Atlantic Richfield Company

Shannon Couch
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RECEIVED

5:48 pm, Jan 09, 2012

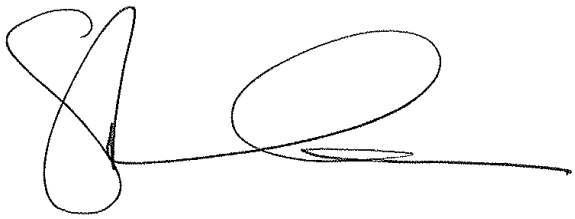
Alameda County
Environmental Health

January 5, 2012

Re: Case Evaluation and Justification for No Further Action
Atlantic Richfield Company Station #771
899 Rincon Avenue
Livermore, California
ACEH Case RO0000200

"I declare, that to the best of my knowledge at the present time, that the information and/or recommendations contained in the attached document are true and correct.

Submitted by,



Shannon Couch
Project Manager

Attachment

CASE EVALUATION AND JUSTIFICATION FOR NO FURTHER ACTION

Atlantic Richfield Company Station #771
899 Rincon Avenue, Livermore, California
ACEH Case No. RO0000200

Prepared for

Ms. Shannon Couch
Project Manager
Atlantic Richfield Company
P.O. Box 1257
San Ramon, California 94583

Prepared by

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

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January 5, 2012

Project No. 06-82-608

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January 5, 2012

Project No. 06-82-608

Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583
Submitted via ENFOS

Attn.: Ms. Shannon Couch

Re: Case Evaluation and Justification for No Further Action, Atlantic Richfield Company Station #771, 899 Rincon Ave, Livermore, California; ACEH Case #RO0000200

Dear Ms. Couch:

Attached is the *Case Evaluation and Justification for No Further Action* for the Atlantic Richfield Company Station #771 located at 899 Rincon Avenue, Livermore, California (Site). A summary of existing Site conditions and the technical justification for a finding of No Further Action Status is presented in this document.

The subject Site environmental case has been open for over 23 years. A waste oil tank was removed in August 1987 and soil samples detected total petroleum fuel hydrocarbons at 378 mg/kg. Over-excavation activities performed to date have reportedly removed approximately 1,100 cubic yards of impacted soil. Operation of the Soil Vapor Extraction System removed over 56.9 pounds of hydrocarbons from the subsurface.

Contaminant concentrations of gasoline, BTEX, and MTBE are presently minimal at the Site. The closest identified well to the Site was located 450 feet to the North on the property of the Livermore-Pleasanton Fire Department Station No. 7. Recent discussion with personnel at Zone 7 Water Agency, the local water purveyor, indicates that this well was abandoned by Dejesus Pump and Well Drilling on February 15, 2002. Therefore, this well is no longer a potential receptor. The closest wells recently identified within a half-mile radius of the Site are located approximately 2,300 feet to the east-northeast and southeast. No wells or surface water bodies are likely to be affected by the Site. These observations, plus additional lines of evidence are the basis for this closure request.

Should you have questions regarding this submittal, please do not hesitate to contact us at 530-566-1400.

Sincerely,
BROADBENT & ASSOCIATES, INC.

Jason Duda
Project Scientist

Matthew G. Herrick, P.G., C.HG.
Senior Hydrogeologist

Enclosures

cc: Mr. Paresh Khatri, Alameda County Environmental Health (submitted via ACEH ftp site)
Electronic copy uploaded to GeoTracker

CASE EVALUATION AND JUSTIFICATION FOR NO FURTHER ACTION
ARCO STATION #771
899 RINCON AVENUE
LIVERMORE, CALIFORNIA

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ARCO STATION #771
LIVERMORE, CALIFORNIA

1.0 SITE SUMMARY

1.1 Location and Setting

The Site is located at 899 Rincon Avenue, on the southwest corner of Rincon Avenue and Pine Street in Livermore, California. The latitude and longitude of the center of the Site is approximately 37°41'17.33"N, 121°47'1.22"W (37.688147°, -121.783673°). The Site property is recognized by the Alameda County Assessor's Office as Assessor's Parcel Number 98-351-5. The approximate ground surface elevation at the Site is approximately 455 feet above mean sea level. A Site Location Map is provided as Drawing 1.

The land use in the immediate area is mixed residential and commercial. The adjacent property to the west is a shopping complex along with various restaurants. The property to the south is May Nissen Community Park and Swim Center and Rincon Library. Across Pine Street to the north of the Site is the Livermore-Pleasanton Fire Department Fire Station No.7. Residential homes reside to the northeast across the intersection of Pine Street and Rincon Avenue and east of the Site across Rincon Avenue.

1.2 Current Use

The Site is currently in use as an active ARCO brand retail gasoline station with AM/PM convenience store. There are four gasoline underground storage tanks (USTs) with associated piping to two dispensers on one pump-island under one overhead canopy. The Site is covered with asphalt or concrete surfacing except for planters along the north, northeast, and south property boundaries containing bushes and mature trees. There is a former remediation compound on the northern side of the AM/PM building. A Site Map is provided as Drawing 2.

1.3 Regional Geology and Hydrogeology

The Site is located in the north-central portion of the Livermore Valley, an east-west trending structural trough surrounded by north-south trending faults and hills of the Diablo Range. The valley extends approximately 14 miles in an east-west direction and varies from three to six miles in width. The valley floor slopes gently west and southwest and is a part of the Livermore Valley groundwater basin. The groundwater basin is bounded and crossed by several faults. These faults act as barriers to the lateral movement of groundwater and divide the groundwater basin into several sub-basins. The water-bearing materials in the groundwater basin include Holocene age surficial valley-fill alluvial sediments overlying the Plio-Pleistocene Livermore Formation. The Livermore Formation consists of unconsolidated to semi-consolidated beds of gravel, sand, silt, and clay of varying permeability (California Department of Water Resources, 2003). Natural recharge occurs primarily along the uplands and edges of the Livermore Valley groundwater basin, through the arroyos during periods of precipitation and winter flow, by underground flow, and by applied irrigation water seeping into the ground. The basin is also recharged by controlled releases from the South Bay Aqueduct along with local surface water stored at Del Valle reservoir into Arroyo Valle and Arroyo Mocho. Sections of these arroyos contain creek bottoms that are very porous, allowing the water to quickly seep into the ground. Mine quarrying pits on the west side of the Livermore Valley are currently being used for storm water collection to assist in recharge of groundwater in the basin (Zone 7 Water Agency, 2005).

The basins' groundwater system is a multi-layered system with an unconfined upper aquifer overlying deeper semi-confined to confined aquifers separated by clay aquitards. These clay aquitards impede the vertical movement of groundwater between the upper and deeper aquifers. Most of the water for municipal and agricultural use is pumped from the deeper aquifers. Groundwater flow in the basin generally flows toward the west central portions of the valley and generally moves east to west within Livermore Valley. Groundwater near the center of Livermore Valley flows toward a cone of depression located west of the city

of Livermore near gravel mining areas. The groundwater depression is thought to have been created by extraction of groundwater for municipal and agricultural use and dewatering for gravel quarrying (Zone 7 Water Agency, 2005). The extraction of groundwater is ongoing but has lessened over the years due to usage of water from the State Water Project. Surface drainage features include four major seasonal streams (Arroyo Valle, Arroyo Mocho, Arroyo las Positas, and Arroyo de la Laguna) and several quarry ponds (mining area). The four major streams converge on the southwest side of the basin to form the main basin outlet, Arroyo de la Laguna, which flows south and joins Alameda Creek in Sunol Valley. These natural drainages are located approximately 0.7 miles north (Arroyo las Positas), 0.75 miles south-southwest (Arroyo Mocho), and 2.75 miles southwest (Arroyo Valle) of the Site.

1.4 Local Hydrogeology

Depth to groundwater at the Site fluctuates at least seasonally and is typically encountered between 25 and 35 feet below ground surface (bgs), although it has ranged from 16.03 ft bgs (well MW-9 on 2/18/1998) to 43.25 ft bgs (well MW-6 on 2/19/2004). The groundwater gradient has historically been predominantly toward the north to northwest. During the Third Quarter 2011 groundwater monitoring event the gradient was towards the North at 0.04 ft/ft. A groundwater elevation contour map from the Third Quarter 2011 groundwater monitoring event is presented as Drawing 3. Groundwater elevation data since 1995 are presented within Appendix A.

1.5 Lithology

The soil underlying the Site has been consistently characterized as primarily clayey to sandy gravel interbedded with some silty sand and sandy silt to clay. A four and half to five foot layer of moist sandy clay has been encountered at varying depths ranging from 37 to 42.5 feet bgs. Available soil boring logs, well construction details and geologic cross-sections are provided in Appendix B.

1.6 Sensitive Receptors

A water well survey was conducted by URS in September 2003. This survey concluded that five water wells were located within 2,640 feet (0.5 miles) of the Site. Two were identified as water supply wells located approximately 2,500 feet southwest and 2,300 feet east-northeast of the Site. Two other wells were of unknown use and reported as being located approximately 240 feet northeast and 2,300 southeast of the Site. Upon further review of the well logs, the well of unknown use that was believed to be located approximately 240 feet northeast from the Site was incorrectly located by URS. The correct location of the well was 450 feet north, down-gradient, of the Site (across Pine Street and on the north side of the fire station). Recent discussion with personnel at Zone 7 Water Agency, the local water purveyor, indicates that this well (Well ID# 3S/2E8E1) located at the Livermore-Pleasanton Fire Station #7, 951 Rincon Avenue, was abandoned by Dejesus Pump and Well Drilling on February 15, 2002. Therefore, this well is no longer a potential receptor. A fifth well from a previous well survey conducted at the Site was noted in the URS report. The well was reported to be a municipal water supply well located approximately 360 feet to the southwest of the Site. The URS report stated that the Department of Water Resources well survey did not include a log for this well. Additional information regarding this well is unavailable; therefore, the well will not be considered as a potential receptor for this report. A copy of the URS Water Well Survey (9/17/2003) is provided in Appendix C.

The closest surface water body to the Site in the down-gradient direction appears to be Arroyo las Pasitas located approximately 0.7 miles to the north.

1.7 Summary of Previous Investigations

In August 1987, a waste-oil tank was removed from the Site. A soil sample (AL-1) was collected at 10 feet bgs and analyzed for halogenated volatile compounds (HVC), polychlorinated byphenyls (PCB's), total

petroleum fuel hydrocarbons (TPFH), and benzene, toluene, and xylenes (BTX). Results showed TPFH at 378 milligrams per kilogram (mg/kg). The excavation was deepened and a second sample (AL-2) was collected from 12 feet bgs. No analytes (HVC, PCB's, TPFH, and BTX) were detected above laboratory reporting limits in the deeper sample. Summarized analytical results are provided within Appendix D. It is important to note that a waste-oil tank removal report summarizing work activities could not be located. The data discussed above and analytical results and drawing included in Appendix D were taken from the 1990 Applied GeoSystems (AGS) report titled *Limited Subsurface Environmental Assessment.*

In February 1990, AGS conducted a limited onsite subsurface environmental assessment to evaluate the presence of gasoline hydrocarbons in the subsurface soil in the area adjacent to the four gasoline underground storage tanks (USTs) prior to their planned removal. Three exploratory soil borings (B-1, B-2, and B-3) were drilled and soil samples were collected from each boring. Groundwater was encountered in soil boring B-1 at approximately 33 feet bgs. Soil borings B-2 and B-3 were terminated prior to encountering groundwater. Soil samples were analyzed for total petroleum hydrocarbons as gasoline (TPH-g) and benzene, toluene, ethylbenzene, and total xylenes (BTEX). Results indicated petroleum hydrocarbon impacted soil (TPH-g) in excess of 100 mg/kg in one of the soil samples from boring B-3 at a depth of 32 ft bgs. A grab groundwater sample was obtained from soil boring B-1 for visual inspection. Approximately 1/8-inch of floating product was present (Applied GeoSystems, 1990).

In December 1990, a supplemental subsurface investigation was initiated by AGS to evaluate the lateral and vertical extent of petroleum hydrocarbons in soil and groundwater near the onsite gasoline USTs. This investigation included drilling three soil borings (B-4, B-5, and B-6), converting the borings to monitoring wells (MW-1, MW-2, and MW-3, respectively), and collecting and analyzing soil and groundwater samples. Groundwater was encountered in each of the soil borings at approximately 37 feet bgs at the time of drilling. A sheen of light, non-aqueous phase liquid (LNAPL) was observed in well MW-1 and 0.16 feet of LNAPL was noted in MW-2. Sixteen soil samples and one groundwater sample (MW-3) were submitted for analysis of TPH-g and BTEX. Results indicated impacted soil (TPH-g) in excess of 100 mg/kg in two of the soil samples collected from boring B-4. Groundwater results showed TPH-g at 230 µg/L in MW-3 (Applied Geosystems, 1991).

In June and July 1991, an additional subsurface investigation was conducted by RESNA to further evaluate the lateral and vertical extent of impacted soil and groundwater and to confirm the vertical extent of waste-oil hydrocarbons in the area of the former waste-oil tank. This investigation included drilling five soil borings (B-7 through B-11), converting four of the borings (B-7 through B-10) to monitor wells (MW-4 through MW-7), and collecting and analyzing soil and groundwater samples. Soil boring B-11 was drilled in the area of the former waste-oil tank. Groundwater was encountered in borings B-7 through B-10 at depths of approximately 35.5 to 37 feet bgs. A total of 33 soil samples collected at various depths were submitted for analysis of TPH-g and BTEX. Soil samples from boring B-11 were also analyzed for total petroleum hydrocarbons as diesel (TPH-d) and total oil and grease (TOG). Groundwater samples were collected from wells MW-3 through MW-7 and analyzed for TPH-g and BTEX. Samples were not collected for laboratory analysis from wells MW-1 and MW-2 as LNAPL was observed in the wells. Soil analytical results indicated impacted soil (TPH-g) in excess of 100 mg/kg in three of the soil samples. No analytes were detected above the laboratory reporting limits in the soil samples from boring B-11. Groundwater analytical results showed impacted groundwater in each of the monitor wells sampled (RESNA, 1991). Summarized analytical results are provided within Appendix A and D. Soil boring and monitor well construction logs are provided in Appendix B.

In December 1991, RESNA conducted a vapor extraction test from wells MW-1, MW-2, MW-4, MW-5, and MW-7. Test results showed that vapor extraction was an effective method to remediate subsurface soils at the site (RESNA, 1992). Vapor extraction test monitoring data and summarized analytical results are provided in Appendix E.

Between December 30, 1991 and January 3, 1992, four USTs, with the following capacities: one 10,000 gallon, one 6,000 gallon, and two 4,000 gallon, were removed from the Site (Roux, 1992). Initially, two soil samples were collected from underneath each tank for a total of eight soil samples at depths ranging from 14 to 16 feet bgs. Soil samples were analyzed for TPH-g and BTEX. Results showed petroleum impacted soil (TPH-g) in excess of 100 mg/kg below three of the four tanks. Additional excavation and sampling occurred on January 21, 1992. Six soil samples were collected at a depth of 18 feet and additionally analyzed for Organic Lead. Two of the samples showed TPH-g at or above 100 mg/kg. Product line replacement was conducted in February 1992. Ten soil samples from various depths within the product line trenches were collected and analyzed for TPH-g and BTEX, with select samples additionally analyzed for Organic Lead. Results showed TPH-g impacted soil exceeding 100 mg/kg in two of the samples collected within the product line trenches (Roux, 1992). Approximately 1,100 cubic yards of soil was generated during removal of the USTs and product lines. The soil was disposed of at the Browning Ferris Industries' Class III landfill in Livermore, California. Historic sample locations and a table of analytical results are contained within Appendix D.

In April 1992 and January 1993, RESNA conducted an additional onsite and initial offsite subsurface investigation. This investigation included drilling four offsite soil borings (B-12 through B-15) and two onsite soil borings (B-16 and B-17), converting borings B-12 through B-15 to monitoring wells MW-8 through MW-11, converting boring B-16 to a vapor extraction well (VW-1), and boring B-17 to a recovery well (RW-1). Monitor wells MW-8 through MW- 10 were originally proposed to be located on the immediate adjacent property south and west of the Site. After repeated attempts by RESNA and ARCO, the owner of the adjacent property refused to allow installation of the wells. These locations were then changed to northeast, east, and southeast of the site along Rincon Avenue and were installed in January 1993 (RESNA, 1993). Groundwater and soil samples were collected and submitted for analysis of TPH-g and BTEX. Three of the eight soil samples from onsite borings B-16 and B-17 contained slight detections of various analytes. No analytes were detected above laboratory reporting limits in any of the offsite soil or groundwater samples. Onsite well RW-1 contained significant TPH-g and BTEX concentrations (RESNA, 1993). Summarized analytical results are provided within Appendix A and D. Soil boring and monitor well construction logs are provided in Appendix B.

In March 1993, EMCON completed construction of a Soil Vapor Extraction (SVE) system to extract vapors from wells VW-1, MW-1, MW-2, MW-4, MW-5, and MW-7. Initial startup of the remediation system was postponed due to heavy rain, which caused water levels at the Site to rise and submerge the screen intervals within the remediation wells. The SVE system was initially activated on December 20, 1994, extracting from wells VW-1 and MW-4. The other SVE wells had submerged screen intervals. Influent samples showed detectable concentrations of TPH-g and total xylenes (EMCON, 1995). The system was shut down on January 17, 1995 due to re-submergence of the well screen intervals. During the First Quarter 1995, modifications were completed to the SVE system to facilitate in-well air bubbling in conjunction with SVE. On July 12, 1995, the system was restarted in conjunction with air-bubbling in wells VW-1, MW-1, MW-2, MW-4, MW-5, MW-7, and RW-1. The SVE system was shut down on October 10, 1995 due to low hydrocarbon concentrations in extracted soil vapor. Review of historic reports did not indicate when air-bubbling was discontinued. During operation of the SVE system, a total of 56.9 pounds of hydrocarbons were removed from the subsurface (EMCON, 1996). SVE system operation and performance data are provided within Appendix E.

In June 2001, Cambria Environmental Technology, Inc. (Cambria) supervised the removal of the dispenser and product piping by Paradiso Construction and performed compliance sampling activities (Cambria, 2001). Soil sampling was performed beneath each dispenser unit, at each piping elbow joint, and along the product piping. Four soil samples were submitted for analysis of TPH-g, BTEX, and Methyl tert-butyl ether (MTBE). Minor concentrations of TPHg, toluene, total xylenes, and MTBE were detected in two of the soil samples. Summarized analytical results are provided in Appendix D.

In 2006, URS installed an Air Diffusion (AD) Treatment system for remediation of dissolved phase hydrocarbons. A 1.5 horsepower single-phase air sparge compressor was installed in the existing remediation system compound at the Site. Air bubblers were affixed to onsite wells MW-2, MW-4, MW-5, MW-6, and MW-7. Air bubbling activities with the new system began in 2006 and were discontinued in March 2010.

On March 25, 2011, BAI field personnel observed RSI advance two off-site soil borings (SB-2 and SB-3) on adjacent property to the south and west of the Site in the cross- and up-gradient directions. RSI utilized a hollow stem auger drill rig to advance the soil borings to a maximum depth of 35 feet bgs. Physical soil samples were collected at approximate five foot intervals during soil boring activities. Following completion of soil boring advancement, a grab groundwater sample was collected from each boring within the augers utilizing a stainless-steel bailer between approximately 30 and 35 feet bgs. Select samples were submitted to the laboratory for analysis. Laboratory analytical results for the soil samples submitted from this investigation were below laboratory reporting limits for each constituent analyzed. GRO and MTBE were detected above laboratory reporting limits in the groundwater sample collected from boring SB-3 at concentrations of 81 micrograms per liter (µg/L) and 3.8 µg/L, respectively. The remaining analytes were not detected above laboratory reporting limits in the two groundwater samples collected. Summarized analytical data is provided in Appendix A and D.

Groundwater monitoring and sampling was initiated during the First Quarter 1992. Sampling of the following wells were discontinued following the respective sampling event: MW-10 – Second Quarter 1999, MW-8 and MW-9 – First Quarter 2000, and MW-1 and MW-3– Second Quarter 2000. Historic groundwater elevation and laboratory analytical results are included in Appendix A. Recent quarterly groundwater elevation and laboratory analytical results are provided in Drawing 3 and Appendix A.

1.8 Groundwater Constituents of Concern

Recent concentrations of GRO were found to be the highest in well MW-2 at 6,200 micrograms per liter (µg/L, parts per billion, ppb) during the Third Quarter 2010 sampling event. BTEX concentrations were found to be highest in well MW-7 during the Third Quarter 2010 sampling event at 430 µg/L, 11 µg/L, 32 µg/L, and 46 µg/L, respectively. Recent concentrations of MTBE were found to be the highest in well MW-7 at 150 µg/L during the Third Quarter 2011 sampling event. Ethanol, TBA, DIPE, ETBE, TAME, 1,2 DCA, and EDB were analyzed in select wells (MW-2, MW-4 through MW-7, MW-11, RW-1, and VW-1) beginning in July 2003. Recent TBA concentrations were found to be the highest in MW-4 at 880 µg/L during the Third Quarter 2010 sampling event. Although a Notification Level for TBA has been established at 12 µg/L by the California Department of Public Health (CDPH), it is BAI's understanding that the State Water Resources Control Board (SWRCB) does not consider CDPH Notification Levels to be actionable criteria that can be used to establish Water Quality Objectives (WQOs) in accordance with Resolution 68-16. An odor threshold has been established at 290,000 µg/L (Amoore, J.E., and E. Hautala, 1983). Concentrations reported at this site are well below this threshold; therefore, TBA is not considered a constituent of concern (CoC). Ethanol, DIPE, ETBE, TAME, 1,2 DCA, and EDB have not been detected in wells sampled. Therefore the current CoCs are GRO, benzene, and MTBE.

The following table presents the maximum concentrations for constituents of concern detected within the past year, as well as the WQOs for each constituent. BAI considers the WQOs for CoCs to be the secondary Maximum Contaminant Level (MCL), or the Primary MCL if the secondary MCL has not been established. If neither has been established, the San Francisco Regional Water Quality Control Boards (SFRWQCBs) Environmental Screening Level (ESL) is used.

Contaminant	Current Maximum Concentration	Sample Date	Water Quality Objective	Water Quality Objective Basis
TPH-G/GRO	6,200 µg/L (MW-2)	9/9/2010	100 µg/L	SFRWQCB ESL
Benzene	430 µg/L (MW-7)	9/9/2010	1 µg/L	California Primary MCL
Toluene	11 µg/L (MW-7)	9/9/2010	150 µg/L	California Primary MCL
Ethylbenzene	32 µg/L (MW-7)	9/9/2010	300 µg/L	California Primary MCL
Total Xylenes	46 µg/L (MW-7)	9/9/2010	1,750 µg/L	California Primary MCL
MTBE	150 µg/L (MW-7)	7/7/2011	5 µg/L	California Secondary MCL

1.9 Current Regulatory Status

The most recent correspondence with Alameda County Environmental Health (ACEH) dated September 10, 2010 granted approval to conduct off-site soil borings SB-2 and SB-3 along with angled soil boring (ASB-1), as detailed in BAI's *Second Addendum Soil and Ground-Water Investigation Work Plan* dated August 13, 2010. Angled soil boring ASB-1 was removed from the scope of work due to safety concerns involved with drilling beneath the existing UST system. This modification was relayed to ACEH via email correspondence dated December 12, 2010. A response from ACEH regarding this change was not received. Results of the off-site investigation are summarized in BAI's *Off-Site Soil and Groundwater Investigation Report* dated April 29, 2011. There are currently no other regulatory directives for further investigation or remediation.

According to information provided on the State's GeoTracker website, impediments to closure include the following:

- *Site Assessment Incomplete – Pollutant sources have not been adequately identified or evaluated.* Borings installed in 1990 detected elevated concentrations of petroleum hydrocarbons in soil and LNAPL on groundwater. Soil Vapor Extraction and product skimmers were installed at the site. However, effectiveness of remedial measures is unknown and verification sampling has not been conducted.

- *Plume Instability* – Borings installed in 1990 detected elevated concentrations of petroleum hydrocarbons in soil and LNAPL on groundwater. Soil Vapor Extraction and product skimmers were installed at the site. However, effectiveness of remedial measures is unknown and verification sampling has not been conducted.

2.0 ENVIRONMENTAL CONDITIONS

2.1 Extent of Groundwater Impact

As noted in section 1.8, groundwater CoCs are GRO, benzene, and MTBE. The GRO plume is concentrated around the former UST's with the highest recent concentration detected in MW-2 at 6,200 µg/L during the Third Quarter 2010 sampling event. The benzene plume has been restricted to the area surrounding the former USTs with the highest recent concentration of 430 µg/L detected in MW-7 during the Third Quarter 2010 sampling event. MTBE concentrations have also been restricted to the area surrounding the former USTs with the highest recent concentration of 150 µg/L detected in MW-7 during the Third

Quarter 2011 sampling event. Wells down-gradient to the north and north-west of the former USTs have been non-detect for CoCs. The contaminant plumes for GRO, benzene, and MTBE are fully delineated, and restricted to the area surrounding the former USTs. A groundwater analytical summary map from the Third Quarter 2011 monitoring/sampling event is provided as Drawing 3. A summary of historic groundwater analytical results are provided in Appendix A.

2.2 Extent of Soil Impact

Soil investigations and excavations have been performed around the former waste oil tank and former UST complex on the south side of the Station Building, down-gradient of the former USTs on the northeast and northwest sides of the station building, and beneath current dispensers and former product piping on the east side of the station building. In 1987, the former waste oil UST was removed on the northeast side of the station building. After detecting total petroleum fuel hydrocarbon contamination in the shallow soil sample, a deeper sample was collected from approximately 12 ft. bgs, and no analytes were detected above laboratory reporting limits in this deeper soil sample. It is important to note that a waste-oil tank removal report summarizing activates could not be located.

In late 1991 to early 1992, the former USTs on the southeast side of the station building, and the product piping along the east side of the station building were removed when the current UST complex was installed in the same location and to the west of the former UST complex. Soil samples were collected below the former tanks at depths ranging from 14 to 16 ft bgs. Confirmation sample T4-A, below the former northernmost UST, had the highest reported concentrations of TPH-G and BTEX at 4,600 mg/kg, 28 mg/kg, 470 mg/kg, 170 mg/kg, and 1,100 mg/kg, respectively. Soil samples were also collected along the product lines at depths ranging from 0.5 to 1.5 ft bgs. Confirmation sample L2, collected from the southern most end of the pump dispensers at a depth of 1.5 ft bgs contained the highest concentrations of TPH-G and BTEX at 750 mg/kg, 0.35 mg/kg, 30 mg/kg, 26 mg/kg, and 200 mg/kg, respectively. A total of approximately 1,100 cubic yards of soil was excavated from the Site during the 1991/92 UST and pipeline removal/replacement project.

In 2001, additional soil sampling and excavation was performed during product line and dispenser removal and upgrade activities. Soil samples were collected beneath the dispensers during the upgrades, at each piping elbow joint, and along the product piping at depths ranging from 3.5 to 6.0 ft bgs. Samples collected below dispensers 1 and 2 located on the east side of the station building contained minor concentrations of TPHg, Toulene, total Xylenes, and MTBE.

During the period of March 1993 to October 1995, the SVE system operating on-site removed an estimated total of 56.9 pounds (9.2 gallons) of hydrocarbons from the soil. System operation was discontinued due to low hydrocarbon influent concentrations. In 2011, BAI advanced two off-site soil borings in order to further evaluate the lateral extent of petroleum hydrocarbon impacted soil and groundwater to the west and south of the Site. Laboratory analytical results for soil samples collected at 10 and 30 ft bgs were below laboratory reporting limits for each constituent analyzed. Based on visual and olfactory observations during boring advancement at each location, petroleum hydrocarbon impacted soil did not appear to be present from ground surface to total depth explored, approximately 35 feet bgs.

3.0 TECHNICAL JUSTIFICATION FOR NO FURTHER ACTION

Over-excavation activities performed to date have reportedly removed approximately 1,100 cubic yards of impacted soil from the Site. Operation of the SVE system between 1994 and 1995 removed an estimated 56.9 pounds of total hydrocarbons from the subsurface. The SVE system was shutdown in October 1995 reportedly due to low influent concentrations. Additionally, an Air Diffusion treatment system was operational from 2006 to 2010.

Contaminant concentrations in groundwater exhibit decreasing trends for all identified CoCs. Natural attenuation of petroleum hydrocarbons is ongoing and will continue to reduce concentrations and the extent of the residual plume. The reader is referred to Section 4.3 for additional discussion of decreasing concentrations trends observed in groundwater. Because groundwater is relatively shallow and residual soil impacts limited in extent and magnitude, we can infer that the contaminant mass in soil above the groundwater table is not appreciable, and the potential for further leaching is limited. The lack of meaningful rebound in post-remediation groundwater contaminant concentrations attests to the success of past remedial efforts at the Site.

Vapor intrusion into the station building is not thought to be a viable exposure pathway of concern based on the conditions present at the Site. As evidenced by borings B-4 and B-8 located between the USTs and station building, there is approximately 20 feet of essentially clean/non-impacted soil in the vadose zone under the station building. Numerous studies have indicated that significant bio-attenuation of vapors occurs and the vapor intrusion to the indoor air pathway is not likely to be complete for petroleum vapors if there are at least five feet of clean coarse-grained soil or two feet of fine-grained soil overlying the contaminant source (R. Davis 2005 & 2006, G.B. Davis et al 2009, McHugh et al 2010). Current draft guidance indicates there is no need to assess the vapor intrusion pathway with low concentrations of dissolved petroleum hydrocarbons in groundwater and greater than five feet separation between a contaminant source and building. According to SWRCB draft guidance, there have been no published examples of petroleum vapor intrusion for this condition and that modeling studies indicate bio-attenuation will limit the potential for vapor intrusion (SWRCB, 2010).

Constituents of Concern have been adequately delineated to concentrations below laboratory reporting limits in wells down-gradient of the Site. BAI believes that the adverse effect of Site contaminants on shallow groundwater will be minimal and localized, and there will be no adverse effect on the groundwater contained in deeper aquifers, given the physical and chemical characteristics of petroleum constituents, the hydrogeological characteristics of the groundwater and direction of the groundwater gradient.

Numerous studies of the fate and transport of petroleum hydrocarbons and fuel oxygenates have been performed, including the Lawrence Livermore Reports (Lawrence Livermore National Laboratories, 1995 & 1998) and the 2004 Los Angeles Area Petroleum Hydrocarbon and Fuel Oxygenate Study (Shih et al, 2004). These studies indicate that unabated, petroleum hydrocarbon and MTBE groundwater plumes reach a maximum length before the processes of natural attenuation, diffusion, advection, and dispersion reduce the concentration to WQOs or levels adequately protective of human health. The 1995 and 1998 Lawrence Livermore Reports indicate that the lateral dimensions of most (non-MTBE) LUFT sites do not exceed more than a few hundred feet, and that in 90% of cases, the Benzene concentration had decreased to below 1 mg/L within 400 feet of the source area. The 2004 Los Angeles Study indicated that the longest MTBE plume length observed (5 µg/L) was approximately 1,040 feet, and that 90% of MTBE cases resulted in a plume length of 540 feet or less.

Additionally, according to a study by the California Leaking Underground Fuel Tank Task Force conducted in 2009 (Chinn, 2009), it is recognized that domestic drinking water wells are not commonly being installed in urban areas already served by municipal drinking water sources. Typically municipal wells are installed at a greater depth and with a more robust sanitary seal. This implies that in areas already serviced by municipal sources, groundwater in shallow water bearing zones is not likely to be used for drinking water purposes except in the immediate vicinity of any already existing wells. Releases from petroleum USTs typically only impact the shallowest water bearing zones and therefore should not be prevented from case closure unless it can be reasonably expected that WQOs will not be met prior to impacting existing or potential future wells.

Because the Site is located in an area already serviced by a public water supply system, it is not reasonably expected that new drinking water wells will be installed in the vicinity of the Site. If a municipal well were to be installed, it is unlikely to draw from shallow groundwater, and the well's sanitary seal would

protect against the incursion of contaminants into the well. As discussed in Section 1.6, sensitive receptors that could potentially be impacted by the residual contaminant plume do not appear to be present within the general vicinity of the Site. If further investigation and remediation are not warranted at the Site, then long-term groundwater monitoring serves no useful purpose.

4.0 QUALIFICATION AS LOW RISK CASE

The SWRCB Resolution 68-16 (*Statement of Policy with Respect to Maintaining High Quality of Waters in California*), Resolution 88-63 (*Sources of Drinking Water*), and Resolution 92-49 (*Policies and Procedures for Investigation and Cleanup and Abatement of Discharges under Water Code Section 13304*) require the cleanup of unauthorized releases to background concentrations or the highest quality of water that is protective of the designated beneficial uses. It appears that the environmental case at the subject Site should be granted No Further Action status at this time for numerous technical and regulatory reasons, as discussed in the following sections.

4.1 Qualification as a Low-Risk Environmental Case

On December 8, 1995, Mr. Walt Pettit, SWRCB Executive Director, issued an advisory to the Regional Water Quality Control Boards indicating that oversight agencies should proceed aggressively to close low risk cases. *Supplemental Instructions to State Water Board December 8, 1995, Interim Guidance on Required Cleanup at Low Risk Fuel Sites*, prepared by SFRWQCB on January 5, 1996 defined and explained low-risk criteria for environmental UST cases. These low-risk criteria are presented below, with justification why each criteria element is satisfied:

1) The leak has been stopped and ongoing sources, including LNAPL, removed or remediated to the extent practicable

The cause of the original release has been repaired, and the USTs, fuel dispensers, and piping have been subsequently replaced and/or upgraded. LNAPL was first detected in on-site soil boring B-1 (0.01 ft floating product) during a limited subsurface assessment on February 1, 1990. LNAPL in monitoring wells was first observed in MW-1 (0.10 ft) on July 25, 1991, in MW-2 (0.16 ft) on January 15, 1991, and in MW-5 (0.03 ft) on August 13, 1991. Passive skimmers were installed in wells MW-1, MW-2, and MW-5. Approximately 3.06 gallons of LNAPL were recovered in 1991 and 1992. LNAPL has not been observed in the monitor wells associated with the Site since November 1992. There is no evidence of an ongoing release. As such, this criterion is satisfied.

2) The Site has been adequately characterized

For this environmental case, the lateral extent of CoCs in groundwater is delineated cross-gradient and down-gradient by the existing monitoring well network. Constituents of concern have been delineated to concentrations at or below WQOs in downgradient wells MW-3, MW-6, MW-8, and MW-11. Based on Site reports, it appears that the bulk of petroleum hydrocarbon impacts to soil reported in the vicinity of the USTs, dispenser islands, and product piping were removed by over-excavation and SVE. Boring B-10 exhibited the presence of approximately 20 feet of essentially clean/non-impacted vadose zone soil above the groundwater table in the area of the former UST excavation on the backside of the station building. Samples collected from the recent offsite soil and groundwater investigation indicate that the contaminant plume is delineated to the west and south of the Site (cross- and up-gradient). It is not necessary to perform a Vapor Intrusion Assessment as there is no basis from historic studies and guidance.

3) The dissolved hydrocarbon plume is not migrating

Wells in the vicinity of impacted groundwater (MW-1, MW-2, MW-4, MW-5, MW-7, and RW-1) show a decreasing trend in concentrations of CoCs. TPHg/GRO and benzene have been intermittently detected in

wells MW-3 and MW-6 on the north portion of the Site and down gradient of the believed source. No CoCs have historically been detected in down-gradient wells MW-8, MW-11, and VW-1. The lead scavenger 1,2-DCA has been reliably detected once on-site in MW-4 at a concentration of 0.76 µg/L (7/18/2007). The fact that 1,2-DCA (originally added to leaded gasoline) has not been detected in the downgradient wells MW-1, MW-2, MW-4, MW-5, MW-7, and RW-1 attests to the fact that the 'hydrocarbon plume' is not migrating.

4) No water wells, deeper drinking water aquifers, surface water, or other sensitive receptors are likely to be impacted

A water well survey was conducted by URS in September 2003. This survey concluded that four water wells were located within 2,640 feet (0.5 miles) of the Site. Based on the results of the well survey, it is unlikely that the groundwater contamination associated with the Site poses a potential threat to wells. The well survey completed only identified one well in close proximity and approximately 450 feet down-gradient and north of the Site. The well was completed in 1963 and although the well drillers report did not indicate the screen interval or surface seal, it does state the total depth of the well as 300 feet bgs. It is our understanding that the intended purpose of the well was for use as an emergency water supply for the fire station in the event of a natural disaster that cuts off the main water supply. As previously discussed, recent correspondence with Zone 7 Water Agency personnel have verified that this well was properly abandoned on February 15, 2002. Therefore, this well is no longer a potential receptor. A copy of URS' Water Well Survey is provided in Appendix C. Additionally, as discussed above in criteria 3, petroleum hydrocarbon impacted groundwater does not appear to have migrated off-site.

5) The Site presents no significant risk to human health

The absence of GRO and BTEX in shallow vadose zone soils (less than 20 feet below land surface) collected from borings B-9 (MW-6) and B-10 (MW-7) near the station building indicates the potential for vapor intrusion into the station building is extremely unlikely. No water supply wells are likely to be impacted now or in the foreseeable future. Therefore, BAI believes that the Site presents no significant risk to human health.

6) The Site presents no significant risk to the environment

The closest down-gradient surface water body is Arroyo las Pasitas located approximately 0.7 miles north. Due to the distance of this water body from the Site, it is not reasonably anticipated that groundwater from beneath the Site would affect this receptor.

4.2 Qualification as Low-Risk Case Based on Groundwater Concentration

The SWRCB formed the UST Cleanup Program Task Force under Resolution 2009-0042 on May 19, 2009. This task force was developed to make recommendations to improve the UST cleanup regulatory program, including additional approaches to risk-based cleanup. The Task Force Final Report (January 13, 2010) made a recommendation that cases be considered for low-risk closure if the concentration of petroleum hydrocarbons and fuel oxygenates in groundwater are below the levels listed below:

- 10 mg/L for TPH-G and TPH-Diesel;
- 1 mg/L for each of the individual petroleum constituents; and
- 0.5 mg/L for each of the individual oxygenates.

While it is understood that these criteria cannot be uniformly applied to all sites, in "the vast majority of cases," unless an existing water well or surface water body is located in the down-gradient direction within 1,000 feet of the source area, cases exhibiting concentrations similar to those levels established above should be considered for low-risk closure. It is also noted that "[i]n cases where the TPH concentration is high, but

MTBE and Benzene concentrations are low or not present above laboratory detection limits, the case should be considered to be low-risk irrespective of the TPH concentration."

In the subject case, GRO, BTEX, and MTBE are detected at relatively low concentrations and display a decreasing trend over time. The other oxygenates have not been detected above the laboratory reporting limits with the exception of 1,2-DCA in MW-4 during the Third Quarter 2007 sampling event. The highest recent concentrations of GRO (6,200 µg/L in MW-2), benzene (430 µg/L in MW-7), and MTBE (150 µg/L in MW-7) are below the criteria threshold listed above of 10 mg/L (10,000 µg/L) for GRO, 1.0 mg/L (1,000 µg/L) for the individual petroleum constituents, and 0.5 mg/L (500 µg/L) for individual oxygenates. Therefore, the Site case is considered to be a strong candidate for low-risk closure.

4.3 Achievement of Water Quality Objectives Being Met Before Resource Is Used

The SWRCB Resolution 68-16 resolves that any activity that produces a waste discharge will be required to meet waste discharge requirements which will result in the best practicable treatment or control of the discharge necessary to assure that the highest water quality consistent with the maximum benefit to the people of the State will be maintained. SWRCB Resolution 88-63 resolves that virtually all water in California is designated as a drinking water source. Water Code Section 13304 authorizes Regional Boards to require the complete cleanup of all waste discharged and the restoration of affected water to background conditions or the best water quality reasonable if background levels of water quality cannot be restored. SWRCB Resolution 92-49 sets forth the policies and procedures for the investigation and cleanup of discharges from leaking UST cases. Resolution 92-49 does not require, however, that the WQOs be met at the time of site closure. Even if the requisite level of water quality has not yet been attained, a site may be closed if the level will be attained within a reasonable time frame. SWRCB Water Quality Order 98-04 (Matthew Walker) explicitly interprets a "reasonable time frame" as "anywhere from a couple of decades to hundreds of years." The Matthew Walker petition further states "…[I]f complete removal of detectable traces of petroleum hydrocarbon constituents become the standard for UST corrective actions, the statewide technical and economic implications will be enormous."

The SWRCB Resolution 2009-042 states that "[i]t is the responsibility of Regional Water Boards, LOP agencies, and other local agencies to close UST cases that are ready for closure." This resolution further states "[i]n previous decisions, the State Water Board, when determining a reasonable period, has considered all relevant factors including, but not limited to, existing and anticipated beneficial uses of water." Resolution 2009-081 further clarifies this issue by stating that "[i]n the orders issued by the State Water Board regarding UST case closure, several factors relevant to the particular UST case were considered, such as: (1) whether remaining petroleum constituents would migrate beyond the limited spatial extent, (2) the presence and location of drinking water wells in the area, (3) the likelihood that the impacted groundwater will be used as a source of drinking water in the reasonably foreseeable future, and (4) the protective nature of standard well-construction practices."

The SWRCB Resolution 2009-042 makes it clear that the decisional framework used in previous UST closure orders interpreted a "reasonable time frame" to be the amount of time before the resource is actually used, based on *existing* or *anticipated* beneficial use. SWRCB Resolution 2009-081 clarifies that the decisional framework in UST closure orders contemplate whether the impacted groundwater will be used as a source of *drinking water* in the *foreseeable future*. These Resolutions indicate that closure policy based on "potential beneficial use" or "possible future beneficial use" is inappropriate. These Resolutions indicate that the decisional framework previously used by SWRCB when considering UST closure is based on "existing" beneficial use, or "anticipated beneficial use within the foreseeable future." SWRCB Resolution 2009-081 resolves that "[w]hen considering whether a UST cleanup case should be closed, Agencies shall apply the decisional framework established in previous State Water Board UST closure orders."

As discussed above, one or more petroleum constituents (TPHg, BTEX, and MTBE) have been detected in groundwater in on-site wells MW-2, MW-4, MW-5, MW-6, MW-7 and RW-1 at concentrations

slightly above the WQOs (SFRWQCB ESL, Primary MCL, or Secondary MCL). However, detections have been at relatively low concentrations, displayed a decreasing trend over time, and have been highly localized within the vicinity of the former UST complex. Contaminants have not been detected in the downgradient wells MW-8, MW-11, or VW-1 and concentrations have been non-detect since 1999 in down-gradient well MW-3.

The first step when evaluating whether WQOs will be met (due to natural attenuation processes) within a reasonable time frame is to perform statistical analysis to demonstrate whether contaminant concentrations are declining with respect to time. For the purposes of this evaluation, a Mann-Kendall trend test using wells MW-4, MW-5, MW-6, MW-7, and RW-1 was utilized to evaluate analytical data of the CoCs (TPHg/GRO, benzene, and/or MTBE) to determine if concentrations are stable, increasing, or decreasing. The Mann-Kendall model is a statistical tool (or model) used to aid in the evaluation of plume stability. The Mann-Kendall model utilizes "messenger wells" (wells located in the internal area of the plume), and "perimeter of compliance" (POC) wells. POC wells are located down-gradient of the messenger wells and contain COC concentrations that generally approximate Site closure levels. The tool will indicate an expanding plume if the COC concentrations are increasing in any two messenger wells or any POC well.

One requirement of the Mann-Kendall test is that the COC concentrations must not be susceptible to seasonal groundwater fluctuations. A regression analysis was conducted on the slope of the trend line for plots of the CoCs versus groundwater elevations for wells MW-4, MW-5, MW-6, MW-7, and RW-1. Generally, an R^2 value between 0.85 and 1.0 indicates that there is a direct correlation between the two data sets. The following table summarizes the R^2 values calculated for laboratory analytical data and groundwater elevations collected from First Quarter 2005 through present-day. As indicated within the table, a direct correlation between the CoCs and groundwater elevations does not appear to exist. It should be noted that an R^2 value could not be calculated for Benzene at well MW-6 due to the single detection above laboratory reporting limits within the data set.

R^2 Values – Groundwater Elevation Vs. Concentrations

	GRO	Benzene	MTBE
MW-4	0.0617	0.0648	0.1686
MW-5	0.7332	0.3418	0.0004
MW-6	0.1665	---	0.116
MW-7	0.5188	0.5165	0.3892
RW-1	0.1754	0.1936	0.0172

Wells MW-4 and MW-5 were utilized as messenger wells and wells MW-6, MW-7, and RW-1 as POC wells for the Mann-Kendall analysis. The individual datasets consist of analytical data for GRO, Benzene, and MTBE dating from Third Quarter 2003 to the present. The Mann-Kendall test is a non-parametric test for identifying trends in time series data. The test compares the relative magnitudes of sample data rather than the data values themselves. Based on the 16 quarter analysis, GRO, Benzene, and MTBE are either stable or decreasing in each well analyzed with the exception of MTBE within well RW-1, which was calculated to be increasing. However, the MTBE concentrations detected in RW-1 since Third Quarter 2008 have been below the WQO of 5.0 µg/L. Results from the Mann-Kendall analysis can be found in Attachment F.

The Mann-Kendall trend analysis does not account for temporal variation in the data and therefore cannot be used to estimate a time to reach WQOs. In order to estimate the amount of time necessary for existing Site contaminants to degrade to WQOs, a logarithmic regression analysis was performed for wells MW-2, MW-4, MW-5, and MW-7. These wells were chosen due to recent concentrations of CoCs exceeding WQOs and the generation of regression analyses yielding a date to achieve WQOs beyond present day. The regression analysis was performed using historical data from 1995 to present. Three data points determined to be outliers (3/13/2000, 8/31/2000, and 2/9/2001) were removed from the MTBE data set for well MW-4. The results of the regression analysis are summarized below and also provided in Appendix G.

Well ID	Constituent	WQO	Date to Achieve WQO
MW-2	TPHg/GRO	100 µg/L	11/25/2022
MW-2	Benzene	1 µg/L	9/27/2020
MW-4	TPHg/GRO	100 µg/L	12/2/2025
MW-4	Benzene	1 µg/L	5/5/2033
MW-4	MTBE	5 µg/L	12/28/2052
MW-5	TPHg/GRO	100 µg/L	4/10/2016
MW-5	Benzene	1 µg/L	8/9/2018
MW-5	MTBE	5 µg/L	8/1/2023
MW-7	TPHg/GRO	100 µg/L	1/20/2019
MW-7	Benzene	1 µg/L	1/11/2023
MW-7	MTBE	5 µg/L	8/28/2013

Based on the regression analysis, contaminant concentrations at the subject Site are calculated to reach WQOs by time periods which are reasonably considered to be protective of the existing and anticipated beneficial uses of water at the subject Site. As such, it is believed that WQOs will be reached within a 'reasonable time frame' without the need for active remediation.

5.0 BENEFIT OF ADDITIONAL WORK

While the concentrations of the current CoCs (TPHg, benzene, and MTBE) are currently above the WQOs, the concentrations are relatively low and the impact is limited in extent. The lateral extent of the CoCs in groundwater has been adequately delineated for the purposes of low-risk closure. The plume appears to be stable and is not expected to migrate. The nearest identified potable well, approximately 0.4 miles east-northeast of the Site, is unlikely to be at risk from the low concentrations remaining on-site. Based on the available Site data, the contaminant plume does not appear to represent a significant threat to existing or reasonably anticipated beneficial uses in the foreseeable future. The potential for vapor intrusion and exposure to station building occupants is considered highly unlikely and current guidance recommends against the necessity of vapor intrusion assessment for the situational conditions present at the Site. The Site appears to be adequately characterized and no further investigation appears to be warranted to evaluate potential impacts to human health or environmental receptors.

Since the SVE and Air Diffusion Treatment remediation systems reached the point of diminishing returns, if Atlantic Richfield Company were to pursue active remediation of the TPHg, benzene, and MTBE contaminant plume at the Site, a possible remedial approach would be the implementation of enhanced aerobic or anerobic biodegradation remediation technology. This type of system would require the installation of remediation system infrastructure, equipment, and ongoing operations and maintenance for perhaps an extended period of time before concentrations would be below WQO's. While pursuing the installation and operation of such a system would be a significant cost, it is not expected that installation and operation of such a system would confer appreciable benefit to human health or the environmental receptors. As noted in Water Quality Order 98-04, "[i]f the complete removal of detectable traces of petroleum hydrocarbon constituents becomes the standard for UST corrective actions, the statewide technical and

economic implications will be enormous." As such, it appears that the Site-specific benefit of additional work, if any, is dwarfed by the cost and statewide implications for corrective action.

6.0 CLOSURE RECOMMENDATION

This Request for No Further Action presents a summary of the current environmental status of the Site, as well as rationale justifying case closure both from technical and regulatory perspectives. In addition to the technical and regulatory justification, there are strong economic reasons for closing the case. Maintaining a backlog of open low-risk environmental cases diverts available funding from cases with significantly greater threat to human health and the environment. By closing low-risk environmental cases, the available funding for the investigation and remediation of environmental cases with significantly greater threat to human health and the environment can be increased, which will, in turn accelerate the cleanup of UST cases within Alameda County and statewide.

Further investigation of the Site is not necessary to ensure that human health and the environment are protected since the plume already appears to be stable and that WQOs will be met within a reasonable time frame. Active remediation of the existing contaminants cannot be justified from a technical or economic perspective since the CoCs, GRO, MTBE, and benzene, have been documented to degrade naturally to the WQOs within a reasonable time frame. If further investigation and remediation are not warranted at the Site, then long term groundwater monitoring serves no beneficial purpose. It is recommended that Atlantic Richfield Company formally request that No Further Action status be granted at this time for ACEH Environmental Case # RO0000200 at 899 Rincon Ave, Livermore.

7.0 LIMITATIONS

The findings presented in this report are based upon observations of field personnel, points investigated, results of laboratory tests performed by various laboratories, and our understanding of SWRCB, RWQCB and ACEH requirements. Our services were performed in accordance with the generally accepted standard of practice at the time this report was written. No other warranty, expressed or implied was made. This report has been prepared for the exclusive use of the Atlantic Richfield Company. It is possible that variations in soil or groundwater conditions could exist beyond points explored in this investigation. Also, changes in site conditions could occur in the future due to variations in rainfall, temperature, regional water usage, or other factors.

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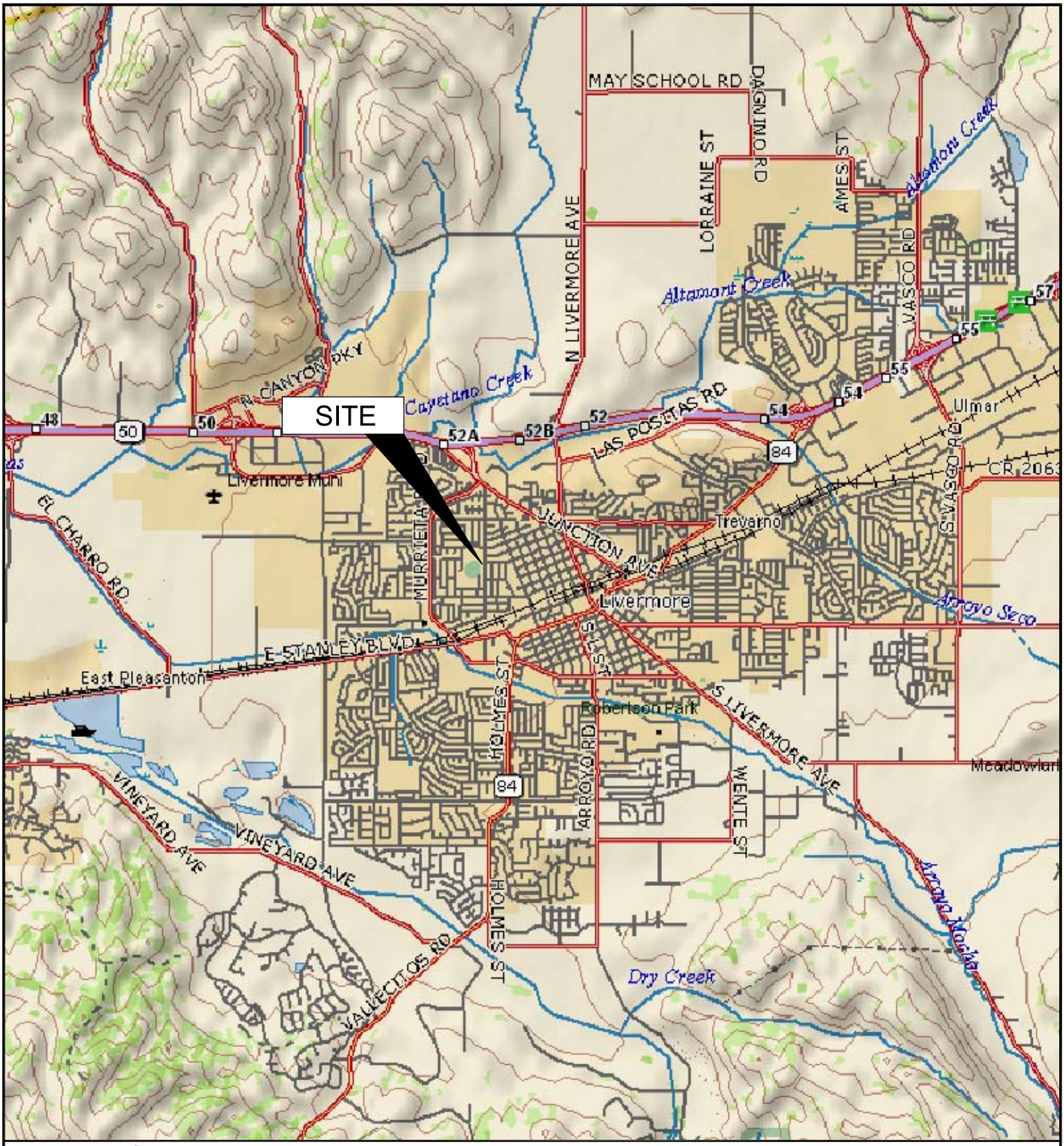

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APPROXIMATE SCALE (mi)

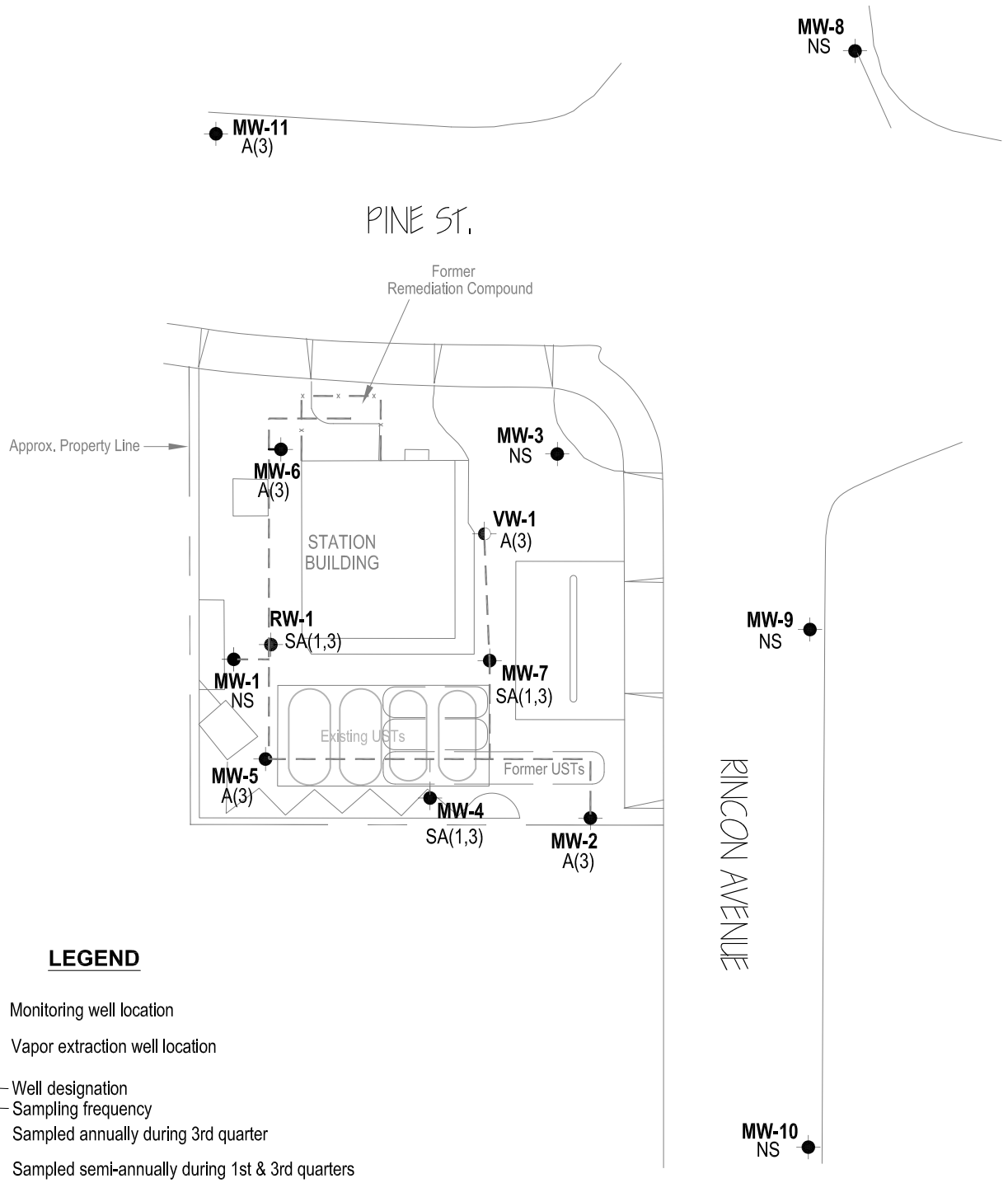
IMAGE SOURCE: DELORME

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California 95926
Project No.: 06-82-608 Date: 7/27/2009

Station #771
899 Rincon Avenue
Livermore, California

Site Location Map

Drawing
1



LEGEND

- Monitoring well location
- Vapor extraction well location
- **Well** — Well designation
- A,SA — Sampling frequency
- A(3) — Sampled annually during 3rd quarter
- SA(1,3) — Sampled semi-annually during 1st & 3rd quarters
- NS — Not sampled
- Remediation piping

N

0 40 80

SCALE (ft)

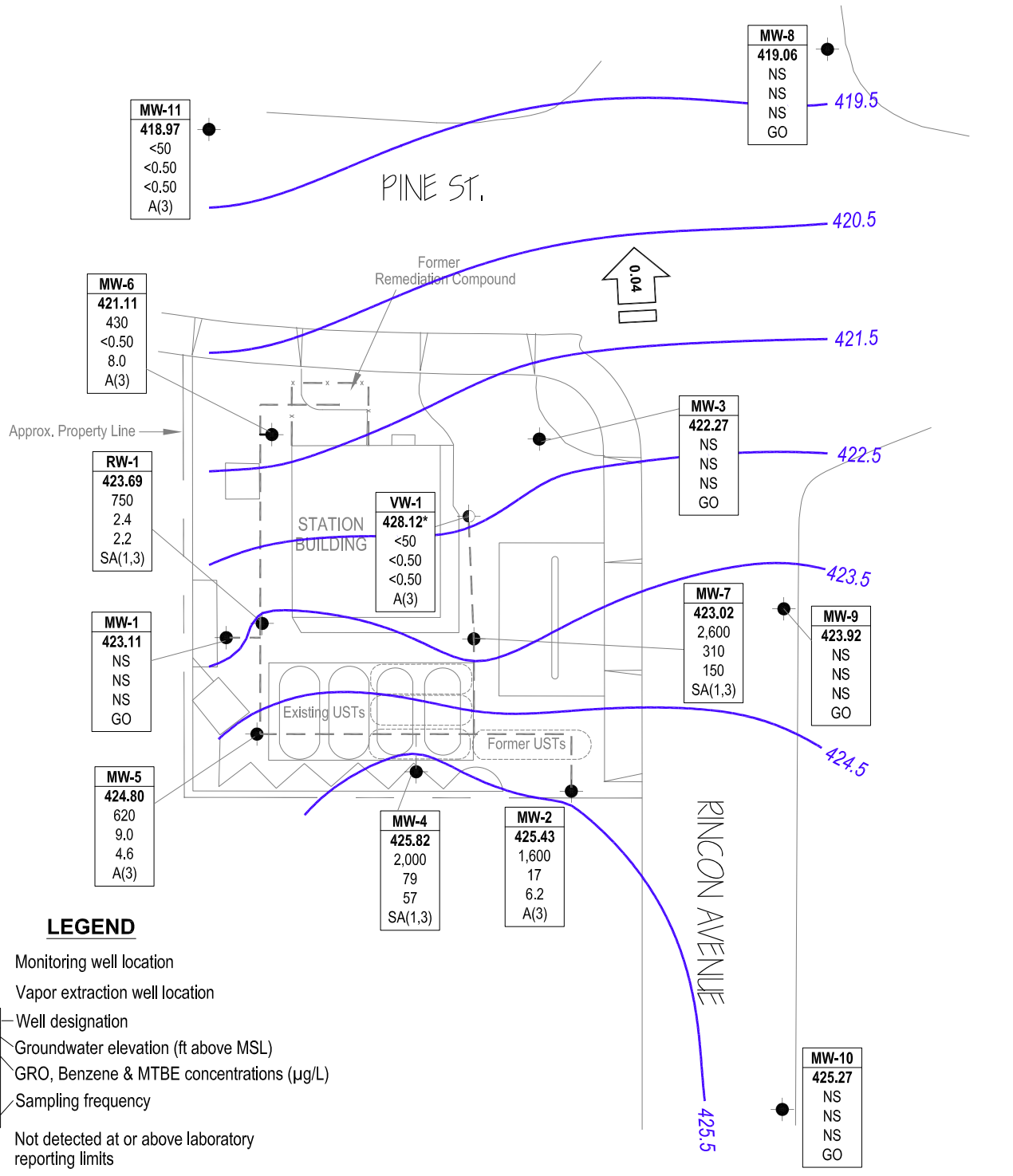
NOTE: SITE MAP ADAPTED FROM URS FIGURES.
SITE DIMESIONS AND FACILITY LOCATIONS NOT VERIFIED.

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California
Project No.: 06-82-608 Date: 1/14/2009

Station #771
899 Rincon Avenue
Livermore, California

Site Map

Drawing
2



LEGEND

- Monitoring well location
- Vapor extraction well location
- Well ID — Well designation
- ELEV — Groundwater elevation (ft above MSL)
- GRO, Benzene, MTBE — GRO, Benzene & MTBE concentrations (µg/L)
- SA or A — Sampling frequency
- < — Not detected at or above laboratory reporting limits
- * — Not used in contouring
- NG — Not gauged
- NS — Not sampled
- A(3) — Sampled annually during 3rd quarter
- GO — Not sampled, gauged only
- SA(1,3) — Sampled semi-annually, 1st & 3rd quarters
- 425.5 — Groundwater elevation contour (ft above MSL)
- 0.04 — Approximate groundwater flow direction and gradient (ft/ft)
- Remediation piping

NOTE: SITE MAP ADAPTED FROM URS FIGURES.SITE DIMESIONS AND FACILITY LOCATIONS NOT VERIFIED.

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California
Project No.: 06-82-608 Date: 8/16/2011

Station #771
899 Rincon Avenue
Livermore, California

Groundwater Elevation Contour
and Analytical Summary Map
July 7, 2011

Drawing
3

APPENDIX A

HISTORIC GROUNDWATER ELEVATION AND ANALYTICAL DATA

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Date: 03-07-95
Project Number: 0805-122.01

Well Desig-nation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-1	01-15-91	451.80	32.77	419.03	Sheen	NR	NR
MW-1	02-27-91	451.80	32.23	419.57	ND	NR	NR
MW-1	03-20-91	451.80	27.38	424.42	Sheen	NR	NR
MW-1	04-10-91	451.80	26.49	425.31	ND	NR	NR
MW-1	05-20-91	451.80	Not surveyed: interface probe failure				
MW-1	06-20-91	451.80	33.95	417.85	Sheen	NR	NR
MW-1	07-25-91	451.80	^36.59	^415.21	0.10	NR	NR
MW-1	08-13-91	451.80	^37.72	^414.08	0.20	NR	NR
MW-1	09-12-91	451.80	^39.25	^412.55	0.23	NR	NR
MW-1	10-30-91	451.80	^39.14	^412.66	0.20	NR	NR
MW-1	11-13-91	451.80	DRY	DRY	ND	NR	NR
MW-1	12-26-91	451.80	^39.30	^412.50	0.01	NR	NR
MW-1	01-18-92	NR	37.81	NR	Skimmer	NR	NR
MW-1	02-21-92	NR	Not surveyed: well inaccessible due to construction				
MW-1	03-31-92	NR	31.90	NR	Skimmer	NR	NR
MW-1	04-24-92	451.42	Not surveyed: well inaccessible due to construction				
MW-1	05-20-92	451.42	33.00	418.42	Skimmer	NR	NR
MW-1	06-12-92	451.42	33.25	418.17	0.02	NR	NR
MW-1	07-28-92	451.42	32.31	419.11	ND	NR	NR
MW-1	08-24-92	451.42	30.87	420.55	ND	NR	NR
MW-1	09-15-92	451.42	^32.24	^419.18	0.01	NR	NR
MW-1	10-29-92	451.42	32.29	419.13	ND	NR	NR
MW-1	11-25-92	451.73	32.15	419.58	ND*	NR	NR
MW-1	12-14-92	451.73	30.54	421.19	ND	NR	NR
MW-1	01-29-93	451.73	23.49	428.24	ND	NR	NR
MW-1	02-26-93	451.73	25.23	426.50	ND	NR	NR
MW-1	03-29-93	451.73	25.66	426.07	ND	NR	NR
MW-1	04-27-93	451.73	28.02	423.71	ND	NR	NR
MW-1	05-10-93	451.73	30.38	421.35	ND	NR	NR
MW-1	06-17-93	451.73	30.81	420.92	ND	NR	NR
MW-1	07-27-93	451.73	Not surveyed: vehicle parked on well				
MW-1	08-26-93	451.73	31.23	420.50	ND	NR	NR
MW-1	09-14-93	451.73	32.59	419.14	ND	NR	NR
MW-1	11-05-93	451.73	32.13	419.60	ND	NR	NR
MW-1	03-26-94	451.73	28.22	423.51	ND	NR	NR
MW-1	06-13-94	451.73	29.86	421.87	ND	NR	NR
MW-1	09-22-94	451.73	31.61	420.12	ND	NNE	0.056
MW-1	11-25-94	451.73	29.76	421.97	ND	N	0.06

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Summary Report

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Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-2	01-15-91	449.52	^30.89	^418.63	0.16	NR	NR
MW-2	02-27-91	449.52	^29.11	^420.41	0.02	NR	NR
MW-2	03-20-91	449.52	^24.57	^424.95	0.02	NR	NR
MW-2	04-10-91	449.52	^22.85	^426.67	0.05	NR	NR
MW-2	05-20-91	449.51	Not surveyed:				
MW-2	06-20-91	449.51	^31.42	^418.09	0.15	NR	NR
MW-2	07-25-91	449.51	^33.69	^415.82	0.49	NR	NR
MW-2	08-13-91	449.51	^34.80	^414.71	0.47	NR	NR
MW-2	09-12-91	449.51	^36.39	^413.12	0.45	NR	NR
MW-2	10-30-91	449.51	DRY	DRY	ND	NR	NR
MW-2	11-13-91	449.51	DRY	DRY	ND	NR	NR
MW-2	12-26-91	449.51	36.45	413.06	Sheen	NR	NR
MW-2	01-18-92	449.51	Not surveyed: well inaccessible due to construction				
MW-2	02-21-92	449.51	26.27	NR	Skimmer	NR	NR
MW-2	03-31-92	449.51	28.85	NR	Skimmer	NR	NR
MW-2	04-24-92	449.51	30.95	418.56	Skimmer	NR	NR
MW-2	05-20-92	449.51	30.69	418.82	Skimmer	NR	NR
MW-2	06-12-92	449.51	31.25	418.26	ND	NR	NR
MW-2	07-28-92	449.51	30.31	419.20	ND	NR	NR
MW-2	08-24-92	449.51	29.83	419.68	ND	NR	NR
MW-2	09-15-92	449.51	30.06	419.45	Sheen	NR	NR
MW-2	10-29-92	449.51	30.90	418.61	ND	NR	NR
MW-2	11-25-92	449.49	31.13	418.36	ND*	NR	NR
MW-2	12-14-92	449.49	29.24	420.25	ND	NR	NR
MW-2	01-29-93	449.49	20.12	429.37	ND	NR	NR
MW-2	02-26-93	449.49	22.59	426.90	ND	NR	NR
MW-2	03-29-93	449.49	22.83	426.66	ND	NR	NR
MW-2	04-27-93	449.49	25.10	424.39	ND	NR	NR
MW-2	05-10-93	449.49	27.23	422.26	ND	NR	NR
MW-2	06-17-93	449.49	28.26	421.23	ND	NR	NR
MW-2	07-27-93	449.49	29.50	419.99	ND	NR	NR
MW-2	08-26-93	449.49	29.85	419.64	ND	NR	NR
MW-2	09-14-93	449.49	30.43	419.06	ND	NR	NR
MW-2	11-05-93	449.49	30.20	419.29	ND	NR	NR
MW-2	03-26-94	449.49	25.30	424.19	ND	NR	NR
MW-2	06-13-94	449.49	27.28	422.21	ND	NR	NR
MW-2	09-22-94	449.49	29.54	419.95	ND	NNE	0.056
MW-2	11-25-94	449.49	27.85	421.64	ND	N	0.06

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ARCO Service Station 771
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Date: 03-07-95
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Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-3	01-15-91	450.29	32.34	417.95	ND	NR	NR
MW-3	02-27-91	450.29	31.78	418.51	ND	NR	NR
MW-3	03-20-91	450.29	27.74	422.55	ND	NR	NR
MW-3	04-10-91	450.29	25.05	425.24	ND	NR	NR
MW-3	05-20-91	450.28	27.06	423.22	ND	NR	NR
MW-3	06-20-91	450.28	32.35	417.93	ND	NR	NR
MW-3	07-25-91	450.28	35.02	415.26	ND	NR	NR
MW-3	08-13-91	450.28	36.50	413.78	ND	NR	NR
MW-3	09-12-91	450.28	38.47	411.81	ND	NR	NR
MW-3	10-30-91	450.28	DRY	DRY	ND	NR	NR
MW-3	11-13-91	450.28	DRY	DRY	ND	NR	NR
MW-3	12-26-91	450.28	38.53	411.75	ND	NR	NR
MW-3	01-18-92	450.28	Not surveyed: well inaccessible due to construction				
MW-3	02-21-92	450.28	Not surveyed: well inaccessible due to construction				
MW-3	03-31-92	450.28	30.61	NR	ND	NR	NR
MW-3	04-24-92	450.28	32.83	417.45	ND	NR	NR
MW-3	05-20-92	450.28	33.85	416.43	ND	NR	NR
MW-3	06-12-92	450.28	34.51	415.77	ND	NR	NR
MW-3	07-28-92	450.28	34.42	415.86	ND	NR	NR
MW-3	08-24-92	450.28	32.46	417.82	ND	NR	NR
MW-3	09-15-92	450.28	34.29	415.99	ND	NR	NR
MW-3	10-29-92	450.28	33.40	416.88	ND	NR	NR
MW-3	11-25-92	450.28	33.67	416.61	ND	NR	NR
MW-3	12-14-92	450.28	34.26	416.02	ND	NR	NR
MW-3	01-29-93	450.28	21.88	428.40	ND	NR	NR
MW-3	02-26-93	450.28	24.71	425.57	ND	NR	NR
MW-3	03-29-93	450.28	24.74	425.54	ND	NR	NR
MW-3	04-27-93	450.28	25.96	424.32	ND	NR	NR
MW-3	05-10-93	450.28	27.61	422.67	ND	NR	NR
MW-3	06-17-93	450.28	28.73	421.55	ND	NR	NR
MW-3	07-27-93	450.28	30.37	419.91	ND	NR	NR
MW-3	08-26-93	450.28	30.94	419.34	ND	NR	NR
MW-3	09-14-93	450.28	31.84	418.44	ND	NR	NR
MW-3	11-05-93	450.28	33.22	417.06	ND	NR	NR
MW-3	03-26-94	450.28	26.97	423.31	ND	NR	NR
MW-3	06-13-94	450.28	28.71	421.57	ND	NR	NR
MW-3	09-22-94	450.28	32.34	417.94	ND	NNE	0.056
MW-3	11-25-94	450.28	30.76	419.52	ND	N	0.06

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Summary Report

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Date: 03-07-95
Project Number: 0805-122.01

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Ground-Water Elevation ft-MSL	Floating Product Thickness feet	Ground-Water Flow Direction MWN	Hydraulic Gradient foot/foot
MW-4	07-25-91	451.56	36.07	415.49	ND	NR	NR
MW-4	08-13-91	451.56	37.54	414.02	ND	NR	NR
MW-4	09-12-91	451.56	38.73	412.83	ND	NR	NR
MW-4	10-30-91	451.56	39.90	411.66	ND	NR	NR
MW-4	11-13-91	451.56	40.56	411.00	ND	NR	NR
MW-4	12-26-91	450.99	38.78	412.21	ND	NR	NR
MW-4	01-18-92	450.99	38.71	NR	ND	NR	NR
MW-4	02-21-92	450.99	31.91	NR	ND	NR	NR
MW-4	03-31-92	450.99	30.36	NR	ND	NR	NR
MW-4	04-24-92	450.99	32.65	418.34	ND	NR	NR
MW-4	05-20-92	450.99	32.62	418.37	ND	NR	NR
MW-4	06-12-92	450.99	32.73	418.26	ND	NR	NR
MW-4	07-28-92	450.99	31.48	419.51	ND	NR	NR
MW-4	08-24-92	450.99	32.84	418.15	ND	NR	NR
MW-4	09-15-92	450.99	31.37	419.62	ND	NR	NR
MW-4	10-29-92	450.99	32.58	418.41	ND	NR	NR
MW-4	11-25-92	451.09	32.37	418.72	ND	NR	NR
MW-4	12-14-92	451.09	30.99	420.10	ND	NR	NR
MW-4	01-29-93	451.09	22.30	428.79	ND	NR	NR
MW-4	02-26-93	451.09	24.47	426.62	ND	NR	NR
MW-4	03-29-93	451.09	24.67	426.42	ND	NR	NR
MW-4	04-27-93	451.09	26.68	424.41	ND	NR	NR
MW-4	05-10-93	451.09	28.64	422.45	ND	NR	NR
MW-4	06-17-93	451.09	29.28	421.81	ND	NR	NR
MW-4	07-27-93	451.09	31.14	419.95	ND	NR	NR
MW-4	08-26-93	451.09	31.38	419.71	ND	NR	NR
MW-4	09-14-93	451.09	32.00	419.09	ND	NR	NR
MW-4	11-05-93	451.09	31.16	419.93	ND	NR	NR
MW-4	03-26-94	451.09	26.94	424.15	ND	NR	NR
MW-4	06-13-94	451.09	28.88	422.21	ND	NR	NR
MW-4	09-22-94	451.09	30.98	420.11	ND	NNE	0.056
MW-4	11-25-94	451.09	29.08	422.01	ND	N	0.06

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Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-5	07-25-91	451.41	36.67	414.74	Sheen	NR	NR
MW-5	08-13-91	451.41	^37.98	^413.43	0.01	NR	NR
MW-5	09-12-91	451.41	^39.01	^412.40	0.05	NR	NR
MW-5	10-30-91	451.41	38.28	413.13	Sheen	NR	NR
MW-5	11-13-91	451.41	39.24	412.17	Sheen	NR	NR
MW-5	12-26-91	451.41	39.11	412.30	Sheen	NR	NR
MW-5	01-18-92	451.41	38.15	NR	Skimmer	NR	NR
MW-5	02-21-92	451.41	30.59	NR	Skimmer	NR	NR
MW-5	03-18-92	451.41	30.84	NR	Skimmer	NR	NR
MW-5	04-24-92	451.40	33.00	418.40	Skimmer	NR	NR
MW-5	05-20-92	451.40	32.86	418.54	Skimmer	NR	NR
MW-5	06-12-92	451.40	33.03	418.37	ND	NR	NR
MW-5	07-28-92	451.40	31.92	419.48	ND	NR	NR
MW-5	08-24-92	451.40	32.17	419.23	ND	NR	NR
MW-5	09-15-92	451.40	31.90	419.50	ND	NR	NR
MW-5	10-29-92	451.40	32.94	418.46	ND	NR	NR
MW-5	11-25-92	451.40 Not surveyed: new wellhead prevented measurement					
MW-5	12-14-92	451.40	30.90	NR	ND	NR	NR
MW-5	01-29-93	451.40	23.25	NR	ND	NR	NR
MW-5	02-26-93	451.40	25.02	NR	ND	NR	NR
MW-5	03-29-93	451.40	24.72	NR	ND	NR	NR
MW-5	04-27-93	451.40	27.11	NR	ND	NR	NR
MW-5	05-10-93	451.40	29.04	NR	ND	NR	NR
MW-5	06-17-93	451.40	29.33	NR	ND	NR	NR
MW-5	07-27-93	451.40	31.12	420.28	ND	NR	NR
MW-5	08-26-93	451.40	31.37	420.03	ND	NR	NR
MW-5	09-14-93	451.40	31.96	419.44	ND	NR	NR
MW-5	11-05-93	451.40	31.03	420.37	ND	NR	NR
MW-5	03-26-94	451.40	27.41	423.99	ND	NR	NR
MW-5	06-13-94	451.40	29.29	422.11	ND	NR	NR
MW-5	09-22-94	451.40 Not surveyed: vehicle was parked on well					
MW-5	11-25-94	451.40	29.76	421.64	ND	N	0.06

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		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-6	07-25-91	451.38	37.68	413.70	ND	NR	NR
MW-6	08-13-91	451.38	39.17	412.21	ND	NR	NR
MW-6	09-12-91	451.38	41.14	410.24	ND	NR	NR
MW-6	10-30-91	451.38	42.10	409.28	ND	NR	NR
MW-6	11-13-91	451.38	41.45	409.93	ND	NR	NR
MW-6	12-26-91	451.38	41.23	410.15	ND	NR	NR
MW-6	01-18-92	451.38	38.23	NR	ND	NR	NR
MW-6	02-21-92	451.37	35.21	NR	ND	NR	NR
MW-6	03-31-92	451.37	32.26	NR	ND	NR	NR
MW-6	04-24-92	451.37	33.24	418.13	ND	NR	NR
MW-6	05-20-92	451.37	33.14	418.23	ND	NR	NR
MW-6	06-12-92	451.37	33.43	417.94	ND	NR	NR
MW-6	07-28-92	451.37	32.52	418.85	ND	NR	NR
MW-6	08-24-92	451.37	32.57	418.80	ND	NR	NR
MW-6	09-15-92	451.37	32.58	418.79	ND	NR	NR
MW-6	10-29-92	451.37	32.33	419.04	ND	NR	NR
MW-6	11-25-92	451.37	32.43	418.94	ND	NR	NR
MW-6	12-14-92	451.37	31.52	419.85	ND	NR	NR
MW-6	01-29-93	451.37	23.70	427.67	ND	NR	NR
MW-6	02-26-93	451.37	26.22	425.15	ND	NR	NR
MW-6	03-29-93	451.37	26.13	425.24	ND	NR	NR
MW-6	04-27-93	451.37	27.27	424.10	ND	NR	NR
MW-6	05-10-93	451.37	29.74	421.63	ND	NR	NR
MW-6	06-17-93	451.37	30.92	420.45	ND	NR	NR
MW-6	07-27-93	451.37	30.90	420.47	ND	NR	NR
MW-6	08-26-93	451.37	31.18	420.19	ND	NR	NR
MW-6	09-14-93	451.37	31.70	419.67	ND	NR	NR
MW-6	11-05-93	451.37	31.83	419.54	ND	NR	NR
MW-6	03-26-94	451.37	28.24	423.13	ND	NR	NR
MW-6	06-13-94	451.37	29.20	422.17	ND	NR	NR
MW-6	09-22-94	451.37	30.37	421.00	ND	NNE	0.056
MW-6	11-25-94	451.37	29.88	421.49	ND	N	0.06

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		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-7	07-25-91	450.65	34.88	415.77	Sheen	NR	NR
MW-7	08-13-91	450.65	36.17	414.48	ND	NR	NR
MW-7	09-12-91	450.65	37.81	412.84	ND	NR	NR
MW-7	10-30-91	450.65	38.50	412.15	ND	NR	NR
MW-7	11-13-91	450.65	38.31	412.34	ND	NR	NR
MW-7	12-26-91	450.65	37.90	412.75	ND	NR	NR
MW-7	01-18-92	450.65	Not surveyed: well inaccessible due to construction				
MW-7	02-21-92	450.65	31.50	NR	ND	NR	NR
MW-7	03-31-92	450.65	29.40	NR	ND	NR	NR
MW-7	04-24-92	450.63	32.14	418.49	ND	NR	NR
MW-7	05-20-92	450.63	32.51	418.12	ND	NR	NR
MW-7	06-12-92	450.63	32.45	418.18	ND	NR	NR
MW-7	07-28-92	450.63	32.08	418.55	ND	NR	NR
MW-7	08-24-92	450.63	32.29	418.34	ND	NR	NR
MW-7	09-15-92	450.63	31.93	418.70	ND	NR	NR
MW-7	10-29-92	450.63	32.37	418.26	ND	NR	NR
MW-7	11-25-92	450.33	31.80	418.53	ND	NR	NR
MW-7	12-14-92	450.33	30.44	419.89	ND	NR	NR
MW-7	01-29-93	450.33	21.76	428.57	ND	NR	NR
MW-7	02-26-93	450.33	24.16	426.17	ND	NR	NR
MW-7	03-29-93	450.33	24.32	426.01	ND	NR	NR
MW-7	04-27-93	450.33	25.44	424.89	ND	NR	NR
MW-7	05-10-93	450.33	27.40	422.93	ND	NR	NR
MW-7	06-17-93	450.33	28.80	421.53	ND	NR	NR
MW-7	07-27-93	450.33	29.89	420.44	ND	NR	NR
MW-7	08-26-93	450.33	30.52	419.81	ND	NR	NR
MW-7	09-14-93	450.33	31.09	419.24	ND	NR	NR
MW-7	11-05-93	450.33	31.42	418.91	ND	NR	NR
MW-7	03-26-94	450.33	26.03	424.30	ND	NR	NR
MW-7	06-13-94	450.33	27.94	422.39	ND	NR	NR
MW-7	09-22-94	450.33	30.46	419.87	ND	NNE	0.056
MW-7	11-25-94	450.33	28.30	422.03	ND	N	0.06

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Date: 03-07-95
Project Number: 0805-122.01

Well Desig-nation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-8	01-29-93	449.43	23.23	426.20	ND	NR	NR
MW-8	02-26-93	449.43	29.20	420.23	ND	NR	NR
MW-8	03-29-93	449.43	29.77	419.66	ND	NR	NR
MW-8	04-27-93	449.43	31.52	417.91	ND	NR	NR
MW-8	05-10-93	449.43	33.88	415.55	ND	NR	NR
MW-8	06-17-93	449.43	35.25	414.18	ND	NR	NR
MW-8	07-27-93	449.43	36.61	412.82	ND	NR	NR
MW-8	08-26-93	449.43	37.71	411.72	ND	NR	NR
MW-8	09-14-93	449.43	38.78	410.65	ND	NR	NR
MW-8	11-05-93	449.43	39.01	410.42	ND	NR	NR
MW-8	03-26-94	449.43	31.40	418.03	ND	NR	NR
MW-8	06-13-94	449.43	35.10	414.33	ND	NR	NR
MW-8	09-22-94	449.43	38.77	410.66	ND	NNE	0.056
MW-8	11-25-94	449.43	36.46	412.97	ND	N	0.06
MW-9	01-29-93	449.21	18.91	430.30	ND	NR	NR
MW-9	02-26-93	449.21	21.35	427.86	ND	NR	NR
MW-9	03-29-93	449.21	21.78	427.43	ND	NR	NR
MW-9	04-27-93	449.21	24.70	424.51	ND	NR	NR
MW-9	05-10-93	449.21	26.19	423.02	ND	NR	NR
MW-9	06-17-93	449.21	27.50	421.71	ND	NR	NR
MW-9	07-27-93	449.21	29.11	420.10	ND	NR	NR
MW-9	08-26-93	449.21	29.55	419.66	ND	NR	NR
MW-9	09-14-93	449.21	30.65	418.56	ND	NR	NR
MW-9	11-05-93	449.21	32.24	416.97	ND	NR	NR
MW-9	03-26-94	449.21	25.68	423.53	ND	NR	NR
MW-9	06-13-94	449.21	27.69	421.52	ND	NR	NR
MW-9	09-22-94	449.21	31.36	417.85	ND	NNE	0.056
MW-9	11-25-94	449.21	29.84	419.37	ND	N	0.06

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Date: 03-07-95
Project Number: 0805-122.01

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
MW-10	01-29-93	449.22	19.27	429.95	ND	NR	NR
MW-10	02-26-93	449.22	21.34	427.88	ND	NR	NR
MW-10	03-29-93	449.22	20.89	428.33	ND	NR	NR
MW-10	04-27-93	449.22	25.40	423.82	ND	NR	NR
MW-10	05-10-93	449.22	26.77	422.45	ND	NR	NR
MW-10	06-17-93	449.22	26.80	422.42	ND	NR	NR
MW-10	07-27-93	449.22	29.87	419.35	ND	NR	NR
MW-10	08-26-93	449.22	29.67	419.55	ND	NR	NR
MW-10	09-14-93	449.22	31.07	418.15	ND	NR	NR
MW-10	11-05-93	449.22	30.42	418.80	ND	NR	NR
MW-10	03-26-94	449.22	26.20	423.02	ND	NR	NR
MW-10	06-13-94	449.22	28.23	420.99	ND	NR	NR
MW-10	09-22-94	449.22	31.79	417.43	ND	NNE	0.056
MW-10	11-25-94	449.22	30.30	418.92	ND	N	0.06
MW-11	04-24-92	448.02	35.06	412.96	ND	NR	NR
MW-11	05-20-92	448.02	34.10	413.92	ND	NR	NR
MW-11	06-12-92	448.02	34.48	413.54	ND	NR	NR
MW-11	07-28-92	448.02	35.13	412.89	ND	NR	NR
MW-11	08-24-92	448.02	33.32	414.70	ND	NR	NR
MW-11	09-15-92	448.02	35.72	412.30	ND	NR	NR
MW-11	10-29-92	448.02	35.26	412.76	ND	NR	NR
MW-11	11-25-92	448.02	36.44	411.58	ND	NR	NR
MW-11	12-14-92	448.02	33.18	414.84	ND	NR	NR
MW-11	01-29-93	448.02	23.89	424.13	ND	NR	NR
MW-11	02-26-93	448.02	27.31	420.71	ND	NR	NR
MW-11	03-29-93	448.02	27.27	420.75	ND	NR	NR
MW-11	04-27-93	448.02	30.61	417.41	ND	NR	NR
MW-11	05-10-93	448.02	32.78	415.24	ND	NR	NR
MW-11	06-17-93	448.02	33.25	414.77	ND	NR	NR
MW-11	07-27-93	448.02	34.49	413.53	ND	NR	NR
MW-11	08-26-93	448.02	35.44	412.58	ND	NR	NR
MW-11	09-14-93	448.02	36.62	411.40	ND	NR	NR
MW-11	11-05-93	448.02	36.68	411.34	ND	NR	NR
MW-11	03-26-94	448.02	30.20	417.82	ND	NR	NR
MW-11	06-13-94	448.02	33.39	414.63	ND	NR	NR
MW-11	09-22-94	448.02	34.75	413.27	ND	NNE	0.056
MW-11	11-25-94	448.02	33.84	414.18	ND	N	0.06

Table 2
Historical Groundwater Elevation Data
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ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Date: 03-07-95
Project Number: 0805-122.01

Well Desig-nation	Water Level Field Date	TOC Elevation	Depth to Water	Ground-Water Elevation	Floating Product Thickness	Ground-Water Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
RW-1	04-24-92	451.44	32.85	418.59	ND	NR	NR
RW-1	05-20-92	451.44	32.60	418.84	ND	NR	NR
RW-1	06-12-92	451.44	32.72	418.72	ND	NR	NR
RW-1	07-28-92	451.44	31.94	419.50	ND	NR	NR
RW-1	08-24-92	451.44	31.73	419.71	ND	NR	NR
RW-1	09-15-92	451.44	31.94	419.50	ND	NR	NR
RW-1	10-29-92	451.44	32.15	419.29	ND	NR	NR
RW-1	11-25-92	451.67	32.21	419.46	ND	NR	NR
RW-1	12-14-92	451.67	30.58	421.09	ND	NR	NR
RW-1	01-29-93	451.67	22.89	428.78	ND	NR	NR
RW-1	02-26-93	451.67	23.97	427.70	ND	NR	NR
RW-1	03-29-93	451.67	23.98	427.69	ND	NR	NR
RW-1	04-27-93	451.67	27.26	424.41	ND	NR	NR
RW-1	05-10-93	451.67	29.64	422.03	ND	NR	NR
RW-1	06-17-93	451.67	30.18	421.49	ND	NR	NR
RW-1	07-27-93	451.67	31.55	420.12	ND	NR	NR
RW-1	08-26-93	451.67	31.82	419.85	ND	NR	NR
RW-1	09-14-93	451.67	32.32	419.35	ND	NR	NR
RW-1	11-05-93	451.67	31.91	419.76	ND	NR	NR
RW-1	03-26-94	451.67	27.78	423.89	ND	NR	NR
RW-1	06-13-94	451.67	29.48	422.19	ND	NR	NR
RW-1	09-22-94	451.67	30.52	421.15	ND	NNE	0.056
RW-1	11-25-94	451.67	30.89	420.78	ND	N	0.06

TOC = Top of casing
ft-MSL = Elevation in feet, relative to mean sea level
MWN = Ground-water flow direction and gradient apply to the entire monitoring well network
NR = Not reported; data not available
ND = None detected
^ = Groundwater elevation (GWE) and depth to water (DTW) adjusted to include 80 percent of the floating product thickness (FPT):
[GWE = (TOC - DTW) + (FPT x 0.8)]
* = Floating product was not initially detected, but entered the well during purging
NNE = North-northeast
N = North

Table 3
Historical Groundwater Analytical Data
Summary Report

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Date: 03-07-95
Project Number: 0805-122.01

Well Designation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHD	TOG
		ppb	ppb	ppb	ppb	ppb	ppb	ppm
MW-1	01-15-91	Not sampled: well contained floating product						
MW-1	04-10-91	98000	11000	18000	2800	20000	NA	NA
MW-1	07-25-91	Not sampled: well contained floating product						
MW-1	10-30-91	Not sampled: well contained floating product						
MW-1	03-31-92	Not sampled: well contained floating product						
MW-1	06-12-92	Not sampled: well contained floating product						
MW-1	09-16-92	Not sampled: well contained floating product						
MW-1	11-25-92	Not sampled: well contained floating product						
MW-1	01-29-93	360000	2500	9300	5100	41000	NA	NA
MW-1	05-10-93	1900000	4100	15000	21000	140000	NA	NA
MW-1	09-16-93	1800000	6400	21000	19000	140000	NA	NA
MW-1	11-05-93	700000	3000	7600	8600	65000	NA	NA
MW-1	03-26-94	29000	1000	290	610	3300	NA	NA
MW-1	06-13-94	25000	600	160	500	2500	NA	NA
MW-1	09-22-94	51000	1400	280	570	2800	NA	NA
MW-1	11-25-94	170000	990	1000	1700	9400	NA	NA
MW-2	01-15-91	Not sampled: well contained floating product						
MW-2	04-10-91	Not sampled: well contained floating product						
MW-2	07-25-91	Not sampled: well contained floating product						
MW-2	10-30-91	Not sampled: well contained floating product						
MW-2	03-31-92	270000	7000	12000	4400	40000	NA	NA
MW-2	06-12-92	110000	8900	13000	2800	16000	NA	NA
MW-2	09-16-92	Not sampled: well contained floating product						
MW-2	11-25-92	Not sampled: well contained floating product						
MW-2	01-29-93	89000	4600	5700	1800	15000	NA	NA
MW-2	05-10-93	440000	3900	4300	4400	36000	NA	NA
MW-2	09-16-93	200000	5500	4300	2300	19000	NA	NA
MW-2	11-05-93	250000	7800	8400	3100	24000	NA	NA
MW-2	03-26-94	22000	1100	1400	190	3700	NA	NA
MW-2	06-13-94	71000	4100	4600	1700	9900	NA	NA
MW-2	09-22-94	42000	1200	620	710	2000	NA	NA
MW-2	11-25-94	60000	3900	4100	1400	7400	NA	NA

Table 3
Historical Groundwater Analytical Data
Summary Report

ARCO Service Station 771
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Date: 03-07-95
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Well Designation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHD	TOG
		ppb	ppb	ppb	ppb	ppb	ppb	ppm
MW-3	01-15-91	230	<0.5	<0.5	2.2	2.1	NA	NA
MW-3	04-10-91	530	12	8.4	4	7	NA	NA
MW-3	07-25-91	110	0.32	0.75	1.2	1	NA	NA
MW-3	10-30-91	Not sampled: dry well						
MW-3	03-31-92	670	12	1.1	7.4	27	NA	NA
MW-3	06-12-92	280	<0.5	<0.5	2.1	2	NA	NA
MW-3	09-15-92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-3	11-25-92	220	1	<0.5	4.9	1.2	NA	NA
MW-3	01-29-93	380*	0.8	0.6	2.1	2	NA	NA
MW-3	05-10-93	170	<0.5	<0.5	2	0.6	NA	NA
MW-3	09-15-93	120	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-3	11-05-93	110	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-3	03-26-94	54	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-3	06-13-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-3	09-22-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-3	11-25-94	54	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-4	07-25-91	23000	590	730	360	3500	NA	NA
MW-4	10-30-91	19000	320	340	230	180	NA	NA
MW-4	03-31-92	30000	1300	740	770	4800	NA	NA
MW-4	06-12-92	28000	990	440	550	3200	NA	NA
MW-4	09-16-92	21000	740	240	350	1300	NA	NA
MW-4	11-25-92	26000	1200	300	350	730	NA	NA
MW-4	01-29-93	23000	2000	580	770	2500	NA	NA
MW-4	05-10-93	74000	2200	890	1400	4000	NA	NA
MW-4	09-16-93	43000	640	90	360	690	NA	NA
MW-4	11-05-93	30000	1000	240	390	1300	NA	NA
MW-4	03-26-94	27000	1800	830	1300	2900	NA	NA
MW-4	06-13-94	17000	1300	620	670	1600	NA	NA
MW-4	09-22-94	10000	700	61	420	570	NA	NA
MW-4	11-25-94	13000	1400	250	490	1200	NA	NA

Table 3
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Summary Report

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Well Designation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHD	TOG
		ppb	ppb	ppb	ppb	ppb	ppb	ppm
MW-5	07-25-91	57000	2300	4200	77	14000	NA	NA
MW-5	10-30-91	Not sampled: well contained floating product						
MW-5	03-31-92	80000	7100	9100	2000	16000	NA	NA
MW-5	06-12-92	69000	4000	5300	2200	12000	NA	NA
MW-5	09-16-92	65000	2300	2600	1700	9900	NA	NA
MW-5	11-25-92	Not sampled: new wellhead made casing inaccessible for sampling						
MW-5	01-29-93	Not sampled: new wellhead made casing inaccessible for sampling						
MW-5	05-10-93	220000	3900	3700	3400	15000	NA	NA
MW-5	09-16-93	180000	3500	3300	2700	10000	NA	NA
MW-5	11-05-93	66000	3000	2300	1700	6200	NA	NA
MW-5	03-26-94	39000	4000	2300	1600	6200	NA	NA
MW-5	06-13-94	28000	2500	1700	1100	3900	NA	NA
MW-5	09-22-94	Not sampled: vehicle was parked on well						
MW-5	11-25-94	31000	2400	1100	1100	4400	NA	NA
MW-6	07-25-91	10000	3000	200	340	1000	NA	NA
MW-6	10-30-91	970	150	4.4	4.9	6.6	NA	NA
MW-6	03-31-92	16000	3600	1500	660	1700	2400*	2.5(a), 4.0(b)
MW-6	06-12-92	2900	480	17	190	170	1100*	1.2(c)
MW-6	09-16-92	2300	220	<5	92	43	810*	1.5(d)
MW-6	11-25-92	2700	240	11	103	32	720*	1.6(a), 1.8(b)
MW-6	01-29-93	20000	1800	1700	490	2600	2300*	3.6(a), 4.0(b)
MW-6	05-10-93	43000	3000	1700	1100	4800	3900*	16(a), 110(b)
MW-6	09-15-93	3500	300	10	100	180	1100*	1.0(a), 1.0(b)
MW-6	11-05-93	1100	140	<5	35	23	290	1.0(a), 1.0(b)
MW-6	03-26-94	3100	350	99	130	340	880	1.5(d)
MW-6	06-13-94	2300	250	12	130	31	350*	0.80(d)
MW-6	09-22-94	73	2.6	<0.5	1.7	0.7	<50	<0.5(a)
MW-6	11-25-94	1100	78	<2.5	46	17	<50	<0.5(d)

Table 3
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Date: 03-07-95
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Well Designation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHD	TOG
		ppb	ppb	ppb	ppb	ppb	ppb	ppm
MW-7	07-25-91	45000	1500	2700	1200	9200	NA	NA
MW-7	10-30-91	93000	1800	770	780	6700	NA	NA
MW-7	03-31-92	35000	960	350	300	5900	NA	NA
MW-7	06-12-92	27000	900	270	340	4800	NA	NA
MW-7	09-16-92	39000	1900	410	470	5000	NA	NA
MW-7	11-25-92	49000	2900	810	750	5300	NA	NA
MW-7	01-29-93	38000	3200	1100	740	4300	NA	NA
MW-7	05-10-93	54000	1600	160	560	3100	NA	NA
MW-7	09-16-93	37000	1400	170	560	2700	NA	NA
MW-7	11-05-93	40000	1900	210	570	2900	NA	NA
MW-7	03-26-94	22000	2700	280	500	2600	NA	NA
MW-7	06-13-94	21000	1500	180	360	1900	NA	NA
MW-7	09-22-94	22000	1800	240	430	1900	NA	NA
MW-7	11-25-94	29000	2600	380	640	3300	NA	NA
MW-8	01-29-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-8	05-10-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-8	09-15-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-8	11-05-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-8	03-26-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-8	06-13-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-8	09-22-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-8	11-25-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-9	01-29-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-9	05-10-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-9	09-15-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-9	11-05-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-9	03-26-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-9	06-13-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-9	09-22-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-9	11-25-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA

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ARCO Service Station 771
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Well Desig-nation	Water Sample Field Date	TPHG ppb	Benzene ppb	Toluene ppb	Ethyl-benzene ppb	Total Xylenes ppb	TPHD ppb	TOG ppm
MW-10	01-29-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-10	05-10-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-10	09-15-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-10	11-05-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-10	03-26-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-10	06-13-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-10	09-22-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-10	11-25-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-11	06-12-92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-11	09-15-92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-11	11-25-92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-11	01-29-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-11	05-10-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-11	09-15-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-11	11-05-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-11	03-26-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-11	06-13-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-11	09-22-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
MW-11	11-25-94	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
RW-1	06-12-92	54000	2300	4400	1200	12000	NA	NA
RW-1	09-15-92	49000	1500	2200	870	6900	NA	NA
RW-1	11-25-92	32000	1500	2500	1000	5500	NA	NA
RW-1	01-29-93	43000	3100	2500	990	7400	NA	NA
RW-1	05-10-93	30000	2900	1100	690	4300	NA	NA
RW-1	09-16-93	20000	1800	580	620	2300	NA	NA
RW-1	11-05-93	25000	1800	250	740	1300	NA	NA
RW-1	03-26-94	8100	780	100	360	340	NA	NA
RW-1	06-13-94	4900	510	32	150	170	NA	NA
RW-1	09-22-94	4900	390	30	190	210	NA	NA
RW-1	11-25-94	4900	550	68	200	230	NA	NA

TPHG = Total petroleum hydrocarbons as gasoline
TPHD = Total petroleum hydrocarbons as diesel
TOG = Total oil and grease/petroleum hydrocarbons using method: (a) 5520F-IR, (b) 5520C, (c) 413.2, or (d) 418.1
ppb = Parts per billion or micrograms per liter (µg/l)
ppm = Parts per million or milligrams per liter (mg/l); TOG only
NA = Not analyzed
* = Chromatogram does not match the typical fingerprint for gasoline or diesel

Table 4
Approximate Cumulative Floating Product Recovered
Summary Report

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Date: 02-09-95
Project Number: 0805-122.01

Well Designation	Date	Floating Product Recovered gallons
MW-1, MW-2, and MW-5	1991	2.77
MW-1, MW-2, and MW-5	1992	0.29
MW-1, MW-2, and MW-5	1993	0.00
	1994 to Date:	
MW-1	11-25-94	0.00
MW-2	11-25-94	0.00
MW-5	11-25-94	0.00
	1994 Total:	0.00
	1991 to 1994 Total:	3.06

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-1															
3/20/1995	--	451.73	32.00	41.00	24.50	427.23	90,000	1,800	1,100	1,000	5,600	--	--	--	
6/2/1995	--		32.00	41.00	25.60	426.13	81,000	2,000	1,400	990	4,600	--	--	--	
8/23/1995	--		32.00	41.00	29.04	422.69	44,000	2,400	1,900	670	3,800	<300	--	--	
12/4/1995	--		32.00	41.00	31.31	420.42	22,000	870	660	390	2,200	--	--	--	
2/20/1996	--		32.00	41.00	22.26	429.47	21,000	1,500	1,200	650	3,500	<300	--	--	
5/15/1996	--		32.00	41.00	23.42	428.31	36,000	3,000	2,500	960	5,700	<250	--	--	
8/13/1996	--		32.00	41.00	26.83	424.90	19,000	730	580	450	2,500	<200	--	--	
11/13/1996	--		32.00	41.00	31.05	420.68	6,600	47	16	74	160	<30	--	--	
3/26/1997	--		32.00	41.00	26.29	425.44	1,900	100	55	37	200	<30	--	--	
5/15/1997	--		32.00	41.00	28.65	423.08	16,000	490	250	250	1,100	<120	--	--	
8/26/1997	--		32.00	41.00	31.53	420.20	190	6.7	3	6.3	25	<3	--	--	
11/5/1997	--		32.00	41.00	33.93	417.80	63	0.5	<0.5	0.8	2.4	29	--	--	
2/18/1998	--		32.00	41.00	20.46	431.27	23,000	1,500	610	550	3,000	<120	--	--	
5/20/1998	--		32.00	41.00	23.84	427.89	50,000	4,400	1,900	1,400	80,000	<300	--	--	
7/30/1998	P		32.00	41.00	26.94	424.79	150	<0.5	<0.5	<0.5	1.6	<3	8.74	--	
10/29/1998	NP		32.00	41.00	32.58	419.15	<50	<0.5	<0.5	<0.5	1.8	<3	2.0	--	
3/16/1999	P		32.00	41.00	26.20	425.53	3,200	160	32	89	390	270	2.0	--	
5/5/1999	P		32.00	41.00	27.57	424.16	3,600	140	46	76	290	170	11.65	--	
8/26/1999	P		32.00	41.00	30.25	421.48	3,200	210	29	100	220	120	1.43	--	
12/3/1999	NP		32.00	41.00	32.70	419.03	53	<0.5	<0.5	<0.5	1	<3	2.12	--	
3/13/2000	P		32.00	41.00	24.45	427.28	<50	<0.5	<0.5	<0.5	<1	<3	5.81	--	
6/20/2000	--		32.00	41.00	27.79	423.94	67.4	3.88	<0.500	1.78	1.48	<2.50	--	--	b
6/20/2000	P		32.00	41.00	27.79	423.94	356	40.1	7.17	11.9	22.7	<2.50	5.1	--	
8/31/2000	--		32.00	41.00	30.35	421.38	--	--	--	--	--	--	--	--	
2/9/2001	--		32.00	41.00	30.95	420.78	--	--	--	--	--	--	--	--	
9/17/2001	--		32.00	41.00	30.85	420.88	--	--	--	--	--	--	--	--	
1/21/2002	--		32.00	41.00	30.61	421.12	--	--	--	--	--	--	--	--	
7/19/2002	--		32.00	41.00	31.55	420.18	--	--	--	--	--	--	--	--	
1/15/2003	--		32.00	41.00	22.99	428.74	--	--	--	--	--	--	--	--	
7/9/2003	--		32.00	41.00	30.35	421.38	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-1 Cont.															
02/19/2004	--	451.73	32.00	41.00	26.24	425.49	--	--	--	--	--	--	--	--	
08/04/2004	--	454.23	32.00	41.00	26.36	427.87	--	--	--	--	--	--	--	--	
01/18/2005	--		32.00	41.00	24.47	429.76	--	--	--	--	--	--	--	--	
07/15/2005	--		32.00	41.00	29.44	424.79	--	--	--	--	--	--	--	--	
01/10/2006	--		32.00	41.00	22.58	431.65	--	--	--	--	--	--	--	--	
7/21/2006	--		32.00	41.00	20.73	433.50	--	--	--	--	--	--	--	--	
1/17/2007	--		32.00	41.00	31.88	422.35	--	--	--	--	--	--	--	--	
7/18/2007	--		32.00	41.00	32.85	421.38	--	--	--	--	--	--	--	--	
1/15/2008	--		32.00	41.00	28.76	425.47	--	--	--	--	--	--	--	--	
7/7/2008	--		32.00	41.00	35.56	418.67	--	--	--	--	--	--	--	--	
1/7/2009	--		32.00	41.00	34.07	420.16	--	--	--	--	--	--	--	--	
7/22/2009	--		32.00	41.00	--	--	--	--	--	--	--	--	--	--	Dry
3/12/2010	--		32.00	41.00	27.61	426.62	--	--	--	--	--	--	--	--	
9/9/2010	--		32.00	41.00	31.72	422.51	--	--	--	--	--	--	--	--	
2/17/2011	--		32.00	41.00	32.11	422.12	--	--	--	--	--	--	--	--	
7/7/2011	**--**		**32.00**	**41.00**	**31.12**	**423.11**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
MW-2															
3/20/1995	--	449.49	30.00	38.00	20.27	429.22	54,000	2,600	1,600	1,200	7,600	--	--	--	
6/2/1995	--		30.00	38.00	22.32	427.17	37,000	2,200	800	980	4,800	--	--	--	
8/23/1995	--		30.00	38.00	25.69	423.80	65,000	1,100	310	840	3,000	<500	--	--	
12/4/1995	--		30.00	38.00	28.52	420.97	19,000	680	150	410	1,600	--	--	--	
2/20/1996	--		30.00	38.00	19.00	430.49	22,000	1,200	240	590	2,200	<300	--	--	
5/15/1996	--		30.00	38.00	20.03	429.46	25,000	1,200	240	610	2,100	<300	--	--	
8/13/1996	--		30.00	38.00	24.44	425.05	19,000	640	110	420	1,200	<300	--	--	
11/13/1996	--		30.00	38.00	28.42	421.07	15,000	260	52	220	640	<200	--	--	
3/26/1997	--		30.00	38.00	22.98	426.51	17,000	580	120	360	980	<120	--	--	
5/15/1997	--		30.00	38.00	25.40	424.09	18,000	420	63	340	730	<120	--	--	
8/26/1997	--		30.00	38.00	28.38	421.11	5,300	210	26	140	270	<120	--	--	
11/5/1997	--		30.00	38.00	31.93	417.56	560	42	2.6	7	9	<40	--	--	
2/18/1998	--		30.00	38.00	16.87	432.62	18,000	710	120	480	1,100	130	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-2 Cont.															
5/20/1998	--	449.49	30.00	38.00	20.29	429.20	16,000	480	72	440	1,100	<120	--	--	
7/30/1998	P		30.00	38.00	23.51	425.98	9,700	240	33	210	490	<120	9.21	--	
10/29/1998	NP		30.00	38.00	30.08	419.41	58	<0.5	<0.5	<0.5	1.2	<3	1.0	--	
3/16/1999	P		30.00	38.00	23.22	426.27	4,700	120	13	90	220	60	2.0	--	
5/5/1999	P		30.00	38.00	24.05	425.44	5,500	58	7.1	58	98	17	9.09	--	
8/26/1999	P		30.00	38.00	26.44	423.05	3,700	55	11	60	64	26	1.9	--	
12/3/1999	NP		30.00	38.00	30.15	419.34	130	<0.5	<0.5	0.7	1.8	<3	1.96	--	
3/13/2000	P		30.00	38.00	20.68	428.81	<50	<0.5	<0.5	<0.5	<1	<3	--	--	
6/20/2000	P		30.00	38.00	23.08	426.41	226	2.2	<0.500	4.83	7.88	<2.50	4.9	--	
8/31/2000	P		30.00	38.00	26.71	422.78	87.1	1.78	<0.500	1.33	1.15	<2.50	1.59	--	
2/9/2001	--		30.00	38.00	29.65	419.84	--	--	--	--	--	--	--	--	
9/17/2001	P		30.00	38.00	27.62	421.87	3,100	300	12	8.8	18	120	1.7	--	
1/21/2002	--		30.00	38.00	27.09	422.40	--	--	--	--	--	--	--	--	
7/19/2002	P		30.00	38.00	27.82	421.67	4,700	280	13	120	19	16	0.8	7.4	a
1/15/2003	--		30.00	38.00	22.18	427.31	--	--	--	--	--	--	--	--	
7/9/2003	--		30.00	38.00	26.40	423.09	3,900	170	<5.0	100	19	39	2.5	7.0	
02/19/2004	--		30.00	38.00	23.85	425.64	--	--	--	--	--	--	--	--	
08/04/2004	P	452.05	30.00	38.00	24.71	427.34	5,400	650	21	160	56	78	0.8	7.2	
01/18/2005	--		30.00	38.00	20.86	431.19	--	--	--	--	--	--	--	--	
07/15/2005	P		30.00	38.00	25.92	426.13	5,200	160	5.3	56	10	46	3.1	6.9	
01/10/2006	--		30.00	38.00	19.25	432.80	--	--	--	--	--	--	--	--	
7/21/2006	P		30.00	38.00	25.73	426.32	120	0.90	<0.50	<0.50	<0.50	<0.50	6.08	8.3	
1/17/2007	--		30.00	38.00	28.70	423.35	--	--	--	--	--	--	--	--	
7/18/2007	P		30.00	38.00	29.07	422.98	2,300	58	2.4	9.5	3.5	45	1.19	7.51	
1/15/2008	--		30.00	38.00	24.65	427.40	--	--	--	--	--	--	--	--	
7/7/2008	NP		30.00	38.00	32.41	419.64	3,600	28	<5.0	<5.0	<5.0	19	2.81	7.24	
1/7/2009	--		30.00	38.00	31.67	420.38	--	--	--	--	--	--	--	--	
7/22/2009	--		30.00	38.00	33.48	418.57	--	--	--	--	--	--	--	--	
3/12/2010	--		30.00	38.00	23.84	428.21	--	--	--	--	--	--	--	--	
9/9/2010	P		30.00	38.00	27.84	424.21	6,200	53	3.8	18	9.5	13	--	6.8	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-2 Cont.															
2/17/2011	--	452.05	30.00	38.00	27.52	424.53	--	--	--	--	--	--	--	--	
7/7/2011	**P**		**30.00**	**38.00**	**26.62**	**425.43**	**1,600**	**17**	**0.76**	**1.2**	**1.5**	**6.2**	**1.02**	**7.1**	**g (GRO)**
MW-3															
3/20/1995	--	450.28	32.00	40.00	22.19	428.09	94	<0.5	<0.5	<0.5	<0.5	--	--	--	
6/2/1995	--		32.00	40.00	23.28	427.00	72	<0.5	<0.5	<0.5	<0.5	--	--	--	
8/23/1995	--		32.00	40.00	26.55	423.73	98	<0.5	<0.5	<0.6	0.5	<3	--	--	
12/4/1995	--		32.00	40.00	29.52	420.76	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
2/20/1996	--		32.00	40.00	19.83	430.45	130	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/15/1996	--		32.00	40.00	21.03	429.25	120	<0.5	<0.5	<0.5	<0.5	<0.5	--	--	
8/13/1996	--		32.00	40.00	25.67	424.61	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
11/13/1996	--		32.00	40.00	21.57	428.71	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
3/26/1997	--		32.00	40.00	24.15	426.13	<50	1.1	<0.5	<0.5	<0.5	<3	--	--	
5/15/1997	--		32.00	40.00	26.85	423.43	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
8/26/1997	--		32.00	40.00	30.07	420.21	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
11/5/1997	--		32.00	40.00	32.46	417.82	<50	<0.5	0.7	<0.5	<0.5	<3	--	--	
2/18/1998	--		32.00	40.00	17.82	432.46	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/20/1998	--		32.00	40.00	21.41	428.87	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
7/30/1998	P		32.00	40.00	26.41	423.87	<50	<0.5	<0.5	<0.5	<0.5	<3	9.56	--	
10/29/1998	P		32.00	40.00	31.33	418.95	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	--	
3/16/1999	P		32.00	40.00	24.61	425.67	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	--	
5/5/1999	P		32.00	40.00	25.75	424.53	140	<0.5	<0.5	0.6	<0.5	<3	4.43	--	
8/26/1999	P		32.00	40.00	28.49	421.79	80	0.6	0.6	0.6	1	<3	1.69	--	
12/3/1999	P		32.00	40.00	31.45	418.83	<50	<0.5	<0.5	<0.5	<1	<3	2.26	--	
3/13/2000	P		32.00	40.00	22.18	428.10	<50	<0.5	<0.5	<0.5	<1	<3	4.41	--	
6/20/2000	P		32.00	40.00	26.03	424.25	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	2.3	--	
8/31/2000	--		32.00	40.00	28.75	421.53	--	--	--	--	--	--	--	--	
2/9/2001	--		32.00	40.00	31.04	419.24	--	--	--	--	--	--	--	--	
9/17/2001	--		32.00	40.00	29.04	421.24	--	--	--	--	--	--	--	--	
1/21/2002	--		32.00	40.00	28.81	421.47	--	--	--	--	--	--	--	--	
7/19/2002	--		32.00	40.00	28.92	421.36	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-3 Cont.															
1/15/2003	--	450.28	32.00	40.00	22.88	427.40	--	--	--	--	--	--	--	--	
7/9/2003	--		32.00	40.00	28.00	422.28	--	--	--	--	--	--	--	--	
02/19/2004	--		32.00	40.00	25.29	424.99	--	--	--	--	--	--	--	--	
08/04/2004	--	452.75	32.00	40.00	27.40	425.35	--	--	--	--	--	--	--	--	
01/18/2005	--		32.00	40.00	22.76	429.99	--	--	--	--	--	--	--	--	
07/15/2005	--		32.00	40.00	25.95	426.80	--	--	--	--	--	--	--	--	
01/10/2006	--		32.00	40.00	21.18	431.57	--	--	--	--	--	--	--	--	
7/21/2006	--		32.00	40.00	25.73	427.02	--	--	--	--	--	--	--	--	
1/17/2007	--		32.00	40.00	30.51	422.24	--	--	--	--	--	--	--	--	
7/18/2007	--		32.00	40.00	29.53	423.22	--	--	--	--	--	--	--	--	
1/15/2008	--		32.00	40.00	27.65	425.10	--	--	--	--	--	--	--	--	
7/7/2008	--		32.00	40.00	33.38	419.37	--	--	--	--	--	--	--	--	
1/7/2009	--		32.00	40.00	34.09	418.66	--	--	--	--	--	--	--	--	
7/22/2009	--		32.00	40.00	34.98	417.77	--	--	--	--	--	--	--	--	
3/12/2010	--		32.00	40.00	25.89	426.86	--	--	--	--	--	--	--	--	
9/9/2010	--		32.00	40.00	31.13	421.62	--	--	--	--	--	--	--	--	
2/17/2011	--		32.00	40.00	30.28	422.47	--	--	--	--	--	--	--	--	
7/7/2011	**--**		**32.00**	**40.00**	**30.48**	**422.27**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
MW-4															
3/20/1995	--	451.09	26.00	42.00	22.68	428.41	12,000	1,000	100	450	700	--	--	--	
6/2/1995	--		26.00	42.00	24.41	426.68	9,000	850	56	380	430	--	--	--	
8/23/1995	--		26.00	42.00	27.72	423.37	5,300	400	25	240	170	<100	--	--	
12/4/1995	--		26.00	42.00	29.85	421.24	6,700	100	<10	90	38	--	--	--	
2/20/1996	--		26.00	42.00	21.16	429.93	7,000	360	22	180	160	<70	--	--	
5/15/1996	--		26.00	42.00	22.18	428.91	--	--	--	--	--	--	--	--	
8/13/1996	--		26.00	42.00	26.20	424.89	--	--	--	--	--	--	--	--	
11/13/1996	--		26.00	42.00	29.72	421.37	--	--	--	--	--	--	--	--	
3/26/1997	--		26.00	42.00	21.86	429.23	8,900	390	33	200	250	<70	--	--	
5/15/1997	--		26.00	42.00	26.92	424.17	--	--	--	--	--	--	--	--	
8/26/1997	--		26.00	42.00	29.30	421.79	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-4 Cont.															
11/5/1997	--	451.09	26.00	42.00	32.14	418.95	--	--	--	--	--	--	--	--	
2/18/1998	--		26.00	42.00	19.30	431.79	5,300	220	19	160	130	120	--	--	
5/20/1998	--		26.00	42.00	22.40	428.69	--	--	--	--	--	--	--	--	
7/30/1998	--		26.00	42.00	25.74	425.35	--	--	--	--	--	--	--	--	
10/29/1998	--		26.00	42.00	31.26	419.83	--	--	--	--	--	--	--	--	
3/16/1999	P		26.00	42.00	25.05	426.04	1,900	49	<5	43	<5	82	1.5	--	
5/5/1999	--		26.00	42.00	26.15	424.94	--	--	--	--	--	--	--	--	
8/26/1999	--		26.00	42.00	28.60	422.49	--	--	--	--	--	--	1.43	--	
12/3/1999	--		26.00	42.00	31.53	419.56	--	--	--	--	--	--	--	--	
3/13/2000	P		26.00	42.00	23.61	427.48	<50	<0.5	<0.5	<0.5	<1	<3	3.82	--	
6/20/2000	--		26.00	42.00	26.38	424.71	--	--	--	--	--	--	0.4	--	
8/31/2000	NP		26.00	42.00	29.55	421.54	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	1.04	--	
2/9/2001	NP		26.00	42.00	30.30	420.79	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	1.39	--	
9/17/2001	NP		26.00	42.00	29.90	421.19	3,400	51	<5.0	16	23	360	0.92	--	
1/21/2002	NP		26.00	42.00	29.51	421.58	1,900	140	12	27	48	300	1.03	--	
7/19/2002	NP		26.00	42.00	30.77	420.32	2,700	150	9.9	<5.0	<5.0	130	1.0	7.3	a
1/15/2003	--		26.00	42.00	23.56	427.53	4,800	150	5.3	28	46	150	1.3	7.0	a
7/9/2003	--		26.00	42.00	29.50	421.59	3,000	210	9.4	6	20	150	2.0	6.9	
02/19/2004	P		26.00	42.00	26.35	424.74	4,800	270	11	25	19	180	1.8	6.2	c
08/04/2004	NP	453.80	26.00	42.00	26.48	427.32	4,200	410	13	49	59	300	0.7	6.7	
01/18/2005	P		26.00	42.00	23.15	430.65	4,500	250	9.5	62	22	160	1.2	6.9	
07/15/2005	NP		26.00	42.00	28.13	425.67	3,500	230	6.1	19	15	230	0.5	7.0	
01/10/2006	P		26.00	42.00	21.49	432.31	5,500	250	7.6	37	25	190	1.3	7.1	
7/21/2006	NP		26.00	42.00	28.88	424.92	66	0.60	<0.50	0.52	0.82	3.1	4.75	8.3	
1/17/2007	NP		26.00	42.00	30.80	423.00	<50	<0.50	<0.50	<0.50	<0.50	11	6.19	8.03	
7/18/2007	NP		26.00	42.00	32.00	421.80	2,400	140	6.8	1.3	4.1	74	5.03	7.12	
1/15/2008	NP		26.00	42.00	27.30	426.50	220	1.2	<0.50	<0.50	0.50	61	3.29	6.94	f (MTBE)
7/7/2008	NP		26.00	42.00	34.78	419.02	<50	3.1	<0.50	<0.50	0.66	17	4.03	7.26	
1/7/2009	NP		26.00	42.00	32.59	421.21	110	1.1	<0.50	<0.50	<0.50	37	2.79	7.26	
7/22/2009	NP		26.00	42.00	36.77	417.03	3,000	320	7.8	5.3	16	63	10.82	7.45	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-4 Cont.															
3/12/2010	NP	453.80	26.00	42.00	26.38	427.42	1,700	150	4.6	8.3	2.3	43	1.14	7.08	
9/9/2010	NP		26.00	42.00	28.20	425.60	3,300	70	<2.5	3.6	3.6	51	--	6.8	
2/17/2011	NP		26.00	42.00	30.62	423.18	2,300	59	2.2	2.2	5.0	33	1.03	7.8	g (GRO)
7/7/2011	**NP**		**26.00**	**42.00**	**27.98**	**425.82**	**2,000**	**79**	**2.7**	**<2.5**	**3.3**	**57**	**0.70**	**6.9**	**g (GRO)**
MW-5															
3/20/1995	--	451.40	31.50	41.00	23.20	428.20	26,000	1,300	180	890	2,900	--	--	--	
6/2/1995	--		31.50	41.00	24.80	426.60	39,000	940	160	740	1,900	--	--	--	
8/23/1995	--		31.50	41.00	28.10	423.30	14,000	490	74	250	890	<300	--	--	
12/4/1995	--		31.50	41.00	29.83	421.57	7,600	230	13	61	80	--	--	--	
2/20/1996	--		31.50	41.00	21.63	429.77	4,300	220	12	45	130	<50	--	--	
5/15/1996	--		31.50	41.00	22.87	428.53	2,200	380	17	58	84	<40	--	--	
8/13/1996	--		31.50	41.00	26.48	424.92	1,700	150	16	24	35	47	--	--	
11/13/1996	--		31.50	41.00	29.68	421.72	850	150	11	19	37	66	--	--	
3/26/1997	--		31.50	41.00	25.14	426.26	2,400	440	21	79	210	68	--	--	
5/15/1997	--		31.50	41.00	27.38	424.02	3,900	510	19	140	240	48	--	--	
8/26/1997	--		31.50	41.00	29.89	421.51	76	4.9	<0.5	1.5	2	9	--	--	
11/5/1997	--		31.50	41.00	32.57	418.83	63	0.8	<0.5	<0.5	1.2	34	--	--	
2/18/1998	--		31.50	41.00	19.99	431.41	6,200	630	70	320	640	320	--	--	
5/20/1998	--		31.50	41.00	23.21	428.19	2,300	340	21	110	140	62	--	--	
7/30/1998	P		31.50	41.00	26.19	425.21	<50	0.8	<0.5	0.6	0.9	<3	8.83	--	
10/29/1998	NP		31.50	41.00	31.92	419.48	<50	<0.5	<0.5	<0.5	<0.5	<3	2.0	--	
3/16/1999	P		31.50	41.00	25.80	425.60	1,300	170	8	59	65	120	2.0	--	
5/5/1999	P		31.50	41.00	27.09	424.31	320	31	1.1	13	13	19	12.09	--	
8/26/1999	P		31.50	41.00	29.67	421.73	260	13	1.7	4.2	6.3	150	1.31	--	
12/3/1999	--		31.50	41.00	--	--	--	--	--	--	--	--	--	--	d
3/13/2000	P		31.50	41.00	24.51	426.89	<50	<0.5	<0.5	<0.5	<1	<3	4.41	--	
6/20/2000	P		31.50	41.00	27.37	424.03	60.8	4.84	<0.500	1.9	1.59	<2.50	5.3	--	
8/31/2000	P		31.50	41.00	30.21	421.19	<50.0	1.18	<0.500	<0.500	<0.500	3.83	0.97	--	
2/9/2001	--		31.50	41.00	30.19	421.21	--	--	--	--	--	--	--	--	
9/17/2001	P		31.50	41.00	30.71	420.69	2,700	120	10	90	77	330	0.81	--	

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ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-5 Cont.															
1/21/2002	--	451.40	31.50	41.00	30.40	421.00	--	--	--	--	--	--	--	--	
7/19/2002	P		31.50	41.00	31.93	419.47	1,600	170	7	120	<5.0	180	1.7	7.2	a
1/15/2003	--		31.50	41.00	23.12	428.28	--	--	--	--	--	--	--	--	
7/9/2003	--		31.50	41.00	30.95	420.45	2,000	160	5.7	67	27	260	1.5	6.9	
02/19/2004	--		31.50	41.00	26.73	424.67	--	--	--	--	--	--	--	--	
08/04/2004	P	453.52	31.50	41.00	26.61	426.91	2,100	250	5.3	73	22	250	2.7	7.0	
01/18/2005	--		31.50	41.00	24.10	429.42	--	--	--	--	--	--	--	--	
07/15/2005	P		31.50	41.00	29.27	424.25	1,600	61	<5.0	8.7	<5.0	270	2.1	6.9	
01/10/2006	--		31.50	41.00	22.19	431.33	--	--	--	--	--	--	--	--	
7/21/2006	P		31.50	41.00	30.36	423.16	2,100	29	<5.0	7.5	11	14	2.98	7.1	
1/17/2007	--		31.50	41.00	31.77	421.75	--	--	--	--	--	--	--	--	
7/18/2007	NP		31.50	41.00	33.42	420.10	470	36	0.84	0.97	2.2	110	1.73	7.50	
1/15/2008	--		31.50	41.00	28.60	424.92	--	--	--	--	--	--	--	--	
7/7/2008	NP		31.50	41.00	35.80	417.72	<50	<0.50	<0.50	<0.50	<0.50	<0.50	7.55	7.79	
1/7/2009	--		31.50	41.00	33.14	420.38	--	--	--	--	--	--	--	--	
7/22/2009	NP		31.50	41.00	37.84	415.68	100	3.0	<0.50	<0.50	<0.50	12	12.34	7.24	
3/12/2010	--		31.50	41.00	27.29	426.23	--	--	--	--	--	--	--	--	
9/9/2010	P		31.50	41.00	28.96	424.56	1,000	18	1.4	0.55	3.2	10	--	6.9	
2/17/2011	--		31.50	41.00	31.49	422.03	--	--	--	--	--	--	--	--	
7/7/2011	**P**		**31.50**	**41.00**	**28.72**	**424.80**	**620**	**9.0**	**0.60**	**<0.50**	**0.61**	**4.6**	**1.60**	**7.0**	**g (GRO)**
MW-6															
3/20/1995	--	451.37	32.00	42.00	25.19	426.18	2,600	210	87	82	140	--	--	--	
6/2/1995	--		32.00	42.00	25.75	425.62	1,600	55	7.9	40	26	--	--	--	
8/23/1995	--		32.00	42.00	29.53	421.84	1,400	42	2.5	36	13	<20	--	--	
12/4/1995	--		32.00	42.00	32.28	419.09	2,500	52	5.8	59	13	--	--	--	
2/20/1996	--		32.00	42.00	22.27	429.10	2,500	120	16	73	12	<30	--	--	
5/15/1996	--		32.00	42.00	23.86	427.51	2,000	71	6.4	47	25	<15	--	--	
8/13/1996	--		32.00	42.00	28.55	422.82	3,800	91	8.2	69	25	<20	--	--	
11/13/1996	--		32.00	42.00	32.04	419.33	1,900	55	3.3	55	8.5	16	--	--	
3/26/1997	--		32.00	42.00	26.84	424.53	1,800	51	5	32	15	<30	--	--	

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Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-6 Cont.															
5/15/1997	--	451.37	32.00	42.00	29.58	421.79	2,400	46	3	29	9	<12	--	--	
8/26/1997	--		32.00	42.00	32.67	418.70	1,400	61	6	33	10	<12	--	--	
11/5/1997	--		32.00	42.00	34.62	416.75	690	29	2.7	18	3.4	9	--	--	
2/18/1998	--		32.00	42.00	20.09	431.28	1,800	74	5	24	12	19	--	--	
5/20/1998	--		32.00	42.00	24.05	427.32	1,900	280	4	31	16	9	--	--	
7/30/1998	P		32.00	42.00	28.72	422.65	2,300	110	7	36	20	<15	--	--	
10/29/1998	P		32.00	42.00	32.77	418.60	2,500	14	13	17	12	<12	1.0	--	
3/16/1999	P		32.00	42.00	26.45	424.92	1,200	65	4	27	13	18	0.5	--	
5/5/1999	P		32.00	42.00	27.86	423.51	2,200	53	4	26	6	25	5.59	--	
8/26/1999	P		32.00	42.00	30.49	420.88	1,100	11	6	10	4	13	2.35	--	
12/3/1999	P		32.00	42.00	32.35	419.02	370	<0.5	<0.5	0.8	<1	4	2.36	--	
3/13/2000	P		32.00	42.00	28.36	423.01	54	2.1	0.5	0.9	1.4	<3	4.22	--	
6/20/2000	P		32.00	42.00	28.35	423.02	195	1.83	<0.500	0.528	<0.500	<2.50	3.5	--	
8/31/2000	P		32.00	42.00	30.20	421.17	276	3.52	0.788	1.15	0.621	8.73	7.0	--	
2/9/2001	P		32.00	42.00	30.70	420.67	253	5.44	2.93	0.924	0.977	48.9	0.59	--	
2/9/2001	--		32.00	42.00	30.70	420.67	222	4.49	2.73	0.579	0.523	57.1	--	--	b
9/17/2001	--		32.00	42.00	30.94	420.43	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--	b
9/17/2001	P		32.00	42.00	30.94	420.43	<50	<0.50	<0.50	<0.50	<0.50	<2.5	2.79	--	
1/21/2002	P		32.00	42.00	30.55	420.82	<50	<0.50	<0.50	<0.50	<0.50	<5.0	1.9	--	
7/19/2002	P		32.00	42.00	30.27	421.10	60	2	<0.50	<0.50	<0.50	<0.50	3.5	7.9	a
1/15/2003	--		32.00	42.00	22.86	428.51	83	9.1	<0.50	3.4	4.6	1	2.5	7.2	a
7/9/2003	P		32.00	42.00	29.41	421.96	110	<0.50	<0.50	<0.50	<0.50	0.98	2.6	7.1	
02/19/2004	--		32.00	42.00	43.25	408.12	--	--	--	--	--	--	--	--	
08/04/2004	P	453.83	32.00	42.00	27.71	426.12	540	36	3.8	17	24	5.2	3.5	7.1	
01/18/2005	--		32.00	42.00	24.56	429.27	--	--	--	--	--	--	--	--	
07/15/2005	P		32.00	42.00	27.61	426.22	4,600	210	44	150	670	32	3.5	7.1	
01/10/2006	--		32.00	42.00	23.75	430.08	--	--	--	--	--	--	--	--	
7/21/2006	P		32.00	42.00	27.96	425.87	260	<0.50	<0.50	<0.50	0.86	5.1	2.60	7.2	
1/17/2007	--		32.00	42.00	30.57	423.26	--	--	--	--	--	--	--	--	
7/18/2007	P		32.00	42.00	30.96	422.87	<50	<0.50	<0.50	<0.50	<0.50	<0.50	4.95	7.57	

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ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-6 Cont.															
1/15/2008	--	453.83	32.00	42.00	28.89	424.94	--	--	--	--	--	--	--	--	
7/7/2008	NP		32.00	42.00	34.57	419.26	<50	<0.50	<0.50	<0.50	<0.50	<0.50	6.00	7.19	
1/7/2009	--		32.00	42.00	34.75	419.08	--	--	--	--	--	--	--	--	
7/22/2009	NP		32.00	42.00	35.84	417.99	<50	<0.50	<0.50	<0.50	<0.50	<0.50	16.67	7.68	
3/12/2010	--		32.00	42.00	27.89	425.94	--	--	--	--	--	--	--	--	
9/9/2010	NP		32.00	42.00	33.06	420.77	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	7.2	
2/17/2011	--		32.00	42.00	32.60	421.23	--	--	--	--	--	--	--	--	
7/7/2011	**NP**		**32.00**	**42.00**	**32.72**	**421.11**	**430**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**8.0**	**2.04**	**7.1**	**g (GRO)**
MW-7															
3/20/1995	--	450.33	30.00	40.00	22.07	428.26	31,000	2,300	400	620	2,900	--	--	--	
6/2/1995	--		30.00	40.00	23.42	426.91	40,000	1,400	280	610	2,400	--	--	--	
8/23/1995	--		30.00	40.00	27.13	423.20	25,000	1,400	200	600	1,600	350	--	--	
12/4/1995	--		30.00	40.00	29.45	420.88	23,000	1,100	74	490	720	--	--	--	
2/20/1996	--		30.00	40.00	20.25	430.08	39,000	1,200	140	640	1,800	<400	--	--	
5/15/1996	--		30.00	40.00	21.38	428.95	--	--	--	--	--	--	--	--	
8/13/1996	--		30.00	40.00	25.52	424.81	--	--	--	--	--	--	--	--	
11/13/1996	--		30.00	40.00	29.38	420.95	--	--	--	--	--	--	--	--	
3/26/1997	--		30.00	40.00	24.36	425.97	35,000	1,100	180	460	1,700	<300	--	--	
5/15/1997	--		30.00	40.00	26.90	423.43	--	--	--	--	--	--	--	--	
8/26/1997	--		30.00	40.00	30.21	420.12	--	--	--	--	--	--	--	--	
11/5/1997	--		30.00	40.00	32.49	417.84	--	--	--	--	--	--	--	--	
2/18/1998	--		30.00	40.00	18.10	432.23	19,000	1,100	120	460	1,700	240	--	--	
5/20/1998	--		30.00	40.00	21.68	428.65	--	--	--	--	--	--	--	--	
7/30/1998	--		30.00	40.00	26.07	424.26	--	--	--	--	--	--	--	--	
10/29/1998	--		30.00	40.00	31.13	419.20	--	--	--	--	--	--	--	--	
3/16/1999	P		30.00	40.00	24.45	425.88	8,600	430	51	200	680	<120	1.5	--	
5/5/1999	--		30.00	40.00	25.84	424.49	--	--	--	--	--	--	--	--	
8/26/1999	--		30.00	40.00	28.28	422.05	--	--	--	--	--	--	1.51	--	
12/3/1999	--		30.00	40.00	31.57	418.76	--	--	--	--	--	--	--	--	
3/13/2000	--		30.00	40.00	--	--	--	--	--	--	--	--	--	--	d

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-7 Cont.															
6/20/2000	--	450.33	30.00	40.00	25.91	424.42	--	--	--	--	--	--	5.4	--	
8/31/2000	--		30.00	40.00	28.40	421.93	8,410	344	58.9	276	581	202	0.09	--	
2/9/2001	--		30.00	40.00	30.04	420.29	2,030	203	12	17.9	49.4	128	1.55	--	
9/17/2001	P		30.00	40.00	29.03	421.30	4,800	200	14	9.9	27	160	0.29	--	
1/21/2002	--		30.00	40.00	28.98	421.35	2,600	280	17	41	50	97	--	--	b
1/21/2002	P		30.00	40.00	28.98	421.35	4,200	350	20	52	63	99	0.81	--	
7/19/2002	P		30.00	40.00	28.70	421.63	5,700	630	31	330	160	64	0.7	7.3	a
1/15/2003	--		30.00	40.00	21.91	428.42	12,000	470	19	340	310	91	1.5	7.0	a
7/9/2003	P		30.00	40.00	27.88	422.45	6,700	590	23	280	92	110	1.0	6.9	
02/19/2004	P		30.00	40.00	25.12	425.21	8,900	670	24	470	120	100	0.8	6.6	c
08/04/2004	P	452.70	30.00	40.00	25.92	426.78	9,100	930	29	460	130	140	0.6	7.2	
01/18/2005	P		30.00	40.00	22.31	430.39	16,000	770	33	590	220	87	1.0	6.9	
07/15/2005	P		30.00	40.00	27.20	425.50	12,000	1,000	38	490	220	150	1.5	6.9	
01/10/2006	P		30.00	40.00	20.61	432.09	13,000	1,200	50	760	330	120	0.8	7.1	
7/21/2006	P		30.00	40.00	28.10	424.60	8,000	110	<50	380	180	54	3.20	7.8	
1/17/2007	P		30.00	40.00	29.70	423.00	5,600	16	<2.5	26	12	3.1	1.08	7.83	
7/18/2007	P		30.00	40.00	29.73	422.97	2,400	140	2.8	9.1	7.3	67	4.86	7.67	
1/15/2008	P		30.00	40.00	26.18	426.52	3,500	120	3.6	9.0	29	26	3.16	7.07	
7/7/2008	NP		30.00	40.00	33.10	419.60	70	0.76	<0.50	<0.50	<0.50	0.69	7.81	8.24	
1/7/2009	NP		30.00	40.00	33.21	419.49	<50	1.5	<0.50	<0.50	<0.50	<0.50	3.00	7.73	
7/22/2009	NP		30.00	40.00	34.54	418.16	<50	<0.50	<0.50	<0.50	<0.50	0.53	11.95	7.65	
3/12/2010	P		30.00	40.00	25.46	427.24	2,600	36	1.0	14	9.1	11	0.42	8.07	
9/9/2010	NP		30.00	40.00	30.10	422.60	2,800	430	11	32	46	110	--	--	
2/17/2011	--		30.00	40.00	29.71	422.99	--	--	--	--	--	--	--	--	
7/7/2011	**NP**		**30.00**	**40.00**	**29.68**	**423.02**	**2,600**	**310**	**8.3**	**7.5**	**46**	**150**	**0.77**	**6.9**	**g (GRO)**
MW-8															
3/20/1995	--	449.43	27.50	42.50	24.75	424.68	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
6/2/1995	--		27.50	42.50	24.95	424.48	--	--	--	--	--	--	--	--	
8/23/1995	--		27.50	42.50	30.94	418.49	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
12/4/1995	--		27.50	42.50	31.99	417.44	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-8 Cont.															
2/20/1996	--	449.43	27.50	42.50	21.13	428.30	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/15/1996	--		27.50	42.50	21.96	427.47	--	--	--	--	--	--	--	--	
8/13/1996	--		27.50	42.50	30.20	419.23	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
11/13/1996	--		27.50	42.50	33.24	416.19	--	--	--	--	--	--	--	--	
3/26/1997	--		27.50	42.50	26.85	422.58	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/15/1997	--		27.50	42.50	29.69	419.74	--	--	--	--	--	--	--	--	
8/26/1997	--		27.50	42.50	34.00	415.43	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
11/5/1997	--		27.50	42.50	35.94	413.49	--	--	--	--	--	--	--	--	
2/18/1998	--		27.50	42.50	18.18	431.25	<50	0.6	0.6	<0.5	1.1	<3	--	--	
5/20/1998	--		27.50	42.50	22.85	426.58	--	--	--	--	--	--	--	--	
7/30/1998	NP		27.50	42.50	30.31	419.12	<50	<0.5	<0.5	<0.5	<0.5	<3	8.21	--	
10/29/1998	--		27.50	42.50	35.88	413.55	--	--	--	--	--	--	--	--	
3/16/1999	NP		27.50	42.50	28.50	420.93	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	--	
5/5/1999	--		27.50	42.50	29.76	419.67	--	--	--	--	--	--	--	--	
8/26/1999	P		27.50	42.50	33.51	415.92	<50	<0.5	<0.5	<0.5	<0.5	<3	4.93	--	
12/3/1999	--		27.50	42.50	35.83	413.60	--	--	--	--	--	--	--	--	
3/13/2000	P		27.50	42.50	26.12	423.31	<50	<0.5	<0.5	<0.5	<1	<3	2.81	--	
6/20/2000	--		27.50	42.50	30.91	418.52	--	--	--	--	--	--	5.8	--	
8/31/2000	--		27.50	42.50	33.70	415.73	--	--	--	--	--	--	--	--	
2/9/2001	--		27.50	42.50	30.90	418.53	--	--	--	--	--	--	--	--	
9/17/2001	--		27.50	42.50	33.95	415.48	--	--	--	--	--	--	--	--	
1/21/2002	--		27.50	42.50	33.71	415.72	--	--	--	--	--	--	--	--	
7/19/2002	--		27.50	42.50	35.30	414.13	--	--	--	--	--	--	--	--	
1/15/2003	--		27.50	42.50	27.10	422.33	--	--	--	--	--	--	--	--	
7/9/2003	--		27.50	42.50	33.10	416.33	--	--	--	--	--	--	--	--	
02/19/2004	--		27.50	42.50	28.92	420.51	--	--	--	--	--	--	--	--	
08/04/2004	--	451.80	27.50	42.50	34.28	417.52	--	--	--	--	--	--	--	--	
01/18/2005	--		27.50	42.50	26.76	425.04	--	--	--	--	--	--	--	--	
07/15/2005	--		27.50	42.50	31.14	420.66	--	--	--	--	--	--	--	--	
01/10/2006	--		27.50	42.50	22.88	428.92	--	--	--	--	--	--	--	--	

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ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-8 Cont.															
7/21/2006	--	451.80	27.50	42.50	30.84	420.96	--	--	--	--	--	--	--	--	
1/17/2007	--		27.50	42.50	33.20	418.60	--	--	--	--	--	--	--	--	
7/18/2007	--		27.50	42.50	31.92	419.88	--	--	--	--	--	--	--	--	
1/15/2008	--		27.50	42.50	31.52	420.28	--	--	--	--	--	--	--	--	
7/7/2008	--		27.50	42.50	36.32	415.48	--	--	--	--	--	--	--	--	
1/7/2009	--		27.50	42.50	40.52	411.28	--	--	--	--	--	--	--	--	
7/22/2009	--		27.50	42.50	40.38	411.42	--	--	--	--	--	--	--	--	
3/12/2010	--		27.50	42.50	31.48	420.32	--	--	--	--	--	--	--	--	
9/9/2010	--		27.50	42.50	35.28	416.52	--	--	--	--	--	--	--	--	
2/17/2011	--		27.50	42.50	33.49	418.31	--	--	--	--	--	--	--	--	
7/7/2011	**--**		**27.50**	**42.50**	**32.74**	**419.06**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
MW-9															
3/20/1995	--	449.21	29.50	39.50	19.11	430.10	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
6/2/1995	--		29.50	39.50	21.23	427.98	--	--	--	--	--	--	--	--	
8/23/1995	--		29.50	39.50	24.33	424.88	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
12/4/1995	--		29.50	39.50	27.90	421.31	--	--	--	--	--	--	--	--	
2/20/1996	--		29.50	39.50	17.86	431.35	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/15/1996	--		29.50	39.50	18.69	430.52	--	--	--	--	--	--	--	--	
8/13/1996	--		29.50	39.50	24.17	425.04	--	--	--	--	--	--	--	--	
11/13/1996	--		29.50	39.50	28.01	421.20	--	--	--	--	--	--	--	--	
3/26/1997	--		29.50	39.50	22.58	426.63	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/15/1997	--		29.50	39.50	25.12	424.09	--	--	--	--	--	--	--	--	
8/26/1997	--		29.50	39.50	28.28	420.93	--	--	--	--	--	--	--	--	
11/5/1997	--		29.50	39.50	31.18	418.03	--	--	--	--	--	--	--	--	
2/18/1998	--		29.50	39.50	16.03	433.18	<50	0.6	0.5	<0.5	1	<3	--	--	
5/20/1998	--		29.50	39.50	19.31	429.90	--	--	--	--	--	--	--	--	
7/30/1998	--		29.50	39.50	24.90	424.31	--	--	--	--	--	--	--	--	
10/29/1998	--		29.50	39.50	30.08	419.13	--	--	--	--	--	--	--	--	
3/16/1999	P		29.50	39.50	22.68	426.53	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	--	
5/5/1999	--		29.50	39.50	23.82	425.39	--	--	--	--	--	--	--	--	

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							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-9 Cont.															
8/26/1999	--	449.21	29.50	39.50	26.57	422.64	--	--	--	--	--	--	5.08	--	
12/3/1999	--		29.50	39.50	--	--	--	--	--	--	--	--	--	--	d
3/13/2000	P		29.50	39.50	25.62	423.59	<50	<0.5	<0.5	<0.5	<1	<3	5.43	--	
6/20/2000	--		29.50	39.50	23.55	425.66	--	--	--	--	--	--	6.2	--	
8/31/2000	--		29.50	39.50	27.39	421.82	--	--	--	--	--	--	--	--	
2/9/2001	--		29.50	39.50	28.65	420.56	--	--	--	--	--	--	--	--	
9/17/2001	--		29.50	39.50	27.51	421.70	--	--	--	--	--	--	--	--	
1/21/2002	--		29.50	39.50	27.09	422.12	--	--	--	--	--	--	--	--	
7/19/2002	--		29.50	39.50	27.06	422.15	--	--	--	--	--	--	--	--	
1/15/2003	--		29.50	39.50	21.78	427.43	--	--	--	--	--	--	--	--	
7/9/2003	--		29.50	39.50	26.18	423.03	--	--	--	--	--	--	--	--	
02/19/2004	--		29.50	39.50	23.45	425.76	--	--	--	--	--	--	--	--	
08/04/2004	--	451.63	29.50	39.50	29.24	422.39	--	--	--	--	--	--	--	--	
01/18/2005	--		29.50	39.50	20.64	430.99	--	--	--	--	--	--	--	--	
07/15/2005	--		29.50	39.50	25.72	425.91	--	--	--	--	--	--	--	--	
01/10/2006	--		29.50	39.50	18.86	432.77	--	--	--	--	--	--	--	--	
7/21/2006	--		29.50	39.50	25.58	426.05	--	--	--	--	--	--	--	--	
1/17/2007	--		29.50	39.50	29.11	422.52	--	--	--	--	--	--	--	--	
7/18/2007	--		29.50	39.50	--	--	--	--	--	--	--	--	--	--	d
1/15/2008	--		29.50	39.50	24.89	426.74	--	--	--	--	--	--	--	--	
7/7/2008	--		29.50	39.50	32.06	419.57	--	--	--	--	--	--	--	--	
1/7/2009	--		29.50	39.50	32.65	418.98	--	--	--	--	--	--	--	--	
7/22/2009	--		29.50	39.50	33.74	417.89	--	--	--	--	--	--	--	--	
3/12/2010	--		29.50	39.50	23.44	428.19	--	--	--	--	--	--	--	--	
9/9/2010	--		29.50	39.50	29.56	422.07	--	--	--	--	--	--	--	--	
2/17/2011	--		29.50	39.50	27.18	424.45	--	--	--	--	--	--	--	--	
7/7/2011	**--**		**29.50**	**39.50**	**27.71**	**423.92**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	
MW-10															
3/20/1995	--	449.22	29.00	37.00	20.96	428.26	--	--	--	--	--	--	--	--	
6/2/1995	--		29.00	37.00	22.15	427.07	--	--	--	--	--	--	--	--	

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ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-10 Cont.															
8/23/1995	--	449.22	29.00	37.00	24.47	424.75	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
12/4/1995	--		29.00	37.00	26.97	422.25	--	--	--	--	--	--	--	--	
2/20/1996	--		29.00	37.00	18.40	430.82	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/15/1996	--		29.00	37.00	--	--	--	--	--	--	--	--	--	--	d
8/13/1996	--		29.00	37.00	23.70	425.52	--	--	--	--	--	--	--	--	
11/13/1996	--		29.00	37.00	27.15	422.07	--	--	--	--	--	--	--	--	
3/26/1997	--		29.00	37.00	22.23	426.99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/15/1997	--		29.00	37.00	24.57	424.65	--	--	--	--	--	--	--	--	
8/26/1997	--		29.00	37.00	27.62	421.60	--	--	--	--	--	--	--	--	
11/5/1997	--		29.00	37.00	30.79	418.43	--	--	--	--	--	--	--	--	
2/18/1998	--		29.00	37.00	--	--	--	--	--	--	--	--	--	--	d
5/20/1998	--		29.00	37.00	--	--	--	--	--	--	--	--	--	--	
7/30/1998	--		29.00	37.00	23.90	425.32	--	--	--	--	--	--	--	--	
10/29/1998	--		29.00	37.00	30.55	418.67	--	--	--	--	--	--	--	--	
3/16/1999	P		29.00	37.00	23.05	426.17	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	--	
5/5/1999	--		29.00	37.00	24.00	425.22	--	--	--	--	--	--	--	--	
8/26/1999	--		29.00	37.00	26.50	422.72	--	--	--	--	--	--	5.15	--	
12/3/1999	--		29.00	37.00	30.80	418.42	--	--	--	--	--	--	--	--	
3/13/2000	--		29.00	37.00	26.21	423.01	--	--	--	--	--	--	--	--	d
6/20/2000	--		29.00	37.00	23.52	425.70	--	--	--	--	--	--	5.5	--	
8/31/2000	--		29.00	37.00	27.52	421.70	--	--	--	--	--	--	--	--	
2/9/2001	--		29.00	37.00	28.71	420.51	--	--	--	--	--	--	--	--	
9/17/2001	--		29.00	37.00	27.94	421.28	--	--	--	--	--	--	--	--	
1/21/2002	--		29.00	37.00	27.44	421.78	--	--	--	--	--	--	--	--	
7/19/2002	--		29.00	37.00	27.80	421.42	--	--	--	--	--	--	--	--	
1/15/2003	--		29.00	37.00	23.09	426.13	--	--	--	--	--	--	--	--	
7/9/2003	--		29.00	37.00	26.87	422.35	--	--	--	--	--	--	--	--	
02/19/2004	--		29.00	37.00	23.39	425.83	--	--	--	--	--	--	--	--	
01/18/2005	--	451.65	29.00	37.00	21.40	430.25	--	--	--	--	--	--	--	--	
07/15/2005	--		29.00	37.00	25.37	426.28	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-10 Cont.															
01/10/2006	--	451.65	29.00	37.00	19.81	431.84	--	--	--	--	--	--	--	--	
7/21/2006	--		29.00	37.00	25.16	426.49	--	--	--	--	--	--	--	--	
1/17/2007	--		29.00	37.00	28.95	422.70	--	--	--	--	--	--	--	--	
7/18/2007	--		29.00	37.00	--	--	--	--	--	--	--	--	--	--	d
1/15/2008	--		29.00	37.00	24.62	427.03	--	--	--	--	--	--	--	--	
7/7/2008	--		29.00	37.00	--	--	--	--	--	--	--	--	--	--	d
1/7/2009	--		29.00	37.00	--	--	--	--	--	--	--	--	--	--	d
7/22/2009	--		29.00	37.00	--	--	--	--	--	--	--	--	--	--	Dry
3/12/2010	--		29.00	37.00	24.13	427.52	--	--	--	--	--	--	--	--	
9/9/2010	--		29.00	37.00	27.91	423.74	--	--	--	--	--	--	--	--	
2/17/2011	--		29.00	37.00	27.16	424.49	--	--	--	--	--	--	--	--	
7/7/2011	**--**		**29.00**	**37.00**	**26.38**	**425.27**	--	--	--	--	--	--	--	--	
MW-11															
3/20/1995	--	448.02	29.00	39.00	25.02	423.00	<50	<0.5	<0.5	<0.5	<0.5	--	--	--	
6/2/1995	--		29.00	39.00	23.82	424.20	--	--	--	--	--	--	--	--	
8/23/1995	--		29.00	39.00	30.15	417.87	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
12/4/1995	--		29.00	39.00	31.63	416.39	--	--	--	--	--	--	--	--	
2/20/1996	--		29.00	39.00	20.94	427.08	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/15/1996	--		29.00	39.00	23.03	424.99	--	--	--	--	--	--	--	--	
8/13/1996	--		29.00	39.00	29.19	418.83	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
11/13/1996	--		29.00	39.00	31.96	416.06	--	--	--	--	--	--	--	--	
3/26/1997	--		29.00	39.00	26.61	421.41	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
5/15/1997	--		29.00	39.00	29.39	418.63	--	--	--	--	--	--	--	--	
8/26/1997	--		29.00	39.00	33.47	414.55	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--	
11/5/1997	--		29.00	39.00	35.12	412.90	--	--	--	--	--	--	--	--	
2/18/1998	--		29.00	39.00	18.03	429.99	<50	<0.5	<0.5	<0.5	1	<3	--	--	
5/20/1998	--		29.00	39.00	23.00	425.02	--	--	--	--	--	--	--	--	
7/30/1998	P		29.00	39.00	29.30	418.72	<50	<0.5	<0.5	<0.5	<0.5	<3	5.59	--	
10/29/1998	--		29.00	39.00	34.47	413.55	--	--	--	--	--	--	--	--	
3/16/1999	P		29.00	39.00	27.88	420.14	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
MW-11 Cont.															
5/5/1999	--	448.02	29.00	39.00	26.85	421.17	--	--	--	--	--	--	--	--	
8/26/1999	P		29.00	39.00	32.74	415.28	<50	<0.5	<0.5	<0.5	<0.5	<3	4.59	--	
12/3/1999	--		29.00	39.00	34.70	413.32	--	--	--	--	--	--	--	--	
3/13/2000	P		29.00	39.00	25.94	422.08	<50	<0.5	<0.5	<0.5	<1	<3	3.21	--	
6/20/2000	--		29.00	39.00	30.40	417.62	--	--	--	--	--	--	3.3	--	
8/31/2000	--		29.00	39.00	32.68	415.34	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	--	--	b
8/31/2000	NP		29.00	39.00	32.68	415.34	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	0.4	--	
2/9/2001	--		29.00	39.00	31.17	416.85	--	--	--	--	--	--	--	--	
9/17/2001	NP		29.00	39.00	32.98	415.04	<50	<0.50	<0.50	<0.50	<0.50	<2.5	0.62	--	
1/21/2002	--		29.00	39.00	31.05	416.97	--	--	--	--	--	--	--	--	
7/19/2002	P		29.00	39.00	31.67	416.35	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.7	7.7	
1/15/2003	--		29.00	39.00	23.75	424.27	--	--	--	--	--	--	--	--	
7/9/2003	P		29.00	39.00	31.06	416.96	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	6.6	
02/19/2004	--		29.00	39.00	27.21	420.81	--	--	--	--	--	--	--	--	
08/04/2004	P	450.41	29.00	39.00	31.71	418.70	<50	<0.50	<0.50	<0.50	<0.50	<0.50	3.3	7.1	
01/18/2005	--		29.00	39.00	24.80	425.61	--	--	--	--	--	--	--	--	
07/15/2005	P		29.00	39.00	29.15	421.26	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.7	7.1	
01/10/2006	--		29.00	39.00	20.87	429.54	--	--	--	--	--	--	--	--	
7/21/2006	P		29.00	39.00	29.30	421.11	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.7	7.2	
1/17/2007	--		29.00	39.00	31.59	418.82	--	--	--	--	--	--	--	--	
7/18/2007	NP		29.00	39.00	29.22	421.19	<50	<0.50	<0.50	<0.50	<0.50	<0.50	5.35	7.12	
1/15/2008	--		29.00	39.00	29.12	421.29	--	--	--	--	--	--	--	--	
7/7/2008	NP		29.00	39.00	34.21	416.20	<50	<0.50	<0.50	<0.50	<0.50	<0.50	4.08	7.94	
1/7/2009	--		29.00	39.00	37.45	412.96	--	--	--	--	--	--	--	--	
7/22/2009	NP		29.00	39.00	37.33	413.08	<50	<0.50	<0.50	<0.50	<0.50	<0.50	15.97	7.81	
3/12/2010	--		29.00	39.00	28.47	421.94	--	--	--	--	--	--	--	--	
9/9/2010	NP		29.00	39.00	33.03	417.38	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	7.2	
2/17/2011	--		29.00	39.00	31.70	418.71	--	--	--	--	--	--	--	--	
7/7/2011	**NP**		**29.00**	**39.00**	**31.44**	**418.97**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**3.65**	**7.1**	
RW-1															

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
RW-1 Cont.															
3/20/1995	--	451.67	25.50	40.50	23.76	427.91	15,000	1,000	140	310	950	--	--	--	
6/2/1995	--		25.50	40.50	25.12	426.55	12,000	1,300	280	420	1,100	--	--	--	
8/23/1995	--		25.50	40.50	28.80	422.87	8,200	520	190	240	610	<50	--	--	
12/4/1995	--		25.50	40.50	31.15	420.52	2,600	140	59	83	210	--	--	--	
2/20/1996	--		25.50	40.50	21.45	430.22	6,300	410	160	180	650	<40	--	--	
5/15/1996	--		25.50	40.50	22.97	428.70	--	--	--	--	--	--	--	--	
8/13/1996	--		25.50	40.50	24.74	426.93	--	--	--	--	--	--	--	--	
11/13/1996	--		25.50	40.50	30.69	420.98	--	--	--	--	--	--	--	--	
3/26/1997	--		25.50	40.50	25.69	425.98	500	57	3	6.4	18	54	--	--	
5/15/1997	--		25.50	40.50	28.19	423.48	--	--	--	--	--	--	--	--	
8/26/1997	--		25.50	40.50	31.21	420.46	--	--	--	--	--	--	--	--	
11/5/1997	--		25.50	40.50	33.67	418.00	--	--	--	--	--	--	--	--	
2/18/1998	--		25.50	40.50	20.14	431.53	9,400	200	70	190	710	<60	--	--	
5/20/1998	--		25.50	40.50	23.43	428.24	--	--	--	--	--	--	--	--	
7/30/1998	--		25.50	40.50	27.42	424.25	--	--	--	--	--	--	--	--	
10/29/1998	--		25.50	40.50	32.47	419.20	--	--	--	--	--	--	--	--	
3/16/1999	NP		25.50	40.50	25.45	426.22	1,100	140	19	45	83	530	1.0	--	
5/5/1999	--		25.50	40.50	27.23	424.44	--	--	--	--	--	--	--	--	
8/26/1999	--		25.50	40.50	29.98	421.69	--	--	--	--	--	--	1.39	--	
12/3/1999	--		25.50	40.50	32.38	419.29	--	--	--	--	--	--	--	--	
3/13/2000	NP		25.50	40.50	25.53	426.14	1,100	130	3.5	0.7	95	230	4.43	--	
6/20/2000	--		25.50	40.50	28.31	423.36	--	--	--	--	--	--	1.9	--	
8/31/2000	NP		25.50	40.50	30.61	421.06	<50.0	<0.500	<0.500	<0.500	<0.500	82.5	3.21	--	
2/9/2001	NP		25.50	40.50	31.14	420.53	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	0.84	--	
9/17/2001	NP		25.50	40.50	31.70	419.97	<50	<0.50	<0.50	<0.50	<0.50	<2.5	1.51	--	
1/21/2002	NP		25.50	40.50	30.15	421.52	<50	7.7	<0.50	<0.50	1.5	18	0.63	--	
7/19/2002	NP		25.50	40.50	31.15	420.52	<50	<0.50	<0.50	<0.50	<0.50	13	1.4	6.6	
1/15/2003	--		25.50	40.50	22.20	429.47	860	9	1.6	17	42	1.5	2.8	7.2	a
7/9/2003	--		25.50	40.50	29.56	422.11	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	7.1	
02/19/2004	NP		25.50	40.50	23.53	428.14	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	6.7	c

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
RW-1 Cont.															
08/04/2004	P	454.11	25.50	40.50	22.45	431.66	600	<0.50	<0.50	3.3	3.4	<0.50	4.4	7.2	
01/18/2005	P		25.50	40.50	23.57	430.54	1,400	8.0	1.9	22	68	<0.50	3.6	6.9	
07/15/2005	NP		25.50	40.50	29.02	425.09	<50	<0.50	<0.50	<0.50	<0.50	2.0	1.1	7.8	
01/10/2006	P		25.50	40.50	21.88	432.23	480	4.3	0.67	8.3	18	0.54	4.4	7.1	
7/21/2006	--		25.50	40.50	--	--	--	--	--	--	--	--	--	--	d
1/17/2007	P		25.50	40.50	31.48	422.63	6,900	17	2.8	22	31	2.6	4.08	7.74	
7/18/2007	NP		25.50	40.50	32.45	421.66	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.33	7.48	
1/15/2008	NP		25.50	40.50	28.39	425.72	<50	<0.50	<0.50	<0.50	<0.50	8.3	2.73	6.87	
7/7/2008	NP		25.50	40.50	35.19	418.92	<50	<0.50	<0.50	<0.50	<0.50	0.53	2.51	7.05	
1/7/2009	NP		25.50	40.50	33.31	420.80	120	0.96	<0.50	<0.50	<0.50	1.6	2.13	6.84	
7/22/2009	NP		25.50	40.50	36.15	417.96	<50	<0.50	<0.50	<0.50	<0.50	0.84	10.39	7.40	
3/12/2010	P		25.50	40.50	25.01	429.10	240	15	<0.50	<0.50	<0.50	2.7	0.78	7.06	
9/9/2010	NP		25.50	40.50	31.01	423.10	440	<0.50	<0.50	<0.50	0.53	1.9	--	7.3	
2/17/2011	NP		25.50	40.50	26.45	427.66	500	1.5	<0.50	<0.50	0.55	<0.50	0.98	8.0	g (GRO)
7/7/2011	**NP**		**25.50**	**40.50**	**30.42**	**423.69**	**750**	**2.4**	**<0.50**	**0.64**	**2.2**	**2.2**	**0.82**	**6.7**	**g (GRO)**
VW-1															
8/31/2000	P	NS	18.50	28.50	20.61	--	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	10.08	--	
2/9/2001	P		18.50	28.50	22.10	--	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	0.53	--	
9/17/2001	P		18.50	28.50	21.99	--	<50	<0.50	<0.50	<0.50	<0.50	<2.5	6.59	--	
1/21/2002	P		18.50	28.50	21.50	--	<50	<0.50	<0.50	<0.50	<0.50	<5.0	0.7	--	
7/19/2002	P		18.50	28.50	22.42	--	<50	<0.50	<0.50	<0.50	<0.50	<0.50	4.9	7.1	
1/15/2003	--		18.50	28.50	22.59	--	<50	<0.50	<0.50	0.63	1.7	<0.50	5.4	7.2	
7/9/2003	--		18.50	28.50	22.50	--	<50	<0.50	<0.50	<0.50	0.61	<0.50	2.0	7.0	
02/19/2004	--		18.50	28.50	21.04	--	--	--	--	--	--	--	--	--	
08/04/2004	P	453.29	18.50	28.50	20.48	432.81	<50	<0.50	<0.50	<0.50	<0.50	<0.50	5.7	7.0	
01/18/2005	--		18.50	28.50	21.72	431.57	--	--	--	--	--	--	--	--	
07/15/2005	P		18.50	28.50	22.50	430.79	<50	<0.50	<0.50	<0.50	<0.50	<0.50	5.1	7.4	
01/10/2006	--		18.50	28.50	20.17	433.12	--	--	--	--	--	--	--	--	
7/21/2006	P		18.50	28.50	22.50	430.79	220	<0.50	<0.50	<0.50	<0.50	<0.50	5.91	7.3	e
1/17/2007	--		18.50	28.50	21.67	431.62	--	--	--	--	--	--	--	--	

Table 1. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
VW-1 Cont.															
7/18/2007	NP	453.29	18.50	28.50	23.58	429.71	<50	<0.50	<0.50	<0.50	<0.50	<0.50	6.45	8.52	
1/15/2008	--		18.50	28.50	21.87	431.42	--	--	--	--	--	--	--	--	
7/7/2008	NP		18.50	28.50	23.70	429.59	<50	<0.50	<0.50	<0.50	<0.50	<0.50	7.54	8.46	
1/7/2009	--		18.50	28.50	22.00	431.29	--	--	--	--	--	--	--	--	
7/22/2009	NP		18.50	28.50	23.95	429.34	<50	<0.50	<0.50	<0.50	<0.50	<0.50	10.12	7.66	
3/12/2010	--		18.50	28.50	21.85	431.44	--	--	--	--	--	--	--	--	
9/9/2010	NP		18.50	28.50	23.65	429.64	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	6.93	
2/17/2011	NP		18.50	28.50	23.83	429.46	<50	<0.50	<0.50	<0.50	<0.50	<0.50	4.57	7.9	
7/7/2011	**NP**		**18.50**	**28.50**	**25.17**	**428.12**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**3.85**	**7.2**	

Symbols & Abbreviations:
--/- - = Not analyzed/applicable/sampled/measured
< = Not detected at or above specified laboratory reporting limit
DO = Dissolved oxygen
DTW = Depth to water in ft bgs
ft bgs = Feet below ground surface
ft MSL = Feet above mean sea level
GRO = Gasoline range organics, range C4-C12
GWE = Groundwater elevation in ft MSL
g/L = Micrograms per liter
mg/L = Milligrams per liter
MTBE = Methyl tert-butyl ether
NP = Not purged before sampling
P = Purged before sampling
TPH-g = Total petroleum hydrocarbons as gasoline
TOC = Top of casing elevation in ft MSL

Footnotes:
a = Chromatogram Pattern: Gasoline C6-C10
b = Duplicate sample
c = GRO analyzed by EPA Method 8015B modified
d = Well inaccessible
e = Hydrocarbon result partly due to individ. peak(s) in quant. range
f = Sample > 4x spike concentration
g = Quantitated against gasoline

Notes:
For previous historical GWE and analytical data please refer to Fourth Quarter 1995 Groundwater Monitoring Program Results and Remediation System Performance Evaluation Report, ARCO Service Station 771, Livermore, California, (EMCON, March 1, 1996)

Please note that beginning in the fourth quarter 2003, the laboratory modified the reported analyte list. TPH-g was changed to GRO. The resulting data may be impacted by the potential inclusion of non-TPH-g analytes within the requested fuel range resulting in a higher concentration being reported

All analytes unless otherwise notes utilized EPA Method 8260B, EPA method 8015B modified prior to 1/15/03, and EPA method 8020 prior to 12/03/99

Site wells were resurveyed to NAVD '88 datum on March 8, 2004

Top of screen and bottom of screen depths for MW-3 and MW-6 are estimated from cross-sections

GRO analysis was completed by EPA method 8260B (C4-C12) for samples collected from the time period April 2006 through February 4, 2008. The analysis for GRO was changed to EPA method 8015B (C6-C12) for samples collected from the time period February 5, 2008 through the present

The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-1									
8/23/1995	--	--	<300	--	--	--	--	--	
2/20/1996	--	--	<300	--	--	--	--	--	
5/15/1996	--	--	<250	--	--	--	--	--	
8/13/1996	--	--	<200	--	--	--	--	--	
11/13/1996	--	--	<30	--	--	--	--	--	
3/26/1997	--	--	<30	--	--	--	--	--	
5/15/1997	--	--	<120	--	--	--	--	--	
8/26/1997	--	--	<3	--	--	--	--	--	
11/5/1997	--	--	29	--	--	--	--	--	
2/18/1998	--	--	<120	--	--	--	--	--	
5/20/1998	--	--	<300	--	--	--	--	--	
7/30/1998	--	--	<3	--	--	--	--	--	
10/29/1998	--	--	<3	--	--	--	--	--	
3/16/1999	--	--	270	--	--	--	--	--	
5/5/1999	--	--	170	--	--	--	--	--	
8/26/1999	--	--	120	--	--	--	--	--	
12/3/1999	--	--	<3	--	--	--	--	--	
3/13/2000	--	--	<3	--	--	--	--	--	
6/20/2000	--	--	<2.50	--	--	--	--	--	
6/20/2000	--	--	<2.50	--	--	--	--	--	
MW-2									
8/23/1995	--	--	<500	--	--	--	--	--	
2/20/1996	--	--	<300	--	--	--	--	--	
5/15/1996	--	--	<300	--	--	--	--	--	
8/13/1996	--	--	<300	--	--	--	--	--	
11/13/1996	--	--	<200	--	--	--	--	--	
3/26/1997	--	--	<120	--	--	--	--	--	
5/15/1997	--	--	<120	--	--	--	--	--	
8/26/1997	--	--	<120	--	--	--	--	--	
11/5/1997	--	--	<40	--	--	--	--	--	
2/18/1998	--	--	130	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-2 Cont.									
5/20/1998	--	--	<120	--	--	--	--	--	
7/30/1998	--	--	<120	--	--	--	--	--	
10/29/1998	--	--	<3	--	--	--	--	--	
3/16/1999	--	--	60	--	--	--	--	--	
5/5/1999	--	--	17	--	--	--	--	--	
8/26/1999	--	--	26	--	--	--	--	--	
12/3/1999	--	--	<3	--	--	--	--	--	
3/13/2000	--	--	<3	--	--	--	--	--	
6/20/2000	--	--	<2.50	--	--	--	--	--	
8/31/2000	--	--	<2.50	--	--	--	--	--	
9/17/2001	--	--	120	--	--	--	--	--	
7/19/2002	--	--	16	--	--	--	--	--	
7/9/2003	<1,000	<200	39	<5.0	<5.0	<5.0	<5.0	<5.0	
08/04/2004	<2,000	<400	78	<10	<10	<10	<10	<10	
07/15/2005	<500	120	46	<2.5	<2.5	<2.5	<2.5	<2.5	
7/21/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/18/2007	<600	89	45	<1.0	<1.0	<1.0	<1.0	<1.0	
7/7/2008	--	<100	19	<5.0	<5.0	<5.0	<5.0	--	
9/9/2010	<600	41	13	<1.0	<1.0	<1.0	<1.0	<1.0	
7/7/2011	**<300**	**<10**	**6.2**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-3									
8/23/1995	--	--	<3	--	--	--	--	--	
2/20/1996	--	--	<3	--	--	--	--	--	
5/15/1996	--	--	<0.5	--	--	--	--	--	
8/13/1996	--	--	<3	--	--	--	--	--	
11/13/1996	--	--	<3	--	--	--	--	--	
3/26/1997	--	--	<3	--	--	--	--	--	
5/15/1997	--	--	<3	--	--	--	--	--	
8/26/1997	--	--	<3	--	--	--	--	--	
11/5/1997	--	--	<3	--	--	--	--	--	
2/18/1998	--	--	<3	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-3 Cont.									
5/20/1998	--	--	<3	--	--	--	--	--	
7/30/1998	--	--	<3	--	--	--	--	--	
10/29/1998	--	--	<3	--	--	--	--	--	
3/16/1999	--	--	<3	--	--	--	--	--	
5/5/1999	--	--	<3	--	--	--	--	--	
8/26/1999	--	--	<3	--	--	--	--	--	
12/3/1999	--	--	<3	--	--	--	--	--	
3/13/2000	--	--	<3	--	--	--	--	--	
6/20/2000	--	--	<2.50	--	--	--	--	--	
MW-4									
8/23/1995	--	--	<100	--	--	--	--	--	
2/20/1996	--	--	<70	--	--	--	--	--	
3/26/1997	--	--	<70	--	--	--	--	--	
2/18/1998	--	--	120	--	--	--	--	--	
3/16/1999	--	--	82	--	--	--	--	--	
3/13/2000	--	--	<3	--	--	--	--	--	
8/31/2000	--	--	<2.50	--	--	--	--	--	
2/9/2001	--	--	<2.50	--	--	--	--	--	
9/17/2001	--	--	360	--	--	--	--	--	
1/21/2002	--	--	300	--	--	--	--	--	
7/19/2002	--	--	130	--	--	--	--	--	
1/15/2003	--	--	150	--	--	--	--	--	
7/9/2003	<1,000	750	150	<5.0	<5.0	<5.0	<5.0	<5.0	
02/19/2004	<1,000	630	180	<10	<10	<10	<5.0	<5.0	
08/04/2004	<2,000	1,300	300	<10	<10	<10	<10	<10	
01/18/2005	<1,000	630	160	<5.0	<5.0	<5.0	<5.0	<5.0	a
07/15/2005	<1,000	850	230	<5.0	<5.0	<5.0	<5.0	<5.0	
01/10/2006	<1,500	810	190	<2.5	<2.5	<2.5	<2.5	<2.5	
7/21/2006	<300	35	3.1	<0.50	<0.50	<0.50	<0.50	<0.50	
1/17/2007	<300	<20	11	<0.50	<0.50	<0.50	<0.50	<0.50	
7/18/2007	<300	830	74	<0.50	<0.50	<0.50	0.76	<0.50	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-4 Cont.									
1/15/2008	<300	280	61	<0.50	<0.50	<0.50	<0.50	<0.50	b (MTBE)
7/7/2008	--	19	17	<0.50	<0.50	<0.50	<0.50	--	
1/7/2009	--	74	37	<0.50	<0.50	<0.50	<0.50	<0.50	
7/22/2009	<300	580	63	0.85	<0.50	<0.50	<0.50	<0.50	
3/12/2010	<300	460	43	<0.50	<0.50	<0.50	<0.50	<0.50	
9/9/2010	<1,500	880	51	<2.5	<2.5	<2.5	<2.5	<2.5	
2/17/2011	<1200	430	33	<2.0	<2.0	<2.0	<2.0	<2.0	
7/7/2011	**<1,500**	**580**	**57**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	
MW-5									
8/23/1995	--	--	<300	--	--	--	--	--	
2/20/1996	--	--	<50	--	--	--	--	--	
5/15/1996	--	--	<40	--	--	--	--	--	
8/13/1996	--	--	47	--	--	--	--	--	
11/13/1996	--	--	66	--	--	--	--	--	
3/26/1997	--	--	68	--	--	--	--	--	
5/15/1997	--	--	48	--	--	--	--	--	
8/26/1997	--	--	9	--	--	--	--	--	
11/5/1997	--	--	34	--	--	--	--	--	
2/18/1998	--	--	320	--	--	--	--	--	
5/20/1998	--	--	62	--	--	--	--	--	
7/30/1998	--	--	<3	--	--	--	--	--	
10/29/1998	--	--	<3	--	--	--	--	--	
3/16/1999	--	--	120	--	--	--	--	--	
5/5/1999	--	--	19	--	--	--	--	--	
8/26/1999	--	--	150	--	--	--	--	--	
3/13/2000	--	--	<3	--	--	--	--	--	
6/20/2000	--	--	<2.50	--	--	--	--	--	
8/31/2000	--	--	3.83	--	--	--	--	--	
9/17/2001	--	--	330	--	--	--	--	--	
7/19/2002	--	--	180	--	--	--	--	--	
7/9/2003	<1,000	1,100	260	<5.0	<5.0	<5.0	<5.0	<5.0	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-5 Cont.									
08/04/2004	<1,000	850	250	<5.0	<5.0	<5.0	<5.0	<5.0	
07/15/2005	<1,000	720	270	<5.0	<5.0	<5.0	<5.0	<5.0	
7/21/2006	<3,000	<200	14	<5.0	<5.0	<5.0	<5.0	<5.0	
7/18/2007	<300	260	110	<0.50	<0.50	<0.50	<0.50	<0.50	
7/7/2008	--	<10	<0.50	<0.50	<0.50	<0.50	<0.50	--	
7/22/2009	<300	11	12	<0.50	<0.50	<0.50	<0.50	<0.50	
9/9/2010	<300	420	10	<0.50	<0.50	<0.50	<0.50	<0.50	
7/7/2011	**<300**	**350**	**4.6**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-6									
8/23/1995	--	--	<20	--	--	--	--	--	
2/20/1996	--	--	<30	--	--	--	--	--	
5/15/1996	--	--	<15	--	--	--	--	--	
8/13/1996	--	--	<20	--	--	--	--	--	
11/13/1996	--	--	16	--	--	--	--	--	
3/26/1997	--	--	<30	--	--	--	--	--	
5/15/1997	--	--	<12	--	--	--	--	--	
8/26/1997	--	--	<12	--	--	--	--	--	
11/5/1997	--	--	9	--	--	--	--	--	
2/18/1998	--	--	19	--	--	--	--	--	
5/20/1998	--	--	9	--	--	--	--	--	
7/30/1998	--	--	<15	--	--	--	--	--	
10/29/1998	--	--	<12	--	--	--	--	--	
3/16/1999	--	--	18	--	--	--	--	--	
5/5/1999	--	--	25	--	--	--	--	--	
8/26/1999	--	--	13	--	--	--	--	--	
12/3/1999	--	--	4	--	--	--	--	--	
3/13/2000	--	--	<3	--	--	--	--	--	
6/20/2000	--	--	<2.50	--	--	--	--	--	
8/31/2000	--	--	8.73	--	--	--	--	--	
2/9/2001	--	--	48.9	--	--	--	--	--	
2/9/2001	--	--	57.1	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-6 Cont.									
9/17/2001	--	--	<2.5	--	--	--	--	--	
9/17/2001	--	--	<2.5	--	--	--	--	--	
1/21/2002	--	--	<5.0	--	--	--	--	--	
7/19/2002	--	--	<0.50	--	--	--	--	--	
1/15/2003	--	--	1	--	--	--	--	--	
7/9/2003	<100	<20	0.98	<0.50	<0.50	<0.50	<0.50	<0.50	
08/04/2004	<100	<20	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	
07/15/2005	<500	110	32	<2.5	<2.5	<2.5	<2.5	<2.5	
7/21/2006	<300	<20	5.1	<0.50	<0.50	<0.50	<0.50	<0.50	
7/18/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/7/2008	--	<10	<0.50	<0.50	<0.50	<0.50	<0.50	--	
7/22/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/9/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/7/2011	**<300**	**19**	**8.0**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
MW-7									
8/23/1995	--	--	350	--	--	--	--	--	
2/20/1996	--	--	<400	--	--	--	--	--	
3/26/1997	--	--	<300	--	--	--	--	--	
2/18/1998	--	--	240	--	--	--	--	--	
3/16/1999	--	--	<120	--	--	--	--	--	
8/31/2000	--	--	202	--	--	--	--	--	
2/9/2001	--	--	128	--	--	--	--	--	
9/17/2001	--	--	160	--	--	--	--	--	
1/21/2002	--	--	97	--	--	--	--	--	
1/21/2002	--	--	99	--	--	--	--	--	
7/19/2002	--	--	64	--	--	--	--	--	
1/15/2003	--	--	91	--	--	--	--	--	
7/9/2003	<1,000	350	110	<5.0	<5.0	<5.0	<5.0	<5.0	
02/19/2004	<1,000	420	100	<10	<10	<10	<5.0	<5.0	
08/04/2004	<5,000	<1,000	140	<25	<25	<25	<25	<25	
01/18/2005	<1,000	260	87	<5.0	<5.0	<5.0	<5.0	<5.0	a

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-7 Cont.									
07/15/2005	<5,000	<1,000	150	<25	<25	<25	<25	<25	
01/10/2006	<30,000	<2,000	120	<50	<50	<50	<50	<50	
7/21/2006	<30,000	<2,000	54	<50	<50	<50	<50	<50	
1/17/2007	<1,500	<100	3.1	<2.5	<2.5	<2.5	<2.5	<2.5	
7/18/2007	<600	220	67	<1.0	<1.0	<1.0	<1.0	<1.0	
1/15/2008	<1,500	<100	26	<2.5	<2.5	<2.5	<2.5	<2.5	
7/7/2008	--	<10	0.69	<0.50	<0.50	<0.50	<0.50	--	
1/7/2009	--	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/22/2009	<300	<10	0.53	<0.50	<0.50	<0.50	<0.50	<0.50	
3/12/2010	<300	51	11	<0.50	<0.50	<0.50	<0.50	<0.50	
9/9/2010	<300	180	110	<0.50	<0.50	<0.50	<0.50	<0.50	
7/7/2011	**<3,000**	**390**	**150**	**<5.0**	**<5.0**	**<5.0**	**<5.0**	**<5.0**	
MW-8									
8/23/1995	--	--	<3	--	--	--	--	--	
2/20/1996	--	--	<3	--	--	--	--	--	
8/13/1996	--	--	<3	--	--	--	--	--	
3/26/1997	--	--	<3	--	--	--	--	--	
8/26/1997	--	--	<3	--	--	--	--	--	
2/18/1998	--	--	<3	--	--	--	--	--	
7/30/1998	--	--	<3	--	--	--	--	--	
3/16/1999	--	--	<3	--	--	--	--	--	
8/26/1999	--	--	<3	--	--	--	--	--	
3/13/2000	--	--	<3	--	--	--	--	--	
MW-9									
8/23/1995	--	--	<3	--	--	--	--	--	
2/20/1996	--	--	<3	--	--	--	--	--	
3/26/1997	--	--	<3	--	--	--	--	--	
2/18/1998	--	--	<3	--	--	--	--	--	
3/16/1999	--	--	<3	--	--	--	--	--	
3/13/2000	--	--	<3	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-10									
8/23/1995	--	--	<3	--	--	--	--	--	
2/20/1996	--	--	<3	--	--	--	--	--	
3/26/1997	--	--	<3	--	--	--	--	--	
3/16/1999	--	--	<3	--	--	--	--	--	
MW-11									
8/23/1995	--	--	<3	--	--	--	--	--	
2/20/1996	--	--	<3	--	--	--	--	--	
8/13/1996	--	--	<3	--	--	--	--	--	
3/26/1997	--	--	<3	--	--	--	--	--	
8/26/1997	--	--	<3	--	--	--	--	--	
2/18/1998	--	--	<3	--	--	--	--	--	
7/30/1998	--	--	<3	--	--	--	--	--	
3/16/1999	--	--	<3	--	--	--	--	--	
8/26/1999	--	--	<3	--	--	--	--	--	
3/13/2000	--	--	<3	--	--	--	--	--	
8/31/2000	--	--	<2.50	--	--	--	--	--	
8/31/2000	--	--	<2.50	--	--	--	--	--	
9/17/2001	--	--	<2.5	--	--	--	--	--	
7/19/2002	--	--	<0.50	--	--	--	--	--	
7/9/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/04/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
07/15/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/21/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/18/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/7/2008	--	<10	<0.50	<0.50	<0.50	<0.50	<0.50	--	
7/22/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/9/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/7/2011	**<300**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
RW-1									
8/23/1995	--	--	<50	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
RW-1 Cont.									
2/20/1996	--	--	<40	--	--	--	--	--	
3/26/1997	--	--	54	--	--	--	--	--	
2/18/1998	--	--	<60	--	--	--	--	--	
3/16/1999	--	--	530	--	--	--	--	--	
3/13/2000	--	--	230	--	--	--	--	--	
8/31/2000	--	--	82.5	--	--	--	--	--	
2/9/2001	--	--	<2.50	--	--	--	--	--	
9/17/2001	--	--	<2.5	--	--	--	--	--	
1/21/2002	--	--	18	--	--	--	--	--	
7/19/2002	--	--	13	--	--	--	--	--	
1/15/2003	--	--	1.5	--	--	--	--	--	
7/9/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
02/19/2004	<100	<20	<0.50	<1.0	<1.0	<1.0	<0.50	<0.50	
08/04/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
01/18/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
07/15/2005	<100	<20	2.0	<0.50	<0.50	<0.50	<0.50	<0.50	
01/10/2006	<300	<20	0.54	<0.50	<0.50	<0.50	<0.50	<0.50	
1/17/2007	<1,500	<100	2.6	<2.5	<2.5	<2.5	<2.5	<2.5	
7/18/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
1/15/2008	<300	<20	8.3	<0.50	<0.50	<0.50	<0.50	<0.50	
7/7/2008	--	<10	0.53	<0.50	<0.50	<0.50	<0.50	--	
1/7/2009	--	<10	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	
7/22/2009	<300	12	0.84	<0.50	<0.50	<0.50	<0.50	<0.50	
3/12/2010	<300	13	2.7	<0.50	<0.50	<0.50	<0.50	<0.50	
9/9/2010	<300	<10	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
2/17/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/7/2011	**<300**	**<10**	**2.2**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
VW-1									
8/31/2000	--	--	<2.50	--	--	--	--	--	
2/9/2001	--	--	<2.50	--	--	--	--	--	
9/17/2001	--	--	<2.5	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
VW-1 Cont.									
1/21/2002	--	--	<5.0	--	--	--	--	--	
7/19/2002	--	--	<0.50	--	--	--	--	--	
1/15/2003	--	--	<0.50	--	--	--	--	--	
7/9/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/04/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
07/15/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/21/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/18/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/7/2008	--	<10	<0.50	<0.50	<0.50	<0.50	<0.50	--	
7/22/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/9/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/17/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
7/7/2011	**<300**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	

Symbols & Abbreviations:
-- = Not analyzed/sampled
< = Not detected at or above specified laboratory reporting limit
1,2-DCA = 1,2-Dichloroethane
DIPE = Di-isopropyl ether
EDB = 1,2-Dibromoethane
ETBE = Ethyl tert-butyl ether
MTBE = Methyl tert-butyl ether
µg/L = Micrograms per liter
TAME = tert-Amyl methyl ether
TBA = tert-Butyl alcohol

Footnotes:
a = Calibration verification was within the method limits but outside the contract limits for ethanol
b = Sample >4x spike concentration

Notes:
The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information

Table 3. Historical Groundwater Gradient - Direction and Magnitude

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
3/20/1995	Northwest	0.030
6/2/1995	North-Northwest	0.014
8/23/1995	North-Northwest	0.030
12/4/1995	North-Northwest	0.030
2/20/1996	Northwest	0.016
5/15/1996	Northwest	0.024
8/13/1996	North-Northwest	0.030
11/13/1996	North-Northwest	0.031
3/26/1997	North-Northwest	0.044
5/15/1997	North-Northwest	0.031
8/26/1997	North-Northwest	0.042
11/5/1997	North-Northwest	0.030
2/18/1998	Northwest	0.010
5/20/1998	Northwest	0.030
7/30/1998	North	0.040
10/29/1998	North	0.005
3/16/1999	North-Northwest	0.030
5/5/1999	North	0.040
8/26/1999	North-Northwest	0.050
12/3/1999	North-Northeast	0.060
3/13/2000	North-Northwest	0.066
6/20/2000	North-Northwest	0.050
8/31/2000	North-Northwest	0.062
2/9/2001	North-Northeast	0.014
9/17/2001	North-Northwest	0.061
1/21/2002	North-Northwest	0.050
7/19/2002	North-Northwest	0.044
1/15/2003	Northeast to Southeast	0.038 - 0.016
7/9/2003	Northwest to North-Northwest	0.009 - 0.063
2/19/2004	North	0.044
8/4/2004	Northeast	0.071
1/18/2005	North-Northeast	0.04
7/15/2005	Northeast and Southwest	0.05 and 0.02
1/10/2006	North	0.02
7/21/2006	North and Southwest	0.05 and 0.02
1/17/2007	North-Northeast and Southwest	0.03 and 0.02
7/18/2007	North-Northeast to Southwest	0.03 and 0.04
1/15/2008	North	0.04
7/7/2008	North	0.03
1/7/2009	North	0.06
7/22/2009	North	0.04
3/12/2010	North	0.05

Table 3. Historical Groundwater Gradient - Direction and Magnitude

ARCO Service Station #0771, 899 Rincon Ave., Livermore, CA

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
9/9/2010	North	0.04
2/17/2011	North	0.03
7/7/2011	**North**	**0.04**

Notes:
The data within this table collected prior to April 2006 was provided to Broadbent & Associates, Inc. by Atlantic Richfield Company and their previous consultants. Broadbent & Associates, Inc. has not verified the accuracy of this information

Table 2. Summary of Groundwater Sample Analytical Data
Station #771, 899 Rincon Avenue, Livermore, California

Sample ID*	Sample Depth (ft. bgs)	Date Collected	GRO µg/L	Benzene µg/L	Toluene µg/L	Ethylbenzene µg/L	Xylenes µg/L	MTBE µg/L	Comments
SB-2									
	30 - 35	3/25/2011	<50	<0.50	<0.50	<0.50	<0.50	<0.50	
SB-3									
	30 - 35	3/25/2011	**81**	<0.50	<0.50	<0.50	<0.50	**3.8**	LW
ESLs	--	--	100	1.0	40	30	20	5	

Abbreviations & Symbols:

* = See Drawing 2 for soil boring locations.

GRO: Gasoline range organics.

Calscience Environmental Laboratories, Inc.: GRO (C6-C12)

GRO analyzed using EPA method 8015B

Benzene, Toluene, Ethylbenzene, Total Xylenes, and MTBE analyzed using EPA method 8260B.

µg/L = Micrograms per liter.

ESLs = Environmental Screening Levels where groundwater is a current or potential source of drinking water (San Francisco Bay Regional Water Quality Control Board, 2008).

bgs = Below ground surface

Footnotes:

LW = Quantitation of unknown hydrocarbon(s) in sample based on gasoline.

Notes:

1,2-dibromoethane (EDB), 1,2-dichloroethane (1,2 DCA), tert-butyl alcohol (TBA), Di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), ter-amyl methyl ether (TAME), and ethanol were not detected at or above their respective laboratory reporting limit.

APPENDIX B

SOIL BORING LOGS WITH GEOLOGIC CROSS-SECTIONS

Total depth of boring: 35 feet **Diameter of boring:** 6 inches **Date drilled:** 2/1/90

Casing diameter: N/A **Length:** N/A **Slot size:** N/A

Screen diameter: N/A **Length:** N/A **Material type:** N/A

Drilling Company: Bakersfield Well & Pump **Driller:** Sid & Tom

Method Used: Hollow-Stem Auger **Field Geologist:** Steve Bittman

Signature of Registered Professional:

Registration No.: **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0						
					Asphalt (6 inches).	
2				GW	Sandy gravel with clay, brown, damp, dense with subrounded gravel.	
4		7				
		10				
6	S-5	19	0			
8						
		16				
10		27				
	S-10	39	2.4		Moist, very dense, noticeable odor.	
12						
14		27				
	S-14.5	45	20			
16						
18						
		31			Obvious odor.	
20	S-19.5	50+	200			
					(Section continues downward)	

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PROJECT 60000-1

LOG OF BORING B - 1

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 4

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				GW	Sandy gravel with clay, brown, moist, very dense, obvious odor.	
24	S-24.5	27 50+	800			
26						
28					Increase clay.	
30	S-29.5	31 50+	20			
32				▽		
34	S-34.5	36 50+	100			
36					Total Depth = 35 feet.	
38						
40						
42						
44						
46						
48						
50						

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PROJECT 60000-1

LOG OF BORING B - 1

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 5

Total depth of boring: 31.5 feet **Diameter of boring:** 6 inches **Date drilled:** 2/1/90

Casing diameter: N/A **Length:** N/A **Slot size:** N/A

Screen diameter: N/A **Length:** N/A **Material type:** N/A

Drilling Company: Bakersfield Well & Pump **Driller:** Sid & Tom

Method Used: Hollow-Stem Auger **Field Geologist:** Steve Bittman

Signature of Registered Professional:

Registration No.: **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (6 inches).	
2				GW	Sandy gravel with clay, brown, damp, dense with subrounded gravel.	
4		10 17				
6	S-5	20	5		Noticeable odor.	
8						
10	S-10	11 17 29	0			
12						
14		17 20	10		Gray.	
16	S-15	15				
18				CL	Sandy clay, gray, moist, low to medium plasticity, stiff, noticeable odor.	
20	S-20	20 41 50+	210	GC	Clayey gravel with sand, gray-brown, moist, very dense with subangular gravel, obvious odor.	

(Section continues downward)

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PROJECT 60000-1

LOG OF BORING B - 2

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 6

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				GC	Clayey gravel with sand, gray–brown, moist, very dense with subangular gravel, obvious odor.	
24		21				
		37				
	S–25	50+	35			
26						
28						
30		7				
		15		CL	Gravelly clay, brown, moist, subangular gravel, medium plasticity, hard.	
	S–31	40	2			
32					Total Depth = 31–1/2 feet.	
34						
36						
38						
40						
42						
44						
46						
48						
50						

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PROJECT 60000-1

LOG OF BORING B - 2

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 7

Total depth of boring: 32.5 feet **Diameter of boring:** 6 inches **Date drilled:** 2/1/90

Casing diameter: N/A **Length:** N/A **Slot size:** N/A

Screen diameter: N/A **Length:** N/A **Material type:** N/A

Drilling Company: Bakersfield Well & Pump **Driller:** Sid & Tom

Method Used: Hollow-Stem Auger **Field Geologist:** Steve Bittman

Signature of Registered Professional:

Registration No.: **State:** CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (6 inches).	
2				GW	Sandy gravel with clay, brown, damp, medium dense with subrounded gravel.	
4		6 8				
6	S-5	9	0			
8						
10		24 37				
12	S-10	25	0		Very dense.	
14		41				
16	S-14.5	50+	2		Moist.	
18						
20		27		GC	Clayey gravel with sand, gray-brown, moist, very dense with subangular gravel, noticeable odor.	
	S-19.5	50+	110		(Section continues downward)	

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PROJECT 60000-1

LOG OF BORING B - 3

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 8

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
				GC	Clayey gravel with sand, gray–brown, moist, very dense with subangular gravel, noticeable odor.	
22						
24		25				
	S–25	50+	240		Obvious odor.	
26						
28						
		24				
30		45				
	S–30	45	700			
		30				
		41				
32	S–32	50	720		Obvious odor.	
					Total Depth = 32–1/2 feet.	
34						
36						
38						
40						
42						
44						
46						
48						
50						

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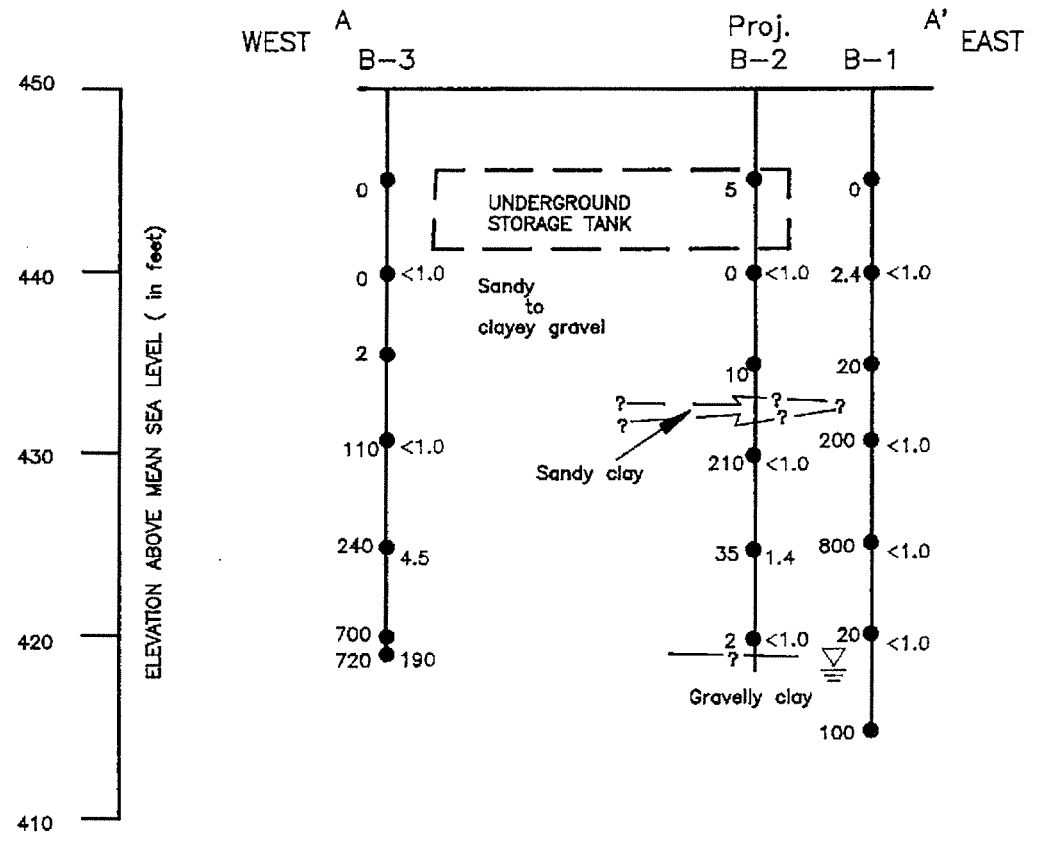
PROJECT 60000-1

LOG OF BORING B - 3

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 9



EXPLANATION

190 = Laboratory analyzed soil sample showing concentration of TPH as gasoline in ppm

800 = Field organic vapor measurement

= Boring

= Initial water level in boring

Approximate Horizontal and Vertical Scale

10 5 0 10 20

feet

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PROJECT 60000-1

GEOLOGIC CROSS SECTION A - A'
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
10

Depth of boring: 46-1/2 feet Diameter of boring: 10 inches Date drilled: 12-10-90

Well depth: 41 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 32 to 41 feet Slot size: 0.020-inch

Drilling Company: Kvilhaug Drilling Co. Driller: Rod and Brian

Method Used: Hollow-Stem Auger Field Geologist: Mike Barminski

Signature of Registered Professional: _____

Registration No.: CE 044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches).	
2				CL	Gravelly clay with sand, dark brown, moist, low to medium plasticity, hard.	
4	S-5	12 18 27	6.5			
6						
8				GW	Sandy gravel with clay, brown, moist, very dense.	
10	S-10	7 22 40	0			
12						
14						
16	S-15	25 50	0			
18						
20	S-20	30 50	4.2		Noticeable product odor.	
					(Section continues downward)	

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PROJECT: 60000-4

LOG OF BORING B-4/MW-1

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 5

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				GW	Sandy gravel with clay, brown, moist, very dense; noticeable product odor.	
24	S-25					
26	S-26.5	30 50 50	4.6			
28						
30	S-30	30 50 50	0	GC	Clayey gravel with sand, brown, moist, very dense.	
32	S-32.5	30				
	S-33	50 50	2.8	▼	12/12/90	
34	S-35	50 50	0		Very moist.	
36	S-36.5	40 50 50	0	▽		
	S-37.5	40				
38	S-38	50 50	2669	GW	Sandy gravel with clay, brown, moist, very dense; obvious product odor.	
40	S-40					
42				CL	Sandy clay, brown, moist, medium to low plasticity, hard; obvious product odor.	
	S-43	15 20 30	187.8			
44						
	S-45.5	15 25			Damp, noticeable product odor.	
46	S-46	35	27.1	SC	Clayey sand with pebbles to 1/8", brown, moist, very dense	
					Total Depth = 46-1/2 feet.	
48						
50						

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PROJECT 60000-4

LOG OF BORING B-4/MW-1
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 6

Depth of boring: 45-1/2 feet Diameter of boring: 10 inches Date drilled: 12-10-90

Well depth: 38 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 30 to 38 feet Slot size: 0.020-inch

Drilling Company: Kvilhaug Drilling Co. Driller: Rod and Brian

Method Used: Hollow-Stem Auger Field Geologist: Mike Barminski

Signature of Registered Professional: _____

Registration No.: CE 044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches).	
				GW	Sandy gravel with clay, brown, damp, dense.	
2						
4	S-5	10 38 50	0		Very dense.	
6						
8						
10	S-10	50 50	0.9		Moist.	
12	S-11.5	50 50	0			
14					Smoother drilling at 14 feet.	
	S-15	35 50 50	0	CL	Sandy clay, gray, very moist, low to medium plasticity, hard.	
16					Rougher drilling at 16 feet.	
				GW	Sandy gravel with clay, brown, very moist, very dense; noticeable product odor?	
18						
20	S-20	30 50 50	4.6			

(Section continues downward)

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PROJECT: 60000-4

LOG OF BORING B-5/MW-2

ARCO Station 771
899 Rincon Avenue
Livemore, California

PLATE 7

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
				GW	Sandy gravel with clay, brown, very moist, very dense; noticeable product odor?	
				GC	Clayey gravel with sand, brown, moist, very dense.	
22						
24	S-25	25 50 50	0			
26						
28						
30	S-30	25 50 50	0			
				▼	12/12/90	
32		30 50		GW	Sandy gravel with clay, brown, very moist, very dense.	
	S-33	50	0			
34		45 50				
	S-34.5	50	0			
		30		▽		
36	S-36	50	3700	GW	Sandy gravel with clay, brown, wet, very dense; obvious product odor.	
38						
		12 17		CL	Sandy clay, brown, moist, medium plasticity, hard; obvious product odor.	
40	S-40	45	500			
42						
44						
	S-45	12 20 50	4.6			
46					Total Depth = 45-1/2 feet.	
48						
50						

Applied GeoSystems

PROJECT 60000-4

LOG OF BORING B-5/MW-2
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 8

Depth of boring: 45 feet Diameter of boring: 10 inches Date drilled: 12-11-90

Well depth: 40 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 32 to 40 feet Slot size: 0.020-inch

Drilling Company: Kvilhaug Drilling Co. Driller: Rod and Brian

Method Used: Hollow-Stem Auger Field Geologist: Mike Barminski

Signature of Registered Professional: _____

Registration No.: CE 044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches).	
				GC	Clayey gravel with sand, brown, damp, very dense.	
2						
4	S-5	30 30 45	0			
6						
8						
10	S-10	50 50	0		Moist.	
12				GW	Sandy gravel with clay, brown, moist, very dense.	
14						
	S-15	45 50	0			
16						
18						
20	S-20	25 40	0			

(Section continues downward)

Applied GeoSystems

PROJECT: 60000-4

LOG OF BORING B-6/MW-3

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 9

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				GW	Sandy gravel with clay, brown, moist, very dense.	
24	S-25	35 50	6.8		Clayier.	
26						
28				GC	Clayey gravel with sand, brown, moist, very dense.	
30	S-29.5 S-30	35 35 35	4.2			
32					12/12/90	
34	S-34.5	50 50	2.8	GW	Sandy gravel with clay, brown, moist, very dense.	
36	S-36.5	14 35 50	3.1			
38	S-38	20 50 50	?		Wet.	
40	S-40.5 S-41	12 15 20	2.8	CL	Sandy clay, brown, moist, low to medium plasticity, hard.	
42						
44	S-44.5	10 18 20	3.2			
46					Total Depth = 45 feet.	
48						
50						

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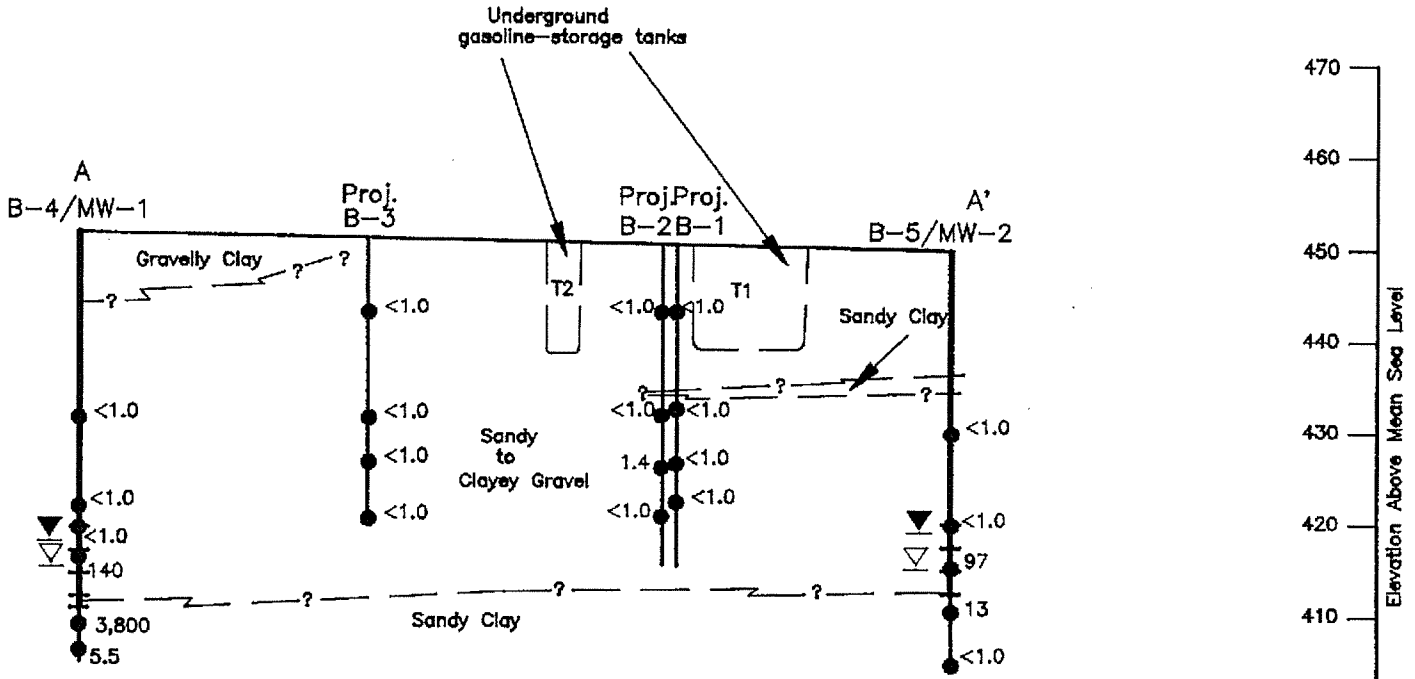
PROJECT 60000-4

LOG OF BORING B-6/MW-3
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
10



EXPLANATION

3,800 = Laboratory analyzed soil sample showing concentration of TPHg (red) in parts per million

= Well casing

= Well screen

= Boring

= Initial water level in boring

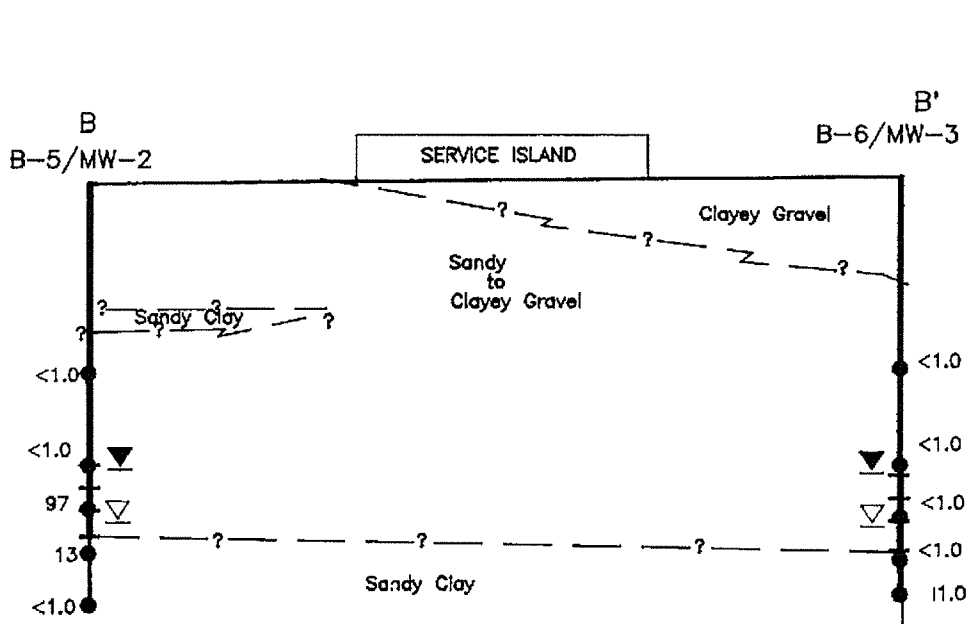
= Static water level in well

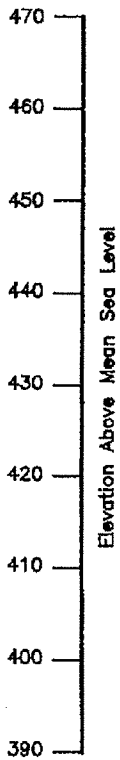
Approximate Horizontal and Vertical Scale

20 10 0 20 40

feet

PLATE 11	GEOLOGIC CROSS SECTION A - A' ARCO Station 771 899 Rincon Avenue Livermore, California	Applied GeoSystems PROJECT 60000-4





EXPLANATION

97 = Laboratory analyzed soil sample showing concentration of TPHg (red) in parts per million

= Well casing

= Well screen

= Boring

= Initial water level in boring

= Static water level in well

Approximate Horizontal and Vertical Scale

20 10 0 20 40

feet

PLATE 12	GEOLOGIC CROSS SECTION B - B' ARCO Station 771 899 Rincon Avenue Livermore, California	Applied GeoSystems PROJECT 60000-4

Depth of boring: 46-1/2 feet Diameter of boring: 10 inches Date drilled: 6-28-91

Well depth: 42 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 26 to 42 feet Slot size: 0.020-inch

Drilling Company: Exceltech Driller: Don & Kenny

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional:

Registration No.: CE044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0						
				SW	Sand, with small gravel, yellow, damp, loose: fill.	
2				GW	Sandy gravel with cobbles, brown, damp, medium dense: fill.	
				GW	Sandy gravel with clay, brown, damp, medium dense.	
4		3				
	S-5.5	4	0			
6		10				
8						
		18				
10	S-10	16	0		Moist, dense.	
		21				
12						
14		18				
	S-15	21	0		Gray, very moist.	
		28				
16					Noticeable product odor.	
18						
		18				
20	S-20	26	82		Very dense.	
		35			(Section continues downward)	

RESNA

PROJECT: 60000.06

LOG OF BORING B-7/MW-4

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 4

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				GW	Sandy gravel with clay, brown, moist, very dense; noticeable product odor.	
24	S-25	19 21 27	131	GC	Clayey gravel with sand, brown, moist, dense; obvious product odor.	
26						
28						
30	S-30	20 15 15	748	GW	Sandy gravel with clay, brown, moist, medium dense; obvious product odor.	
32	S-31.5	20 26	1206	CL	Sandy clay, brown, moist, medium plasticity, hard; obvious product odor.	
	S-33	40 50/5		GW	Sandy gravel with clay, brown, moist, very dense; obvious product odor.	
	S-33.5	50/6	741			
34	S-34.5	36 39 45	103 20		▽ Wet.	
36						
38						
40	S-40	37 50/5	15			
42		8				
	S-42.5	13 15	17	CL	Sandy clay, brown, damp, medium plasticity, very stiff.	
44	S-44	7 9 12	10			
	S-45.5	7 8	8			
46		13				
					Total Depth = 46-1/2 feet.	
48						
50						

RESNA

PROJECT 60000.06

LOG OF BORING B-7/MW-4

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 5

Depth of boring: 45–1/2 feet Diameter of boring: 10 inches Date drilled: 7–2–91

Well depth: 41 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 31–1/2 to 41 feet Slot size: 0.020–inch

Drilling Company: Exceltech Driller: Dan, Kenny, and Adam

Method Used: Hollow–Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional:

Registration No.: CE 044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches).	
2				GW	Sandy gravel, dark brown, damp, medium dense; fill.	
4				GW	Sandy gravel with clay, brown, damp, medium dense; gravel up to 3–inches diameter.	
6	S–5.5	7 8 13	3.4			
8						
10	S–10.5	12 30 37	9.6		More sand, moist, very dense.	
12						
14						
16	S–15.5	12 13 20	0		Dense.	
18						
20	S–20.5	18 19 22	34		More clay.	

(Section continues downward)

RESNA

PROJECT: 60000.06

LOG OF BORING B–8/MW–5

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 6

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				GW	Sandy gravel with clay, brown, moist, dense.	
24				GC	Clayey gravel with sand, brown, moist, very dense.	
26	S-25.5	20 30 30	37			
28						
30	S-30.5	5 6 11	0	CL	Sandy clay with small gravel, brown, moist, medium plasticity, very stiff.	
32				SC	Clayey sand with small gravel, brown, moist, medium dense.	
34	S-34.5	35 30	364	GW	Sandy gravel with clay, brown, moist, very dense; obvious product odor.	
36	S-36	40 25 39	35		Noticeable product odor.	
38		26 17 29 33	27	▽	Wet.	
40						
42	S-41	11 12 18	305	CL	Sandy clay, brown, moist, medium plasticity, very stiff; obvious product odor.	
44	S-43	8 9 13	49			
46		5 8 13			Total Depth = 45-1/2 feet.	
48						
50						

RESNA

PROJECT 60000.06

LOG OF BORING B-8/MW-5

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 7

Depth of boring: 47-1/2 feet Diameter of boring: 10 inches Date drilled: 7-1-91

Well depth: 42-1/2 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 32-1/2 to 42-1/2 feet Slot size: 0.020-inch

Drilling Company: Exceltech Driller: Don & Kenny

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional:

Registration No.: CE 044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches).	
				GW	Sandy gravel, brown, dry, loose: fill.	
2				GC	Clayey gravel with sand, dark brown, damp, dense.	
4				GW	Sandy gravel with clay, brown, damp, dense; gravel up to 2-inches diameter.	
6	S-5.5	10 17 15	0			
8						
10	S-10.5	20 36 45	0		Very dense.	
12						
14						
16	S-15.5	15 16 16	0		Moist, dense.	
18						
20	S-20	17 50/1	0		Gravel up to 3-inches diameter.	
					(Section continues downward)	

RESNA

PROJECT: 60000.06

LOG OF BORING B-9/MW-6

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 8

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				GW	Sandy gravel with clay, brown, dense; gravel up to 3-inches diameter.	
24					More clay.	
26	S-25.5	18 27 50/1	0			
28				GC	Clayey gravel with sand, brown, moist, dense.	
30	S-30.5	15 34 28	0	GW	Sandy gravel with clay, brown, moist, very dense.	
32						
34	S-34.5	32 44 50	0			
36	S-36	36 49 40	0	▽	Wet.	
38		19 18 30	0			
40	S-40.5	30 33 28	0			
42	S-42	10 16 8	19	CL	Sandy clay, brown, moist, medium plasticity, stiff.	
44	S-43.5	4 6 9	0			
46	S-45	6 11 14	0			
48		6 11 13	0		Total Depth = 47-1/2 feet.	
50						

RESNA

PROJECT 60000.06

LOG OF BORING B-9/MW-6

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 9

Depth of boring: 44-1/2 feet Diameter of boring: 10 inches Date drilled: 7-2-91

Well depth: 40 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 30 to 40 feet Slot size: 0.020-inch

Drilling Company: Exceltech Driller: Don, Kenny, and Adam

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional: [signature]

Registration No.: CE 044600 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0						
					Asphalt (4 inches).	
2				GW	Sandy gravel, dark brown, damp, medium dense: fill.	
4				GW	Sandy gravel with clay, brown, damp, medium dense; gravel up to 3-inches diameter.	
6	S-5.5	6 7 8	0			
8						
10	S-10.5	19 20 29	0		Moist, dense.	
12						
14						
16		35 50/1				
18						
20	S-20.5	17 35 43	152		Very dense; obvious product odor.	
					(Section continues downward)	

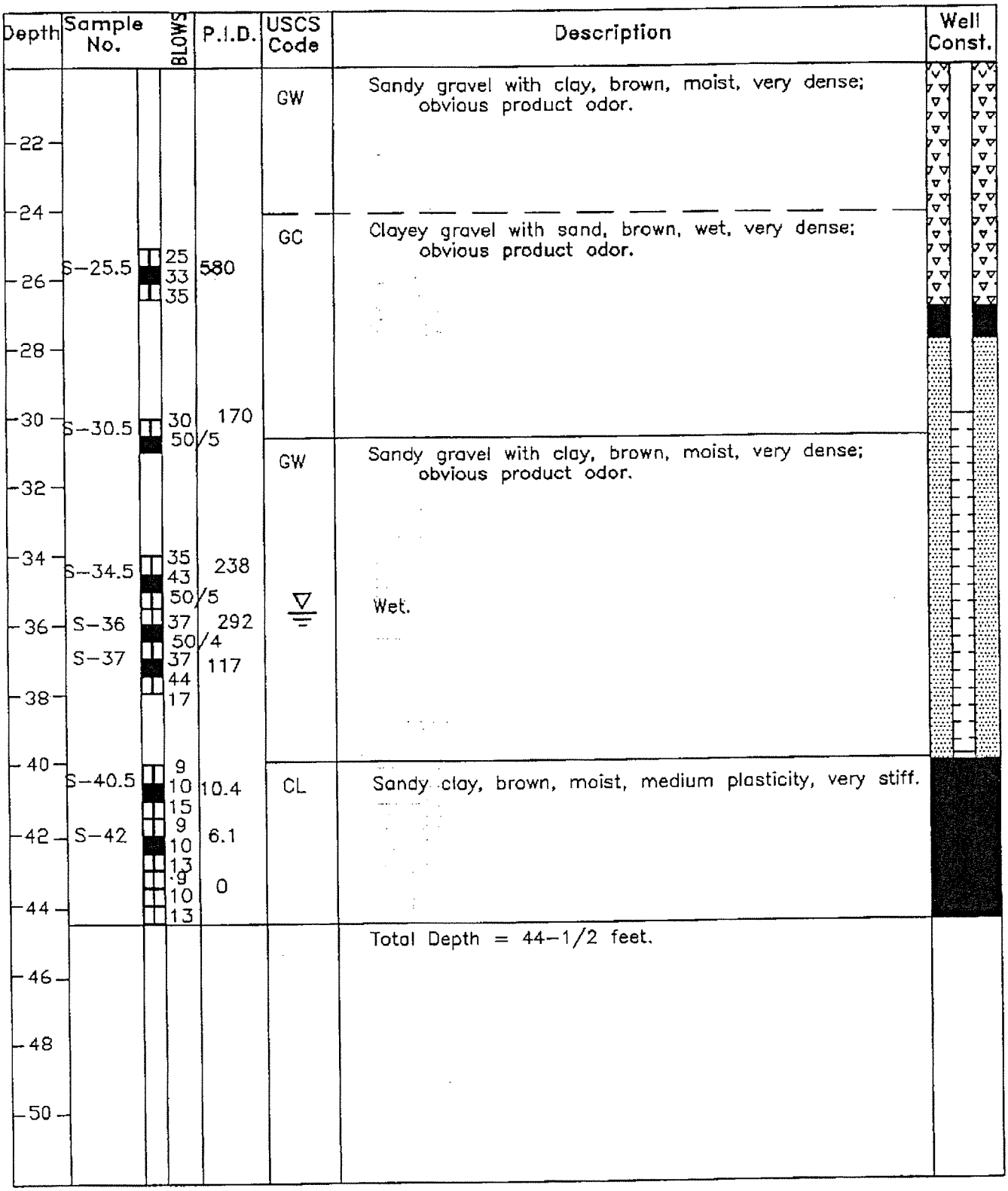
RESNA

PROJECT: 60000.06

LOG OF BORING B-10/MW-7

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 10



RESNA

PROJECT 60000.06

LOG OF BORING B-10/MW-7

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 11

Depth of boring: 40-1/2 feet Diameter of boring: 8 inches Date drilled: 7-1-91

Well depth: NA Material type: NA Casing diameter: NA

Screen interval: NA Slot size: NA

Drilling Company: Exceltech Driller: Don, Kenny

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional: _____

Registration No.: _____ State: _____

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches).	
2				GW	Sandy gravel, dark brown, damp, medium dense: fill.	
4						
6	S-7	12 17	0		With clay, brown, dense.	
8		17 16				
	S-8.5	12 26	0			
10		15 26	0		Very dense.	
12		50 50/3				
14				GW	Sandy gravel with clay, brown, damp, dense.	
	S-15.5	32 36			Moist.	
16		36	0			
18						
20	S-20.5	23 30	0			
		33			(Section continues downward)	

RESNA

PROJECT: 60000.06

LOG OF BORING B-11

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 12

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				GW	Sandy gravel with clay, brown, moist, very dense.	
24						
26	S-25	25 50/5	3.4		More clay.	
28				GC	Clayey gravel with sand, brown, moist, dense.	
30	S-30.5	14 10 10	0	GW	Sandy gravel with clay, brown, moist, medium dense.	
32						
34						
36	S-35.5	40 50/5	0		Very dense.	
38				▽	Wet.	
40	S-40	50/5	0			
42					Total Depth = 40-1/2 feet.	
44						
46						
48						
50						

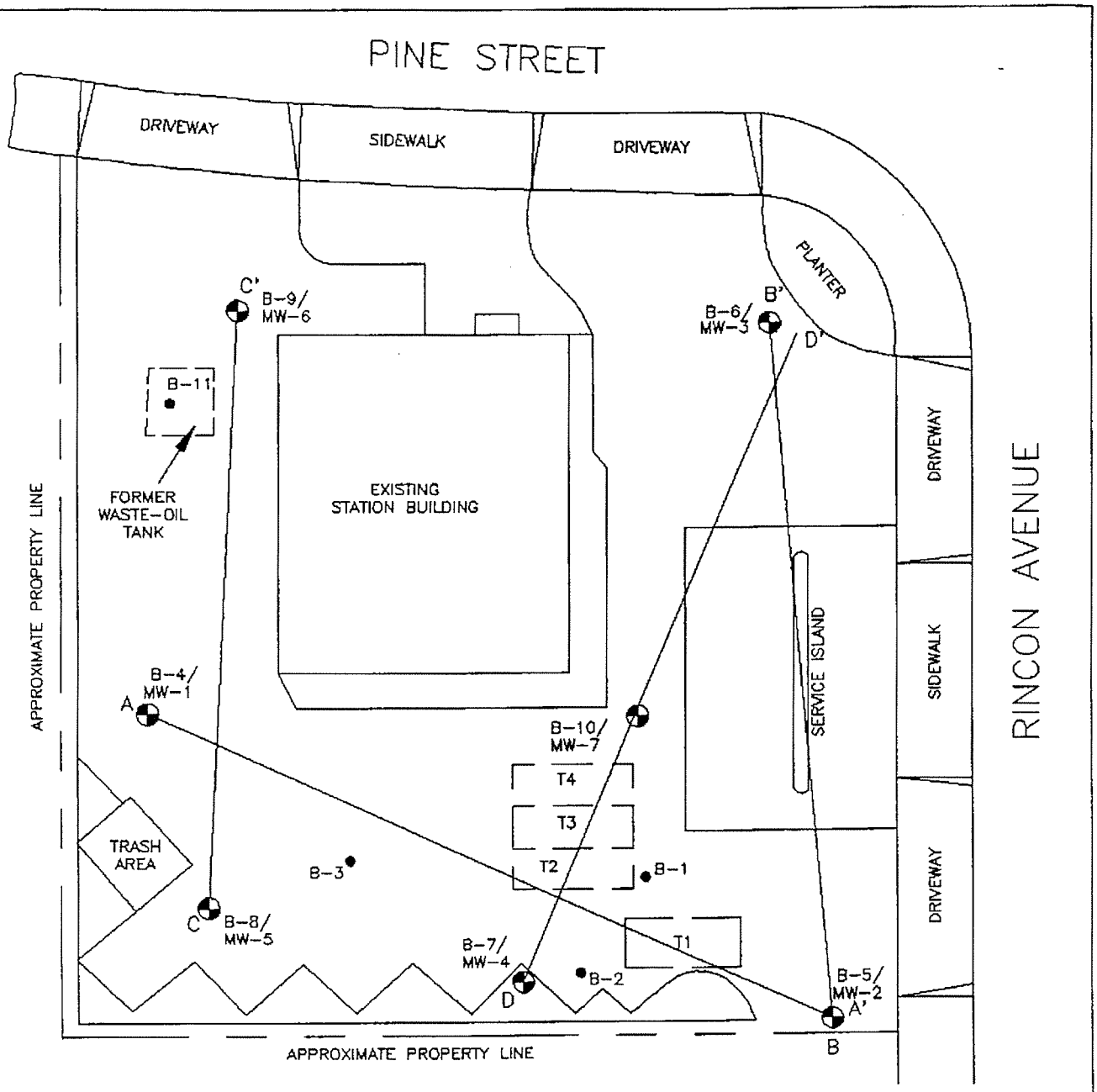
RESNA

PROJECT 60000.06

LOG OF BORING B-11

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 13



EXPLANATION

B-10/ MW-7 = Monitoring well (Applied GeoSystems, December 1990, June, and July 1991)

B-11 = Soil boring (Applied GeoSystems, February 1990, July 1991)

D — D' = Geologic cross sections

T4 = Underground gasoline-storage tank

N

Approximate Scale

20 10 0 20 40

feet

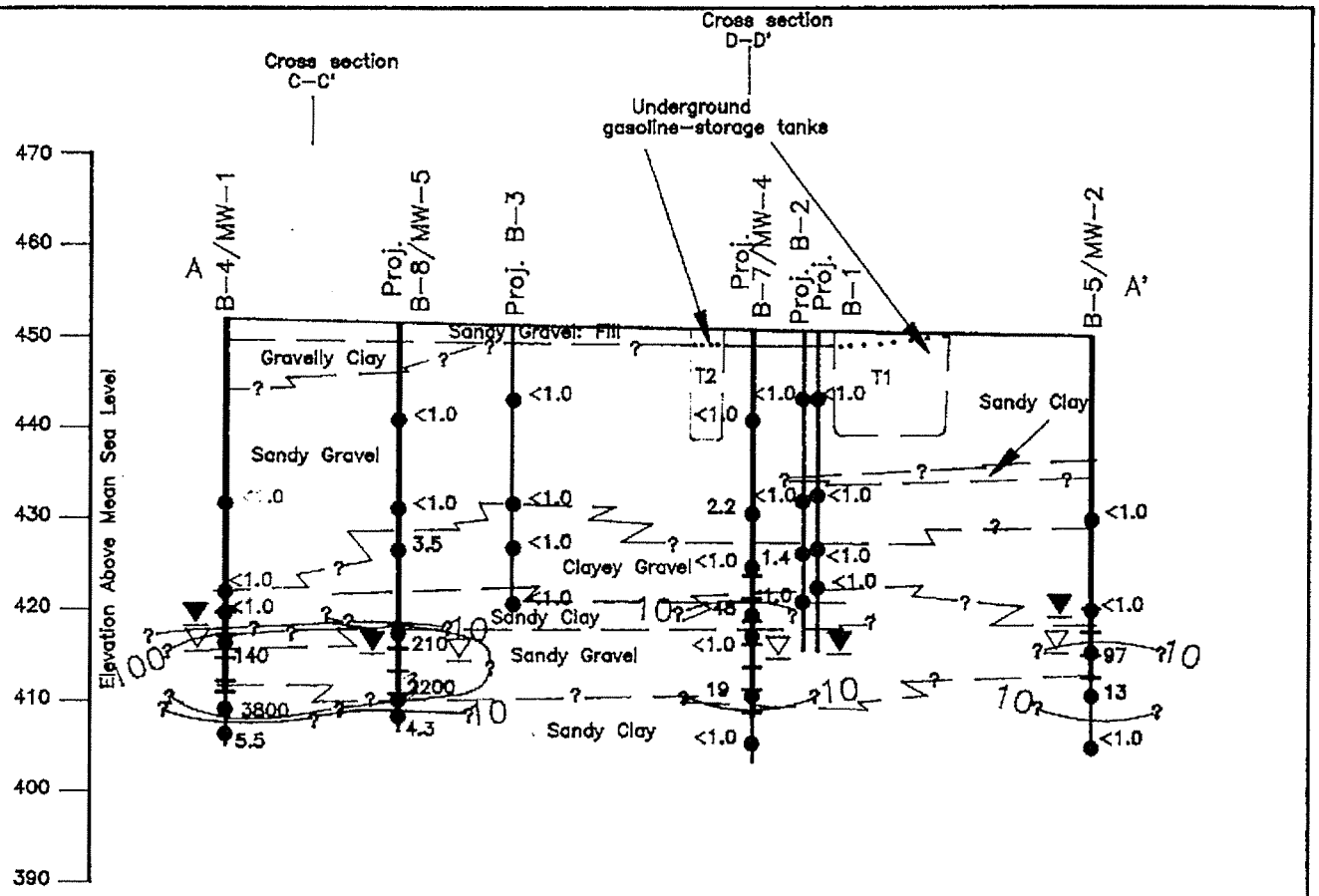
Source: Surveyed by John Koch, Licenced Land Surveyor.

RESNA

PROJECT 60000.06

GENERALIZED SITE PLAN
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 2



EXPLANATION

10 = Line of equal concentration of TPHg in soil

3800 = Laboratory analyzed soil sample showing concentration of TPHg in parts per million

= Well casing

= Well screen

= Boring

= Initial water level in boring

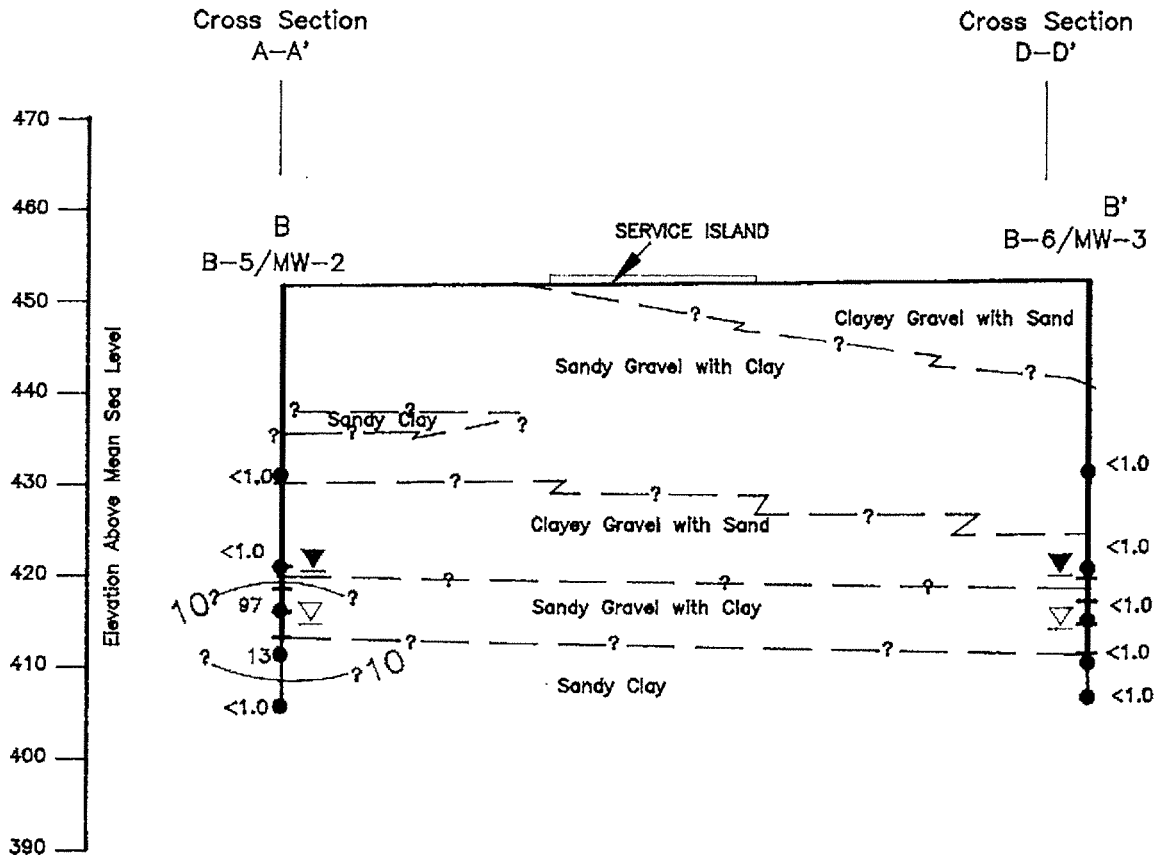
= Static water level in well

Approximate Horizontal and Vertical Scale

20 10 0 20 40

feet

RESNA	**GEOLOGIC CROSS SECTION A - A'** **ARCO Station 771** **899 Rincon Avenue** **Livermore, California**	**PLATE** **14**
PROJECT 60000.06		



EXPLANATION

10 = Line of equal concentration of TPHg in soil

97 = Laboratory analyzed soil sample showing concentration of TPHg in parts per million

= Well casing

= Well screen

= Boring

= Initial water level in boring

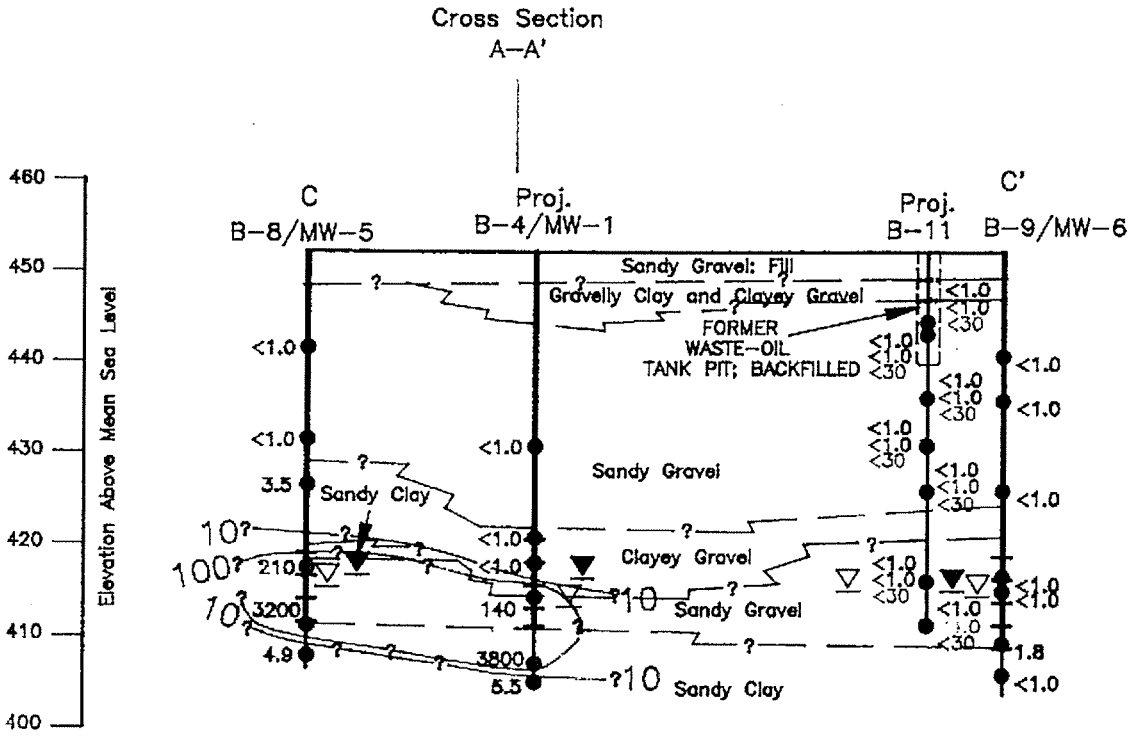
= Static water level in well

Approximate Horizontal and Vertical Scale

20 10 0 20 40

feet

RESNA	**GEOLOGIC CROSS SECTION B - B'** **ARCO Station 771** **899 Rincon Avenue** **Livermore, California**	**PLATE** **15**
PROJECT 60000.06		



EXPLANATION

10 = Line of equal concentration of TPHg in soil

3800 / <30 = Laboratory analyzed soil sample showing concentration of TPHg (red), TPHd (green), and TOG (blue) in parts per million (ppm).

= Well casing

= Well screen

= Boring

= Initial water level in boring

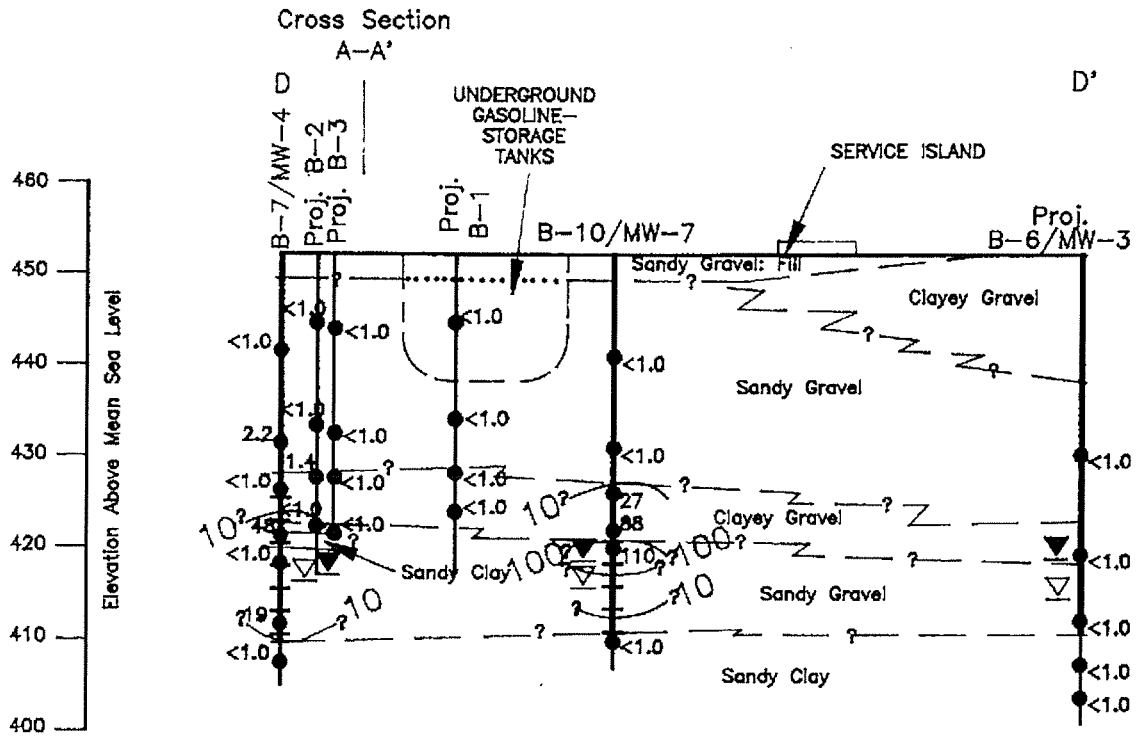
= Static water level in well

Approximate Horizontal and Vertical Scale

20 10 0 20 40

feet

RESNA	**GEOLOGIC CROSS SECTION C - C'** **ARCO Station 771** **899 Rincon Avenue** **Livermore, California**	**PLATE** **16**
PROJECT 60000.06		



EXPLANATION

10 = Line of equal concentration of TPHg in soil

18 = Laboratory analyzed soil sample showing concentration of TPHg in parts per million

= Well casing

= Well screen

= Boring

= Initial water level in boring

= Static water level in well

Approximate Horizontal and Vertical Scale

20 10 0 20 40

feet

RESNA	**GEOLOGIC CROSS SECTION D - D'** **ARCO Station 771** **899 Rincon Avenue** **Livermore, California**	**PLATE** **17**
PROJECT 60000.06		

Depth of boring: 45 1/2 feet Diameter of boring: 8 inches Date drilled: 01/15/93

Well depth: 42 1/2 feet Material type: Sch 40 PVC Casing diameter: 2 inches

Screen interval: 27 1/2 to 42 1/2 feet Slot size: 0.020-inch

Drilling Company: Exploration GeoServices Driller: John and Mike

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches).	
				GP	Sandy gravel, gray, damp, dense; baserock.	
2				GW	Sandy gravel, brown, damp, very dense; fine- to coarse-grained sand.	
4	S-4.5	26 38 50/6"	0			
6						
8						
	S-9	50/5"	0			
10						
12						
14	S-14.5	27 50/6"	0		Becoming very moist.	
16				GC	Clayey gravel with sand, brown, damp, very dense	
	S-17	50/6"	0			
18						
	S-19.5	48 39 37	0		Becoming moist	
20						

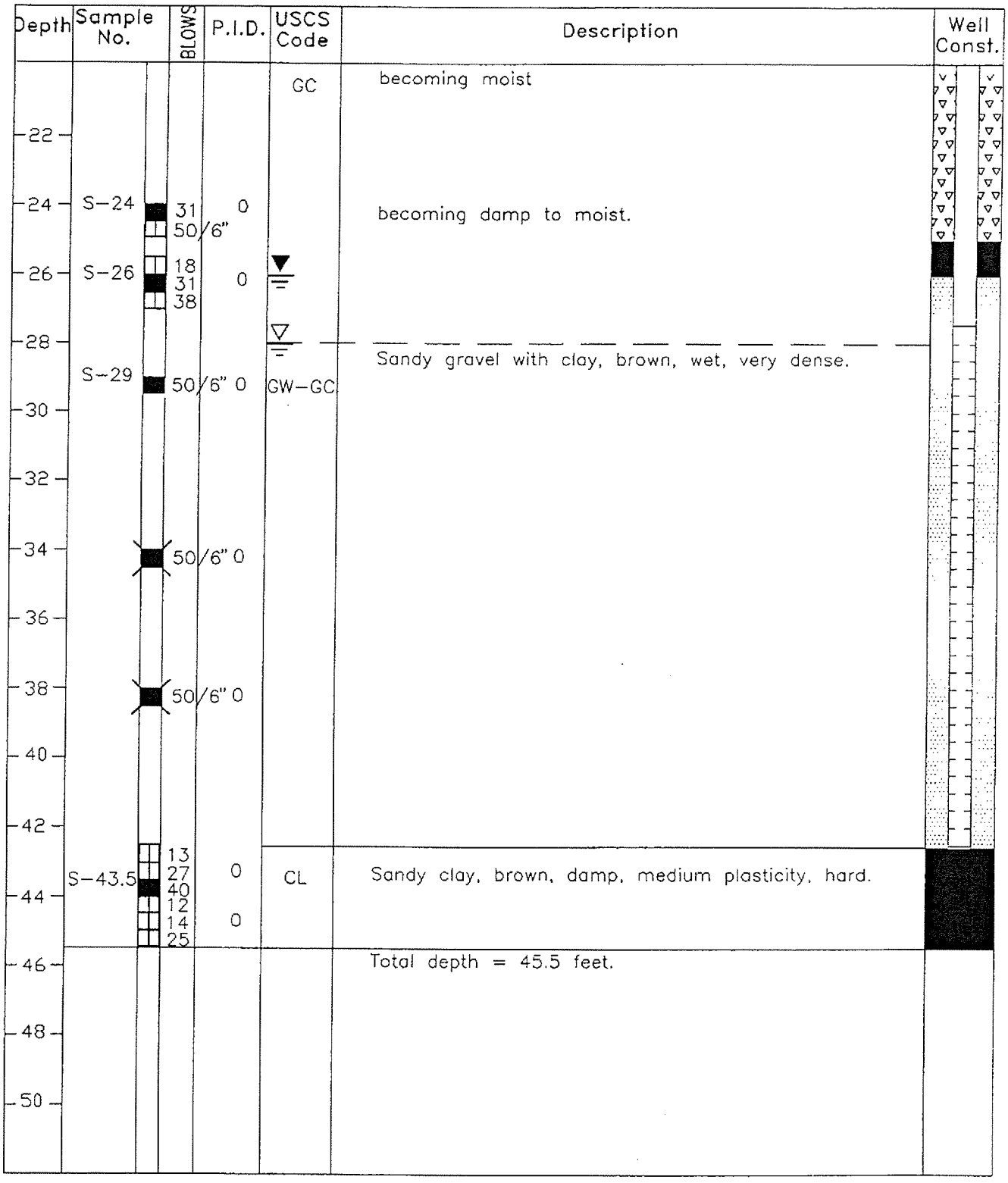
(Section continues downward)

RESNA
Working to Restore Nature

PROJECT: 60000.09

LOG OF BORING B-12/MW-8
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
4



RESNA
Working to Restore Nature

PROJECT 60000.09

LOG OF BORING B-12/MW-8
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
5

Depth of boring: 42 feet Diameter of boring: 8 inches Date drilled: 01/14/93

Well depth: 39 1/2 feet Material type: Sch 40 PVC Casing diameter: 2 inches

Screen interval: 29 1/2 to 39 1/2 feet Slot size: 0.020-inch

Drilling Company: Exploration GeoServices Driller: John and Mike

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches).	
				GP	Sandy gravel, gray, damp, dense; baserock.	
2				GW	Sandy gravel, brown, moist, dense; fine- to coarse-grained sand.	
4	S-4.5	10 13 34	0			
6						
8						
10	S-9.5	34 50/3"	0		Very dense, gravel up to 3" diameter with cobbles	
12						
14	S-14.5	35 50/5"	0		with clay becoming very moist.	
16						
18					Trace water at 18.5'	
	S-19	50/6"	0			
20				GC	Clayey gravel with sand, brown, moist to wet, very dense.	

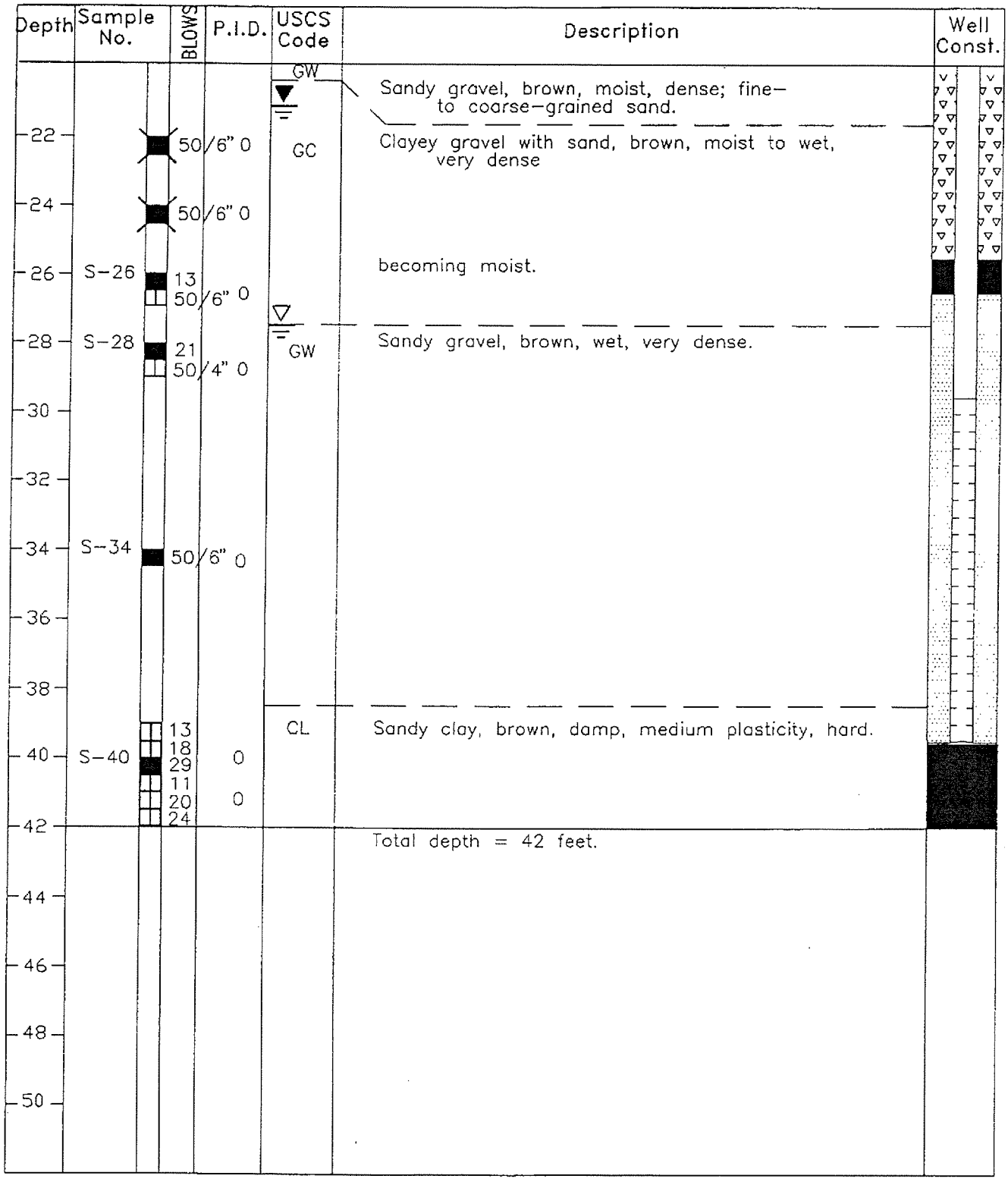
(Section continues downward)

RESNA
Working to Restore Nature

PROJECT: 60000.09

LOG OF BORING B-13/MW-9
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
6



RESNA
Working to Restore Nature

PROJECT 60000.09

LOG OF BORING B-13/MW-9
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
7

Depth of boring: 40 feet Diameter of boring: 8 inches Date drilled: 01/14/93

Well depth: 37 feet Material type: Sch 40 PVC Casing diameter: 2 inches

Screen interval: 29 to 37 feet Slot size: 0.020-inch

Drilling Company: Exploration GeoServices Driller: John and Mike

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt (4 inches).	
				GP	Sandy gravel, gray, damp, dense; baserock.	
2				GW	Sandy gravel, brown, damp, very dense; fine- to coarse-grained sand; gravel up to 3" diameter; roots.	
4	S-4.5	26 28 50/5"	0			
6						
8						
10	S-9.5	28 50/2"	0			
12						
14	S-14.5	27 50/5"	0		With clay, becoming moist.	
16						
17	S-17	50/5"	0			
					Trace water at 17.5'	
18				GC	Clayey gravel with sand, brown, moist to wet, very dense.	
19	S-19	50/5"	0			
20						

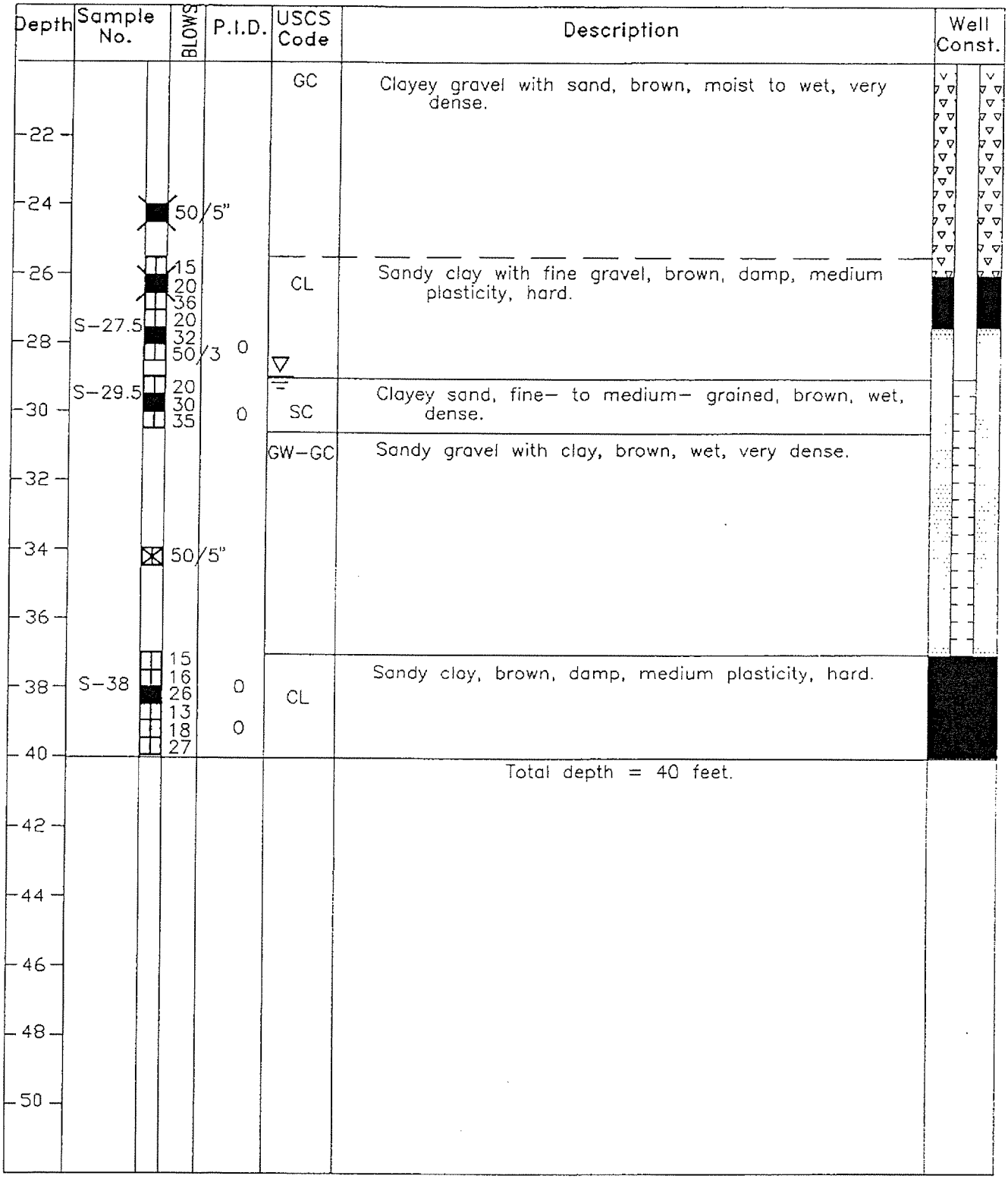
(Section continues downward)

RESNA
Working to Restore Nature

PROJECT: 60000.09

LOG OF BORING B-14/MW-10
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
8



RESNA
Working to Restore Nature

PROJECT 60000.09

LOG OF BORING B-14/MW-10
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
9

Depth of boring: 43 feet Diameter of boring: 8 inches Date drilled: 04/09/92

Well depth: 39 feet Material type: Sch 40 PVC Casing diameter: 2 inches

Screen interval: 29 to 39 feet Slot size: 0.020-inch

Drilling Company: HEW Drilling Driller: Phil and Perfecto

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
					Asphalt-covered surface.	
0					Asphalt (4 inches).	
				GW	Sandy gravel, dark brown, damp, medium dense: fill.	
2				GW-GC	Sandy gravel with clay, brown, damp, dense; gravel up to 3" diameter.	
4						
6	S-5.5	17 17 39	0			
8						
10	S-10.5	24 34 50	0		Becoming moist, very dense.	
12						
14						
	S-15	50/6"	0		Increasing clay.	
16						
18						
20	S-20.5	30 38 40	0			

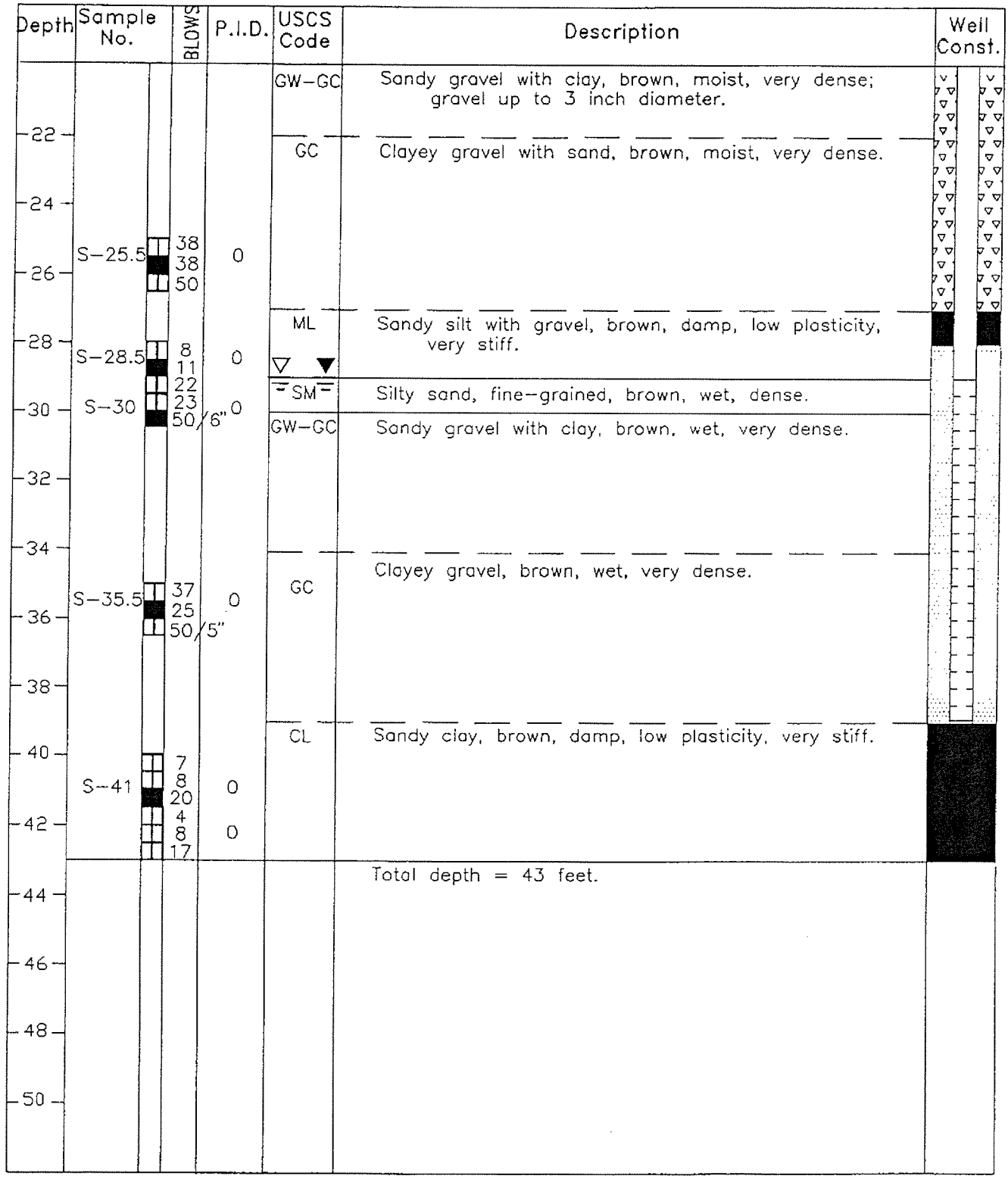
(Section continues downward)

RESNA
Working to Restore Nature

PROJECT: 60000.09

LOG OF BORING B-15/MW-11
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
10



RESNA
Working to Restore Nature

PROJECT 60000.09

LOG OF BORING B–15/MW–11

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
11

Depth of boring: 33-1/2 feet Diameter of boring: 12 inches Date drilled: 04/08/92

Well depth: 28-1/2 feet Material type: Sch 40 PVC Casing diameter: 4 inches

Screen interval: 18-1/2 to 28-1/2 feet Slot size: 0.100-inch

Drilling Company: HEW Drilling Driller: Phil and Perfecto

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
0					Asphalt-covered surface.	
					Asphalt (4 inches).	
					Sump.	
2						
				GW-GC	Sandy gravel with clay, brown, moist, medium dense.	
4						
6	S-6	9 10 17	0			
8						
10						
	S-11	24 30 26	0		Becoming damp to moist, very dense.	
12						
14						
16	S-16	12 10 21	0		Increasing clay, becoming moist to wet.	
				GC	Clayey gravel with sand, brown, moist, dense.	
18				GW	Sandy gravel, brown, moist, very dense; gravel up to 3" diameter.	
20						
	S-21	13 30 28	120		Product odor at 21 feet. Color change to gray at 21-1/2 feet.	

(Section continues downward)

RESNA
Working to Restore Nature

PROJECT: 60000.09

LOG OF BORING B-16/VW-1

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 12

Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				GW	Sandy gravel, gray, moist, very dense; gravel up to 3" diameter. Product odor at 21 feet.	
24				GC	Clayey gravel with sand, brown, moist, very dense.	
26	S-26	11 25 27	320		Product odor at 26 feet.	
28				ML	Sandy silt with fine gravel, brown, damp, low plasticity, very stiff.	
30	S-29.5	7 11 16	58		Product odor at 30 feet.	
	S-31	11 13 15	33		Increasing sand, becoming moist.	
32	S-32.5	14 30 30	34▽			
				GW-GC	Sandy gravel with clay, brown, wet, very dense.	
34					Total depth = 33-1/2 feet.	
36						
38						
40						
42						
44						
46						
48						
50						

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LOG OF BORING B-16/VW-1

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 13

Depth of boring: 45 feet Diameter of boring: 12 inches Date drilled: 04/08/92

Well depth: 40 1/2 feet Material type: Sch 80 PVC/Steel Casing diameter: 6 inches

Screen interval: 25 1/2 to 40 1/2 feet Slot size: 0.020-inch

Drilling Company: HEW Drilling Driller: Phil and Perfecto

Method Used: Hollow-Stem Auger Field Geologist: Barbara Sieminski

Signature of Registered Professional:

Registration No.: CEG 1463 State: CA

Depth	Sample No.	Blows	P.I.D.	USCS Code	Description	Well Const.
					Asphalt-covered surface.	
0					Asphalt (4 inches).	
				SP	Gravelly sand, gray, damp, medium dense: fill.	
2				GC	Clayey gravel with sand, dark brown, damp, medium dense.	
4						
6	S-6	6 8 8	0			
				GW-GC	Sandy gravel with clay, brown, damp, medium dense; gravel up to 3" diameter.	
8						
10						
	S-11	11 16 17	0		Becoming dense, damp to moist, with increasing clay.	
12						
14						
16		50/6"			Large cobble	
18						
20						
	S-21	38 31 30	105		Color change to gray, moist; product odor at 21 feet.	

(Section continues downward)

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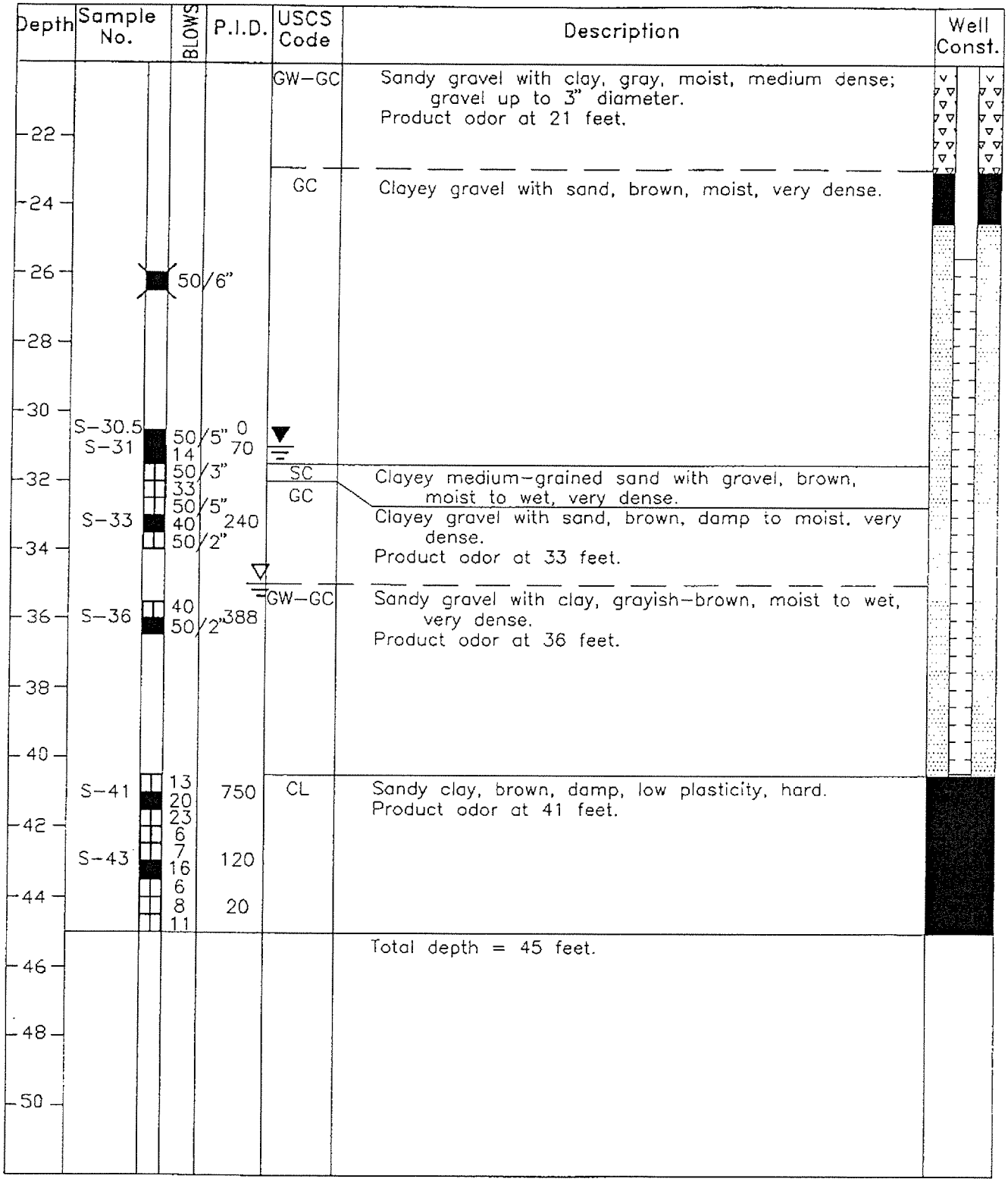
PROJECT: 60000.09

LOG OF BORING B-17/RW-1
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
14



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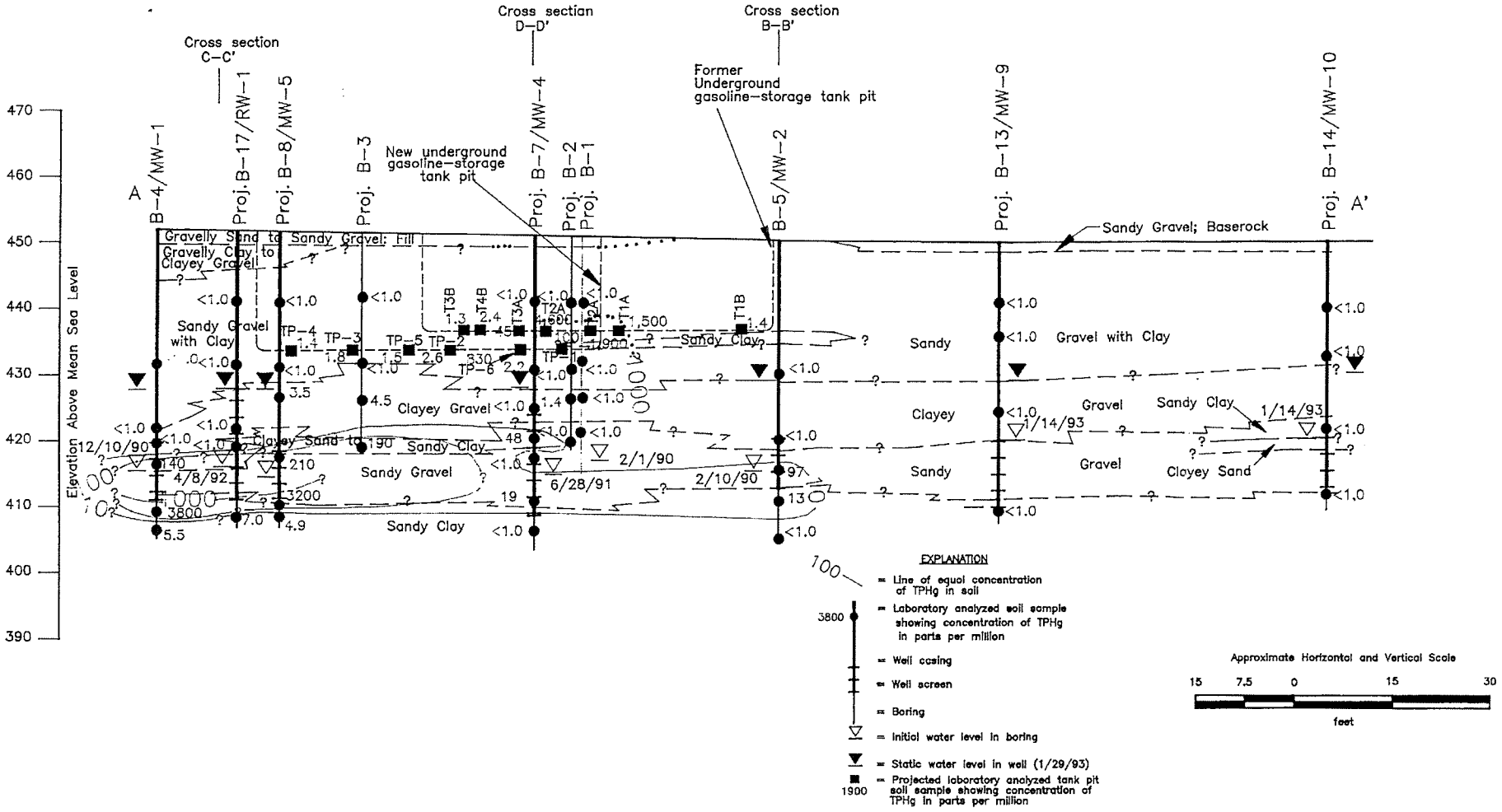
PROJECT 60000.09

LOG OF BORING B–17/RW–1

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 15



RESNA
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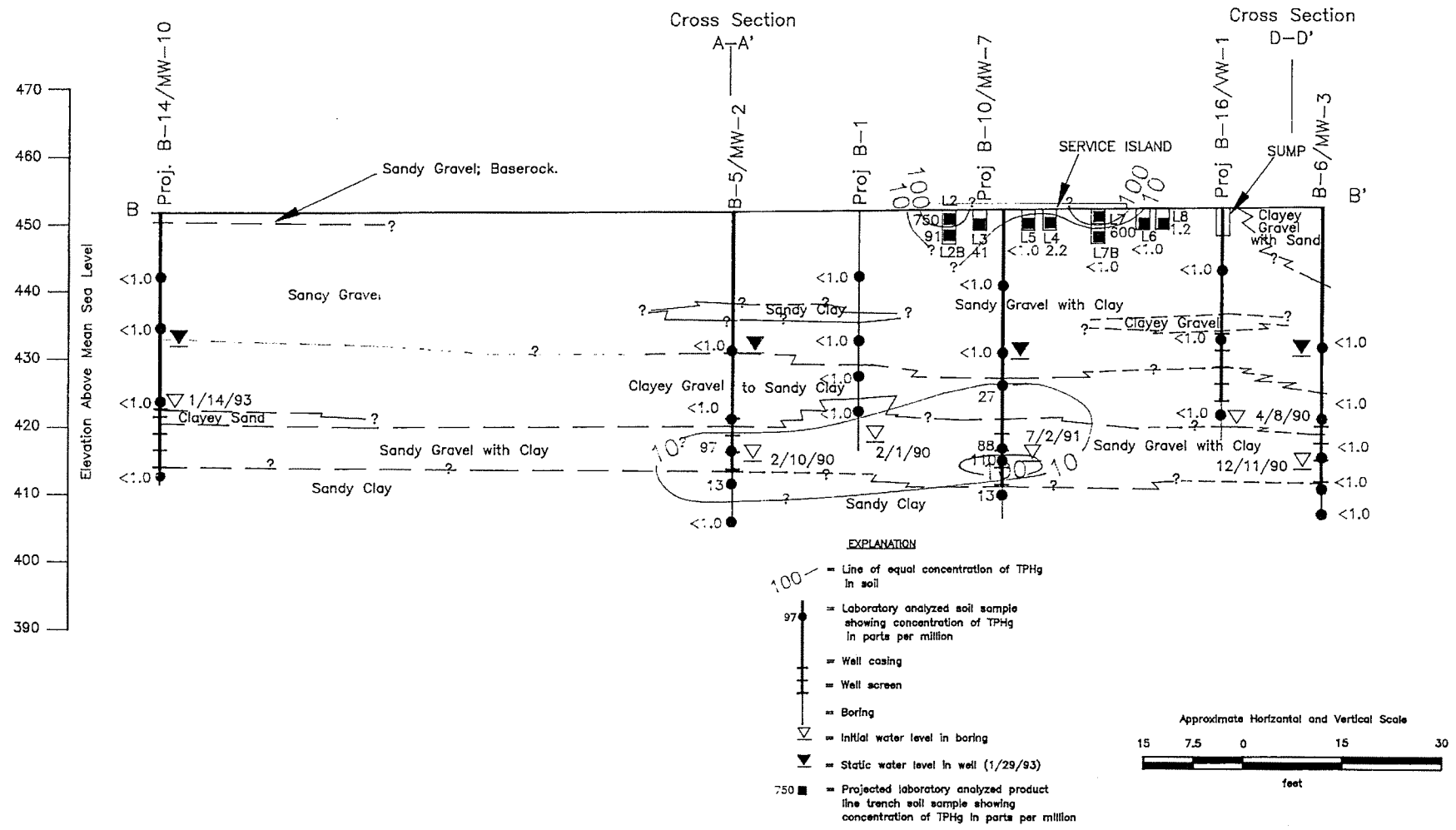
PROJECT 60000.09 DRAWN: DVW 2/12

GEOLOGIC CROSS SECTION A - A'
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
16
CAD FILE: 600009A



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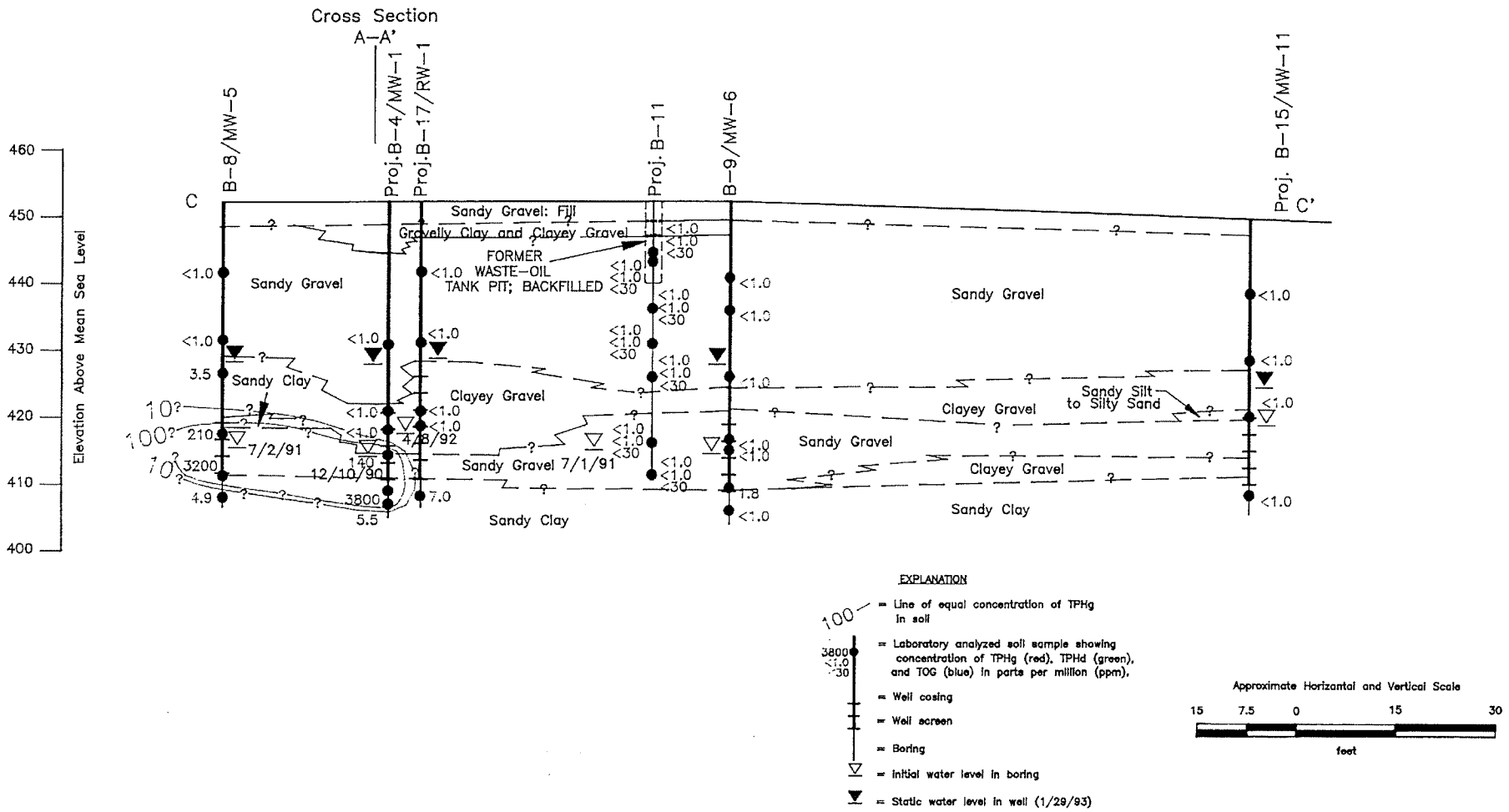
PROJECT 60000.09

GEOLOGIC CROSS SECTION B - B'
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
17

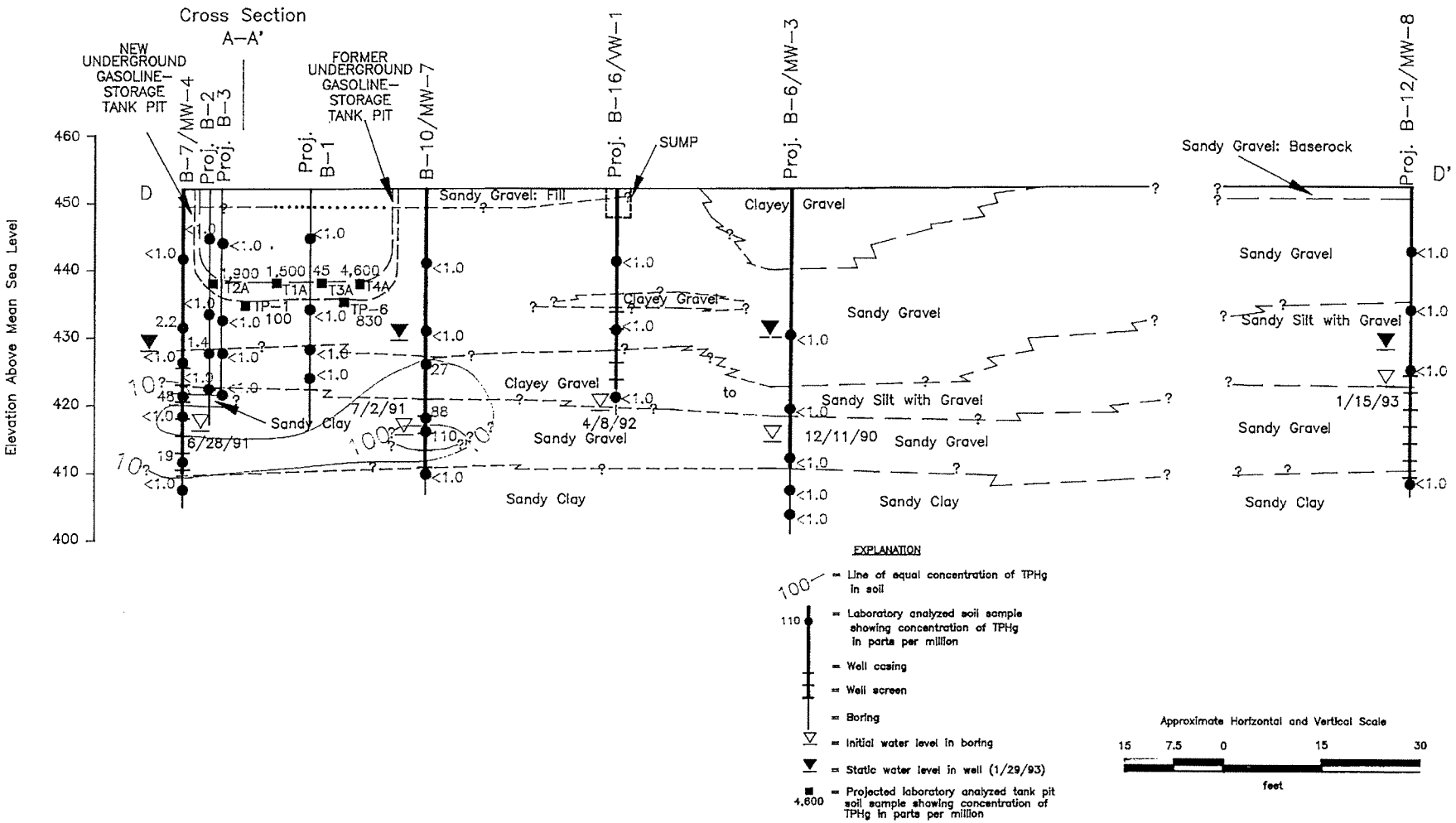


RESNA
Working to Restore Nature

PROJECT 600006.09 DRAWN: DVW 2/12

GEOLOGIC CROSS SECTION C - C'
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
18
CAD FILE: 600009C



RESNA
Working to Restore Nature

PROJECT 60000.09 DRAWN: DVW-2/11

GEOLOGIC CROSS SECTION D - D'
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
19

CAD FILE: 600009D

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

LITHOLOGIC AND SOIL BORING LOG

PROJECT NAME: BP/ARCO 771 | SITE ADDRESS: 899 Rincon Ave., Livermore, CA

PROJECT NUMBER: 06-82-608 | LEGAL DESC: | APN:

LOGGED BY: Sam Barkley | FACILITY ID OR WAIVER: | NOI NUMBER:

DATE: 3/25/11 | START: 1245 | DRILLING COMPANY: RSI | DRILLER: Jorge Morales

WELL ID: SB-2 | STOP: 1335 | DRILLING METHOD: HSA | SAMPLE METHOD: Core Barrel

DEPTH (FEET)	Soil Boring	SAMPLE ID	PID	MOISTURE	COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	ODORS
2	GROUT								
4									
6									
8				Dry	Lt. brown	Loose			
10		SB-2-10'	0.0 ppm	Slightly moist					None
12									
14		SB-2-15'	0.0 ppm						None
16									
18							Gravelly sand with silt - 35% gravel, 45% sand and 20% fines; sub-rounded gravel up to 3 inches.	GM	
20		SB-2-20'	0.0 ppm						None
22				Moist					
24									
24		SB-2-25'	0.0 ppm						None
26									
28				Moist	Lt. brown	Soft	Silty clay about 3 inches thick	CL	
30		SB-2-30'	0.0 ppm		Lt. brown	Loose	Gravelly sand with silt - 35% gravel, 45% sand and 20% fines; sub-rounded gravel up to 3 inches.	GM	
32									
34		SB-2-33'	0.0 ppm	Wet			Gravelly sand with silt - 10% gravel, 60% sand and 30% fines; gravel up to $\frac{1}{2}$ inch.		
36									
38									
40									

TOTAL BORING DEPTH: 35.0' | PAGE NO: 1 OF 1 | ESTIMATED GROUNDWATER DEPTH: 33'

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL

LITHOLOGIC AND SOIL BORING LOG

PROJECT NAME: BP/ARCO 771 | SITE ADDRESS: 899 Rincon Ave., Livermore, CA

PROJECT NUMBER: 06-82-608 | LEGAL DESC: | APN:

LOGGED BY: Sam Barkley | FACILITY ID OR WAIVER: | NOI NUMBER:

DATE: 3/25/11 | START: 0930 | DRILLING COMPANY: RSI | DRILLER: Jorge Morales

WELL ID: SB-3 | STOP: 1035 | DRILLING METHOD: HSA | SAMPLE METHOD: Core Barrel

DEPTH (FEET)	Soil Boring	SAMPLE ID	PID	MOISTURE	COLOR	CONSISTENCY	GRAIN SIZE	CLASSIFICATION	ODORS
2–6	GROUT								
8				Dry	Lt. brown	Loose	Gravelly sand with silt - 35% gravel, 40% sand and 25% fines; sub-rounded gravel up to 3 inches.		
10		SB-3-10'	0.0 ppm						None
12–14				Slightly moist					
14		SB-3-15'	0.0 ppm						None
16–18									
20		SB-3-20'	0.0 ppm				Gravelly sand with silt - 35% gravel, 35% sand and 30% fines; gravel up to 3 inches.	GM	None
22–24				Moist					
24		SB-3-25'	0.0 ppm						None
26–28									
30		SB-3-30'	0.0 ppm						None
32				Wet					
34			0.0 ppm						None
36–40									

TOTAL BORING DEPTH: 35.0' | PAGE NO: 1 OF 1 | ESTIMATED GROUNDWATER DEPTH: 31'

APPENDIX C

URS WATER WELL SURVEY

URS

September 17, 2003

Ms. eva chu
Alameda County Health Care Services Agency
Environmental Health Services Division
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502

SUBJECT: WATER WELL SURVEY,
ARCO SERVICE STATION #0771,
899 RINCON AVENUE, LIVERMORE, CALIFORNIA

Dear Ms. Chu:

On behalf of Atlantic Richfield Company (ARCO - an affiliated company of the Group Environmental Management Company), URS Corporation (URS) submits the results of a water well survey conducted within a ½-mile radius of ARCO Service Station #0771, located at 899 Rincon Avenue, Livermore, California (the Site). URS requested well logs from the California Department of Water Resources (DWR) to determine potential impact on water producing wells within a ½ -mile radius of the Site. Based on the DWR well logs, the locations of all water wells within a ½-mile radius of the Site are shown on Figure 1 and their respective well details are presented in Table 1. The historic groundwater flow direction at the Site has ranged between north through northwest. Since the DWR well logs are classified as confidential, they have not been attached. URS will retain the DWR well logs on file. The details of the water well survey results are as follows:

- One municipal water supply well (742270) is located approximately 2,500 feet cross-gradient of the site (Figure 1: Well 1).
- One well (01-2000) of unknown use is located approximately 240 feet cross-gradient of the site (Figure 1: Well 2). A previous well survey conducted for the Site indicated the respective well to be a public well, however, the well log provided by DWR does not indicate the designated use of the well. Also, the DWR well log did not provide an accurate address for the respective well, therefore, the well location on Figure 1 has been approximated.
- One municipal water supply well (01-2001) is located approximately 2,300, feet cross-gradient of the site (Figure 1: Well 3). Since the DWR well log did not provide an accurate address for the respective well, the well location on Figure 1 is approximate.

URS Corporation
500 12th Street, Suite 200
Oakland, CA 94607-4014
Tel: 510.893.3600
Fax: 510.874.3268

URS

- One well (01-2002) of unknown use is located approximately 2,300 feet up-gradient of the Site (Figure 1: Well 4). Please note that the address provided on the DWR well log for the respective well does not exist and is likely to have changed since the well installation in 1943. Accordingly, the well location on Figure 1 has been approximated.
- A previous well survey conducted for the Site indicated the presence of one municipal water supply well approximately 360 feet cross-gradient of the Site (Figure 1: Well 5). However, the well logs provided by DWR for all wells located within a ½ mile radius of the Site did not include the well log for the respective well. Additional information on the well is unavailable.

Should you have any concerns or questions, please contact me at (510) 874-3280.

Sincerely,

URS CORPORATION

Scott Robinson
Project Manager

William Frohlich, C. Hg., C.E.G.
Project Geologist

REGISTERED GEOLOGIST
WILLIAM H. FROHLICH
No. 730
CERTIFIED HYDROGEOLOGIST
Exp. 1/31/04
STATE OF CALIFORNIA

Attachment: Table 1 – Well Survey Details
Figure 1 - Well Survey Map

cc: Mr. Paul Supple, ARCO (electronic copy uploaded to ENFOS)

URS Corporation
500 12th Street, Suite 200
Oakland, CA 94607-4014
Tel: 510.893.3600
Fax: 510.874.3268

Table 1
Well Survey Details

Arco Service Station #0771
899 Rincon Avenue
Livermore, California

I.D. (Figure 2)	State Well Number	Address	Installation Date	Status	Designated Use	Total Depth (ft)	Screened Interval (ft)	Orientation with Site [e]
1	742270	732 Olivina Avenue	July 8, 2002	In use	Municipal	550	410-450, 505-528	Cross gradient
2	01-2000	North Side of Fire Station, Pine and Rincon [a]	July 5, 1963	Unknown	Unknown [b]	300	Unknown	Cross gradient
3	01-2001	Pine Street and Arroya Road [a]	November 7, 1953	Unknown	Municipal	576	143-433	Cross gradient
4	01-2002	1936 Olivina Avenue [c]	August 3, 1943	Unknown	Unknown [d]	130	118-127	Upgradient

Notes:

Well No. 5 on the well survey map (Figure 1) was noted to be a municipal water supply well in a previous well survey conducted for the Site. However, the well logs provided by the Department of Water Resources did not include a well log for the respective well. The location of the respective well was indicated to be cross-gradient of the Site.

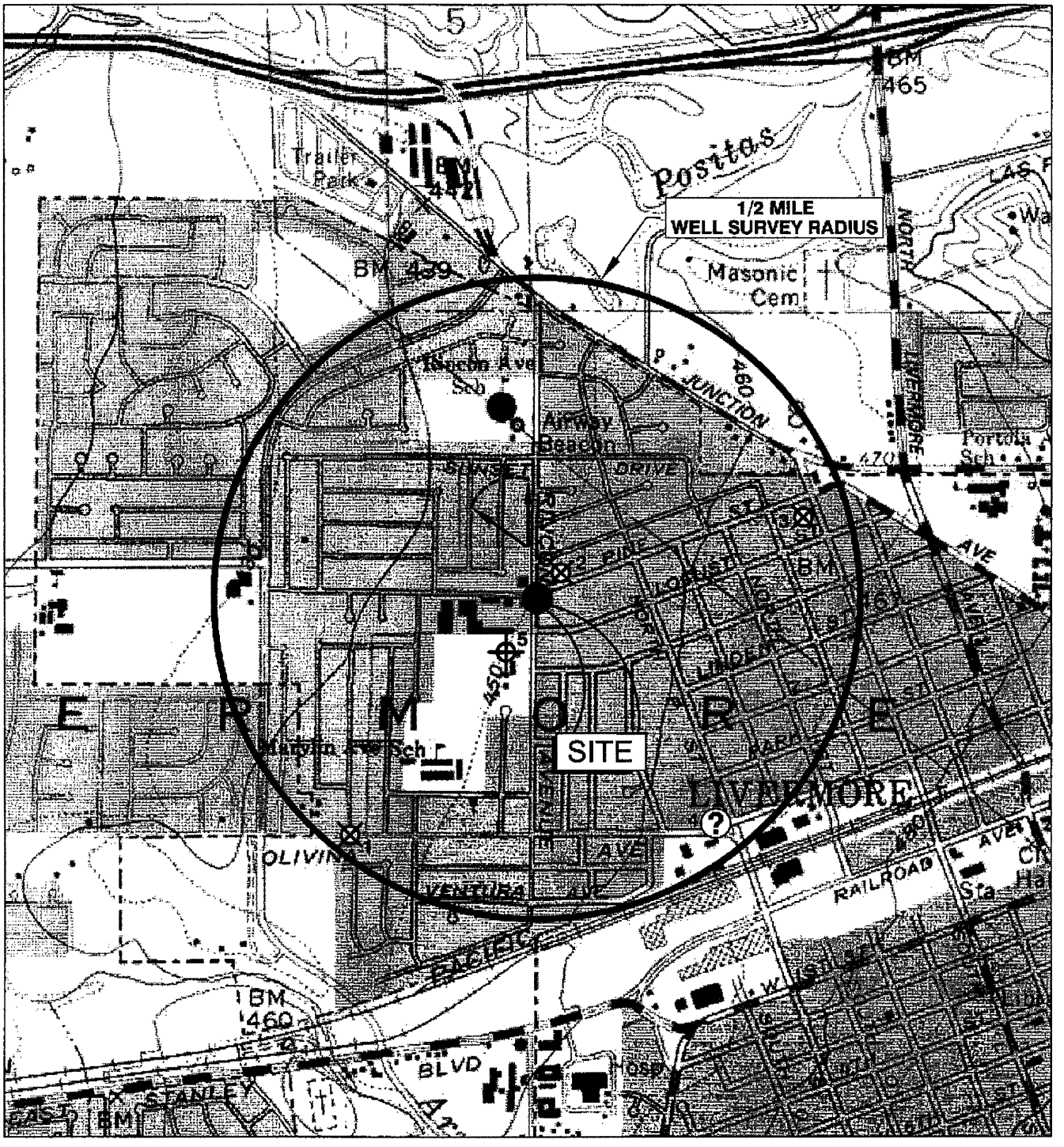
a Well log did not provide an accurate address. The location on the well survey map is approximate.

b Well log did not indicate well use designation. However, a previous well survey conducted for the this Site indicated the well to be a public well.

c This address does not exist and is likely to have changed since the well installation in 1943. The location on the well survey map is approximate.

d Well log indicates the well was installed for a private owner. The well is likely to be a domestic or irrigation well.

e During the third quarter 2003 groundwater monitoring session, the groundwater flow direction at the Site was northwesterly.



LEGEND

- WATER SUPPLY/MUNICIPAL WELL
- UNKNOWN USAGE
- HISTORIC GROUNDWATER FLOW DIRECTION RANGE
- WATER SUPPLY/MUNICIPAL WELL NOTED IN PREVIOUS WELL SURVEY BUT NOT IN DWR RECORDS PROVIDED

QUADRANGLE LOCATION

NORTH

0 1200 FT

APPROXIMATE SCALE

REF: BASE MAP FROM USGS TOPO! 7.5 MINUTE TOPOGRAPHIC PHOTOREVISED 1998

URS	Project No. 38486316 Arco Service Station #0771 899 Rincon Avenue Livermore, California	WELL SURVEY MAP 1/2 MILE RADIUS OF SITE	FIGURE 1

X:\x_env_waste\BP GEM\Sites\Scott Robinson\Paul Supple\0771\sensitive receptor survey\WSM.dwg, 09/17/2003 10:06:18 AM, JKMT, URS

APPENDIX D

HISTORIC SOIL ANALYTICAL DATA

TABLE 1
ANALYTICAL RESULTS OF SOIL AND SLUDGE SAMPLES
BY BROWN AND CALDWELL
ARCO Station 771
899 Rincon Avenue
Livermore, California
August 25, 1987

Sample Identification	HVC	TPFH	B	T	X	PCBs
AL-1	ND	378	ND	ND	ND	ND
AL-2	ND	ND	ND	ND	ND	ND
LS-1	ND	3,779	ND	0.009	0.05	ND
LS-2	ND	808	ND	0.011	0.06	ND
WO-1	ND	256,508	ND	2.920	0.128	ND

Results in milligrams per kilogram (mg/kg) or parts per million (ppm).
HVC: Halogenated volatile compounds by EPA Method 8010.
TPFH: Total petroleum fuel hydrocarbons by modified EPA Method 8015.
B: Benzene by EPA Method 8020.
T: Toluene by EPA Method 8020.
X: Total xylene isomers by EPA Method 8020.
PCBs: Polychlorinated biphenyls (PCBs) by EPA Method 8080.
ND: Below laboratory reported detection concentration.

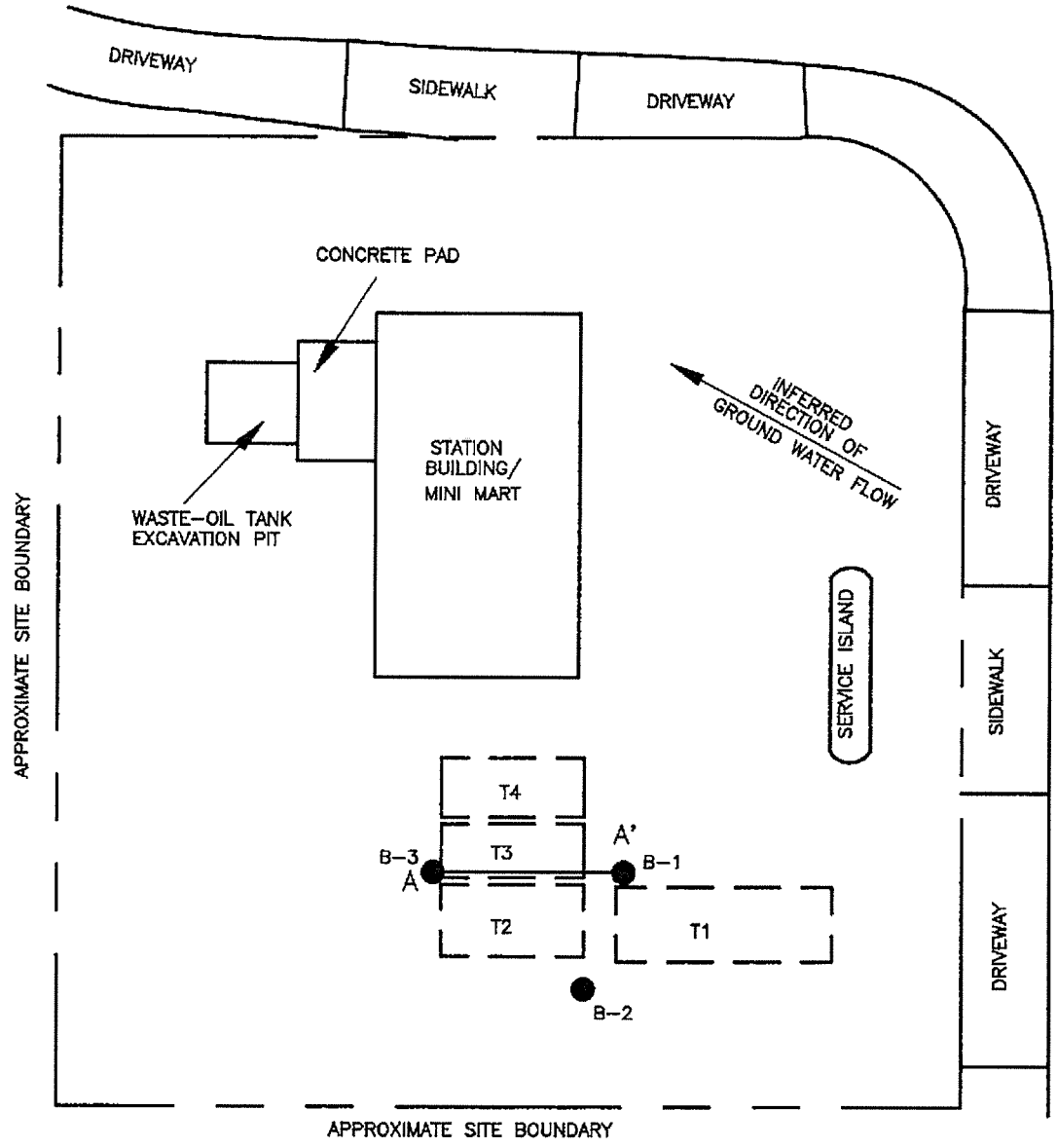
Sample designation: LS-2
- Sample number
- AL = Soil sample
- LS = Stockpile sample
- WO = Waste oil sample

TABLE 2
RESULTS OF LABORATORY ANALYSES
OF SOIL SAMPLES
ARCO Station 771
899 Rincon Avenue
Livermore, California

Sample Identification	Date	TPHg	Benzene	Toluene	Ethyl-benzene	Total Xylenes
S-10-B1	2/1/90	<1.0	<0.005	<0.005	<0.005	<0.005
S-19.5-B1	2/1/90	<1.0	0.022	0.024	<0.005	0.022
S-24.5-B1	2/1/90	<1.0	0.022	0.015	0.010	0.048
S-29.5-B1	2/1/90	<1.0	<0.005	<0.005	<0.005	<0.005
S-10-B2	2/1/90	<1.0	<0.005	<0.005	<0.005	<0.005
S-20-B2	2/1/90	<1.0	0.016	0.020	<0.005	0.025
S-25-B2	2/1/90	1.4	<0.01	<0.01	<0.01	0.018
S-31-B2	2/1/90	<1.0	<0.005	<0.005	<0.005	<0.005
S-10-B3	2/2/90	<1.0	<0.005	<0.005	<0.005	<0.005
S-19.5-B3	2/2/90	<1.0	0.028	<0.005	<0.005	0.017
S-25-B3	2/2/90	4.5	0.047	<0.01	0.011	0.038
S-32-B3	2/2/90	190	<1.0	<1.0	<1.0	1.7

Results in parts per million (ppm)
TPHg = Total Petroleum Hydrocarbons as gasoline
< = Indicates less than the detection limit for the specified method of analysis.

S-25-B2
- S-25-B2 — Soil sample
- S-25-B2 — Approximate sample depth
- S-25-B2 — Boring number



EXPLANATION

B-3 ● = Soil boring

A——A' = Cross section

T4 = Underground gasoline-storage tank

Approximate Scale

20 10 0 20 40

feet

Source: Modified from plan supplied by ARCO.

Applied GeoSystems

PROJECT 60000-1

GENERALIZED SITE PLAN
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 2

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
ARCO Station 771
Livermore, California
(Page 1 of 4)

Sample Identification	TPHg	TPHd	B	T	E	X	TOG
February 1990							
S-10-B1	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-19.5-B1	<1.0	NA	0.022	0.024	<0.005	0.022	NA
S-24.5-B1	<1.0	NA	0.022	0.015	0.010	0.048	NA
S-29.5-B1	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-10-B2	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-20-B2	<1.0	NA	0.016	0.020	<0.005	0.025	NA
S-25-B2	1.4	NA	<0.01	<0.01	<0.01	0.018	NA
S-31-B2	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-10-B3	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-19.5-B3	<1.0	NA	0.028	<0.005	<0.005	0.017	NA
S-25-B3	4.5	NA	0.047	<0.01	0.011	0.038	NA
S-32.5-B3	190	NA	<1.0	<1.0	<1.0	1.7	NA
December 1990							
S-20-B4	<1.0	NA	0.006	<0.005	<0.005	<0.005	NA
S-30-B4	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-32.5-B4	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-36.5-B4	140	NA	<0.15	0.80	1.7	4.2	NA
S-43-B4	3,800	NA	<1.5	130	50	280	NA
S-45.5-B4	5.5	NA	0.16	0.51	0.11	0.82	NA
S-20-B5	<1.0	NA	0.068	0.013	0.009	0.026	NA
S-30-B5	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-34.5-B5	97	NA	<0.005	0.13	0.087	0.22	NA
S-39.5-B5	13	NA	0.15	0.66	0.16	1.5	NA
S-45-B5	<1.0	NA	<0.005	0.006	<0.005	0.009	NA
S-20-B6	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-30-B6	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-36.5-B6	<1.0	NA	<0.005	<0.005	<0.005	0.006	NA
S-41-B6	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-44.5-B6	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-011591-1ABCD*	31	NA	0.25	0.67	0.34	2.8	NA
June, July 1991							
S-10-B7	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-20-B7	2.2	NA	0.074	0.12	0.061	0.43	NA
S-25-B7	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-30-B7	48	NA	0.064	0.15	0.41	1.9	NA

See notes on page 4 of 4.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
ARCO Station 771
Livermore, California
(Page 2 of 4)

Sample Identification	TPHg	TPHd	B	T	E	X	TOG
June, July 1991 cont.							
S-33-B7	<1.0	NA	<0.005	0.006	<0.005	0.010	NA
S-40-B7	19	NA	0.019	0.059	0.14	0.74	NA
S-44-B7	<1.0	NA	0.049	0.020	0.021	0.024	NA
S-10.5-B8	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-20.5-B8	<1.0	NA	0.013	<0.005	<0.005	<0.005	NA
S-25.5-B8	3.5	NA	<0.005	0.007	0.015	0.028	NA
S-34.5-B8	210	NA	0.27	1.0	2.0	12	NA
S-41-B8	3,200	NA	10	70	37	170	NA
S-43-B8	4.9	NA	0.26	1.2	0.13	0.67	NA
S-10.5-B9	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-15.5-B9	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-25.5-B9	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-34.5-B9	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-36-B9	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-42-B9	1.8	NA	0.049	0.006	0.020	0.030	NA
S-45-B9	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-10.5-B10	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
S-20.5-B10	<1.0	NA	0.042	<0.005	0.007	<0.005	NA
S-25.5-B10	27	NA	0.44	0.74	0.36	2.0	NA
S-34.5-10	88	NA	0.20	0.50	0.84	0.96	NA
S-36-B10	110	NA	0.28	0.51	0.86	2.7	NA
S-42-B10	<1.0	NA	0.008	<0.005	<0.005	0.021	NA
S-7-B11	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<30
S-8.5-B11	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<30
S-15.5-B11	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<30
S-20.5-B11	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<30
S-25.5-B11	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<30
S-35.5-B11	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<30
S-40-B11	<1.0	<1.0	<0.005	<0.005	<0.005	<0.005	<30
August 12, 1991							
SP1-ABCD*	<1.0	NA	<0.005	<0.005	<0.005	<0.005	NA
April 1992							
S-10.5-B15	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-20.5-B15	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-28.5-B15	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-41-B15	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA

See notes on page 4 of 4.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
ARCO Station 771
Livermore, California
(Page 3 of 4)

Sample Identification	TPHg	TPHd	B	T	E	X	TOG
April 1992 cont.							
S-11-B16	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-21-B16	<1.0	NA	0.0080	<0.0050	<0.0050	<0.0050	NA
S-31-B16	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-11-B17	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-21-B17	<1.0	NA	0.021	<0.0050	0.017	0.0080	NA
S-30.5-B17	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-33-B17	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-43-B17	7.0	NA	0.30	0.77	0.15	1.1	NA
S-0409-SP1-A-D*	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-0409-SP2-A-D*	6.4	NA	0.0070	0.015	0.020	0.12	
January 1993							
S-9-B12	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-17-B12	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-26-B12	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-43.5-B12	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-9.5-B13	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-14.5-B13	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-26-B13	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-40-B13	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-9.5-B14	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-17-B14	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-27.5-B14	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-38-B14	<1.0	NA	<0.0050	<0.0050	<0.0050	<0.0050	NA
S-0115-SP-A-D**	<1.0 [<0.050]	NA [NA]	<0.0050 [0.00050]	<0.0050 [0.00050]	<0.0050 [0.00050]	<0.0050 [0.00050]	NA [NA]

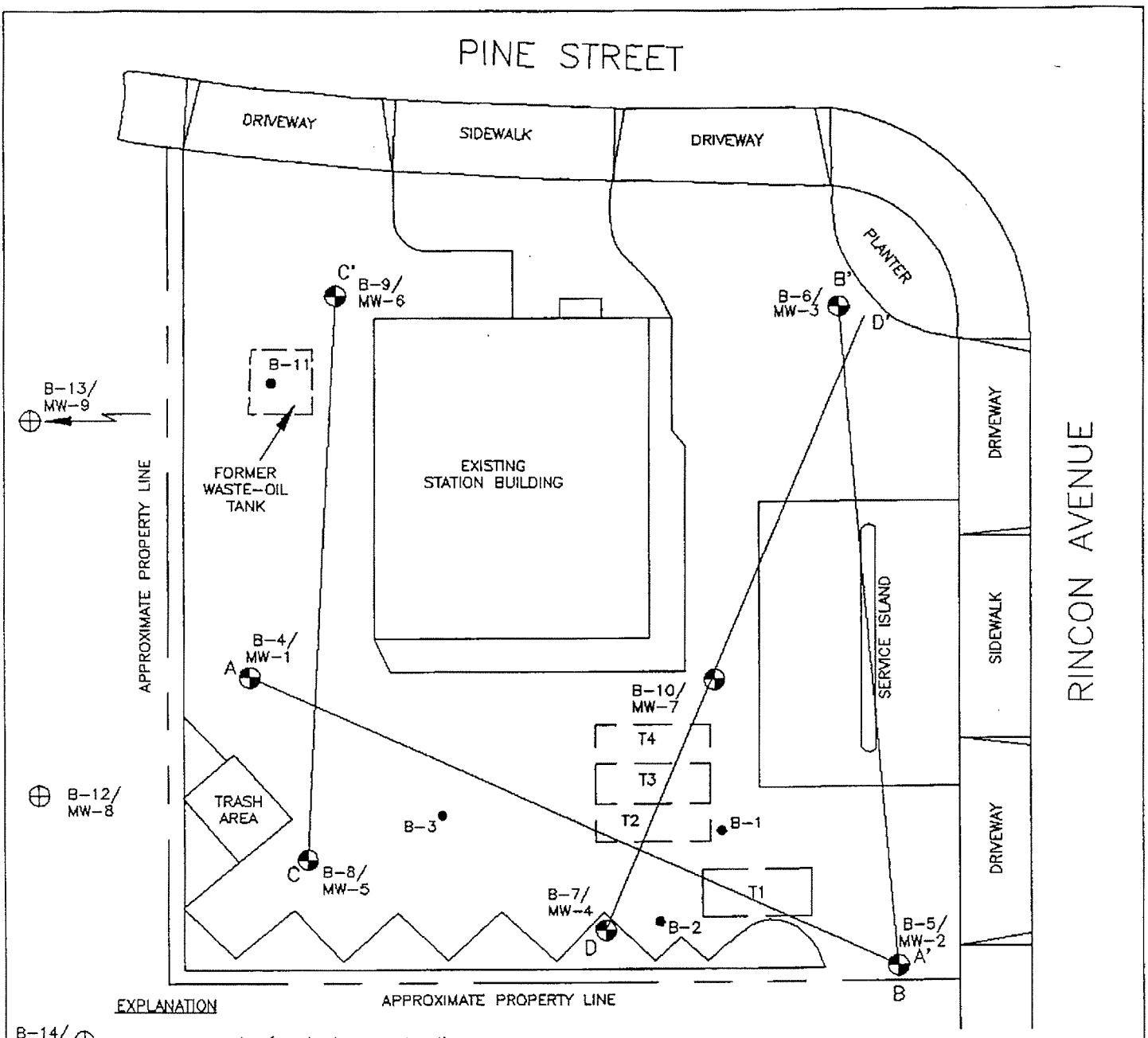
See notes on page 4 of 4.

TABLE 2
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF SOIL SAMPLES
ARCO Station 771
Livermore, California
(Page 4 of 4)

Sample Identification	TPHg	TPHd	B	T	E	X	TOG

Results measured in part per million (ppm).
TPHg: Total petroleum hydrocarbons as gasoline (analyzed by EPA Method 5030/8015/8020).
TPHd: Total petroleum hydrocarbons as diesel (analyzed by EPA Method 5030/8015).
B: benzene; T: toluene; E: ethylbenzene; X: xylenes.
BTEX: Analyzed by EPA Method 5030/8015/8020.
TOG: Total oil and grease (analyzed by Standard Method 5520 E&F (Gravimetric).
*: Composite sample of four soil samples obtained from stockpiled soil.
<: Less than the laboratory detection limit.
NA: Sample not analyzed.
**: Sample was also analyzed for:
STLC lead by EPA Method 7421 - < 0.10 ppm;
corrosivity by EPA Method 9045 - pH = 7.1;
ignitability by EPA Method 1010 - flashpoint >100°C;
and reactivity by EPA Methods 9030, 9010 and 9045 - sulfide <10 ppm,
cyanide <0.50 ppm,reaction with water - negative.
[]: TPHg and BTEX analyzed by EPA Method 5030/8015/8020 TCLP extract of soil.

Sample Identification: S-43-B17
- S: Soil sample
- 43: Depth of boring in feet
- B17: Boring number



RESNA

PROJECT 60000.06

PROPOSED BORING/ MONITORING WELL LOCATIONS
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
A

Table 1. Soil Sample Analytical Results
ARCO Facility No. 771, Livermore, California

Sample Designation	Date	Depth (feet bgs)	TPH-G (1)	BTEX Distinction (1)				Organic Lead (2)
				Benzene	Toluene	Ethylbenzene	Xylenes	
Former Tank Cavity								
T1A	12/30/91	15	**1,500**	1.3	28	24	210	NA
T1B	12/30/91	15	1.4	0.019	0.015	0.0089	0.2	NA
T2A	12/30/91	16	**1,900**	1.3	9.4	8.6	94	NA
T2B	12/30/91	16	ND	ND	ND	ND	ND	NA
T3A	12/30/91	14	**45**	0.089	1.2	0.52	4.7	NA
T3B	12/30/91	14	1.3	0.0097	0.045	0.023	0.24	NA
T4A	12/30/91	14	**4,600**	28	470	170	1,100	NA
T4B	12/30/91	14	2.4	0.0095	0.050	0.041	0.33	NA
New Tank Cavity								
TP-1	1/21/92	18	**100**	ND	0.059	ND	1.4	ND
TP-2	1/21/92	18	2.6	0.0057	0.012	0.012	0.12	ND
TP-3	1/21/92	18	1.8	0.0058	0.011	0.0071	0.053	ND
TP-4	1/21/92	18	1.4	0.0052	0.02	0.0094	0.092	ND
TP-5	1/21/92	18	1.5	0.0062	0.036	0.016	0.14	ND
TP-6	1/21/92	18	**830**	ND	2.5	1.5	47	ND
Product Line Trenches								
L1	2/7/92	1.5	ND	ND	0.035	ND	ND	ND
L2	2/7/92	1.5	**750**	0.35	30	26	200	ND
L3	2/7/92	0.5	41	0.091	0.28	0.1	0.93	ND
L4	2/7/92	1.5	2.2	0.0093	0.52	0.011	0.061	ND
L5	2/7/92	1.5	ND	ND	ND	ND	ND	ND
L6	2/7/92	1.5	ND	ND	ND	ND	ND	ND
L7	2/7/92	**0.5**	**600**	ND	0.21	ND	26	ND
L8	2/7/92	1.5	1.2	ND	0.027	ND	0.0068	ND
L2B	2/18/92	**5**	**91**	ND	ND	ND	2.4	NA
L7B	2/18/92	**5**	**ND**	ND	ND	ND	ND	NA

FOOTNOTES

(1) = Concentrations reported in mg/kg (= parts per million).

(2) = Concentrations reported in mg/L (= parts per million).

TPH-G = Total Petroleum Fuel Hydrocarbons as Low/Medium Boiling Point Hydrocarbons (USEPA Method 8015).

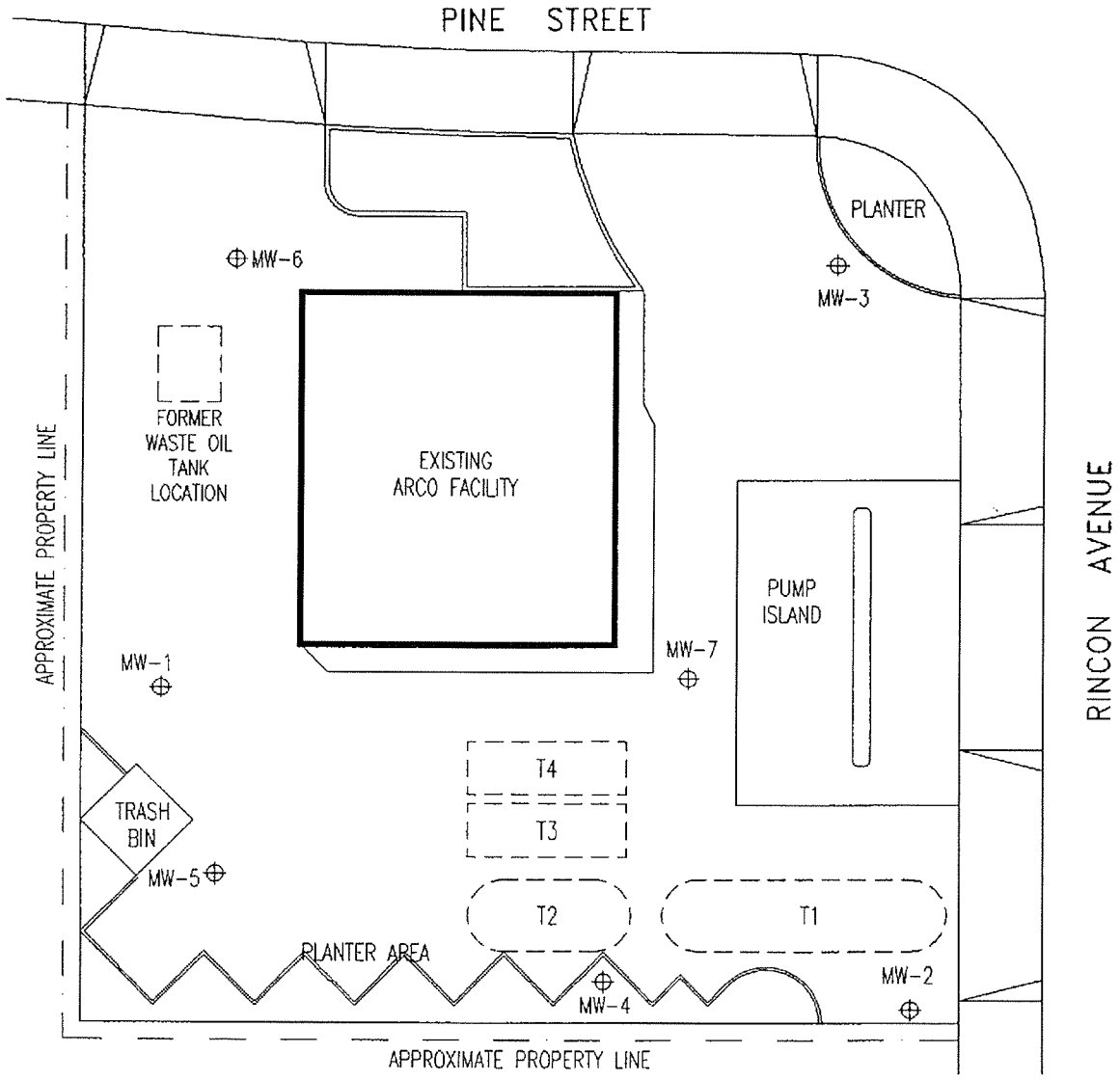
BTEX Distinction (USEPA Method 8020).

Organic Lead by method described in California LUFT Manual 12/87.

ND = Not detected.

NA = Not analyzed.

bgs = below ground surface.



EXPLANATION

⊕MW-5 MONITORING WELL LOCATION AND DESIGNATION

FORMER LOCATION OF UNDERGROUND STORAGE TANKS.

T1	10,000 GAL. SUPER UNLEADED.
T2	6,000 GAL. REGULAR.
T3	4,000 GAL. UNLEADED.
T4	4,000 GAL. UNLEADED.

N

0' 20' 40'

APPROXIMATE SCALE

SOURCE:

MAP MODIFIED FROM
RESNA CONSULTANTS, 1991.

ROUX ASSOCIATES
ENVIRONMENTAL CONSULTING & MANAGEMENT

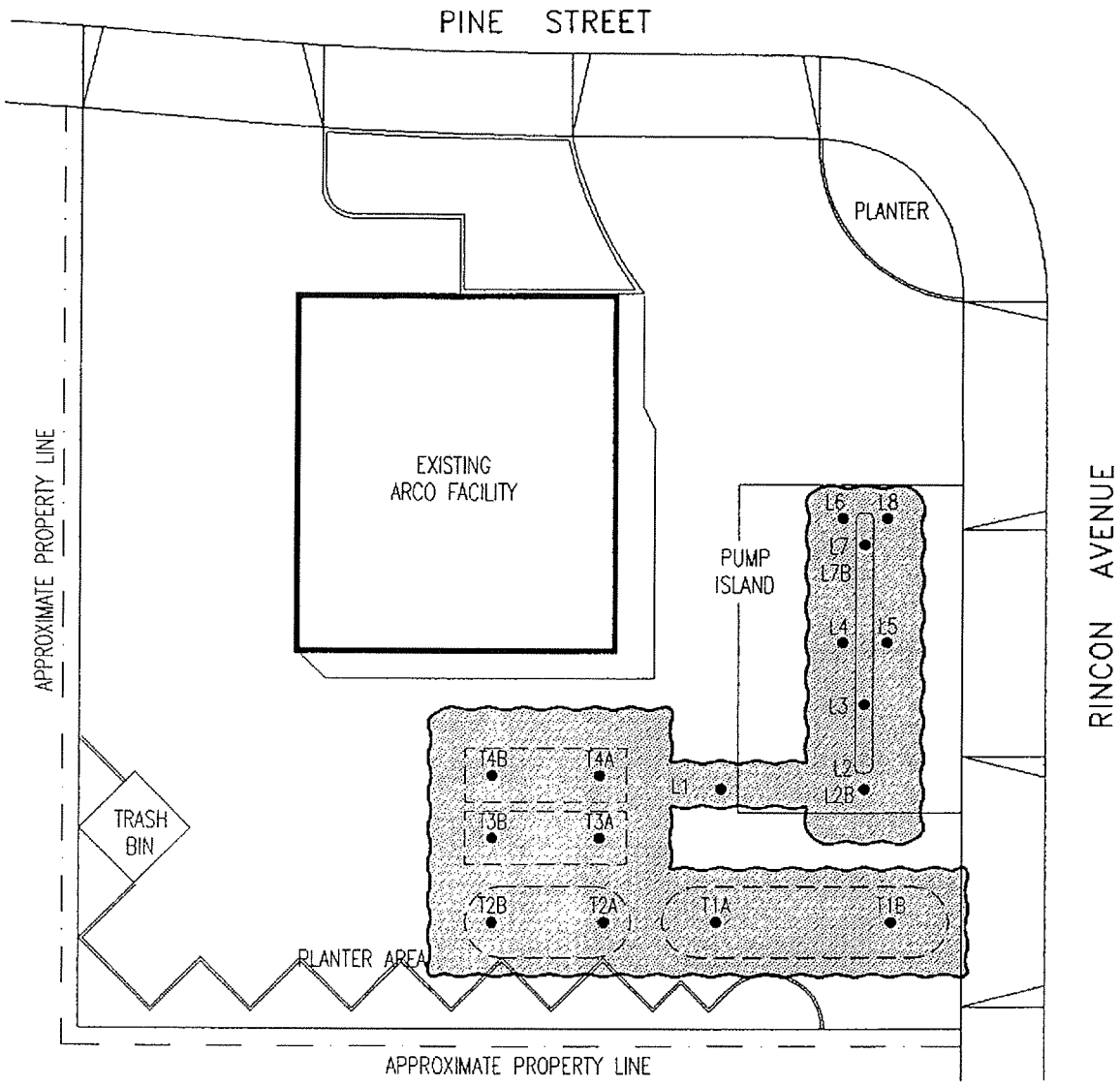
COMPILED BY:	G.M.
PREPARED BY:	R.P.
PROJECT MNGR.	G.M.
DATE:	01/92
SCALE:	AS SHOWN
PROJECT NO.	A135W01
FILE NAME:	AR_771XX

PREPARED FOR: ARCO PRODUCTS COMPANY

TITLE: SITE PLAN

ARCO FACILITY NO. 771

FIGURE 2



EXPLANATION

FORMER LOCATION OF UNDERGROUND STORAGE TANKS.

EXCAVATED AREAS.

●T4A SOIL SAMPLE LOCATION AND DESIGNATION.

N

0' 20' 40'

APPROXIMATE SCALE

SOURCE:

MAP MODIFIED FROM
RESNA CONSULTANTS, 1991.

ROUX ASSOCIATES
ENVIRONMENTAL CONSULTING & MANAGEMENT

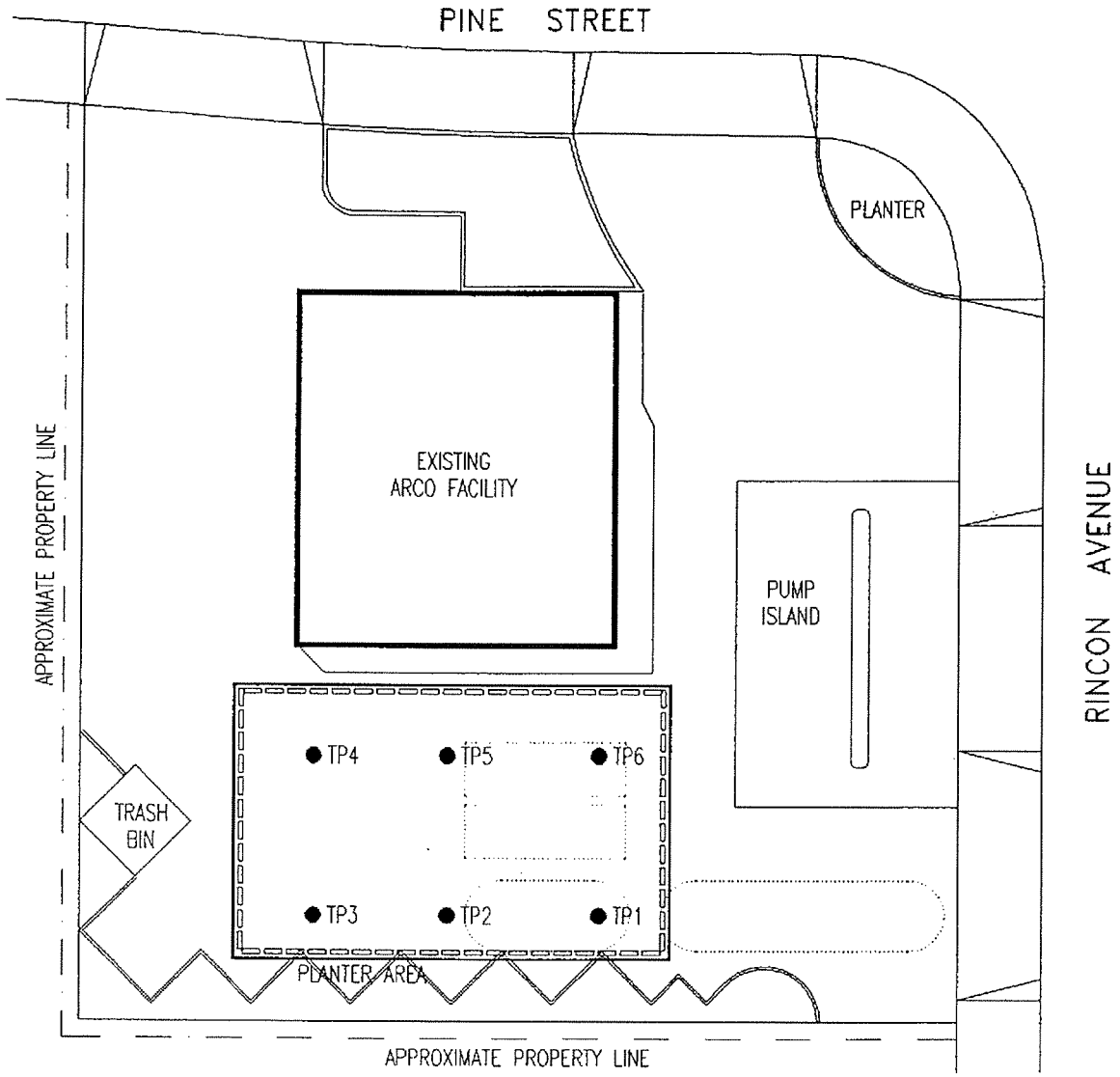
COMPILED BY:	T.R.
PREPARED BY:	R.P.
PROJECT MNGR.	G.M.
DATE:	04/92
SCALE:	AS SHOWN
PROJECT NO.	A135W01
FILE NAME:	AR_771XX

PREPARED FOR: ARCO PRODUCTS COMPANY

TITLE: LOCATION OF TANK CAVITY AND PRODUCT LINE TRENCH SOIL SAMPLES

ARCO FACILITY NO. 771

FIGURE 3



EXPLANATION

SHEET PILES AT LIMITS OF NEW TANK EXCAVATION.

● TP4 SOIL SAMPLE LOCATION AND DESIGNATION.

N

0' 20' 40'

APPROXIMATE SCALE

SOURCE:

MAP MODIFIED FROM
RESNA CONSULTANTS, 1991.

ROUX ASSOCIATES
ENVIRONMENTAL CONSULTING & MANAGEMENT

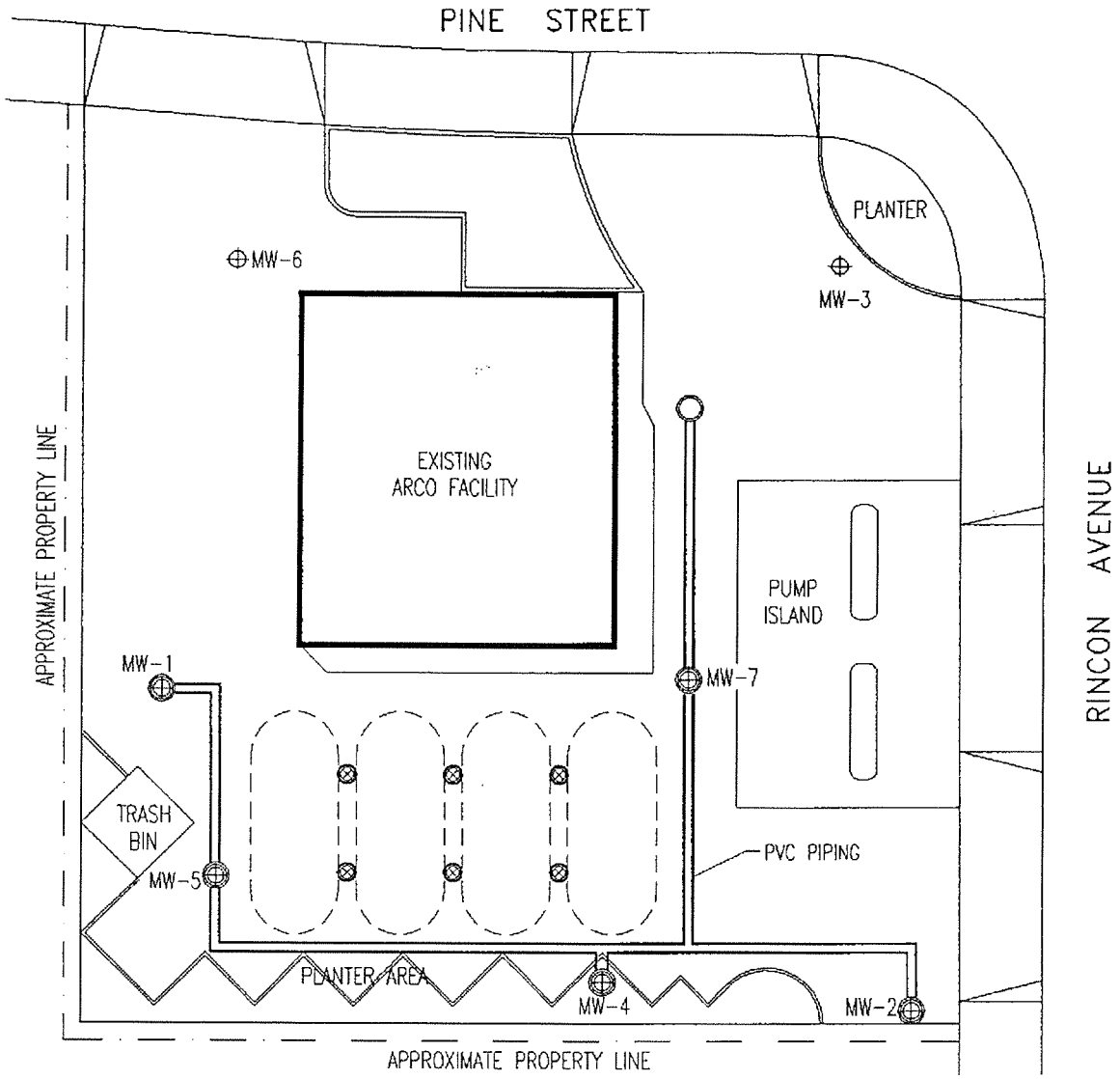
COMPILED BY:	G.M.
PREPARED BY:	R.P.
PROJECT MNGR.	G.M.
DATE:	01/92
SCALE:	AS SHOWN
PROJECT NO.	A135W01
FILE NAME:	AR_771XX

PREPARED FOR: ARCO PRODUCTS COMPANY

TITLE: LOCATION OF NEW TANK EXCAVATION AND SOIL SAMPLES

ARCO FACILITY NO. 771

FIGURE 4



EXPLANATION

- ⊕MW-5 MONITORING WELL LOCATION AND DESIGNATION
- LOCATION OF NEW UNDERGROUND STORAGE TANKS.
- LOCATION OF VAULT BOX.
- LOCATION OF CONDUCTOR CASING.
- PVC PIPING.

N

0' 20' 40'

APPROXIMATE SCALE

SOURCE:

MAP MODIFIED FROM
RESNA CONSULTANTS, 1991.

ROUX
ROUX ASSOCIATES
ENVIRONMENTAL CONSULTING & MANAGEMENT

COMPILED BY:	G.M.
PREPARED BY:	R.P.
PROJECT MNGR.	G.M.
DATE:	01/92
SCALE:	AS SHOWN
PROJECT NO.	A135W01
FILE NAME:	AR_771XX

PREPARED FOR: ARCO PRODUCTS COMPANY

TITLE: LOCATION OF WELLS, VAULT BOXES, AND PVC PIPING

ARCO FACILITY NO. 771

FIGURE 5

Table 1
Product Piping Removal Compliance Sampling Results

June 15, 2001

ARCO Service Station 0771
899 Rincon Ave, Livermore, California

Sample ID	Depth Sampled (fbg)	TPHg (mg/kg)	Benzene (mg/kg)	Toulene (mg/kg)	Ethyl-benzene (mg/kg)	Xylene (mg/kg)	MTBE (mg/kg)
Disp-1-4.5	4.5	<1.0	<0.0050	**0.017**	<0.0050	**0.019**	**0.78**
Disp-2-6	6.0	**1.0**	<0.0050	**0.017**	<0.0050	**0.049**	**2.1**
Pipe-1-3.5	3.5	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050
Pipe-2-4	4.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<0.050

Notes

fbg = feet below grade
mg/kg = milligrams per kilogram

TPHg = total petroluem hydrocarbons as gasoline
MTBE = methyl tert butyl ether

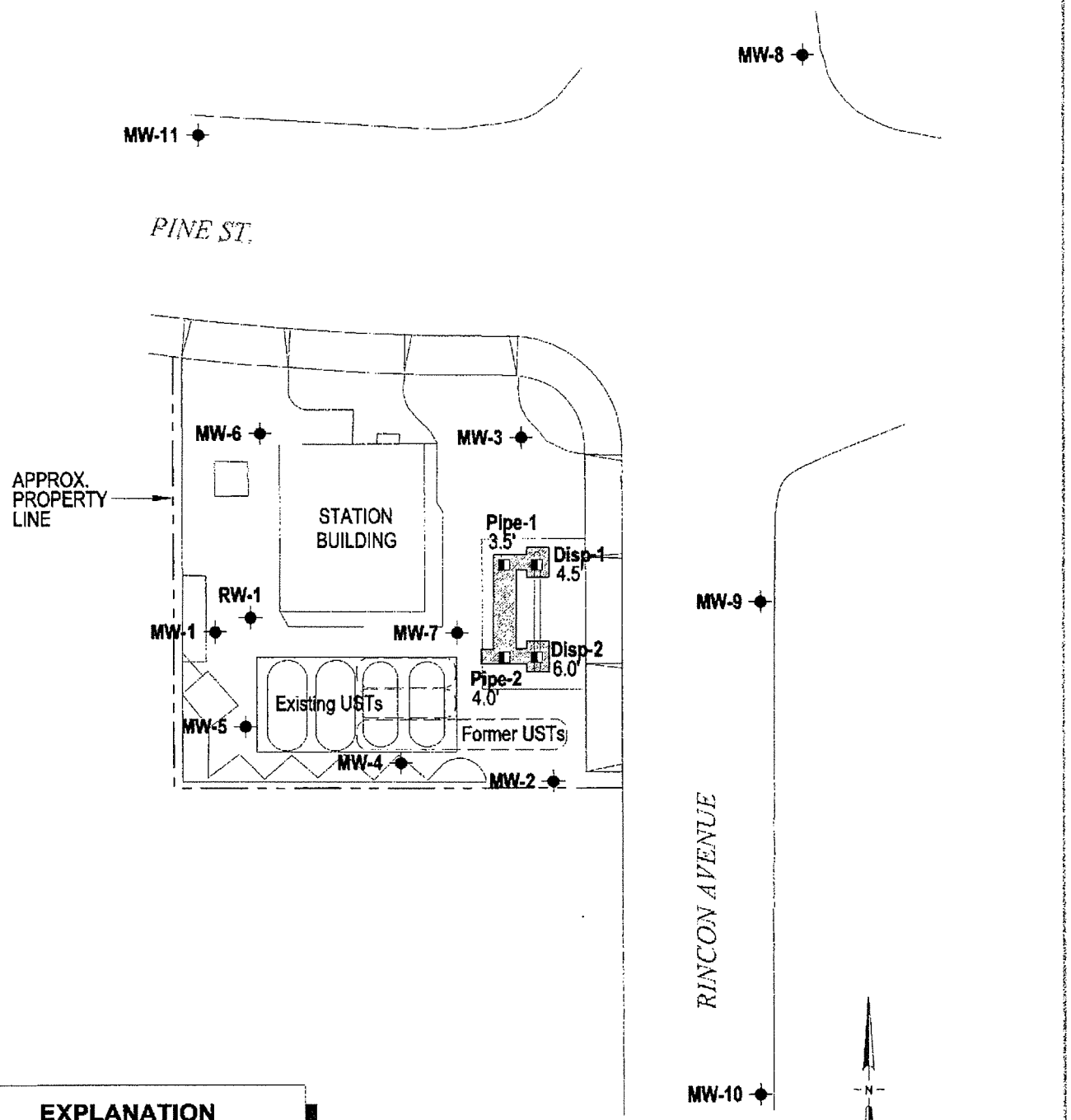


FIGURE
2

H:\ARCO\0771\FIGURES\SAMP-LOC.DWG

ARCO Service Station 0771
899 Rincon Avenue
Livermore, California

CAMBRIA

Site Plan and Soil Sampling Locations

Table 1. Summary of Soil Sample Analytical Data
Station #771, 899 Rincon Avenue, Livermore, California

Soil Boring Identification*	Sample ID	Date Collected	GRO mg/kg	Benzene mg/kg	Toluene mg/kg	Ethylbenzene mg/kg	Xylenes mg/kg	MTBE mg/kg	Comments
SB-2									
	SB-2-10'	3/25/2011	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
	SB-2-30'	3/25/2011	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
SB-3									
	SB-3-10'	3/25/2011	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
	SB-3-30'	3/25/2011	<0.50	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	
ESLs	--	--	83	0.044	2.9	3.3	2.3	0.023	

Abbreviations & Symbols:

* = See Drawing 2 for soil boring locations.

GRO: Gasoline range organics.

Calscience Environmental Laboratories, Inc.: GRO (C6-C12)

GRO analyzed using EPA method 8015B

Benzene, Toluene, Ethylbenzene, Total Xylenes, and MTBE analyzed using EPA method 8260B.

mg/kg = Milligrams per kilogram.

ESLs = Environmental Screening Levels for deep soil (>3 meters bgs) where groundwater is a current or potential source of drinking water (San Francisco Bay Regional Water Quality Control Board, 2008).

bgs = Below ground surface

Notes:

1,2-dibromoethane (EDB), 1,2-dichloroethane (1,2 DCA), tert-butyl alcohol (TBA), Di-isopropyl ether (DIPE), ethyl tert-butyl ether (ETBE), ter-amyl methyl ether (TAME), and ethanol were not detected at or above their respective laboratory reporting limit.

The last number in each Sample ID denotes the depth at which the sample was collected in feet bgs (i.e., SB-2 10' was collected at a depth of 10 feet bgs)

APPENDIX E

SOIL VAPOR EXTRACTION SYSTEM PERFORMANCE DATA

TABLE 1
VAPOR-EXTRACTION TEST MONITORING DATA
ARCO Station 771
Livermore, California

Influent Air Stream					Observation Wells			
Flow	Concentration	Applied Vacuum	Temp.	Elapsed Time (min)	MW-2 Induced Vacuum	MW-5 Induced Vacuum	MW-7 Induced Vacuum	MW-1 Induced Vacuum
53.4	NM	39	50	0	1.0	0.8	0.7	NM
87.2	>10,000	>100	55	30	4.3	5.8	3.7	NM
89.4	>10,000	98	57	60	4.8	6.9	5.0	NM
91.6	>10,000	105	57	90	4.9	7.2	5.7	NM
91.6	>10,000	105	60	120	4.9	7.3	6.0	NM
91.6	>10,000	105	60	150	4.9	7.3	6.0	NM
63.2	>10,000	49	64	30	4.8	5.0	5.1	NM
63.2	>10,000	49	63	60	4.8	5.0	5.1	>3
				Distance from extraction well MW-4 (feet):	40.0	40.0	35.0	60.0

Influent Air Stream					Observation Wells			
Flow	Concentration	Applied Vacuum	Temp.	Elapsed Time (min)	MW-1 Induced Vacuum	MW-4 Induced Vacuum	MW-2 Induced Vacuum	MW-7 Induced Vacuum
81.6	>10,000	96	56	0	2.0	0.9	0.04	0.0
81.6	>10,000	81.8	55	30	5.0	3.3	0.5	1.1
				Distance from extraction well MW-5 (feet):	30.0	40.0	80.0	60.0

Influent Air Stream					Observation Wells		
Flow	Concentration	Applied Vacuum	Temp.	Elapsed Time (min)	MW-2 Induced Vacuum	MW-4 Induced Vacuum	MW-5 Induced Vacuum
82.8	>10,000	95	57	0	2.0	2.0	1.2
82.8	>10,000	100	54	30	2.0	2.3	1.3
				Distance from extraction well MW-7 (feet):	44.0	35.0	57.0

Flow measured in cubic feet per minute (CFM).
Concentration measured in parts per million by volume (ppmv) on Lower Explosion Level (LEL) Meter.
Vacuum measured in inches of water column vacuum.
Temperature measured in degrees Fahrenheit.
NM = Not Measured.

TABLE 2
LABORATORY ANALYSIS OF AIR SAMPLES
ARCO Station 771
Livermore, California

Sample ID	Sample Location	Elapsed Time of Sample	TPHg	B	T	E	X
60000.07-AS1	MW-4	30	62,000	1200	150	28	48
60000.07-AS2	MW-4	150	58,000	1100	180	43	86
effluent	Outlet*	30	1,000	19	14	6.4	18
60000.07-AS3	MW-4	30	14,000	180	23	<12	<12
60000.07-AS4	MW-7	30	30,000	740	150	15	87
60000.07-AS5	MW-5	30	8,600	220	<12	<12	<12

Concentrations reported in milligrams per cubic meter (mg/m^3)
< : Below the minimum laboratory detection limit for air.
NA: Not analyzed.
TPHg: Total petroleum hydrocarbons as gasoline (analyzed by EPA Methods 8015 and 8020).
B: benzene, T: toluene, E: ethylbenzene, X: total xylene isomers
BTEX: Analyzed by EPA Methods 8015 and 8020
*: Outlet effluent vapors sampled after abatement by the internal combustion engine.

TABLE 1
LABORATORY ANALYTICAL RESULTS OF AIR SAMPLES
SVE STARTUP AND PERFORMANCE TEST

ARCO Station 771
899 Rincon Avenue, Livermore, California

Sample Location	Date	Sample ID	Concentration in air (mg/m^3)				
			Benzene	Toluene	Ethylbenzene	Total Xylenes	TPHG
Detection Limit			0.5	0.5	0.5	1.0	60
Well Field Influent (before dilution)	12/20/94	I-1	<0.5	<0.5	<0.5	7.1	300
Influent to System (after dilution)	12/20/94	I-2	<0.5	<0.5	<0.5	1.9	<60
Effluent (stack exhaust)	12/20/94	E-1	<0.5	0.7	<0.5	2.5	<60

Notes:
mg/m^3: Milligrams per cubic meter
TPHG: Total Petroleum Hydrocarbons as Gasoline
Analysis Method: Modified EPA 8015/8020

TABLE 2
HYDROCARBON REMOVAL AND EMISSION RATES
SVE STARTUP AND PERFORMANCE TEST

ARCO Station 771
899 Rincon Avenue, Livermore, California

Date	Compound	Concentration (mg/m^3)		Flow Rate (scfm or ft^3/min)	Mass Removal Rate (lbs/day)	Mass Emisson Rate (lbs/day)	Destruction Efficiency (%)
		Influent(I-2)	Effluent (E-1)				
12/20/94	Benzene	<0.5	<0.5	130	<0.0058	<0.0058	NC
12/20/94	TPHG	<60	<60	130	<0.7	<0.7	NC

Notes:
mg/m^3: milligrams per cubic meter
scfm: standard cubic feet per minute
ft^3/min: cubic feet per minute
TPHG: Total Petroleum Hydrocarbons as Gasoline
lbs/day: pouinds per day
NC: Not calculated

Sample Calculation:
TPHG removal rate:
inf.conc. (mg TPHG/m^3 air) x flow rate(ft^3 air/min) x 1 lb/454,000 mg x 0.0283 m^3/ft^3 x 1440 min/day = lbs TPHG /day

Table 5
Soil-Vapor Extraction System
Operation and Performance Data

Facility Number: 771
Location: 899 Rincon Avenue
Livermore, California

Consultant: EMCON
1921 Ringwood Avenue
San Jose, California

Vapor Treatment Unit: King Buck / 200 cfm
Model MMC-6A/E
catalytic oxidizer

Start-Up Date: 12-20-94
Reporting Period From: 12-01-94
To: 04-01-96
System was shut down on 10-10-95.

Date Begin:	12-01-94	01-01-95	02-01-95	07-01-95	08-01-95
Date End:	01-01-95	02-01-95	07-01-95	08-01-95	09-01-95
Mode of Oxidation:	Catalytic	Catalytic	Catalytic	Catalytic	Catalytic
Days of Operation:	11	11	0	8	14
Days of Downtime:	20	20	150	23	17
Average Vapor Concentrations (1)					
Well Field Influent: ppmv (2) as gasoline	100	<15	NA	54	33
mg/m3 (3) as gasoline	300	<60	NA	218	120
ppmv as benzene	<0.1	<0.1	NA	1.2	0.4
mg/m3 as benzene	<0.5	<0.5	NA	3.6	1.2
System Influent: ppmv as gasoline	<15	NA	NA	48	24
mg/m3 as gasoline	<60	NA	NA	200	87
ppmv as benzene	<0.1	NA	NA	1.2	0.3
mg/m3 as benzene	<0.5	NA	NA	3.8	0.8
System Effluent: ppmv as gasoline	<15	NA	NA	<15	<15
mg/m3 as gasoline	<60	NA	NA	<60	<60
ppmv as benzene	<0.1	NA	NA	<0.1	<0.1
mg/m3 as benzene	<0.5	NA	NA	<0.5	<0.5
Average Well Field Flow Rate (4), scfm (5):	27.3	13.0	0.0	83.3	104.3
Average System Influent Flow Rate (4), scfm:	201.7	180.7	0.0	163.4	170.9
Average Destruction Efficiency (6), percent (7):	NA (13)	NA	NA	70.0 (14)	31.0 (14)
Average Emission Rates (8), pounds per day (9)					
Gasoline:	1.09	0.97	0.00	0.88	0.92
Benzene:	0.01	0.01	0.00	0.01	0.01
Operating Hours This Period:	275.50	269.23	0.00	195.40	342.12
Operating Hours To Date:	275.5	544.7	544.7	740.1	1082.3
Pounds/ Hour Removal Rate, as gasoline (10):	0.03	0.00	0.00	0.07	0.05
Pounds Removed This Period, as gasoline (11):	8.4	0.8	0.0	13.3	16.0
Pounds Removed To Date, as gasoline:	8.4	9.2	9.2	22.5	38.5
Gallons Removed This Period, as gasoline (12):	1.4	0.1	0.0	2.1	2.6
Gallons Removed To Date, as gasoline:	1.4	1.5	1.5	3.6	6.2

Table 5
Soil-Vapor Extraction System
Operation and Performance Data

Facility Number: 771
Location: 899 Rincon Avenue
Livermore, California

Consultant: EMCON
1921 Ringwood Avenue
San Jose, California

Vapor Treatment Unit: King Buck / 200 cfm
Model MMC-6A/E
catalytic oxidizer

Start-Up Date: 12-20-94
Reporting Period From: 12-01-94
To: 04-01-96
System was shut down on 10-10-95.

Date Begin:	09-01-95	10-01-95	01-01-96
Date End:	10-01-95	01-01-96	04-01-96
Mode of Oxidation:	Catalytic	Catalytic	Catalytic
Days of Operation:	27	0	0
Days of Downtime:	3	92	91
Average Vapor Concentrations (1)			
Well Field Influent: ppmv (2) as gasoline	20	NA	NA
mg/m3 (3) as gasoline	89	NA	NA
ppmv as benzene	<0.1	NA	NA
mg/m3 as benzene	<0.5	NA	NA
System Influent: ppmv as gasoline	18	NA	NA
mg/m3 as gasoline	79	NA	NA
ppmv as benzene	<0.1	NA	NA
mg/m3 as benzene	<0.5	NA	NA
System Effluent: ppmv as gasoline	<15	NA	NA
mg/m3 as gasoline	<60	NA	NA
ppmv as benzene	<0.1	NA	NA
mg/m3 as benzene	<0.5	NA	NA
Average Well Field Flow Rate (4), scfm (5):	84.0	0.0	0.0
Average System Influent Flow Rate (4), scfm:	84.0	0.0	0.0
Average Destruction Efficiency (6), percent (7):	24.1 (14)	NA	NA
Average Emission Rates (8), pounds per day (9)			
Gasoline:	0.45	0.00	0.00
Benzene:	0.00	0.00	0.00
Operating Hours This Period:	654.88	0.00	0.40
Operating Hours To Date:	1737.1	1737.1	1737.5
Pounds/ Hour Removal Rate, as gasoline (10):	0.03	0.00	0.00
Pounds Removed This Period, as gasoline (11):	18.3	0.0	0.0
Pounds Removed To Date, as gasoline:	56.9	56.9	56.9
Gallons Removed This Period, as gasoline (12):	3.0	0.0	0.0
Gallons Removed To Date, as gasoline:	9.2	9.2	9.2

Table 5
Soil-Vapor Extraction System
Operation and Performance Data

Facility Number: 771	Vapor Treatment Unit: King Buck / 200 cfm
Location: 899 Rincon Avenue	Model MMC-6A/E
Livermore, California	catalytic oxidizer
Consultant: EMCON	Start-Up Date: 12-20-94
1921 Ringwood Avenue	Reporting Period From: 12-01-94
San Jose, California	To: 04-01-96
	System was shut down on 10-10-95.

CURRENT REPORTING PERIOD:	01-01-96	to	04-01-96
DAYS / HOURS IN PERIOD:	91	2184.0	
DAYS / HOURS OF OPERATION:	0	0.0	
DAYS / HOURS OF DOWN TIME:	91	2184.0	
PERCENT OPERATIONAL:		0.0	%
PERIOD POUNDS REMOVED:	9.2		
PERIOD GALLONS REMOVED:	0.0		
AVERAGE SYSTEM INFLUENT FLOW RATE (scfm):		0.0	

1. Average concentrations are based on discrete sample results reported during the month; refer to Appendix C for discrete sample results.
2. ppmv: parts per million by volume
3. mg/m3: milligrams per cubic meter
4. Average flow rates (time weighted average) are based on instantaneous flow rates recorded during the month; refer to Appendix C for instantaneous flow data.
5. scfm: flow in standard cubic feet per minute at one atmosphere and 70 degrees Fahrenheit
6. Average destruction efficiencies are calculated using monthly average concentrations; refer to Appendix C for instantaneous destruction efficiency data.
7. destruction efficiency, percent = ([system influent concentration (as gasoline in mg/m3) - system effluent concentration (as gasoline in mg/m3)] / system influent concentration (as gasoline in mg/m3)) x 100 percent
8. Average emission rates are calculated using monthly average concentrations and flow rates; refer to Appendix C for instantaneous emission rate data.
9. emission rates (pounds per day) = system effluent concentration (as gasoline or benzene in mg/m3) x system influent flow rate (scfm) x 0.02832 m3/ft3 x 1440 minutes/day x 1 pound/454,000 mg
10. pounds/ hour removal rate (as gasoline) = well field influent concentration (as gasoline in mg/m3) x well field influent flow rate (scfm) x 0.02832 m3/ft3 x 60 minutes/hour x 1 pound/454,000 mg
11. pounds removed this period (as gasoline) = pounds/ hour removal rate x hours of operation
12. gallons removed this period (as gasoline) = pounds removed this period (as gasoline) x 0.1613 gallons/pound of gasoline
13. NA: not analyzed, not available, or not applicable
14. Although the destruction efficiency appeared to be less than 90 percent, laboratory analytical results collected during this period indicate the effluent TVHG and benzene concentrations in off-gas discharged to the atmosphere were below laboratory detection limits, indicating compliance with BAAQMD discharge requirements.

Table 6
Soil-Vapor Extraction Well Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Date: 04-11-96

Date	Well Identification											
	VW-1			MW-1			MW-2			MW-4		
	Valve Position	TVHG ppmv	Vacuum Response in-H2O	Valve Position	TVHG ppmv	Vacuum Response in-H2O	Valve Position	TVHG ppmv	Vacuum Response in-H2O	Valve Position	TVHG ppmv	Vacuum Response in-H2O
12-20-94	open	177 LAB	32.5	passive	NA	NA	passive	NA	NA	open	53 LAB	25.0
01-17-95	System shut down											
07-12-95	System was restarted											
07-12-95	open	NA	NA	open	NA	NA	open	NA	NA	open	NA	NA
08-01-95	open	NA	NA	open	NA	NA	open	NA	NA	open	NA	NA
08-29-95	open	NA	NA	open	NA	NA	open	NA	NA	open	NA	NA
09-18-95	open	44.8 PID	53.7	open	10.7 PID	56.9	open	12.0 PID	52.8	open	13.3 PID	54.7
09-18-95	open (b)	66.8 PID	56.0	open (b)	113 PID	58.2	open (b)	25.9 PID	55.1	open (b)	21.8 PID	56.9
10-10-95	open	NA	NA	open	NA	NA	open	NA	NA	open	NA	NA
10-10-95	System shut down											
12-19-95	closed (b)	NA	NA	closed (b)	NA	NA	closed (b)	NA	NA	closed (b)	NA	NA
02-08-96	closed (b)	NA	NA	closed (b)	NA	NA	closed (b)	NA	NA	closed (b)	NA	NA
02-14-96	closed (b)	NA	NA	closed (b)	NA	NA	closed (b)	NA	NA	closed (b)	NA	NA
03-22-96	closed (b)	NA	NA	closed (b)	NA	NA	closed (b)	NA	NA	closed (b)	NA	NA

TVHG: concentration of total volatile hydrocarbons as gasoline
ppmv: parts per million by volume
in-H2O: inches of water
open: open to the system
open (b): open to the system and bubbling air at 1 scfm per well
passive: open to the atmosphere
closed: closed to the system and atmosphere
closed (b): closed to the system and atmosphere, but bubbling air at 1 scfm per well
NA: not analyzed or not measured
FID: TVHG concentration was measured with a portable flame ionization detector
LAB: TVHG concentration was analyzed in the laboratory

Table 6
Soil-Vapor Extraction Well Data

ARCO Service Station 771
899 Rincon Avenue, Livermore, California

Date: 04-11-96

Date	Well Identification							
	MW-5			MW-7			Bubbler-Only Well	
	Valve Position	TVHG ppmv	Vacuum Response in-H2O	Valve Position	TVHG ppmv	Vacuum Response in-H2O	RW-1	
12-20-94	passive	NA	NA	passive	NA	NA		
01-17-95	System shut down							
07-12-95	System was restarted							
07-12-95	open	NA	NA	open	NA	NA		
08-01-95	open	NA	NA	open	NA	NA		
08-29-95	open	NA	NA	open	NA	NA		
09-18-95	open	11.2 PID	55.9	open	19.0 PID	53.9		
09-18-95	open (b)	117 PID	58.0	open (b)	20.0 PID	56.2		
10-10-95	open	NA	NA	open	NA	NA		
10-10-95	System shut down							
12-19-96	closed (b)	NA	NA	closed (b)	NA	NA		
02-08-96	closed (b)	NA	NA	closed (b)	NA	NA	bubbling	
02-14-96	closed (b)	NA	NA	closed (b)	NA	NA	bubbling	
03-22-96	closed (b)	NA	NA	closed (b)	NA	NA	bubbling	

TVHG: concentration of total volatile hydrocarbons as gasoline
ppmv: parts per million by volume
in-H2O: inches of water
open: open to the system
open (b): open to the system and bubbling air at 1 scfm per well
passive: open to the atmosphere
closed: closed to the system and atmosphere
closed (b): closed to the system and atmosphere, but bubbling air at 1 scfm per well
NA: not analyzed or not measured
FID: TVHG concentration was measured with a portable flame ionization detector
LAB: TVHG concentration was analyzed in the laboratory

APPENDIX F

MANN-KENDALL ANALYSIS

Mann Kendall Trend Evaluation
Atlantic Richfield Company Station #771, Livermore, California

Contaminant: TPHg/GRO

Monitoring Inputs

Quarter	MW-4	MW-5	MW-7	RW-1	MW-6
	ug/l	ug/l	ug/l	ug/l	ug/l
1	4800		8900	0	
2	4200	2100	9100	600	540
3	4500		16000	1400	
4	3500	1600	12000	0	4600
5	5500		13000	480	
6	66	2100	8000		260
7	0		5600	6900	
8	2400	470	2400	0	0
9	220		3500	0	
10	0	0	70	0	0
11	110		0	120	
12	3000	100	0	0	0
13	1700		2600	240	
14	3300	1000	2800	440	0
15	2300			500	
16	2000	620	2600	750	430

Data Entry Cell

Mann-Kendall Results

0-8 Quarter Evaluation

MW-4	Decreasing
MW-5	Stable/No Trend
MW-7	Decreasing
RW-1	Stable/No Trend
MW-6	Stable/No Trend

5-12 Quarter Evaluation

MW-4	Stable/No Trend
MW-5	Stable/No Trend
MW-7	Decreasing
RW-1	Stable/No Trend
MW-6	Stable/No Trend

9-16 Quarter Evaluation

MW-4	Increasing
MW-5	Stable/No Trend
MW-7	Stable/No Trend
RW-1	Increasing
MW-6	Stable/No Trend

12 Quarter Evaluation

MW-4	Decreasing
MW-5	Stable/No Trend
MW-7	Decreasing
RW-1	Stable/No Trend
MW-6	Stable/No Trend

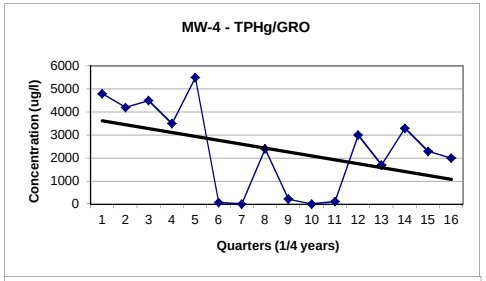
16 Quarter Evaluation

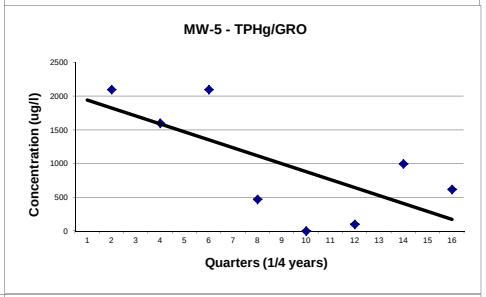
MW-4	Stable/No Trend
MW-5	Stable/No Trend
MW-7	Decreasing
RW-1	Stable/No Trend
MW-6	Stable/No Trend

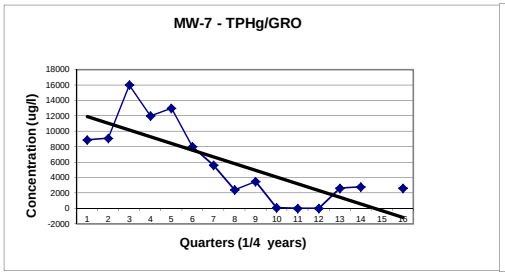
7 Year Evaluation

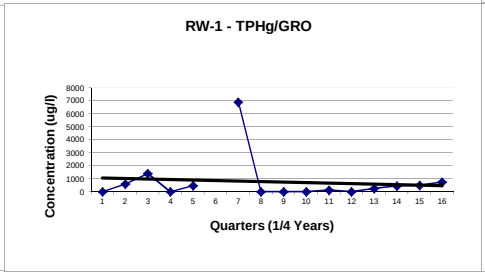
Mess1	Stable/No Trend

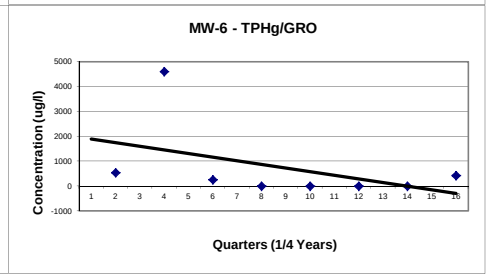
(See 7 year sheet for chart)











Mann Kendall Trend Evaluation
Atlantic Richfield Company Station #771, Livermore, California

Contaminant: Benzene

Monitoring Inputs

Quarter	MW-4	MW-5	MW-7	RW-1	MW-6
	ug/l	ug/l	ug/l	ug/l	ug/l
1	270		670	0	
2	410	250	930	0	36
3	250		770	8	
4	230	61	1000	0	210
5	250		1200	4.3	
6	0.6	29	110		0
7	0		16	17	
8	140	36	140	0	0
9	1.2		120	0	
10	3.1	0	0.76	0	0
11	1.1		1.5	0.96	
12	320	3	0	0	0
13	150		36	15	
14	70	18	430	0	0
15	59			1.5	
16	79	9	310	2.4	0

Data Entry Cell

Mann-Kendall Results

0-8 Quarter Evaluation

MW-4	Decreasing
MW-5	Stable/No Trend
MW-7	Stable/No Trend
RW-1	Stable/No Trend
MW-6	Stable/No Trend

5-12 Quarter Evaluation

MW-4	Stable/No Trend
MW-5	Stable/No Trend
MW-7	Decreasing
RW-1	Stable/No Trend
MW-6	Stable/No Trend

9-16 Quarter Evaluation

MW-4	Stable/No Trend
MW-5	Stable/No Trend
MW-7	Stable/No Trend
RW-1	Increasing
MW-6	Stable/No Trend

12 Quarter Evaluation

MW-4	Decreasing
MW-5	Stable/No Trend
MW-7	Decreasing
RW-1	Stable/No Trend
MW-6	Stable/No Trend

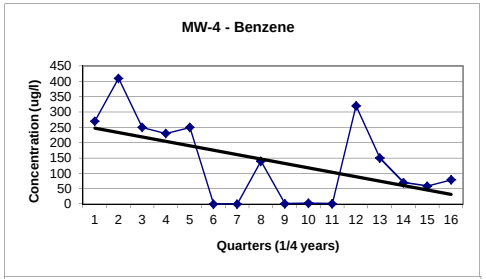
16 Quarter Evaluation

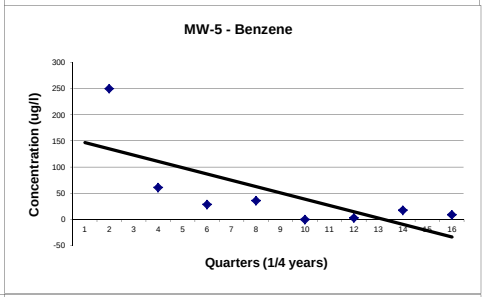
MW-4	Stable/No Trend
MW-5	Stable/No Trend
MW-7	Decreasing
RW-1	Stable/No Trend
MW-6	Stable/No Trend

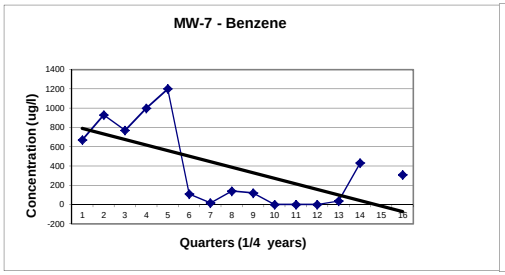
7 Year Evaluation

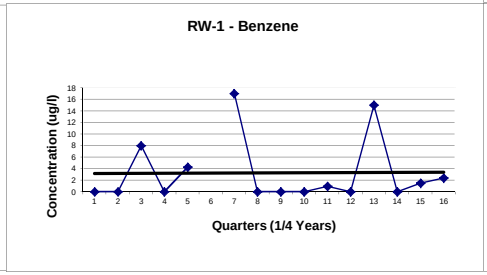
Mess1	Stable/No Trend

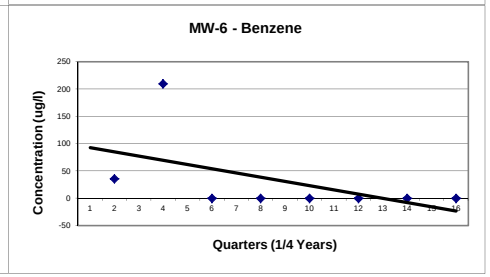
(See 7 year sheet for chart)











Mann Kendall Trend Evaluation
Atlantic Richfield Company Station #771, Livermore, California

Contaminant: MTBE

Monitoring Inputs

Quarter	MW-4	MW-5	MW-7	RW-1	MW-6
	ug/l	ug/l	ug/l	ug/l	ug/l
1	180		100	0	
2	300	250	140	0	5.2
3	160		87	0	
4	230	270	150	2	32
5	190		120	0.54	
6	3.1	14	54		5.1
7	11		3.1	2.6	
8	74	110	67	0	0
9	61		26	8.3	
10	17	0	0.69	0.53	0
11	37		0	1.6	
12	63	12	0.53	0.84	0
13	43		11	2.7	
14	51	10	110	1.9	0
15	33			0	
16	57	4.6	150	2.2	8

Data Entry Cell

Mann-Kendall Results

0-8 Quarter Evaluation

MW-4	Decreasing
MW-5	Stable/No Trend
MW-7	Decreasing
RW-1	Stable/No Trend
MW-6	Stable/No Trend

5-12 Quarter Evaluation

MW-4	Stable/No Trend
MW-5	Stable/No Trend
MW-7	Decreasing
RW-1	Stable/No Trend
MW-6	Stable/No Trend

9-16 Quarter Evaluation

MW-4	Stable/No Trend
MW-5	Stable/No Trend
MW-7	Stable/No Trend
RW-1	Stable/No Trend
MW-6	Stable/No Trend

12 Quarter Evaluation

MW-4	Decreasing
MW-5	Stable/No Trend
MW-7	Decreasing
RW-1	Stable/No Trend
MW-6	Stable/No Trend

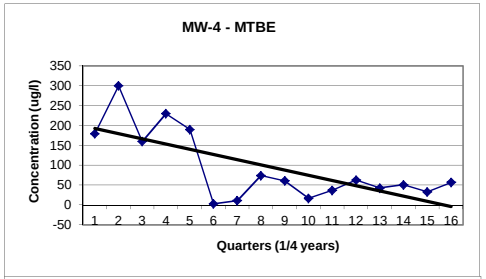
16 Quarter Evaluation

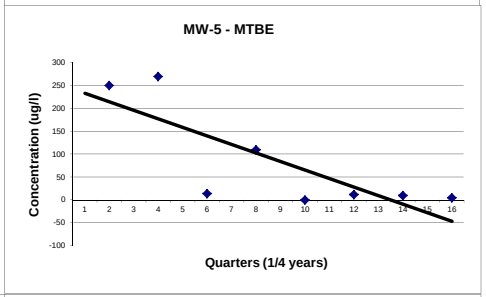
MW-4	Decreasing
MW-5	Stable/No Trend
MW-7	Decreasing
RW-1	Increasing
MW-6	Stable/No Trend

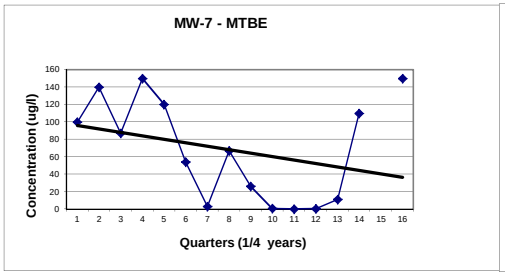
7 Year Evaluation

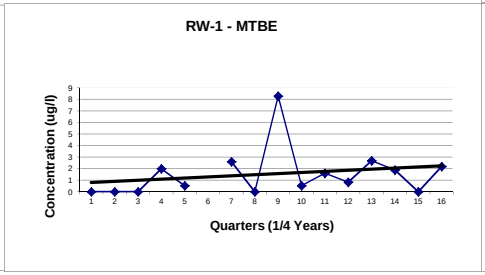
Mess1	Stable/No Trend

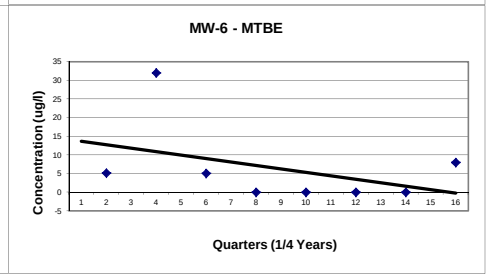
(See 7 year sheet for chart)









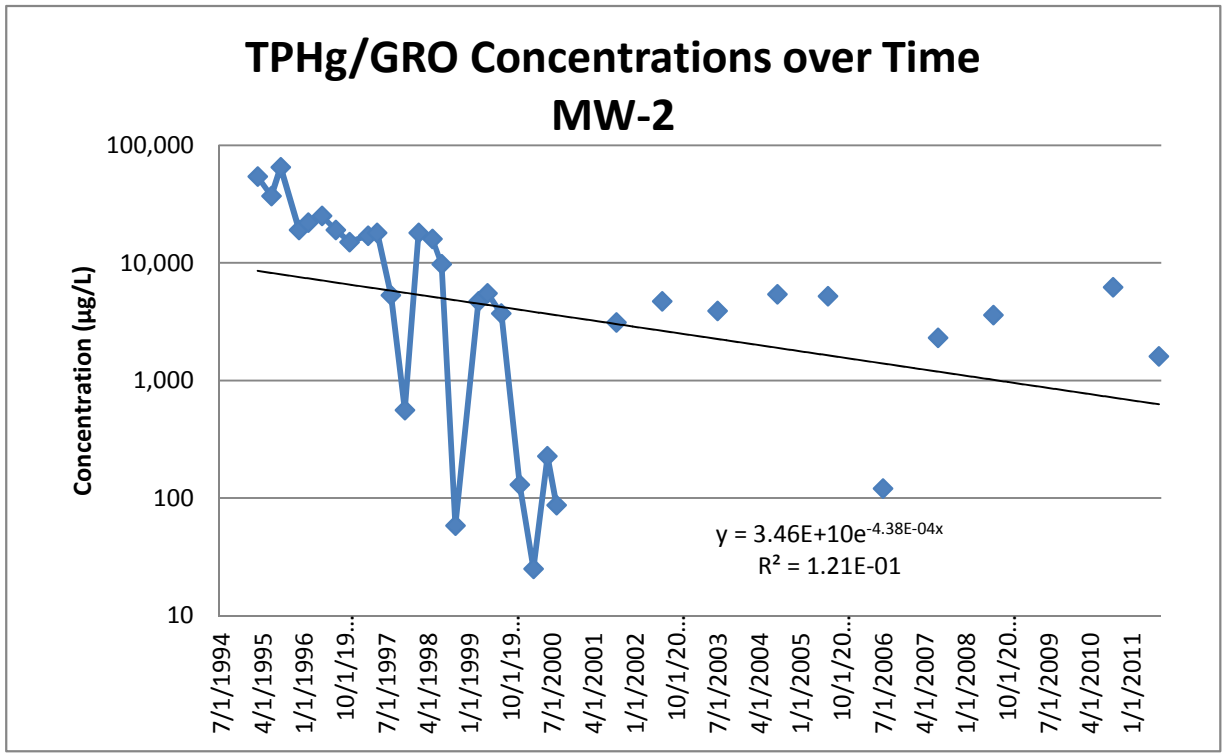


APPENDIX G

REGRESSION CURVE ANALYSIS

Estimated Time to Reach Water Quality Objective
Atlantic Richfield Company Station #771, Livermore, California

Well ID: MW-2
Constituent: TPHg/GRO (data since 3/20/1995)



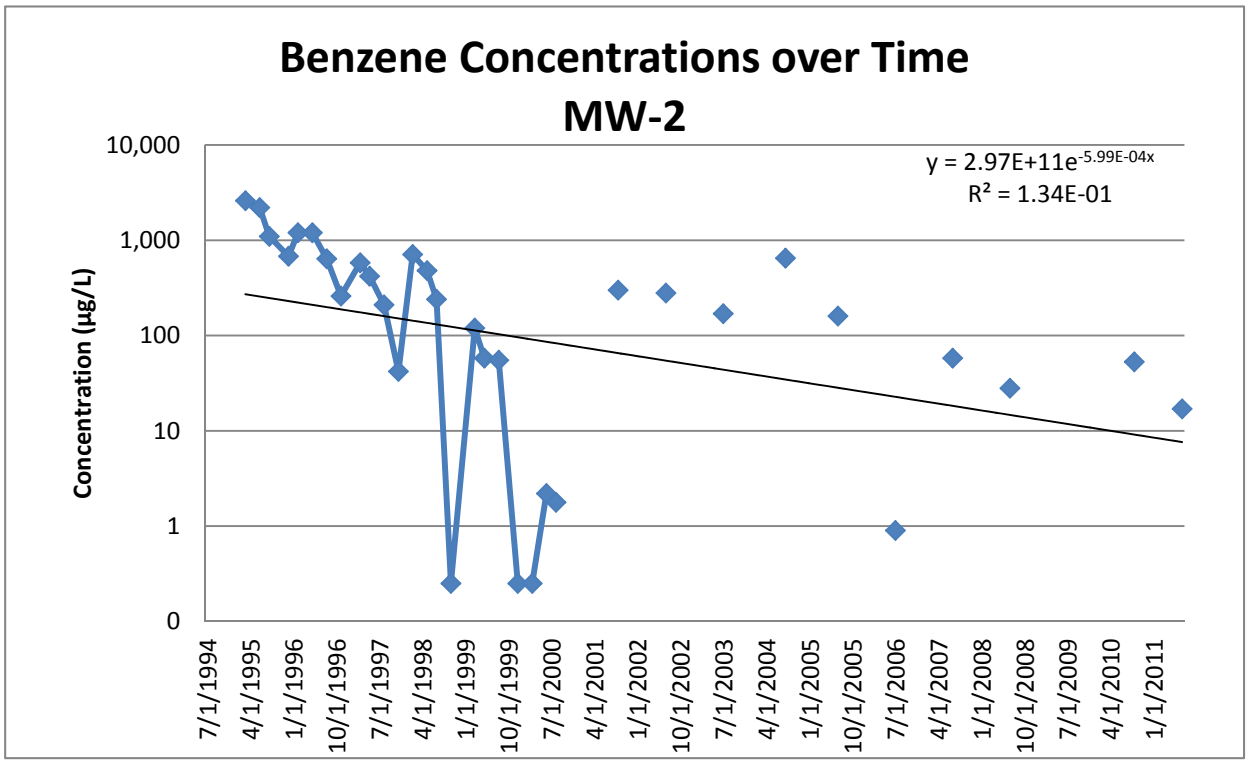
Calculation uses first-order decay equation:

$y = ae^{bx}$ **converts to** **$x = \ln(y/a)/b$**

Given			
Water Quality Objective:	y	100	µg/L
Constant from chart:	a	3.46E+10	
Constant from chart:	b	-4.38E-04	
Date of Peak Concentration:		8/23/1995	
Estimated Date to Reach WQO:	**$x = \ln(y/a)/b$**	**11/25/2022**	

Estimated Time to Reach Water Quality Objective
Atlantic Richfield Company Station #771, Livermore, California

Well ID: MW-2
Constituent: Benzene (data since 3/20/1995)



Calculation uses first-order decay equation:

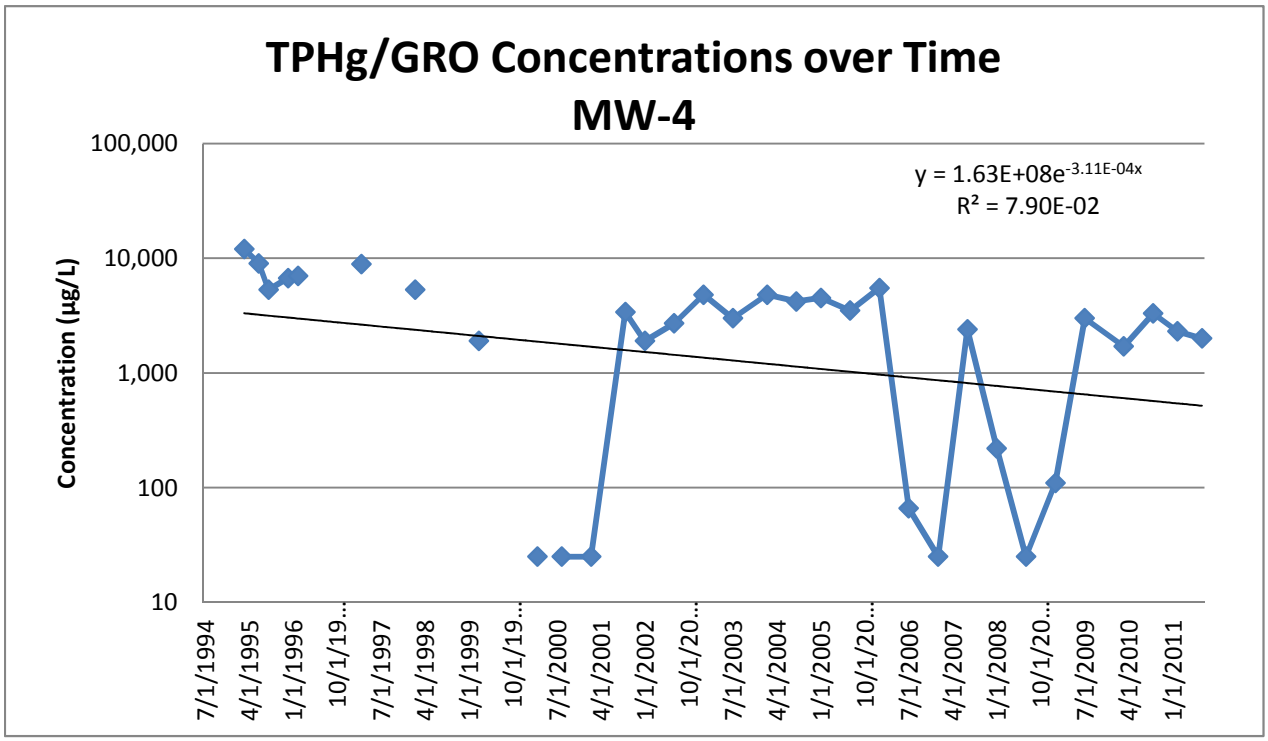
$y = ae^{bx}$ **converts to** **$x = \ln(y/a)/b$**

Given		
Water Quality Objective:	y	1 µg/L
Constant from chart:	a	2.97E+11
Constant from chart:	b	-5.99E-04
Date of Peak Concentration:		3/20/1995

Estimated Date to Reach WQO: **$x = \ln(y/a)/b$** **9/27/2020**

Estimated Time to Reach Water Quality Objective
Atlantic Richfield Company Station #771, Livermore, California

Well ID: MW-4
Constituent: TPHg/GRO (data since 3/20/1995)



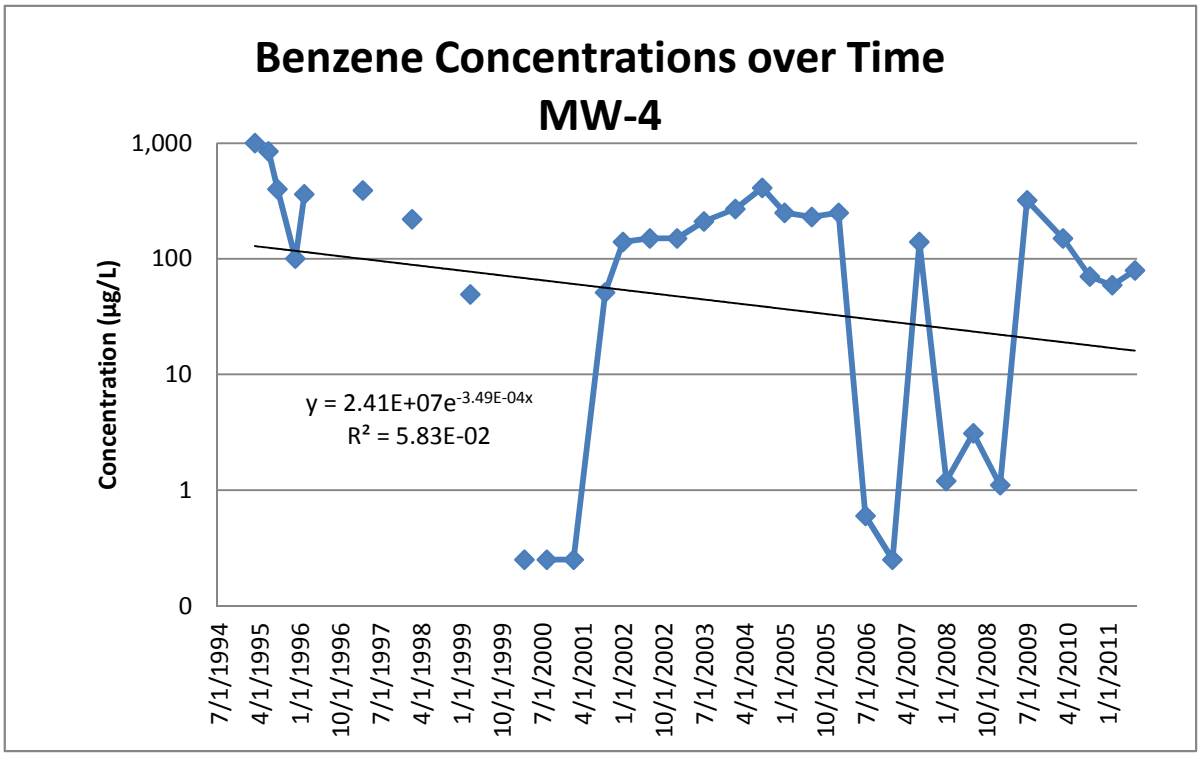
Calculation uses first-order decay equation:

$y = ae^{bx}$ **converts to** **$x = \ln(y/a)/b$**

Given			
Water Quality Objective:	y	100	µg/L
Constant from chart:	a	1.63E+08	
Constant from chart:	b	-3.11E-04	
Date of Peak Concentration:		3/20/1995	
Estimated Date to Reach WQO:	**x = ln(y/a)/b**	**12/2/2025**	

Estimated Time to Reach Water Quality Objective
Atlantic Richfield Company Station #771, Livermore, California

Well ID: MW-4
Constituent: Benzene (data since 3/20/1995)



Calculation uses first-order decay equation:

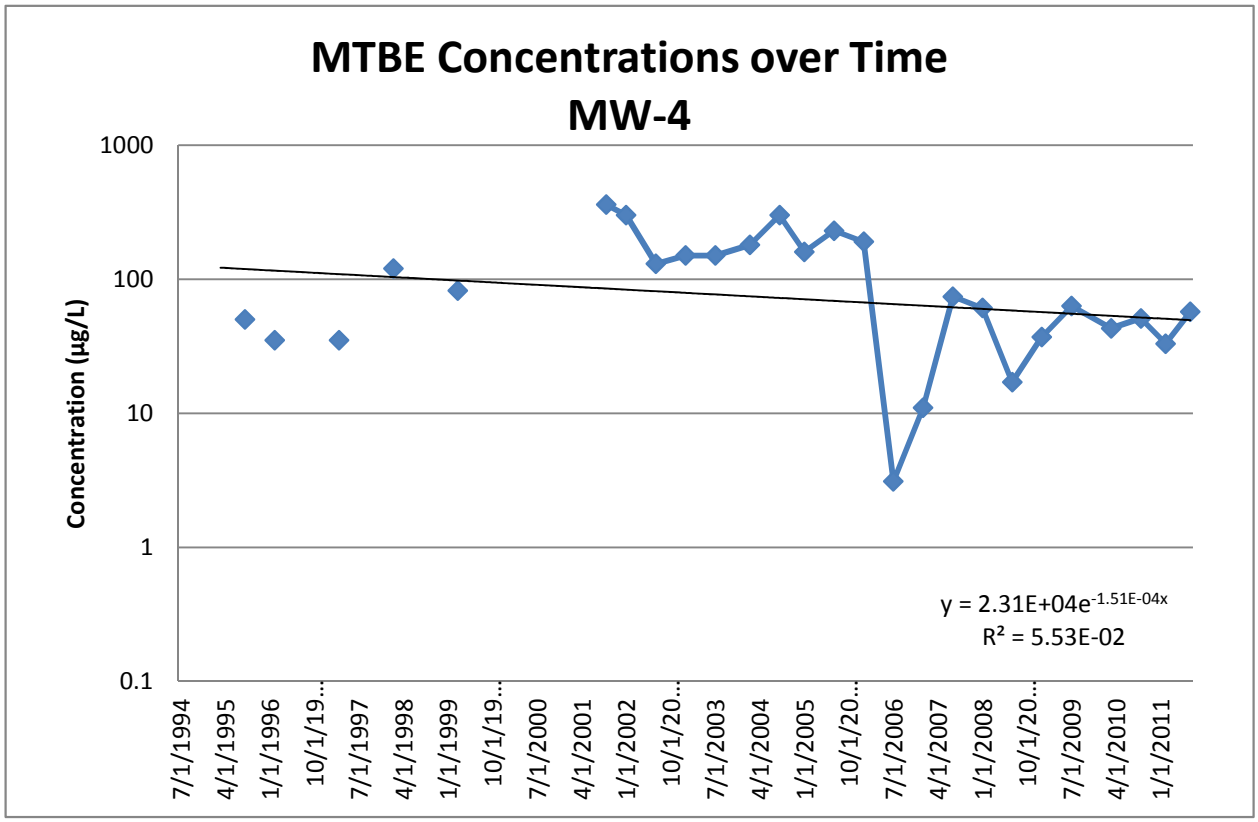
$y = ae^{bx}$ **converts to** **$x = \ln(y/a)/b$**

Given			
Water Quality Objective:	y	1	µg/L
Constant from chart:	a	2.41E+07	
Constant from chart:	b	-3.49E-04	
Date of Peak Concentration:		3/20/1995	

Estimated Date to Reach WQO: **$x = \ln(y/a)/b$** **5/5/2033**

Estimated Time to Reach Water Quality Objective
Atlantic Richfield Company Station #771, Livermore, California

Well ID: MW-4
Constituent: MTBE (data since 3/20/1995)



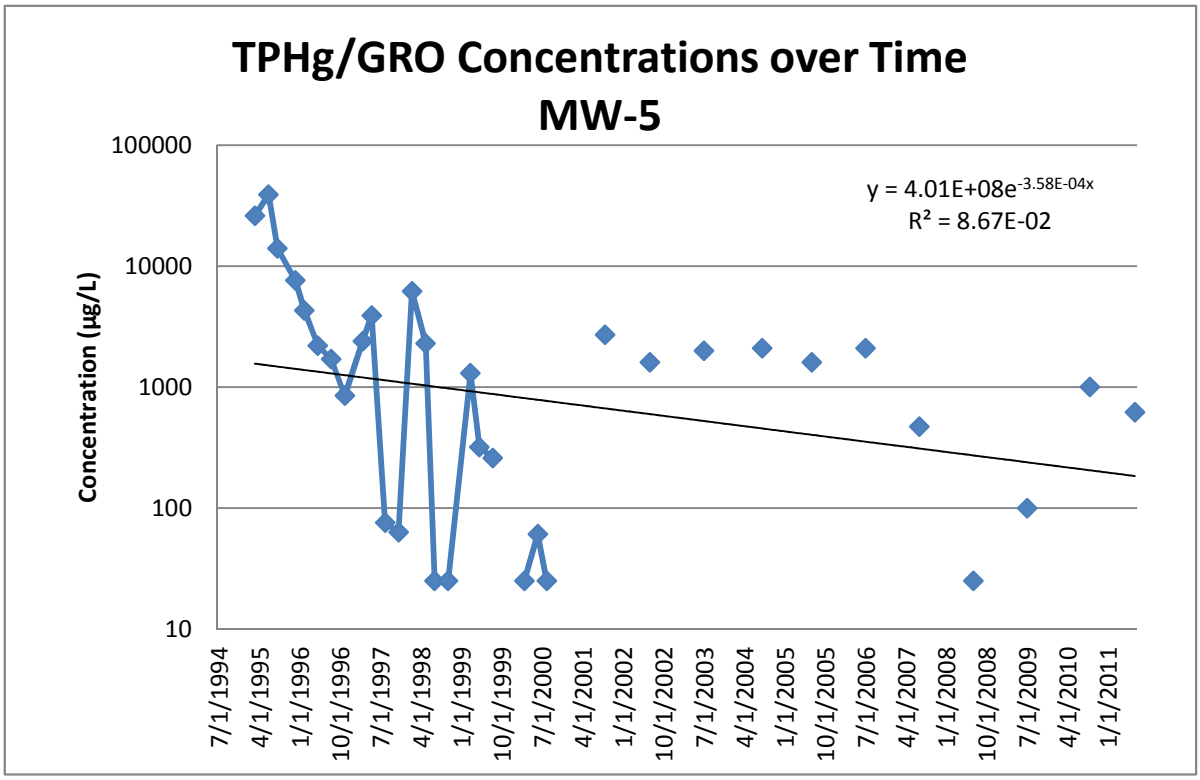
Calculation uses first-order decay equation:

$y = ae^{bx}$ **converts to** **$x = \ln(y/a)/b$**

Given			
Water Quality Objective:	y	5 µg/L	
Constant from chart:	a	2.31E+04	
Constant from chart:	b	-1.51E-04	
Date of Peak Concentration:		9/17/2001	
Estimated Date to Reach WQO:	**x = ln(y/a)/b**	**12/28/2052**	

Estimated Time to Reach Water Quality Objective
Atlantic Richfield Company Station #771, Livermore, California

Well ID: MW-5
Constituent: TPHg/GRO (data since 3/20/1995)



Calculation uses first-order decay equation:

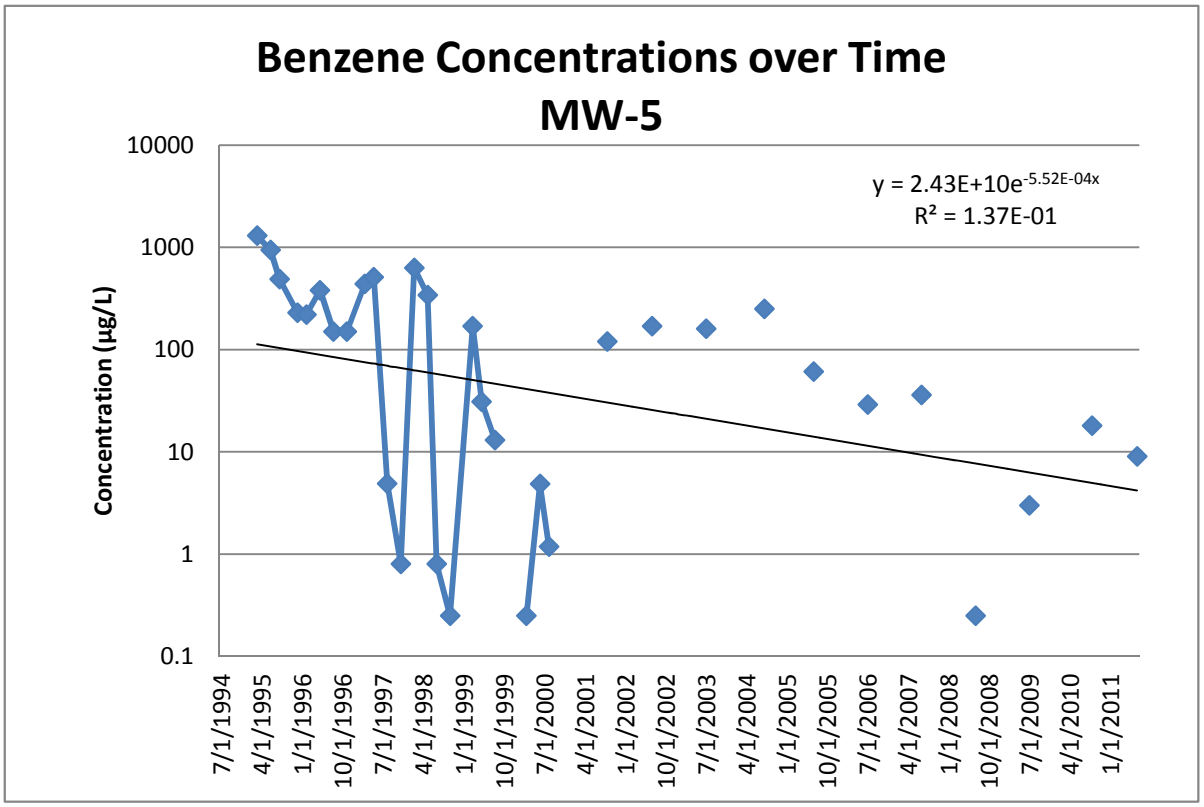
$y = ae^{bx}$ **converts to** **$x = \ln(y/a)/b$**

Given			
Water Quality Objective:	y	100	µg/L
Constant from chart:	a	4.01E+08	
Constant from chart:	b	-3.58E-04	
Date of Peak Concentration:		6/2/1995	

Estimated Date to Reach WQO: **$x = \ln(y/a)/b$** **4/10/2016**

Estimated Time to Reach Water Quality Objective
Atlantic Richfield Company Station #771, Livermore, California

Well ID: MW-5
Constituent: Benzene (data since 3/20/1995)



Calculation uses first-order decay equation:

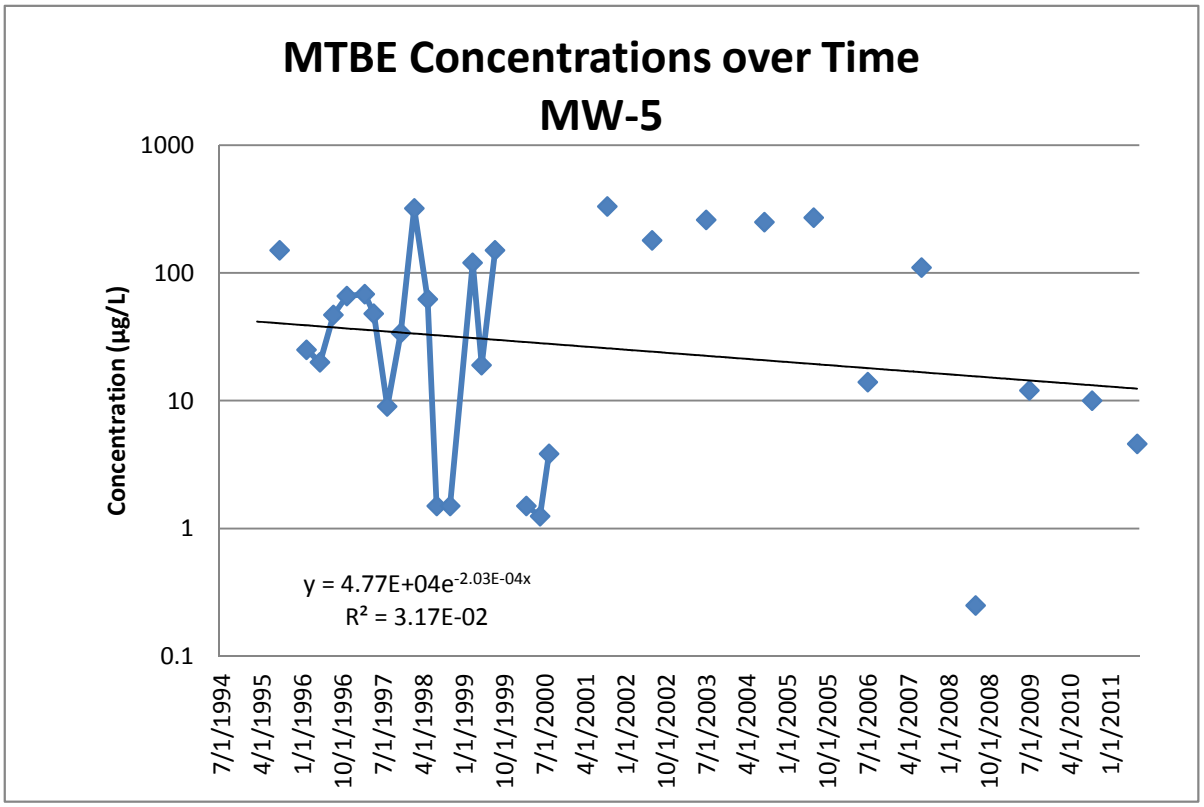
$y = ae^{bx}$ **converts to** **$x = \ln(y/a)/b$**

Given			
Water Quality Objective:	y	1	µg/L
Constant from chart:	a	2.43E+10	
Constant from chart:	b	-5.52E-04	
Date of Peak Concentration:		3/20/1995	

Estimated Date to Reach WQO: **$x = \ln(y/a)/b$** **8/9/2018**

Estimated Time to Reach Water Quality Objective
Atlantic Richfield Company Station #771, Livermore, California

Well ID: MW-5
Constituent: MTBE (data since 3/20/1995)



Calculation uses first-order decay equation:

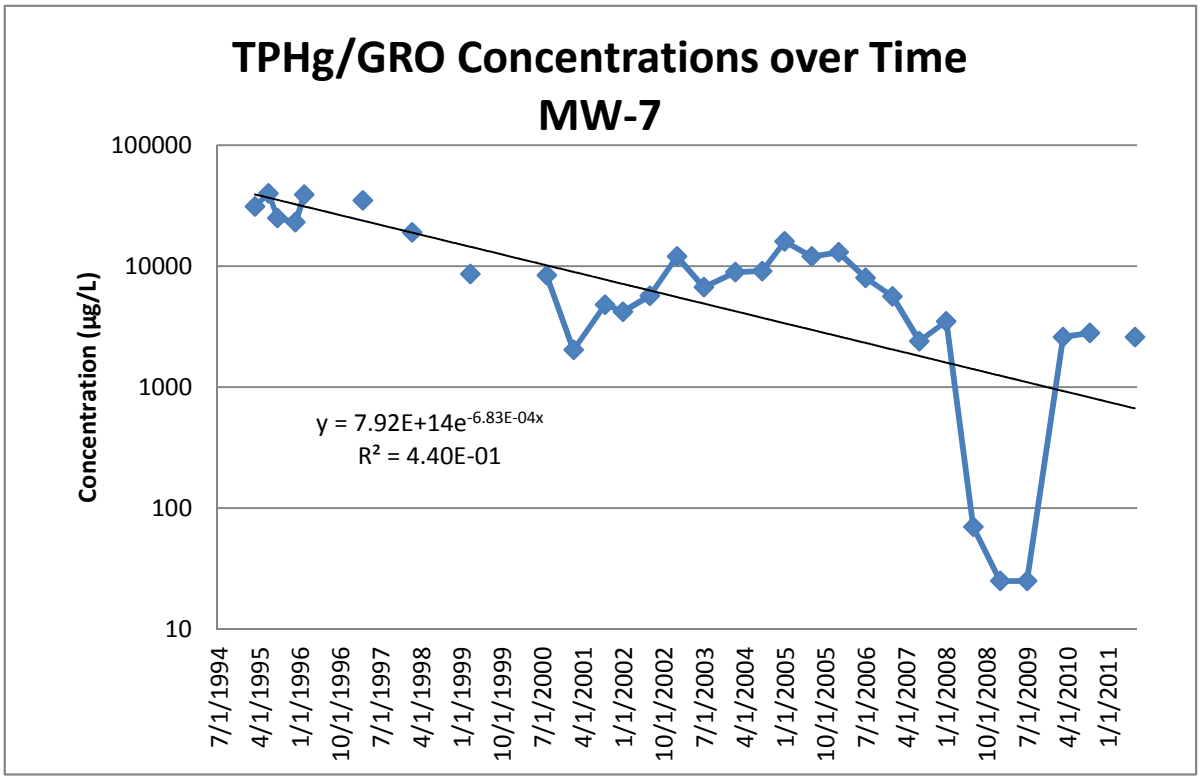
$y = ae^{bx}$ **converts to** **$x = \ln(y/a)/b$**

Given			
Water Quality Objective:	y	5	µg/L
Constant from chart:	a	4.77E+04	
Constant from chart:	b	-2.03E-04	
Date of Peak Concentration:		9/17/2001	

Estimated Date to Reach WQO: **$x = \ln(y/a)/b$** **8/1/2023**

Estimated Time to Reach Water Quality Objective
Atlantic Richfield Company Station #771, Livermore, California

Well ID: MW-7
Constituent: TPHg/GRO (data since 3/20/1995)



Calculation uses first-order decay equation:

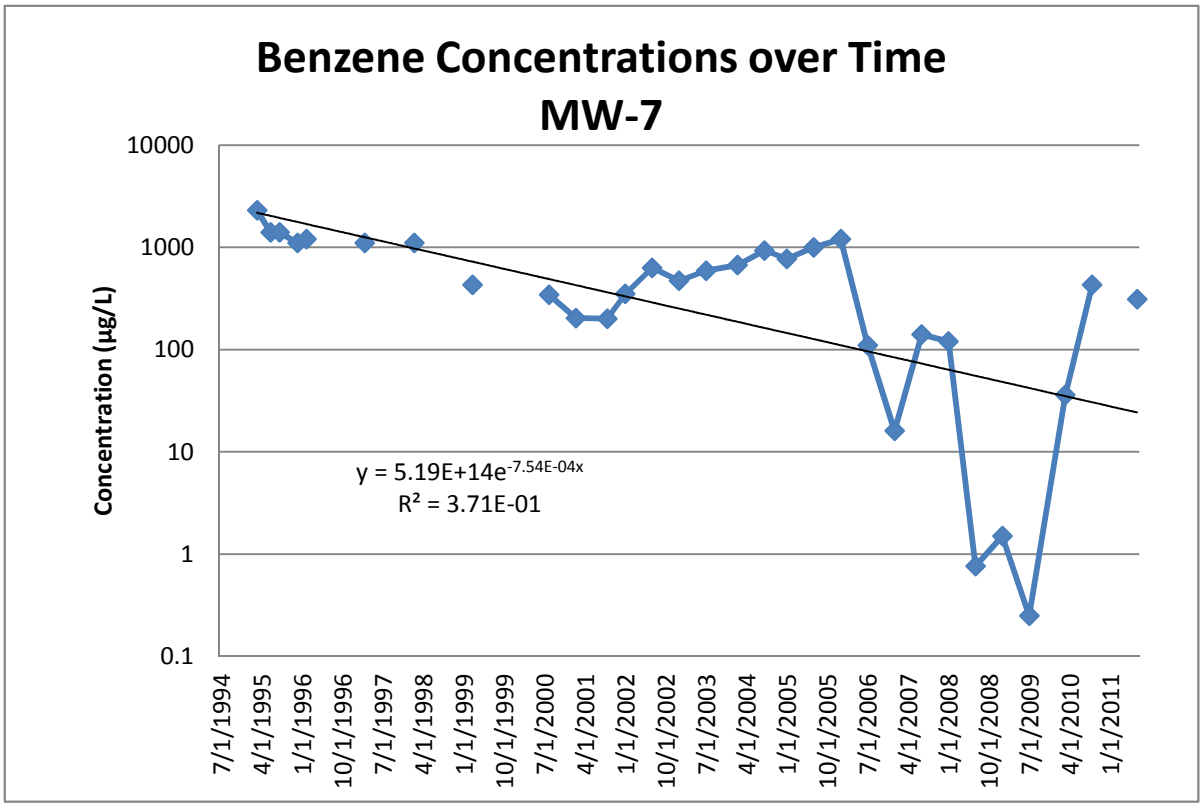
$y = ae^{bx}$ **converts to** **$x = \ln(y/a)/b$**

Given			
Water Quality Objective:	y	100	µg/L
Constant from chart:	a	7.92E+14	
Constant from chart:	b	-6.83E-04	
Date of Peak Concentration:		6/2/1995	

Estimated Date to Reach WQO: **$x = \ln(y/a)/b$** **1/20/2019**

Estimated Time to Reach Water Quality Objective
Atlantic Richfield Company Station #771, Livermore, California

Well ID: MW-7
Constituent: Benzene (data since 3/20/1995)



Calculation uses first-order decay equation:

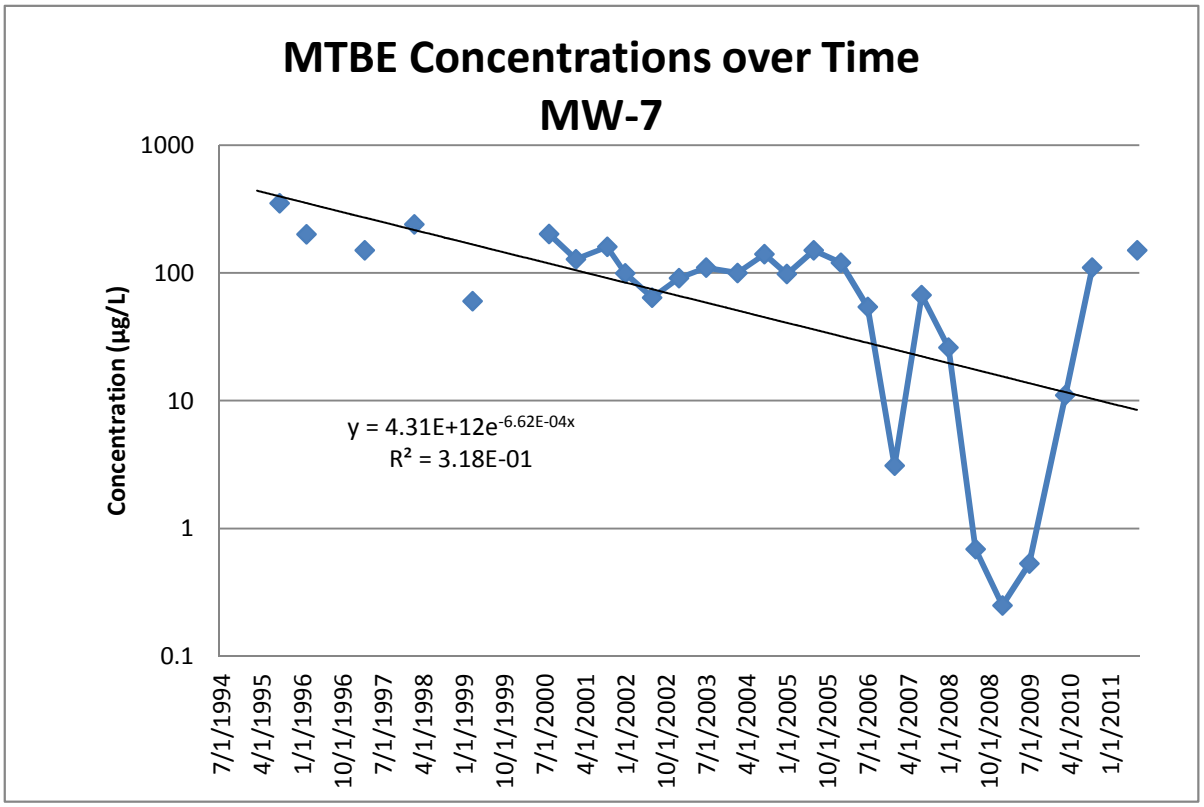
$y = ae^{bx}$ **converts to** **$x = \ln(y/a)/b$**

Given			
Water Quality Objective:	y	1	µg/L
Constant from chart:	a	5.19E+14	
Constant from chart:	b	-7.54E-04	
Date of Peak Concentration:		3/20/1995	

Estimated Date to Reach WQO: **$x = \ln(y/a)/b$** **1/11/2023**

Estimated Time to Reach Water Quality Objective
Atlantic Richfield Company Station #771, Livermore, California

Well ID: MW-7
Constituent: MTBE (data since 3/20/1995)



Calculation uses first-order decay equation:

$y = ae^{bx}$ **converts to** **$x = \ln(y/a)/b$**

Given			
Water Quality Objective:	y	5	µg/L
Constant from chart:	a	4.31E+12	
Constant from chart:	b	-6.62E-04	
Date of Peak Concentration:		8/23/1995	

Estimated Date to Reach WQO: **$x = \ln(y/a)/b$** **8/28/2013**