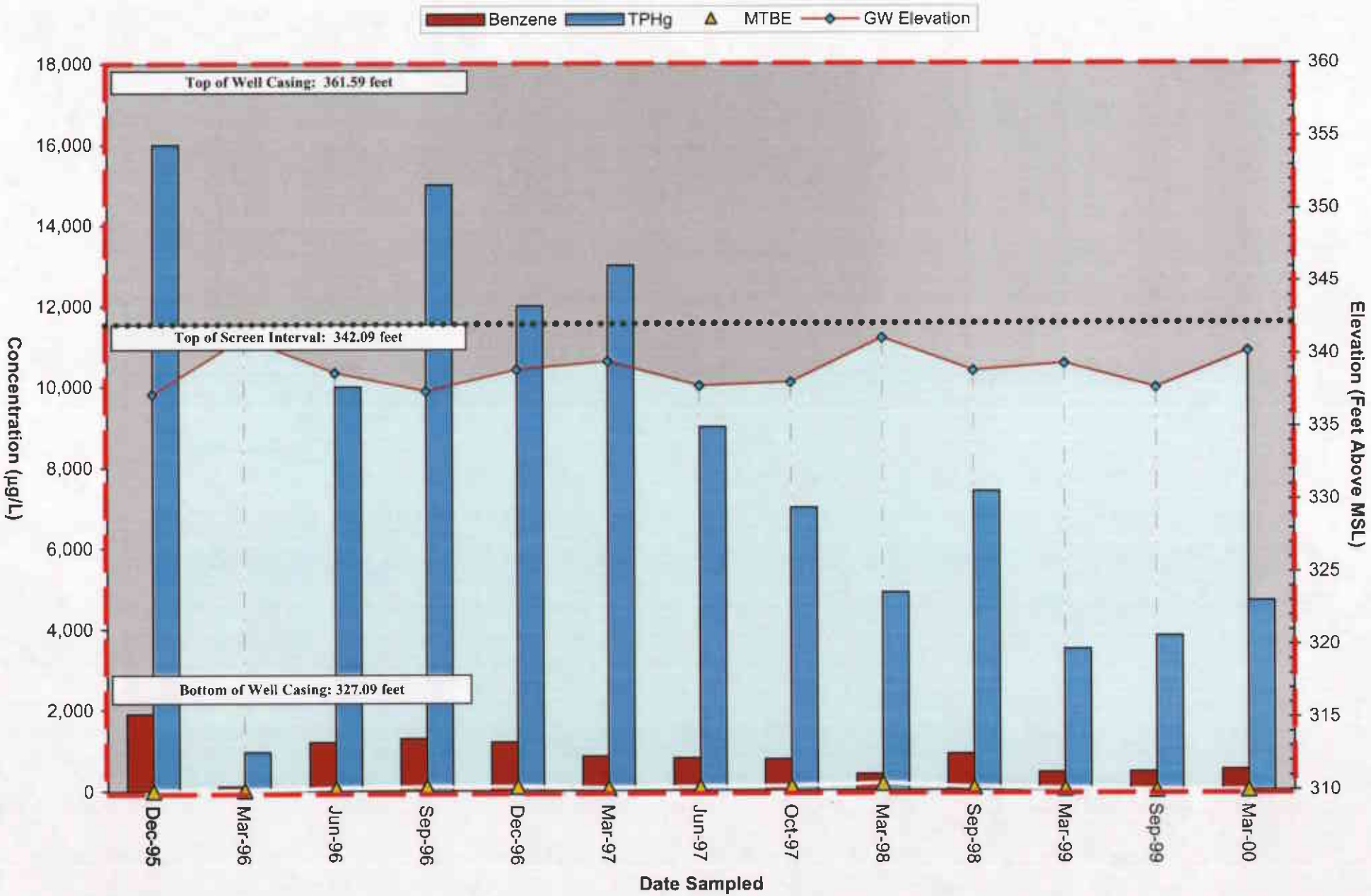
Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

MW-6



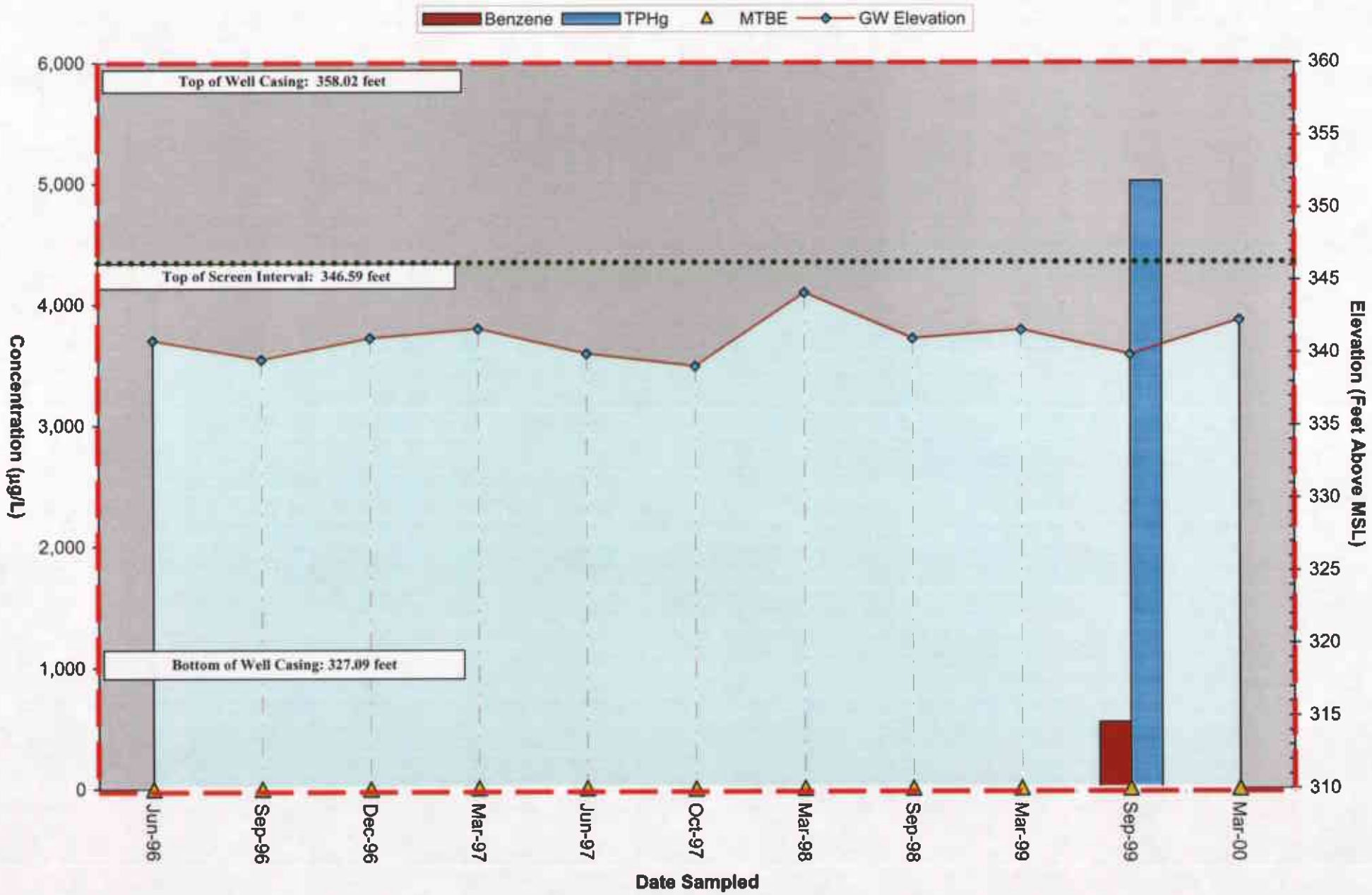
Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

MW-9



Chevron Station No. 9-5542
7007 San Ramon Road
Dublin, California

MW-10



User-Specified Custom Chemical Database

Chemical Name Benzene

CAS No. 71-43-2 Type A

Physical Properties

		Value	Reference
Molecular weight (g/mol)		78.1 ✓	PS
Solubility @ 20-25°C (mg/L)		1750 ✓	PS
Vapor pressure @ 20-25°C (mmHg)		95.2	PS
Henry's Law constant @ 20°C	○ *(atm-m³/mol)*	0.22888633 ✓	PS
	◉ unitless (-)		
Ionization/dissociation constants (pH units):			
acid pKa -	base pKb	-	
Sorption coefficient (log L/kg)	◉ log Koc	1.77	PS
	○ log Kd		
Diffusion coefficient in air (cm^2/s)		0.088 ✓	PS
Diffusion coefficient in water (cm^2/s)		0.0000098 ✓	PS

Miscellaneous Parameters

Analytical Detection Limits:

Groundwater (mg/L) 0.0005 S Soil (mg/kg) 0.005 S

First-Order Decay Half Lives (days):

Saturated 720 Unsaturated 720 H

Bioconcentration Factor (-) 12.6

Toxicity Data

	Value	Reference
EPA weight of evidence ☑ Carcinogen	A	
Oral slope factor (1/[mg/kg/day])	0.1 ✓	PS
Dermal slope factor (1/[mg/kg/day])	0.1 ✓	PS
Inhalation unit risk factor (1/[µg/m³])	8.2857E-06	PS
Oral reference dose (mg/kg/day)	0.003	R
Dermal reference dose (mg/kg/day)	-	
Inhalation reference conc. (mg/m^3)	0.00595	R

Dermal Exposure

Dermal relative adsorption factor (-)	0.5	D
Dermal permeability coefficient (cm/hr)	0.021 ✓	
Lag time for dermal exposure (hr)	0.26	
Critical dermal exposure time (hr)	0.63	
Relative contribution of perm. coeff. (-)	0.013	

Regulatory Standards

Groundwater MCL (mg/L)	0.001	
Air PEL/TWA (mg/m^3)	3.25	
Aquatic life prot. criterion (mg/L)	-	

Commands and Options

Update Database | Close | Refs. | Restore Values | Print Sheet | *Help*

User-Specified Custom Chemical Database

Chemical Name Toluene

CAS No. 108-88-3 Type A

Physical Properties

		Value	Reference
Molecular weight (g/mol)		92.4	5
Solubility @ 20-25°C (mg/L)		515	29
Vapor pressure @ 20-25°C (mmHg)		30	4
Henry's Law constant @ 20°C	○ *(atm-m³/mol)*	0.26	A
	◉ unitless (-)		
Ionization/dissociation constants (pH units):			
acid pKa -	base pKb	-	
Sorption coefficient (log L/kg)	◉ log Koc	2.13	A
	○ log Kd		
Diffusion coefficient in air (cm^2/s)		0.085	A
Diffusion coefficient in water (cm^2/s)		0.0000094	A

Miscellaneous Parameters

Analytical Detection Limits:

Groundwater (mg/L) 0.0005 S Soil (mg/kg) 0.005 S

First-Order Decay Half Lives (days):

Saturated 28 Unsaturated 28 H

Bioconcentration Factor (-) 70

Toxicity Data

	Value	Reference
EPA weight of evidence ☐ Carcinogen	D	
Oral slope factor (1/[mg/kg/day])	-	
Dermal slope factor (1/[mg/kg/day])	-	
Inhalation unit risk factor (1/[µg/m³])	-	
Oral reference dose (mg/kg/day)	0.2	
Dermal reference dose (mg/kg/day)	0.16	
Inhalation reference conc. (mg/m³)	0.4	

Dermal Exposure

Dermal relative adsorption factor (-)	0.5	D
Dermal permeability coefficient (cm/hr)	0.045	
Lag time for dermal exposure (hr)	0.32	
Critical dermal exposure time (hr)	0.77	
Relative contribution of perm. coeff. (-)	0.054	

Regulatory Standards

Groundwater MCL (mg/L)	0.042	
Air PEL/TWA (mg/m³)	147	ACGIH
Aquatic life prot. criterion (mg/L)	-	

Commands and Options

Update Database | Close | Refs. | Restore Values | Print Sheet | *Help*

User-Specified Custom Chemical Database

Chemical Name Ethylbenzene

CAS No. 100-41-4 Type A

Physical Properties

		Value	Reference
Molecular weight (g/mol)		106.2	PS
Solubility @ 20-25°C (mg/L)		169	PS
Vapor pressure @ 20-25°C (mmHg)		10	PS
Henry's Law constant @ 20°C	○ *(atm-m³/mol)*	0.32497735	PS
	◉ unitless (-)		
Ionization/dissociation constants (pH units):			
acid pKa -	base pKb	-	
Sorption coefficient (log L/kg)	◉ log Koc	2.56	PS
	○ log Kd		
Diffusion coefficient in air (cm^2/s)		0.075	PS
Diffusion coefficient in water (cm^2/s)		0.0000078	PS

Miscellaneous Parameters

Analytical Detection Limits:

Groundwater (mg/L) 0.0005 S Soil (mg/kg) 0.005 S

First-Order Decay Half Lives (days):

Saturated 228 Unsaturated 228 H

Bioconcentration Factor (-) 1

Toxicity Data

		Value	Reference
EPA weight of evidence	☐ Carcinogen	D	
Oral slope factor (1/[mg/kg/day])		-	
Dermal slope factor (1/[mg/kg/day])		-	
Inhalation unit risk factor (1/[µg/m³])		-	
Oral reference dose (mg/kg/day)		0.1	PS
Dermal reference dose (mg/kg/day)		0.097	
Inhalation reference conc. (mg/m^3)		1	PS

Dermal Exposure

Dermal relative adsorption factor (-)	0.5	D
Dermal permeability coefficient (cm/hr)	0.074	
Lag time for dermal exposure (hr)	0.39	
Critical dermal exposure time (hr)	1.3	
Relative contribution of perm. coeff. (-)	0.14	

Regulatory Standards

Groundwater MCL (mg/L)	0.029	
Air PEL/TWA (mg/m^3)	435	
Aquatic life prot. criterion (mg/L)	-	

Commands and Options

Update Database | Close | Refs. | Restore Values | Print Sheet | *Help*

User-Specified Custom Chemical Database

Chemical Name Xylene (mixed isomers)

CAS No. 1330-20-7 Type A

Physical Properties

		Value	Reference
Molecular weight (g/mol)		106.2	5
Solubility @ 20-25°C (mg/L)		198	5
Vapor pressure @ 20-25°C (mmHg)		7	4
Henry's Law constant @ 20°C	○ *(atm-m³/mol)*	0.29	A
	◉ unitless (-)		
Ionization/dissociation constants (pH units):			
acid pKa -	base pKb	-	
Sorption coefficient (log L/kg)	◉ log Koc	2.38	A
	○ log Kd		
Diffusion coefficient in air (cm^2/s)		0.072	A
Diffusion coefficient in water (cm^2/s)		0.0000085	A

Miscellaneous Parameters

Analytical Detection Limits:

Groundwater (mg/L) 0.0005 S — Soil (mg/kg) 0.005 S

First-Order Decay Half Lives (days):

Saturated 360 — Unsaturated 360 H

Bioconcentration Factor (-) 1

Toxicity Data

	Value	Reference
EPA weight of evidence ☐ Carcinogen	D	
Oral slope factor (1/[mg/kg/day])	-	
Dermal slope factor (1/[mg/kg/day])	-	
Inhalation unit risk factor (1/[µg/m³])	-	
Oral reference dose (mg/kg/day)	2	
Dermal reference dose (mg/kg/day)	1.84	
Inhalation reference conc. (mg/m³)	7	A

Dermal Exposure

Dermal relative adsorption factor (-)	0.5	D
Dermal permeability coefficient (cm/hr)	0.08	
Lag time for dermal exposure (hr)	0.39	
Critical dermal exposure time (hr)	1.4	
Relative contribution of perm. coeff. (-)	0.16	

Regulatory Standards

Groundwater MCL (mg/L)	0.017	
Air PEL/TWA (mg/m³)	434	ACGIH
Aquatic life prot. criterion (mg/L)	-	

Commands and Options

Update Database | Close | Refs. | Restore Values | Print Sheet | *Help*

User-Specified Custom Chemical Database

Chemical Name Methyl t-Butyl ether

CAS No. 1634-04-4 Type O

Physical Properties

		Value	Reference
Molecular weight (g/mol)		88.146	5
Solubility @ 20-25°C (mg/L)		48000	A
Vapor pressure @ 20-25°C (mmHg)		249	
Henry's Law constant @ 20°C	○ *(atm-m^3/mol)*	0.02379593	
	◉ unitless (-)		
Ionization/dissociation constants (pH units):			
acid pKa -	base pKb	-	
Sorption coefficient (log L/kg)	◉ log Koc	1.08	A
	○ log Kd		
Diffusion coefficient in air (cm^2/s)		0.07919474	6
Diffusion coefficient in water (cm^2/s)		9.4107E-05	7

Miscellaneous Parameters

Analytical Detection Limits:

Groundwater (mg/L) 0.0025 Soil (mg/kg) 0.05

First-Order Decay Half Lives (days):

Saturated 360 Unsaturated 180 H

Bioconcentration Factor (-) 1

Toxicity Data

	Value	Reference
EPA weight of evidence ☐ Carcinogen		
Oral slope factor (1/[mg/kg/day])	-	
Dermal slope factor (1/[mg/kg/day])	-	
Inhalation unit risk factor (1/[µg/m^3])	-	
Oral reference dose (mg/kg/day)	0.01	31
Dermal reference dose (mg/kg/day)	0.008	
Inhalation reference conc. (mg/m^3)	2.9995	R

Dermal Exposure

Dermal relative adsorption factor (-)	0.5
Dermal permeability coefficient (cm/hr)	-
Lag time for dermal exposure (hr)	-
Critical dermal exposure time (hr)	-
Relative contribution of perm. coeff. (-)	-

Regulatory Standards

Groundwater MCL (mg/L)	0.005	
Air PEL/TWA (mg/m^3)	60	NIOSH
Aquatic life prot. criterion (mg/L)	-	

Commands and Options

Update Database | Close | Refs. | Restore Values | Print Sheet | *Help*

CHEMICAL DATA FOR SELECTED COCs

Physical Property Data

Constituent	CAS Number	type	Molecular Weight (g/mole) MW	ref	Diffusion Coefficients in air (cm2/s) Dair	ref	Diffusion Coefficients in water (cm2/s) Dwat	ref	log (Koc) or log(Kd) (@ 20 - 25 C) log(L/kg)	partition	ref	Henry's Law Constant (@ 20 - 25 C) (atm-m3) mol	(unitless)	ref	Vapor Pressure (@ 20 - 25 C) (mm Hg)	ref	Solubility (@ 20 - 25 C) (mg/L)	ref	acid pKa	base pKb	ref
Benzene*	71-43-2	A	78.1	PS	8.80E-02	PS	9.80E-06	PS	1.77	Koc	PS	5.55E-03	2.29E-01	PS	9.52E+01	PS	1.75E+03	PS	-	-	-
Toluene*	108-88-3	A	92.4	5	8.50E-02	A	9.40E-06	A	2.13	Koc	A	6.30E-03	2.60E-01	A	3.00E+01	4	5.15E+02	29	-	-	-
Ethylbenzene*	100-41-4	A	106.2	PS	7.50E-02	PS	7.80E-06	PS	2.56	Koc	PS	7.88E-03	3.25E-01	PS	1.00E+01	PS	1.69E+02	PS	-	-	-
Xylene (mixed isomers)*	1330-20-7	A	106.2	5	7.20E-02	A	8.50E-06	A	2.38	Koc	A	7.03E-03	2.90E-01	A	7.00E+00	4	1.98E+02	5	-	-	-
Methyl t-Butyl ether*	1634-04-4	O	88.146	5	7.92E-02	6	9.41E-05	7	1.08	Koc	A	5.77E-04	2.38E-02	-	2.49E+02	-	4.80E+04	A	-	-	-

* = Chemical with user-specified data

Site Name: Chevron Station No. 9-5542

Site Location: 7007 San Ramon Road, Dublin, Ca

Completed By: Delta Environmental Consultants, Inc.

Date Completed: 19-Jul-00

Job ID: DG95-542

CHEMICAL DATA FOR SELECTED COCs

Toxicity Data

Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	(mg/kg/day) Dermal RfD_dermal	ref	Reference Conc. (mg/m3) Inhalation RfC_Inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	1/(mg/kg/day) Dermal SF_dermal	ref	Unit Risk Factor 1/(µg/m3) Inhalation URF_Inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
Benzene*	3.00E-03	R	-	-	5.95E-03	R	1.00E-01	PS	1.00E-01	PS	8.29E-06	PS	A	TRUE
Toluene*	2.00E-01	-	1.60E-01	0.16	4.00E-01	-	-	-	-	-	-	-	D	FALSE
Ethylbenzene*	1.00E-01	PS	9.70E-02	0.1	1.00E+00	PS	-	-	-	-	-	-	D	FALSE
Xylene (mixed isomers)*	2.00E+00	-	1.84E+00	1.84	7.00E+00	A	-	-	-	-	-	-	D	FALSE
Methyl t-Butyl ether*	1.00E-02	31	8.00E-03	0.01	3.00E+00	R	-	-	-	-	-	-	-	FALSE

* = Chemical with user-specifiec

Site Name: Chevron Station No

Site Location: 7007 San Ram

what is unit risk factor

Miscellaneous Chemical Data

Constituent	Maximum Contaminant Level MCL (mg/L)	ref	Time-Weighted Average Workplace Criteria TWA (mg/m3)	ref	Aquatic Life Prot. Criteria AQL (mg/L)	ref	Biocon-centration Factor (L-wat/kg-fish)
Benzene*	1.00E-03	52 FR 25690	3.25E+00	-	-	-	12.6
Toluene*	4.20E-02	52 FR 25690	1.47E+02	ACGIH	-	-	70
Ethylbenzene*	2.90E-02	52 FR 25690	4.35E+02	-	-	-	1
Xylene (mixed isomers)*	1.70E-02	52 FR 25690	4.34E+02	ACGIH	-	-	1
Methyl t-Butyl ether*	5.00E-03	52 FR 25690	6.00E+01	NIOSH	-	-	1

* = Chemical with user-specifiec

Site Name: Chevron Station No

Site Location: 7007 San Ran

CHEMICAL DATA FOR SELECTED COCs

Miscellaneous Chemical Data

Constituent	Dermal Relative Absorp. Factor (unitless)	Water Dermal Permeability Data: Dermal Permeability Coeff. (cm/hr)	Lag time for Dermal Exposure (hr)	Critical Exposure Time (hr)	Relative Contr of Derm Perm Coeff (unitless)	Water/Skin Derm Adsorp Factor (cm/event)	ref	Detection Limits: Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days): Saturated	Unsaturated	ref
Benzene*	0.5	0.021	0.26	0.63	0.013	7.3E-2	D	0.0005	S	0.005	S	720	720	H
Toluene*	0.5	0.045	0.32	0.77	0.054	1.6E-1	D	0.0005	S	0.005	S	28	28	H
Ethylbenzene*	0.5	0.074	0.39	1.3	0.14	2.7E-1	D	0.0005	S	0.005	S	228	228	H
Xylene (mixed isomers)*	0.5	0.08	0.39	1.4	0.16	2.9E-1	D	0.0005	S	0.005	S	360	360	H
Methyl t-Butyl ether*	0.5	-	-	-	-	-	-	0.0025	-	0.0025	-	360	180	H

* = Chemical with user-specifiec

Site Name: Chevron Station No

Site Location: 7007 San Ran

CHEMICAL DATA FOR SELECTED COCs

Toxicity Data

Constituent	Reference Dose (mg/kg/day) Oral RfD_oral	ref	Reference Dose (mg/kg/day) Dermal RfD_dermal	ref	Reference Conc. (mg/m3) Inhalation RfC_inhal	ref	Slope Factors 1/(mg/kg/day) Oral SF_oral	ref	Slope Factors 1/(mg/kg/day) Dermal SF_dermal	ref	Unit Risk Factor 1/(µg/m3) Inhalation URF_inhal	ref	EPA Weight of Evidence	Is Constituent Carcinogenic ?
Benzene*	3.00E-03	R	-	-	5.95E-03	R	1.00E-01	PS	1.00E-01	PS	8.29E-06	PS	A	TRUE
Toluene*	2.00E-01	-	1.60E-01	0.16	4.00E-01	-	-	-	-	-	-	-	D	FALSE
Ethylbenzene*	1.00E-01	PS	9.70E-02	0.1	1.00E+00	PS	-	-	-	-	-	-	D	FALSE
Xylene (mixed isomers)*	2.00E+00	-	1.84E+00	1.84	7.00E+00	A	-	-	-	-	-	-	D	FALSE
Methyl t-Butyl ether*	1.00E-02	31	8.00E-03	0.01	3.00E+00	R	-	-	-	-	-	-	-	FALSE

* = Chemical with user-specifiec

Site Name: Chevron Station No

Site Location: 7007 San Ram

Miscellaneous Chemical Data

Constituent	Maximum Contaminant Level MCL (mg/L)	ref	Time-Weighted Average Workplace Criteria TWA (mg/m3)	ref	Aquatic Life Prot. Criteria AQL (mg/L)	ref	Biocon-centration Factor (L-wat/kg-fish)
Benzene*	1.00E-03	52 FR 25690	3.25E+00	-	-	-	12.6
Toluene*	4.20E-02	52 FR 25690	1.47E+02	ACGIH	-	-	70
Ethylbenzene*	2.90E-02	52 FR 25690	4.35E+02	-	-	-	1
Xylene (mixed isomers)*	1.70E-02	52 FR 25690	4.34E+02	ACGIH	-	-	1
Methyl t-Butyl ether*	5.00E-03	52 FR 25690	6.00E+01	NIOSH	-	-	1

* = Chemical with user-specifiec

Site Name: Chevron Station No.

Site Location: 7007 San Ran

CHEMICAL DATA FOR SELECTED COCs

Miscellaneous Chemical Data

Constituent	Dermal Relative Absorp. Factor (unitless)	Water Dermal Permeability Data: Dermal Permeability Coeff. (cm/hr)	Lag time for Dermal Exposure (hr)	Critical Exposure Time (hr)	Relative Contr of Derm Perm Coeff (unitless)	Water/Skin Derm Adsorp Factor (cm/event)	ref	Detection Limits: Groundwater (mg/L)	ref	Soil (mg/kg)	ref	Half Life (First-Order Decay) (days): Saturated	Unsaturated	ref
Benzene*	0.5	0.021	0.26	0.63	0.013	7.3E-2	D	0.0005	S	0.005	S	720	720	H
Toluene*	0.5	0.045	0.32	0.77	0.054	1.6E-1	D	0.0005	S	0.005	S	28	28	H
Ethylbenzene*	0.5	0.074	0.39	1.3	0.14	2.7E-1	D	0.0005	S	0.005	S	228	228	H
Xylene (mixed isomers)*	0.5	0.08	0.39	1.4	0.16	2.9E-1	D	0.0005	S	0.005	S	360	360	H
Methyl t-Butyl ether*	0.5	-	-	-	-	-	-	0.0025	-	0.0025	-	360	180	H

* = Chemical with user-specifiec

Site Name: Chevron Station No

Site Location: 7007 San Ran

APPENDIX E

RBCA Tier 2 – Soil and Groundwater Modeling Input Parameters

$$\frac{\text{Hydraulic conductivity} \times \text{gradient}}{\text{porosity}} = \text{gw velocity}.$$

RBCA SITE ASSESSMENT

Input Parameter Summary

Site Name: Chevron Station No. 9-5542
Site Location: 7007 San Ramon Road, Dublin, Ca

Completed By: Delta Environmental Consultants, Inc.
Date Completed: 19-Jul-00

Job ID: DG95-542

Exposure Parameters		Residential			Commercial/Industrial	
		Adult	(1-6yrs)	(1-16 yrs)	Chronic	Construc.
AT_c	Averaging time for carcinogens (yr)	70				
AT_n	Averaging time for non-carcinogens (yr)	30			25	1
BW	Body weight (kg)	70	15	35	70	
ED	Exposure duration (yr)	30	6	16	25	1
τ	Averaging time for vapor flux (yr)	30 25			25	1
EF	Exposure frequency (days/yr)	350			250	180
EF_D	Exposure frequency for dermal exposure	350			250	
IR_w	Ingestion rate of water (L/day)	2			1	
IR_s	Ingestion rate of soil (mg/day)	100	200		50	100
SA	Skin surface area (dermal) (cm^2)	5800		2023	5800	5800
M	Soil to skin adherence factor	1				
ET_{swim}	Swimming exposure time (hr/event)	3				
EV_{swim}	Swimming event frequency (events/yr)	12	12	12		
IR_{swim}	Water ingestion while swimming (L/hr)	0.05	0.5			
SA_{swim}	Skin surface area for swimming (cm^2)	23000		8100		
IR_{fish}	Ingestion rate of fish (kg/yr)	0.025				
FI_{fish}	Contaminated fish fraction (unitless)	1				

Complete Exposure Pathways and Receptors	On-site	Off-site 1	Off-site 2
Groundwater:			
Groundwater Ingestion	None	Commercial	None
Soil Leaching to Groundwater Ingestion	None	Commercial	None
Applicable Surface Water Exposure Routes:			
Swimming			NA
Fish Consumption			NA
Aquatic Life Protection			NA
Soil:			
Direct Ingestion and Dermal Contact	Com./Constr.		
Outdoor Air:			
Particulates from Surface Soils	None	None	None
Volatilization from Soils	Com./Constr.	None	None
Volatilization from Groundwater	Commercial	None	None
Indoor Air:			
Volatilization from Subsurface Soils	Commercial	NA	NA
Volatilization from Groundwater	Commercial	NA	NA

Receptor Distance from Source Media	On-site	Off-site 1	Off-site 2	(Units)
Groundwater receptor	NA	30480	NA	(cm)
Soil leaching to groundwater receptor	NA	30480	NA	(cm)
Outdoor air inhalation receptor	0	NA	NA	(cm)

Target Health Risk Values		Individual	Cumulative
TR_{ab}	Target Risk (class A&B carcinogens)	1.0E-6	NA
TR_c	Target Risk (class C carcinogens)	1.0E-5	
THQ	Target Hazard Quotient (non-carcinogenic risk)	1.0E+0	NA

Modeling Options	
RBCA tier	Tier 2
Outdoor air volatilization model	Surface & subsurface models
Indoor air volatilization model	Johnson & Ettinger model
Soil leaching model	ASTM leaching model
Use soil attenuation model (SAM) for leachate?	No
Air dilution factor	NA
Groundwater dilution-attenuation factor	Domenico model

NOTE: NA = Not applicable

Surface Parameters		General	Construction	(Units)
A	Source zone area	9.9E+6	9.9E+6	(cm^2)
W	Length of source-zone area parallel to wind	2.5E+3	4.0E+3	(cm)
W_{gw}	Length of source-zone area parallel to GW flow	4.0E+3		(cm)
U_{air}	Ambient air velocity in mixing zone	2.3E+2	322	(cm/s)
δ_{air}	Air mixing zone height	2.0E+2		(cm)
P_a	Areal particulate emission rate	NA	1.38×10^{-11}	(g/cm^2/s)
L_{ss}	Thickness of affected surface soils	1.0E+2		(cm)

Surface Soil Column Parameters		Value			(Units)
h_{cap}	Capillary zone thickness	7.0E+1			(cm)
h_v	Vadose zone thickness	5.1E+2			(cm)
ρ_b	Soil bulk density	1.8E+0			(g/cm^3)
f_{oc}	Fraction organic carbon	2.9E-1	.015 (0.006)		(-)
θ_T	Soil total porosity	3.2E-1	.4		(-)
K_{vs}	Vertical hydraulic conductivity	3.0E+3			(m/yr)
k_v	Vapor permeability	1.0E-8			(cm^2)
L_{gw}	Depth to groundwater	5.8E+2			(cm)
L_s	Depth to top of affected soils	1.0E+2			(cm)
L_{base}	Depth to base of affected soils	5.8E+2			(cm)
L_{subs}	Thickness of affected soils	4.8E+2			(cm)
pH	Soil/groundwater pH	6.5E+0			(-)
		capillary	vadose	foundation	
θ_w	Volumetric water content	0.322 .38	0.322 .25	0.12	(-)
θ_a	Volumetric air content	0.001 .02	0.001 .15	0.26	(-)

Building Parameters		Residential	Commercial	(Units)
L_b	Building volume/area ratio	NA	3.00E+2	(cm)
A_b	Foundation area	NA	1.55E+6	(cm^2)
X_{crk}	Foundation perimeter	NA	5.97E+3	(cm)
ER	Building air exchange rate	NA	2.30E-4	(1/s)
L_{crk}	Foundation thickness	NA	1.50E+1	(cm)
Z_{crk}	Depth to bottom of foundation slab	NA	1.50E+1	(cm)
η	Foundation crack fraction	NA	1.00E-2	(-)
dP	Indoor/outdoor differential pressure	NA	0.00E+0	(g/cm/s^2)
Q_s	Convective air flow through slab	NA	0.00E+0	(cm^3/s)

Groundwater Parameters		Value		(Units)
δ_{gw}	Groundwater mixing zone depth	2.0E+2		(cm)
I_f	Net groundwater infiltration rate	3.0E+1	2.4 in/yr ASTM 6 cm/yr use cm/yr	(in/yr)
U_{gw}	Groundwater Darcy velocity	2.5E+1		(m/yr)
V_{gw}	Groundwater seepage velocity	6.6E+1		(m/yr)
K_s	Saturated hydraulic conductivity	2.5E+3		(m/yr)
i	Groundwater gradient	1.0E-2		(-)
S_w	Width of groundwater source zone	1.2E+3		(cm)
S_d	Depth of groundwater source zone	2.0E+2		(cm)
θ_{eff}	Effective porosity in water-bearing unit	3.8E-1		(-)
f_{oc-sat}	Fraction organic carbon in water-bearing unit	1.0E-3	.015	(-)
pH_{sat}	Groundwater pH	6.5E+0		(-)
	Biodegradation considered?	No		

Transport Parameters		Off-site 1	Off-site 2	Off-site 1	Off-site 2	(Units)
	Lateral Groundwater Transport	Groundwater Ingestion		Soil Leaching to GW		
α_x	Longitudinal dispersivity	3.0E+3	NA	3.0E+3	NA	(cm)
α_y	Transverse dispersivity	1.0E+3	NA	1.0E+3	NA	(cm)
α_z	Vertical dispersivity	1.5E+2	NA	1.5E+2	NA	(cm)
	Lateral Outdoor Air Transport	Soil to Outdoor Air Inhal.		GW to Outdoor Air Inhal.		
σ_y	Transverse dispersion coefficient	NA	NA	NA	NA	(cm)
σ_z	Vertical dispersion coefficient	NA	NA	NA	NA	(cm)
ADF	Air dispersion factor	NA	NA	NA	NA	(-)

Surface Water Parameters		Off-site 2	(Units)
Q_{sw}	Surface water flowrate	NA	(cm^3/s)
W_{pl}	Width of GW plume at SW discharge	NA	(cm)
δ_{pl}	Thickness of GW plume at SW discharge	NA	(cm)
DF_{sw}	Groundwater-to-surface water dilution factor	NA	(-)

RBCA SITE ASSESSMENT

Site Name: Chevron Station No. 9-5542 Completed By: Delta Environmental Consultants, Inc.

Site Location: 7007 San Ramon Road, Dublin, Ca Date Completed: 19-Jul-00

TIER 2 SOIL CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/kg)	No. of Samples	No. of Detects	Maximum Conc. (mg/kg)	Mean Conc. (mg/kg)	UCL on Mean Conc. (mg/kg)
71-43-2	Benzene*	5.0E-03	21	5	2.6E-01	2.6E-02	5.0E-02
108-88-3	Toluene*	5.0E-03	21	5	2.5E+00	1.7E-01	3.8E-01
100-41-4	Ethylbenzene*	5.0E-03	21	5	2.5E+00	1.3E-01	3.4E-01
1330-20-7	Xylene (mixed isomers)*	5.0E-03	21	6	1.5E+01	9.0E-01	2.1E+00
1634-04-4	Methyl t-Butyl ether*	5.0E-02	6	0	0.0E+00	2.5E-02	2.5E-02

* = Chemical with user-specified data

verify that soil conc used are w/in source affected area

RBCA SITE ASSESSMENT

Site Name: Chevron Station No. 9-5542 Completed By: Delta Environmental Consultants, Inc.

Site Location: 7007 San Ramon Road, Dublin, Ca Date Completed: 19-Jul-00

TIER 2 GROUNDWATER CONCENTRATION DATA SUMMARY

CONSTITUENTS DETECTED		Analytical Method			Detected Concentrations		
CAS No.	Name	Typical Detection Limit (mg/L)	No. of Samples	No. of Detects	Maximum Conc. (mg/L)	Mean Conc. (mg/L)	UCL on Mean Conc. (mg/L)
71-43-2	Benzene*	5.0E-04	28	16	1.0E+01	1.6E+00	2.6E+00
108-88-3	Toluene*	5.0E-04	28	17	1.5E+01	1.6E+00	2.9E+00
100-41-4	Ethylbenzene*	5.0E-04	28	16	1.9E+00	3.4E-01	5.2E-01
1330-20-7	Xylene (mixed isomers)*	5.0E-04	28	17	8.5E+00	1.2E+00	1.9E+00
1634-04-4	Methyl t-Butyl ether*	5.0E-03	28	20	1.0E+00	9.3E-02	1.6E-01

* = Chemical with user-specified data

no more than 10m (1000 cm)

RBCA Tool Kit for Chemical Releases, Version 1.2

RBCA SITE ASSESSMENT

Site Name: Chevron Station No. 9-5542 | Completed By: Delta Environmental Consultants, Inc. | Job ID: DG95-542

Site Location: 7007 San Ramon Road, Dublin, Ca | Date Completed: 19-Jul-00

SOIL (100 - 579 cm) SSTL VALUES

Target Risk (Class A & B) 1.0E-5
Target Risk (Class C) 1.0E-5
Target Hazard Quotient 1.0E+0

Groundwater DAF Option: Domenico - No Decay (One-directional vert. dispersion)

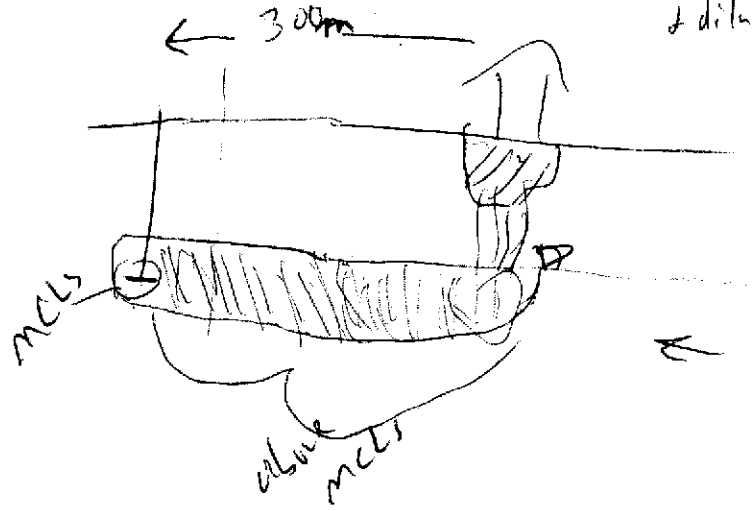
SSTL Results For Complete Exposure Pathways ("X" If Complete)

			X	Soil Leaching to Groundwater Ingestion			X	Soil Vol. to Indoor Air	X	Soil Volatilization to Outdoor Air				X	Surface Soil Inhalation, Ingestion, Dermal Contact		Applicable SSTL	SSTL Exceeded ?	Required CRF
			On-site (0 cm)	Off-site 1 (30480 cm)	Off-site 2 (0 cm)		On-site (0 cm)			Off-site 1 (0 cm)	Off-site 2 (0 cm)			On-site (0 cm)				Only if "yes" left
CONSTITUENTS OF CONCERN		Representative Concentration																	
CAS No.	Name	(mg/kg)	None	Commercial	None		Commercial		Commercial	Construction Worker	None	None		Commercial	Construction Worker		(mg/kg)	"■" if yes	
71-43-2	Benzene*	5.0E-2	NA	4.0E+2	NA		2.8E+2		>3.0E+4	>3.0E+4	NA	NA		9.7E+0	1.4E+2		9.7E+0	☐	<1
108-88-3	Toluene*	3.8E-1	NA	>2.0E+4	NA		>2.0E+4		>2.0E+4	>2.0E+4	NA	NA		5.6E+3	7.6E+3		5.6E+3	☐	<1
100-41-4	Ethylbenzene*	3.4E-1	NA	>1.8E+4	NA		>1.8E+4		>1.8E+4	>1.8E+4	NA	NA		3.4E+3	4.6E+3		3.4E+3	☐	<1
1330-20-7	Xylene (mixed isomers)*	2.1E+0	NA	>1.4E+4	NA		>1.4E+4		>1.4E+4	>1.4E+4	NA	NA		6.4E+4	8.7E+4		6.4E+4	☐	<1
1634-04-4	Methyl t-Butyl ether*	2.5E-2	NA	3.1E+3	NA		1.7E+4		>1.8E+5	>1.8E+5	NA	NA		2.8E+2	3.8E+2		2.8E+2	☐	<1

* = Chemical with user-specified data

">" indicates risk-based target concentration greater than constituent residual saturation value. NA = Not applicable. NC = Not calculated.

allows for significant mixing, (biodegradation???) & dilution with gw



Leaching
1, Protect gw directly under source (not 10m away)
2, Oth. current use, eg, 300m distance to well

RBCA SITE ASSESSMENT

Site Name: Chevron Station No. 9-5542 | Completed By: Delta Environmental Consultants, Inc. | Job ID: DG95-542

Site Location: 7007 San Ramon Road, Dublin, Ca | Date Completed: 19-Jul-00

GROUNDWATER SSTL VALUES

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

Target Risk (Class C) 1.0E-5

Target Hazard Quotient 1.0E+0

add. fire effects ??

Groundwater DAF Option: Domenico - No Decay (One-directional vert. dispersion)

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

CONSTITUENTS OF CONCERN		Representative Concentration	X Groundwater Ingestion			X GW Vol. to Indoor Air	X Groundwater Volatilization to Outdoor Air			Applicable SSTL	SSTL Exceeded ?	Required CRF
			On-site (0 cm)	Off-site 1 (30480 cm)	Off-site 2 (0 cm)	On-site (0 cm)	On-site (0 cm)	Off-site 1 (0 cm)	Off-site 2 (0 cm)			Only if "yes" left
CAS No.	Name	(mg/L)	None	Commercial	None	Commercial	Commercial	None	None	(mg/L)	"■" if yes	
71-43-2	Benzene*	2.6E+0	NA	8.8E+0	NA	9.2E+1	>1.8E+3	NA	NA	8.8E+0	☐	<1
108-88-3	Toluene*	2.9E+0	NA	>5.2E+2	NA	>5.2E+2	>5.2E+2	NA	NA	>5.2E+2	☐	NA
100-41-4	Ethylbenzene*	5.2E-1	NA	>1.7E+2	NA	>1.7E+2	>1.7E+2	NA	NA	>1.7E+2	☐	NA
1330-20-7	Xylene (mixed isomers)*	1.9E+0	NA	>2.0E+2	NA	>2.0E+2	>2.0E+2	NA	NA	>2.0E+2	☐	NA
1634-04-4	Methyl t-Butyl ether*	1.6E-1	NA	3.1E+2	NA	1.2E+4	>4.8E+4	NA	NA	3.1E+2	☐	<1

* = Chemical with user-specified data

">" indicates risk-based target concentration greater than constituent solubility value. NA = Not applicable. NC = Not calculated.

assumes 300m of transporting gw

RBCA SITE ASSESSMENT | **Baseline Risk Summary-All Pathways**

Site Name: Chevron Station No. 9-5542
Site Location: 7007 San Ramon Road, Dublin, Ca

Completed By: Delta Environmental Consultants, Inc.
Date Completed: 19-Jul-00

TIER 2 BASELINE RISK SUMMARY TABLE

	BASELINE CARCINOGENIC RISK					BASELINE TOXIC EFFECTS				
	Individual COC Risk		Cumulative COC Risk		Risk	Hazard Quotient		Hazard Index		Toxicity
EXPOSURE PATHWAY	Maximum Value	Target Risk	Total Value	Target Risk	Limit(s) Exceeded?	Maximum Value	Applicable Limit	Total Value	Applicable Limit	Limit(s) Exceeded?
OUTDOOR AIR EXPOSURE PATHWAYS										
Complete:	5.4E-10	1.0E-5	5.4E-10	NA	☐	3.0E-5	1.0E+0	3.1E-5	NA	☐
INDOOR AIR EXPOSURE PATHWAYS										
Complete:	2.8E-7	1.0E-5	2.8E-7	NA	☐	1.6E-2	1.0E+0	1.6E-2	NA	☐
SOIL EXPOSURE PATHWAYS										
Complete:	5.1E-8	1.0E-5	5.1E-8	NA	☐	4.8E-4	1.0E+0	7.7E-4	NA	☐
GROUNDWATER EXPOSURE PATHWAYS										
Complete:	2.9E-6	1.0E-5	2.9E-6	NA	☐	2.7E-2	1.0E+0	2.8E-2	NA	☐
SURFACE WATER EXPOSURE PATHWAYS										
Complete:	NA	NA	NA	NA	☐	NA	NA	NA	NA	☐

CRITICAL EXPOSURE PATHWAY (Maximum Values From Complete Pathways)										
	2.9E-6	***1.0E-5***	***2.9E-6***	***NA***	☐	***2.7E-2***	***1.0E+0***	***2.8E-2***	***NA***	☐
	Groundwater		***Groundwater***			***Groundwater***		***Groundwater***		

RBCA SITE ASSESSMENT | **Cumulative Risk Worksheet**

Site Name: Chevron Station No. 9-5542 | Completed By: Delta Environmental Consultants, Ir Job ID: DG95-542

Site Location: 7007 San Ramon Road, Dublin, Ca | Date Completed: 19-Jul-00

CUMULATIVE RISK WORKSHEET

CONSTITUENTS OF CONCERN		Representative Concentration		Proposed CRF		Resultant Target Concentration	
CAS No.	Name	Soil (mg/kg)	Groundwater (mg/L)	Soil	GW	Soil (mg/kg)	Groundwater (mg/L)
71-43-2	Benzene*	5.0E-2	2.6E+0	<1	<1	5.0E-2	2.6E+0
108-88-3	Toluene*	3.8E-1	2.9E+0	<1	NA	3.8E-1	2.9E+0
100-41-4	Ethylbenzene*	3.4E-1	5.2E-1	<1	NA	3.4E-1	5.2E-1
1330-20-7	Xylene (mixed isomers)*	2.1E+0	1.9E+0	<1	NA	2.1E+0	1.9E+0
1634-04-4	Methyl t-Butyl ether*	2.5E-2	1.6E-1	<1	<1	2.5E-2	1.6E-1

Cumulative Values:

RBCA SITE ASSESSMENT | **Cumulative Risk Worksheet**

Site Name: Chevron Station No. 9-5542 Site Name: Chevron Station No. 9-5542 Completed By: Delta Environmental Consultants, Inc. Job ID: DG95-542

Site Location: 7007 San Ramon Road, Dublin, Ca Site Location: 7007 San Ramon Road, Dublin, Ca Date Completed: 19-Jul-00 *2 OF 3*

CUMULATIVE RISK WORKSHEET

Cumulative Target Risk: 1.0E-5 Target Hazard Index: 1.0E+0

ON-SITE RECEPTORS

CONSTITUENTS OF CONCERN		Outdoor Air Exposure: Commercial Target Risk: 1.0E-5 / 1.0E-5	Outdoor Air Exposure: Commercial Target HQ: 1.0E+0	Indoor Air Exposure: Commercial Target Risk: 1.0E-5 / 1.0E-5	Indoor Air Exposure: Commercial Target HQ: 1.0E+0	Soil Exposure: Commercial Target Risk: 1.0E-5 / 1.0E-5	Soil Exposure: Commercial Target HQ: 1.0E+0	Groundwater Exposure: None Target Risk: 1.0E-5 / 1.0E-5	Groundwater Exposure: None Target HQ: 1.0E+0
CAS No.	**Name**	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient
71-43-2	Benzene*	5.4E-10	3.0E-5	2.8E-7	1.6E-2	5.1E-8	4.8E-4		
108-88-3	Toluene*		5.2E-7		2.7E-4		6.8E-5		
100-41-4	Ethylbenzene*		3.3E-8		1.6E-5		1.0E-4		
1330-20-7	Xylene (mixed isomers)*		2.2E-8		9.5E-6		3.3E-5		
1634-04-4	Methyl t-Butyl ether*		6.4E-8		1.5E-5		9.0E-5		
	Cumulative Values:	**5.4E-10**	**3.1E-5**	**2.8E-7**	**1.6E-2**	**5.1E-8**	**7.7E-4**	**0.0E+0**	**0.0E+0**

■ indicates risk level exceeding target risk

RBCA SITE ASSESSMENT | **Cumulative Risk Worksheet**

Site Name: Chevron Station No. 9-5542 | Site Name: Chevron Station No. 9-5542 | Completed By: Delta Environmental Consultants, Inc. Job ID: DG95-542

Site Location: 7007 San Ramon Road, Dublin, Ca | Site Location: 7007 San Ramon Road, Dublin, Ca | Date Completed: 19-Jul-00

CUMULATIVE RISK WORKSHEET

Cumulative Target Risk: 1.0E-5 Target Hazard Index: 1.0E+0

Groundwater DAF Option: Domenico - No Decay

OFF-SITE RECEPTORS

CONSTITUENTS OF CONCERN		Outdoor Air Exposure: None Target Risk: 1.0E-5 / 1.0E-5	Outdoor Air Exposure: None Target HQ: 1.0E+0	Outdoor Air Exposure: None Target Risk: 1.0E-5 / 1.0E-5	Outdoor Air Exposure: None Target HQ: 1.0E+0	Groundwater Exposure: Commercial (30480 cm) Target Risk: 1.0E-5 / 1.0E-5	Groundwater Exposure: Commercial (30480 cm) Target HQ: 1.0E+0	Groundwater Exposure: None Target Risk: 1.0E-5 / 1.0E-5	Groundwater Exposure: None Target HQ: 1.0E+0
CAS No.	Name	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient	Carcinogenic Risk	Hazard Quotient
71-43-2	Benzene*					2.9E-6	2.7E-2		
108-88-3	Toluene*						4.7E-4		
100-41-4	Ethylbenzene*						1.7E-4		
1330-20-7	Xylene (mixed isomers)*						3.0E-5		
1634-04-4	Methyl t-Butyl ether*						5.1E-4		
Cumulative Values:		**0.0E+0**	**0.0E+0**	**0.0E+0**	**0.0E+0**	**2.9E-6**	**2.8E-2**	**0.0E+0**	**0.0E+0**

■ indicates risk level exceeding target risk

RBCA SITE ASSESSMENT | **Tier 2 Domenico Groundwater Modeling Summary**

Site Name: Chevron Station No. 9-{ Site Location: 7007 San Ramon Road, Dublin Completed By: Delta Environmental Cons Date Completed: 19-Jul-00

DOMENICO GROUNDWATER MODELING SUMMARY

OFF-SITE GROUNDWATER EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

SOILS (100 - 579 cm): LEACHING TO GROUNDWATER INGESTION

Constituents of Concern	Exposure Concentration: 1) Source Medium: Soil Conc. (mg/kg)	2) Steady-state Exposure Concentration, Groundwater: POE Conc. (mg/L): Off-site 1 (30480 cm) Commercial	2) Steady-state Exposure Concentration, Groundwater: POE Conc. (mg/L): Off-site 2 (0 cm) None	3) POE Concentration Limit, Groundwater: POE Conc. (mg/L): Off-site 1 (30480 cm) Commercial	3) POE Concentration Limit, Groundwater: POE Conc. (mg/L): Off-site 2 (0 cm) None	4) Time to Reach POE Conc. Limit, Conc. limit reached? ("■" if yes) ; Time (yr): Off-site 1 (30480 cm) Commercial	4) Time to Reach POE Conc. Limit, Conc. limit reached? ("■" if yes) ; Time (yr): Off-site 2 (0 cm) None
Benzene*	5.0E-2	3.5E-6		2.9E-2		□ NA	NA
Toluene*	3.8E-1	1.2E-5		2.0E+1		□ NA	NA
Ethylbenzene*	3.4E-1	3.9E-6		1.0E+1		□ NA	NA
Xylene (mixed isomers)*	2.1E+0	3.7E-5		2.0E+2		□ NA	NA
Methyl t-Butyl ether*	2.5E-2	8.3E-6		1.0E+0		□ NA	NA

NOTE: POE = Point of exposure

RBCA SITE ASSESSMENT | **Tier 2 Domenico Groundwater Modeling Summary**

Site Name: Chevron Station No. 9-{ Site Location: 7007 San Ramon Road, Dublin Completed By: Delta Environmental Consı Date Completed: 19-Jul-00 *2 OF 2*

DOMENICO GROUNDWATER MODELING SUMMARY

OFF-SITE GROUNDWATER EXPOSURE PATHWAYS ■ **(CHECKED IF PATHWAY IS ACTIVE)**

GROUNDWATER: INGESTION **Exposure Concentration**

	1) Source Medium	2) Steady-state Exposure Concentration Groundwater: POE Conc. (mg/L)		3) POE Concentration Limit Groundwater: POE Conc. (mg/L)		4) Time to Reach POE Conc. Limit Conc reaches limit? ("■" If yes) ; Time (yr)	
Constituents of Concern	Groundwater Conc. (mg/L)	Off-site 1 (30480 cm) Commercial	Off-site 2 (0 cm) None	Off-site 1 (30480 cm) Commercial	Off-site 2 (0 cm) None	Off-site 1 (30480 cm) Commercial	Off-site 2 (0 cm) None
Benzene*	2.6E+0	8.3E-3		2.9E-2		□ NA	NA
Toluene*	2.9E+0	9.6E-3		2.0E+1		□ NA	NA
Ethylbenzene*	5.2E-1	1.7E-3		1.0E+1		□ NA	NA
Xylene (mixed isomers)*	1.9E+0	6.2E-3		2.0E+2		□ NA	NA
Methyl t-Butyl ether*	1.6E-1	5.2E-4		1.0E+0		□ NA	NA

NOTE: POE = Point of exposure