Atlantic Richfield Company
(a BP affiliated company)

P.O. Box 1257
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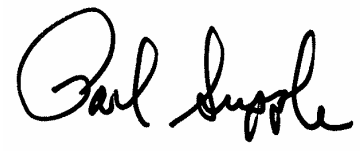
February 10, 2009

Re: Initial Site Conceptual Model and Soil and Ground-Water Investigation Work Plan
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:



Paul Supple
Environmental Business Manager

Initial Site Conceptual Model and
Soil and Ground-Water Investigation Work Plan
Atlantic Richfield Company Station #771
899 Rincon Avenue
Livermore, California

Prepared for

Mr. Paul Supple
Environmental Business 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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February 2009

Project No. 06-82-608

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BROADBENT & ASSOCIATES, INC
ENVIRONMENTAL, WATER RESOURCES & ENGINEERING

February 10, 2009

Project No. 06-82-608

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

Attn.: Mr. Paul Supple

Re: Initial Site Conceptual Model and Soil and Ground-Water Investigation Work Plan, Atlantic Richfield Company Station #771, 899 Rincon Avenue, Livermore, California. ACEH Case RO0000200.

Dear Mr. Supple:

Broadbent & Associates, Inc. is pleased to submit this *Initial Site Conceptual Model and Soil and Ground-Water Investigation Work Plan* for Atlantic Richfield Company Station #771 (herein referred to as Station #771) located at 899 Rincon Avenue, Livermore, California. This report was prepared in response to a directive letter from Alameda County Environmental Health (ACEH) dated December 12, 2008.

Should you have questions regarding the work performed or results obtained, please do not hesitate to contact us at (530) 566-1400.

Sincerely,

BROADBENT & ASSOCIATES, INC.

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

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Principal Hydrogeologist

PROFESSIONAL GEOLOGIST
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Enclosures

cc: Mr. Paresh Khatri, Alameda County Environmental Health, 1131 Harbor Bay Parkway, Suite 250, Alameda, CA, 94502 (Submitted via ACEH ftp Site)
Mr. Paul M. Smith, Livermore-Pleasanton Fire Department, 3560 Nevada St., Pleasanton, CA 94566
Mr. Chuck Headlee, RWQCB, 1515 Clay St. Suite 1400, Oakland, CA 94612 (Submitted via GeoTracker)
GeoTracker

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ATTACHMENTS:

1.0 INTRODUCTION

On behalf of the Atlantic Richfield Company, Broadbent & Associates, Inc. (BAI) has prepared this *Initial Site Conceptual Model and Soil and Ground-Water Investigation Work Plan* for Atlantic Richfield Company Station #771 (herein referred to as Station #771) located at 899 Rincon Avenue, Livermore, California (Site). This document was prepared in response to the request within the December 12, 2008 directive letter from the Alameda County Environmental Health (ACEH).

2.0 PREVIOUS ENVIRONMENTAL ACTIVITIES

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), 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 below ground surface (bgs). No analytes (HVC, PCB's, TPFH, and BTX) were detected in the deeper sample. Summarized analytical results are provided within Appendix A. It is important to note that a waste-oil tank removal report summarizing work activities was not located. The data discussed above and analytical results and drawing included in Appendix A were taken from the 1990 Applied GeoSystems (AGS) report titled *Limited Subsurface Environmental Assessment.*

In February 1990, AGS conducted an onsite limited 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, B-3) were drilled and soil samples collected from each boring. Ground water was encountered in soil boring B-1 at approximately 33 feet bgs. Soil borings B-2 and B-3 were terminated above ground water. 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 water sample was obtained from soil boring B-1 for visual inspection. Approximately 1/8-inch of floating product was present (Applied GeoSystems, 1990). Summarized analytical results and a drawing depicting the location of the soil borings are provided within Appendix A. Soil boring logs are provided in Appendix D.

In December 1990, a supplemental subsurface investigation was initiated by AGS to evaluate the lateral and vertical extent of petroleum hydrocarbons in soil and ground water near the onsite gasoline USTs. This investigation included drilling three soil borings (B-4, B-5, B-6), converting the borings to monitoring wells (MW-1, MW-2, and MW-3 respectively), and collecting and analyzing soil and ground-water samples. Ground water was encountered in all soil borings at approximately 37 feet bgs at the time of drilling. A sheen of free-phase product was observed in well MW-1 and 0.16 feet of product was noted in MW-2. Sixteen soil samples and one ground-water 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. Ground-water results showed TPH-g at 230 µg/L in MW-3 (Applied Geosystems, 1991). Summarized analytical results for soil and ground-water samples are

provided within Appendix A and B, respectively. Soil boring and monitor well construction logs are provided in Appendix D.

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 ground water 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 ground-water samples. Soil boring B-11 was drilled in the area of the former waste-oil tank. Ground water was encountered in borings B-7 through B-10 at depths of approximately 35.5 to 37 feet bgs. A total of thirty-three 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). Ground-water 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 free-phase product was observed in the wells. Soil analytical results indicated impacted soil (TPH-g) in excess of 100 mg/kg[1] in three of the soil samples. No analytes were detected in the soil samples from boring B-11. Ground-water analytical results showed impacted ground water in all the monitor wells sampled (RESNA, 1991). Summarized analytical results are provided within Appendix A and B. Soil boring and monitor well construction logs are provided in Appendix D.

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 C.

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 gallons, 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[1] 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[1]. Product line replacement was conducted in February 1992. Ten soil samples from various depths within the trench were collected and analyzed for TPH-g and BTEX, with select samples additionally analyzed for Organic Lead. Results showed TPH-g impacted soil exceeding100 mg/kg[1] 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. Maps of sample locations and a table of analytical results are contained within Appendix A.

[1] San Francisco Bay Regional Water Quality Control Board Environmental Screening Level (ESL) for TPH-g.

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 wells. These locations were then changed to northeast, east, and southeast of the site along Rincon Avenue and were drilled in January 1993 (RESNA, 1993). Ground-water 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 in any of the offsite soil or ground-water samples. Onsite well RW-1 contained significant TPH-g and BTEX concentrations (RESNA, 1993). Summarized analytical results are provided within Appendix A and B. Soil boring and monitor well construction logs are provided in Appendix D.

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 screens in the wells. The SVE system was initially activated on December 20, 1994 on wells VW-1 and MW-4. The other SVE wells had submerged screens. 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 screens. During 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 (EMCON, 1996). SVE system operation and performance data are provided within Appendix C.

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 TPH-g, toluene, total xylenes, and MTBE were detected in two soil samples. Summarized analytical results are provided in Appendix A.

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 continue to be conducted onsite.

Ground-water monitoring and sampling was initiated during 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 ground-water elevation and laboratory analytical results are included in Appendix B. Recent quarterly ground-water elevation and laboratory analytical results are provided in Table 1 and Table 2. Table 3 contains a summary of recent ground-water flow directions and gradients.

3.0 HYDROCARBON SOURCE

3.1 Release Source and Volume

The exact source and volume released is unknown. However, based on historic reports and observed contaminant concentrations, the source area is suspected to be the UST complex located in the southern portion of the Site. However, concentrations of petroleum hydrocarbons were also observed in shallow soils beneath the dispenser pump islands while trenching to replace the product lines. Due to the area and predominant depth of first detected impacted soil in the vicinity of the UST complex, it appears the majority of the release occurred beneath the USTs.

3.2 Release Intervention

The 1991/1992 removal and replacement of underground petroleum storage and dispensing infrastructure was completed.

4.0 SITE CHARACTERIZATION

4.1 Current Site Use

The Site is currently an operating service station and mini-market located on the southwest corner of the intersection of Pine Street and Rincon Avenue in a mixed use commercial and residential area of Livermore, California. The Site features include a station building and one pump island with a canopy and concrete driveslab. Existing underground storage tanks (USTs) include four double-wall fiberglass gasoline tanks (10,000 gallons each). The four 10,000-gallon USTs store regular, plus, and super unleaded gasoline and were installed in January 1992 (Roux, 1992).

A shopping center and small strip mall borders the Site to the west and south. Family residences are located across Rincon Avenue to the east, northeast, and southeast. A fire station is located across Pine Street to the north of the Site.

4.2 Soil Definition Status

Over-excavation in the former UST area was completed to a depth of 18 feet. Two soil samples from this depth showed detections of TPH-g at or in excess of 100 mg/kg[1]. Over-

[1] San Francisco Bay Regional Water Quality Control Board Environmental Screening Level (ESL) for TPH-g.

excavation was conducted to a depth of five feet in the product line area. One soil sample from this depth showed a detection of TPH-g at 91 mg/kg. An unknown amount of petroleum hydrocarbon may be presently bound within the soil matrix within these areas. A fluctuating ground-water table has also likely "smeared" contaminants in soils up to the high water mark.

4.3 Ground-Water Definition Status

4.3.1 Ground-Water Flow Direction, Depth, and Gradient

Depth to ground water varies across the Site and through time from approximately 16.03 to 43.25 ft bgs. Resulting ground-water elevations have varied from approximately 408.12 ft above mean sea level (amsl) to 433.18 ft amsl. Since March of 1995 the ground-water flow direction was been predominately in a northerly direction. However, on occasion a southwesterly flow direction has been observed. During this same time period the gradient magnitude has varied from 0.009 to 0.071. Ground-water flow direction and gradient data from the time period March 1995 through the present are provided in Table 3.

4.3.2 Free-Phase Product

Free-phase product (FPP) was first detected in on-site soil boring B-1 (0.01 ft floating product) during a limited subsurface assessment on February 1, 1990. FPP 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 FPP were recovered in 1991 and 1992. FPP has not been observed in any of the monitor wells since November 1992. Historic FPP measurements and removal volumes are summarized in Appendix B.

4.3.3 Ground-Water Analysis

TPH-g has been detected in onsite wells MW-1 through MW-7, RW-1, and VW-1. Concentrations of TPH-g have ranged from 1,900,000 µg/L in well MW-1 (5/10/1993) to below laboratory reporting limits in wells MW-1 through MW-6, RW-1, and VW-1. TPH-g concentrations in RW-1 and VW-1 have remained below laboratory detection limits since Third Quarter 2007. TPH-g has significantly decreased over time in all onsite wells. TPH-g has never been detected in offsite wells MW-8 through MW-11. TPH-g concentrations from select onsite wells over time are plotted in Figure 1. TPH-g concentrations from select onsite wells versus distance from the source area are presented in Figure 4. TPH-g concentrations and ground-water elevations from MW-2 over time are provided in Figure 7.

BTEX have been detected in all onsite wells MW-1 through MW-7, RW-1, and VW-1. Concentrations of benzene have ranged from 8,900 µg/L in well MW-2 (6/12/1992) to below laboratory reporting limits in wells MW-2, MW-3, MW-4, MW-5, MW-6, RW-1, and VW-1. BTEX concentrations have generally decreased over time in all onsite wells. With the exception of the occasional detection, BTEX have not been observed in offsite wells MW-8, MW-9, and MW-11. BTEX have never been detected in offsite well MW-10. Benzene concentrations from select onsite wells over time are plotted in Figure 2. Benzene concentrations from select onsite

wells versus distance from the source area are presented in Figure 5. Benzene concentrations and ground-water elevations from MW-2 over time are provided in Figure 8.

MTBE has been detected at relatively low concentrations in onsite wells MW-1, MW-2, MW-4 through MW-7, and RW-1. Maximum concentrations of MTBE have been recorded at 270 µg/L in MW-1 (3/16/1999), 130 µg/L in MW-2 (2/18/1998), 360 µg/L in MW-4 (9/17/2001), 330 µg/L in MW-5 (9/17/2001), 57.1 µg/L in MW-6 (2/9/2001), 350 µg/L in MW-7 (8/23/1995), and 530 µg/L in RW-1 (3/16/1999). MTBE concentrations have generally decreased over time and are currently below laboratory detection limits in wells MW-5, MW-6, and VW-1. MTBE has never been detected in offsite wells MW-8 through MW-11. MTBE concentrations from select onsite wells over time are plotted in Figure 3. MTBE concentrations from select onsite wells versus distance from the source area are presented in Figure 6. MTBE concentrations and ground-water elevations from MW-2 over time are provided in Figure 9.

Although concentrations of GRO, BTEX, and MTBE have decreased over time, data collected over the last couple years from onsite wells shows moderately elevated concentrations remain in wells MW-2 and MW-4 (to the south and up gradient direction from the source area), well MW-7 (immediately down gradient from the source area), and wells MW-5, MW-6, and RW-1 (to west and cross gradient direction from the source area). Concentrations in these wells have noticeably dropped over the last couple sampling events; however, at this time it is not clear whether this is a result of changes in ground-water elevations or a reduction in the mass of petroleum hydrocarbons in ground water.

4.4 Regional 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 ground-water basin. The ground-water basin is bounded by and crossed by several faults. These faults act as barriers to the lateral movement of ground water and divide the ground-water basin into several subbasins. The water-bearing materials in the ground-water 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 permeabilities (California Department of Water Resources, 2003).

Natural recharge occurs primarily along the uplands and edges of the Livermore Valley ground-water 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 ground water in the basin (Zone 7 Water Agency, 2005).

The basins' ground-water 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 ground water between the upper and deeper aquifers. Most of the water for municipal and agricultural use is pumped from the deeper aquifers. Ground-water flow in the basin generally flows toward the west central portions of the valley and generally moves east to west within Livermore Valley. Ground water near the center of Livermore Valley flows toward a cone of depression located west of the city of Livermore near gravel mining areas. The ground-water depression is thought to have been created by extraction of ground water for municipal and agricultural use and dewatering for gravel quarrying (Zone 7 Water Agency, 2005). The extraction of ground water 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 (Arroyo las Positas) north, 0.75 miles south-southwest (Arroyo Mocho), and 2.75 miles southwest (Arroyo Valle) of the Site.

4.5 Topography

The Site is situated at an approximate elevation of 450 feet above mean sea level. The Site is relatively flat, consistent with the local topography.

4.6 Stratigraphy

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 a half to five foot layer of moist sandy clay was encountered at varying depths ranging from 37 to 42.5 feet bgs. Available lithologic soil boring logs, well construction details, and geologic cross-sections are provided in Appendix D.

4.7 Preferential Pathway Analysis

BAI has no record of a formal utility survey of the Site and surrounding area. Soil excavation conducted during tank removal activities was completed to a depth of 18 feet bgs and ground water underneath the Site, at its shallowest, has been 16.03 feet bgs. Therefore, it is unlikely that utility trenches within and near the Site could be serving as preferential pathways for contaminant migration above or below the ground-water table.

5.0 REMEDIATION STATUS

5.1 Remedial Actions Taken

The first and probably most effective remedial action taken at the Site to date was the over-excavation and removal of contaminated soils encountered during UST replacement in late

1991 and early 1992. A total of approximately 1,100 cubic yards of soil in the vicinity of the USTs, pumps, and dispenser islands was excavated and removed. The majority of the soils removed came from the vicinity of the UST complex, where impacted soils were excavated down to 18 ft bgs. Soils beneath the removed product lines near the dispenser island were excavated down to 5 ft bgs. Drawings showing the location of samples, and tables containing analytical results are contained in Appendix A.

As stated above, free-phase product removal was conducted in 1991 and 1992 via passive skimmers. Approximately 3.06 gallons of FPP was removed from well MW-1, MW-2, and MW-5.

Between December 20, 1994 and October 10, 1995, a SVE system operated and comprised of wells VW-1, MW-1, MW-2, MW-4, MW-5, and MW-7. Air bubbling was used in conjunction with the system starting in July 1995. A summary of SVE system operation and performance data is provided in Appendix C.

An air diffusion system was installed and started in 2006 in wells MW-2, MW-4, MW-5, MW-6, and MW-7. Air diffusion activities are on-going.

5.2 Areas Remediated

Remediation by soil removal has taken place in the immediate vicinity of the USTs, product lines, and dispenser islands. Free-product removal was conducted primarily on the southern portion of the Site from wells MW-1, MW-2, and MW-5. SVE in conjunction with air bubbling was completed on the southern portion of the Site from wells VW-1, MW-1, MW-2, MW-4, MW-5, MW-7, and RW-1. The current air diffusion system is in operation from wells MW-2, MW-4, MW-5, MW-6, and MW-7 also generally located on the southern portion of the site near the source area.

5.3 Remediation Effectiveness

Soil over-excavation during replacement of the facility infrastructure substantially removed the primary onsite contaminant source. The SVE system in conjunction with air bubbling appears to have had a positive effect on petroleum hydrocarbon impacted soil and ground water. Free product has not been observed in wells since November 1992. Concentrations of GRO, BTEX, and MTBE in ground water have decreased over time in onsite wells. The decrease in concentrations is attributed to the remedial efforts that have been completed and natural attenuation.

6.0 WELL SURVEY AND SENSITIVE RECEPTOR SURVEY

6.1 Designated Beneficial Shallow and Deep Ground-Water Use

Existing beneficial uses of the Livermore Valley ground-water basin are listed as municipal and domestic supply (MUN), industrial service supply (IND), and agricultural supply (AGR). Currently, a majority of the water supply to Livermore Valley comes from the State

Water Project and the Del Valle Reservoir. On average, 25% percent of potable water comes from ground-water wells in Pleasanton. Agricultural and industrial companies are now using more water from the State Water Project instead of ground water. Controlled releases of water from the State Water Project and Del Valle Reservoir have recently been completed to recharge the ground-water basin. As a result, the cone of depression west of Livermore has begun to return to natural conditions (Zone 7 Water Agency, 2005).

6.2 Well Survey Results

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. Two were water supply wells located approximately 2,500 feet and 2,300 feet cross-gradient of the Site. The other two wells were of unknown use and were reported as being located approximately 240 feet cross-gradient and 2,300 feet up-gradient of the Site. Upon further review of the well logs, the well of unknown use that was believed to be located approximately 240 feet cross-gradient from the Site was incorrectly located by URS. The correct location of the well is 450 feet down-gradient of the Site (across Pine Street and on the north side of the fire station). A copy of the water well survey report is provided within Appendix E.

6.3 Likelihood of Impact to Wells

Based on the results of the well survey, it is unlikely that the ground-water 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 dept of the well is 300 feet bgs. It is our understanding that the well is used as an emergency water supply for the fire station in the event of a natural disaster that cuts off the main water supply. We have contacted the Livermore Fire Department in an attempt to receive confirmation on use of the well. However, as of the date of this report we are still awaiting a response. Offsite monitoring well MW-11, located on Pine Street (between the Fire Station and the Site in the down-gradient direction), has been below laboratory reporting limits for TPH-g, BTEX, and MTBE since May 1998. Since MW-11 was installed, there has been only a single detection of total xylenes (1 µg/L) in February 1998. Additionally, as discussed above in Section 4.3, petroleum hydrocarbon impacted ground water does not appear to have migrated offsite to the east, north, and southeast.

6.4 Likelihood of Impact to Surface Water

Arroyo las Pasitas is the closest surface water to the Site (approximately 0.7 miles north). Ground-water contamination associated with the Site is unlikely to impact Arroyo las Pasitas due to the separation distance.

7.0 RISK ASSESSMENT

7.1 Site Conceptual Exposure Model

The Site is currently an operational gasoline service station. The Site is open to the public and by authorized environmental personnel performing sampling or other relevant activities. Review of historical investigations indicates the majority of soil and ground-water contamination associated with the Site is present at depths generally greater than five to 18 feet bgs and in the areas of the UST complex, product line, and dispenser islands. Public and general occupational exposure to these secondary sources of contamination are believed to be remote and/or of short duration.

7.2 Exposure Pathways

Potential exposure pathways associated with the Site include human inhalation, ingestion, and absorption risks by environmental personnel. A remote but unknown potential exposure pathway might be human inhalation by tradesmen in the underground utility installation and maintenance occupation. The likelihood of vapor migration has not been verified by a soil-gas investigation. However, soil concentrations present would seem unlikely to present a viable exposure pathway of concern. It is also noted that the majority of soil and ground-water contamination is located in the southern portion of the Site away from the station building, where employees are present for extended periods of time. In addition, customers are not present for extended periods while utilizing the station, and would be congregating in open-air areas.

7.3 Risk Assessment Status

A formal Risk Assessment has not been performed for this Site. Based on Site characteristics and limited viable exposure pathways, consideration should be given to development of risk-based cleanup levels in lieu of strict adherence to Maximum Contaminant Levels for drinking water, Environmental Screening Levels or California Human Health Screening Levels.

7.4 Identified Human Exceedances

Human exceedances are unknown at this time but unlikely due to Site characteristics and location of the contaminants.

7.5 Identified Ecological Exceedances

Ecological exceedances are unknown at this time but unlikely due to Site characteristics and location of the contaminants.

8.0 SUMMARY AND RECOMMENDATIONS

Over-excavation was completed on the former waste oil tank area to a depth of 12 feet bgs in 1987 following removal of the waste oil tank. No analytes were detected in the deeper

confirmation sample collected from the excavation. Soil boring B-11, installed in 1991 to a total depth of 40 feet bgs in the general area of the former waste oil tank, did not show the presence of impacted soil. Based on the above information, the former waste oil tank is considered fully characterized.

Over-excavation was completed in the UST area to a depth of approximately 18 feet bgs in 1992 following removal of four USTs. Confirmation samples collected at the bottom of the excavation showed moderately elevated TPH-g concentrations at or above 100 mg/kg[1]. The vertical extent of impacted soil in the immediate area below the former USTs has not been fully characterized.

The SVE system was operational in 1994 and 1995 and pulled petroleum hydrocarbon vapors from a number of wells - four of which are in the immediate vicinity of the former USTs (MW-2, MW-4, MW-5, and MW-7). It is reasonable to infer that SVE activities completed from these wells has reduced contaminants levels in soil in the former UST area below the 18 foot excavation depth discussed above. How effective the SVE system was at remediating impacted soil is not known at this time. The ACEH December 12, 2008 letter mentioned the collection of post remediation verification sampling as a means of determining the effectiveness of the SVE system. Unfortunately, the location of the current USTs and product lines prevents the safe collection of confirmation samples in the former UST area at this time.

Impacted ground water has been adequately defined to the north, east, and southeast of the Site. However, the extent of impacted ground water has not been adequately defined to the south and west of the Site. Data collected over the last couple of years has shown moderately elevated concentrations remain in wells MW-2 and MW-4 (to the south and up gradient direction from the source area) and wells MW-5, MW-6, and RW-1 (to west and cross gradient direction from the source area).

Accordingly, it is recommended that additional investigation activities be completed to the south and west of the Site. It is important to note that the property to the south and west of the Site is a Shopping Center. In 1992 and 1993 monitor wells MW-8 through MW-10 were originally proposed to be installed on the Shopping Center property. However, after repeated requests for access were refused, well locations were moved to the east of the Site along Rincon Avenue. A Work Plan to conduct soil and ground-water investigation activities is provided below. Additional discussion regarding property access to the Shopping Center is also provided below.

9.0 SOIL AND GROUND-WATER INVESTIGATION WORK PLAN

9.1 Scope of Work

It is proposed that two wells (MW-12 and MW-13) be installed to the south and west of the Site on the neighboring Shopping Center property to further define the extent of petroleum hydrocarbon impacted ground water. An access agreement will be submitted to the property

[1] San Francisco Bay Regional Water Quality Control Board Environmental Screening Level (ESL) for TPH-g.

owner of the Shopping Center to facilitate completion of field work. Field work will not commence until an access agreement has been accepted and signed by the Shopping Center property owner. Proposed well locations are presented in Drawing 3.

9.2 Project Setup

In accordance with the current contract with Atlantic Richfield Company, Stratus Environmental, Inc. (Stratus) will complete the field work associated with this soil and ground-water investigation (i.e., drilling, gauging, and sampling). Stratus will obtain any permits necessary prior to initiation of field work. Once the field work is complete, Stratus will provide a data package which will include field notes, lithologic logs, and laboratory analytical reports from the investigation. BAI will then use this data package to generate a report for submittal to the ACEH summarizing the soil and ground-water investigation including data interpretation and recommendations.

9.3 Soil Investigation

Soil borings will be advanced using a hollow steam auger drilling technique. Soils will be lithologically logged by a qualified geologist using the Unified Soil Classification System (USCS). As stated in section 4.3.1 above, depth to ground water has historically varied from approximately 16 to 43 feet bgs. Over the last three years depth to ground water has varied from approximately 19 to 35 feet bgs. Soil samples will be collected at five foot intervals beginning five feet bgs and continuing to just above the capillary fringe using a split-spoon sampler and brass sleeves. All samples will be screened with a PID. A minimum of one soil sample will be submitted for laboratory analysis from each boring based on the highest PID reading. Additional soil samples will be submitted if PID readings or visual inspection indicate the presence of impacted soil. Each sample collected for submittal to a laboratory for analysis will be sealed on both ends with Teflon tape, capped with plastic end caps, labeled, and placed in an ice-filled cooler for preservation. The soil samples will be transported under chain-of-custody protocol to a California State-certified analytical laboratory and analyzed for the following:

- Gasoline range organics (GRO) via EPA Method 8015B and BTEX via EPA Method 8260B; and
- Fuel additives MTBE, tert-butyl alcohol (TBA), ethyl tert-butyl ether (ETBE), tert-amyl methyl ether (TAME), di-isopropyl ether (DIPE), 1,2-dichloroethane (1,2-DCA), 1,2-dibromoethane (EDB), and ethanol via EPA Method 8260B.

Investigation-derived residuals will be collected in 55-gallon steel drums, stored on the Site, and profiled prior to disposal at an approved Atlantic Richfield Company disposal facility.

9.4 Ground-Water Investigation

As stated above, depth to static ground water over the last three years has varied from 19 to 35 feet bgs. The proposed well design calls for a total well depth of 40 feet, with 15 feet of well screen from total depth to 25 feet bgs. The wells will be constructed using four-inch diameter, schedule 40 PVC well casing and factory slotted well screen (0.02 inch slots) with flush threaded water tight connections. The casing will be surrounded by silica sand compatible

with 0.02 inch slots in the annular space from total depth to three feet above top of screen. A sanitary seal will be installed consisting of approximately three feet of bentonite well-seal overlain by neat cement grout to the surface. Well heads will be completed with a lockable water-tight plug and traffic rated monitor well vault.

Upon completion of well construction, the wells will be developed by surging/bailing or pumping water until relatively silt free water is removed from the wells. Well development will continue until water quality parameters stabilized and silt free water is observed. After development, the wells will be left to hydraulically equilibrate prior to water level measurement and sampling. When equilibrated, depth to water and presence of free-phase product will be measured in each well.

Prior to water sample collection, a minimum of three casing volumes of water will be purged from the wells. Purge water will be collected in drums and stored on the Site pending receipt of laboratory analytical results. Upon receipt of laboratory analytical results, the purge water will be transported and disposed at an approved Atlantic Richfield Company disposal facility. Ground-water samples will be collected with factory decontaminated disposable bailers and placed in laboratory prepared containers. Samples will be labeled and chilled prior to transport under chain-of-custody protocol to a California State-certified analytical laboratory and analyzed for the following:

- GRO via EPA Method 8015B and BTEX via EPA Method 8260B; and
- Fuel additives MTBE, TBA, ETBE, TAME, DIPE, 1,2-DCA, EDB, and ethanol via EPA Method 8260B.

A California-licensed Professional Land Surveyor will be scheduled to survey the well heads and other relevant structures and land features. All elevations will be surveyed with respect to mean sea level. The survey information will be used to update an existing site map and generate an accurate ground-water gradient map. Well survey information will be uploaded to GeoTracker

9.5 Schedule and Reporting

Once the ACEH has approved this Soil and Ground-Water Investigation Work Plan, access agreement negotiations with the Shopping Center property owner will be initiated. With a signed access agreement in place, Stratus will be directed to execute field work. If, a signed access agreement is not in place following 90 days approval of this Work Plan by the ACEH, assistance with access agreement negotiations from the ACEH will be requested. Upon completion of field work and receipt of a data packet from Stratus summarizing field activities including laboratory analytical reports, BAI will complete a soil and ground-water investigation report for submittal to the ACEH.

10.0 CLOSURE

The findings presented in this document are based upon: observations of field personnel from previous consultants, the points investigated, and results of analytical tests performed by

various laboratories. Our services were performed in accordance with the generally accepted standard of practice at the time this document was written. No other warranty, expressed or implied was made. This report has been prepared for the exclusive use of BP. It is possible that variations in soil or ground-water 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.

11.0 REFERENCES

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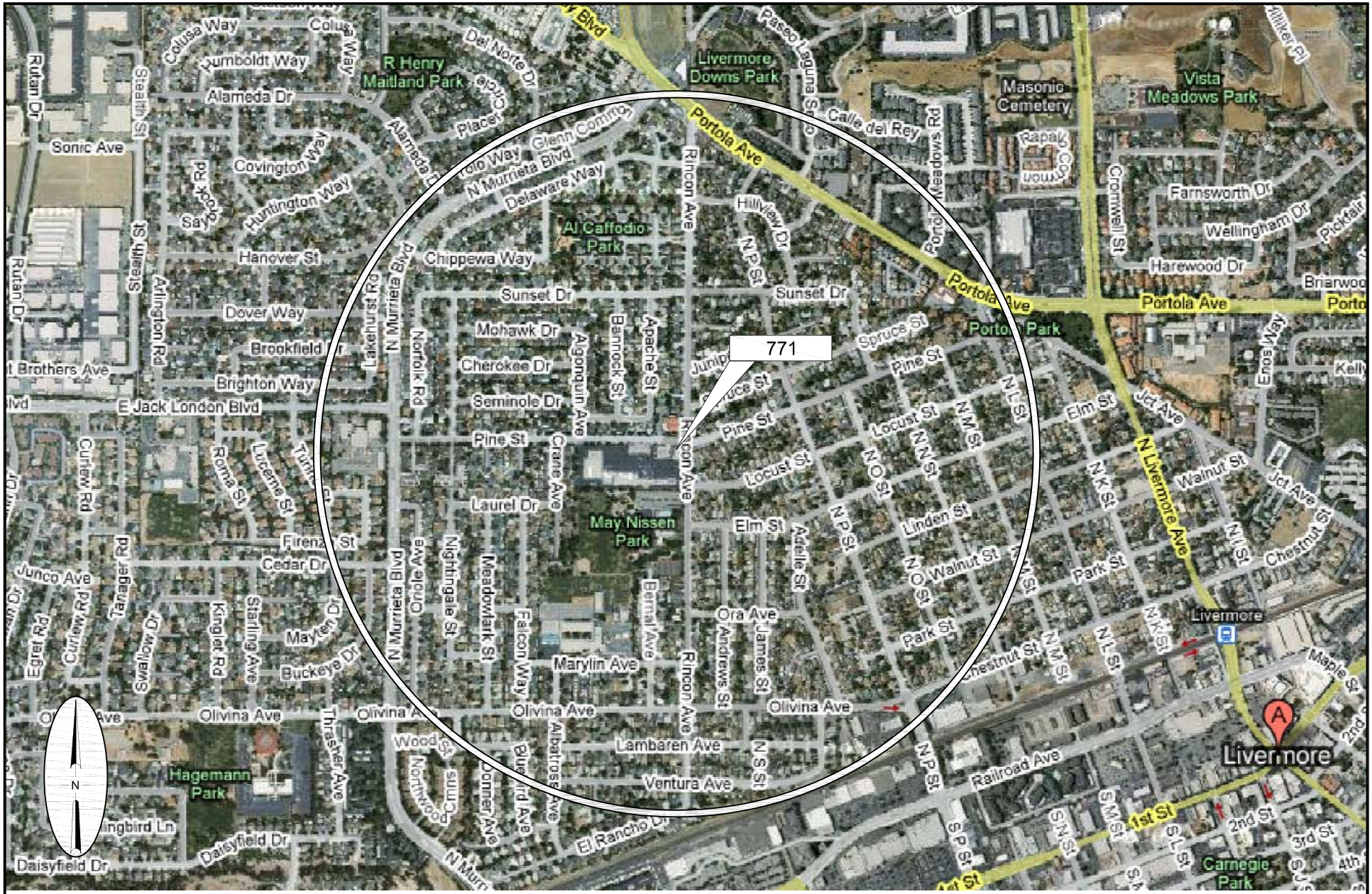
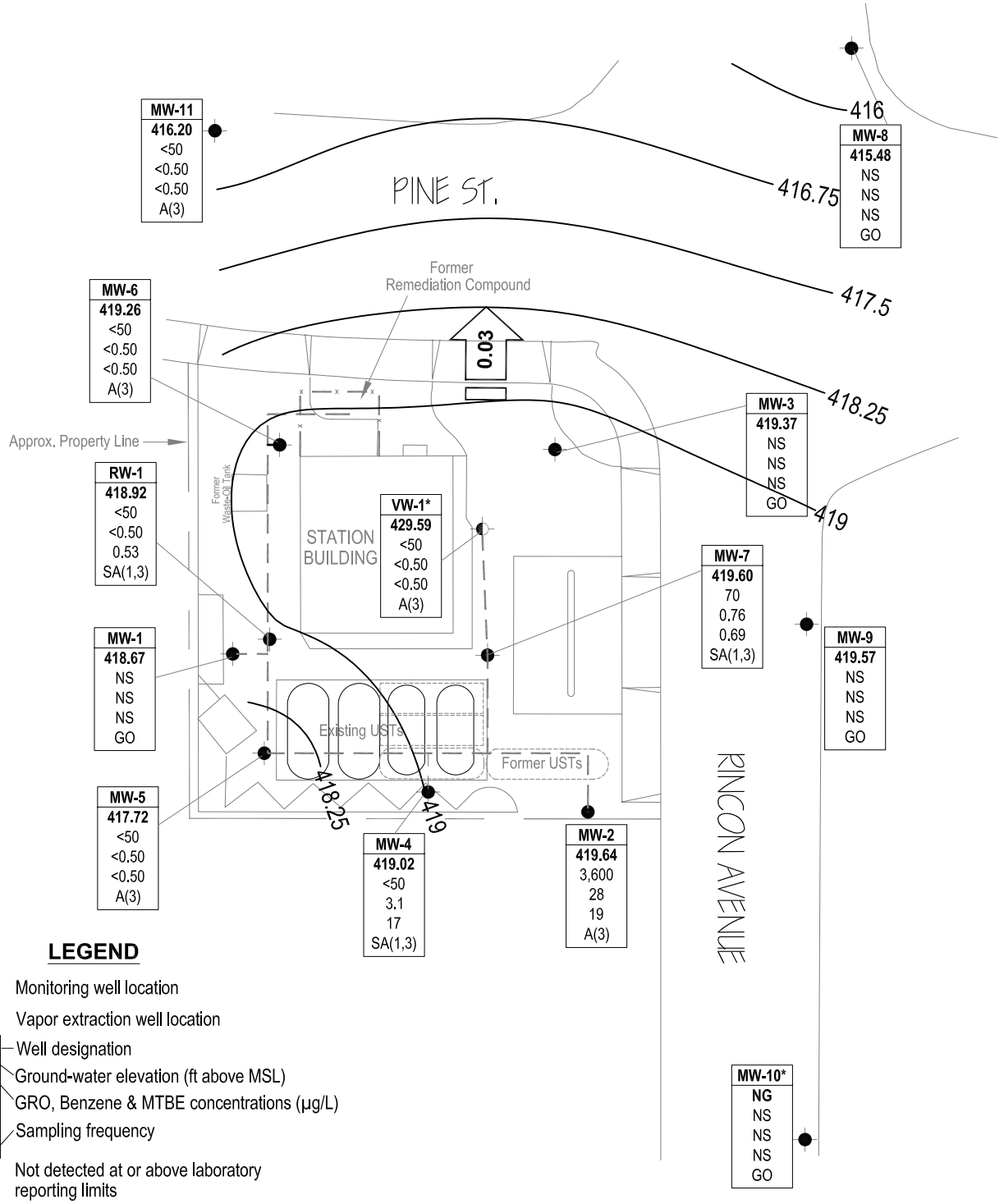


BROADBENT & ASSOCIATES, INC. ENGINEERING, WATER RESOURCES & ENVIRONMENTAL 1324 Mangrove Ave. Suite 212, Chico, California Project No.: 06-82-608 Date: 1/28/2009	Station #771 899 Rincon Avenue Livermore, CA	Site Vicinity Map

Drawing
1



LEGEND

- Monitoring well location
- Vapor extraction well location
- Well ID — Well designation
- ELEV — Ground-water 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
- 418.25 — Ground-water elevation contour (ft above MSL)
- 0.03 — Approximate ground-water flow direction and gradient (ft/ft)
- Remediation piping

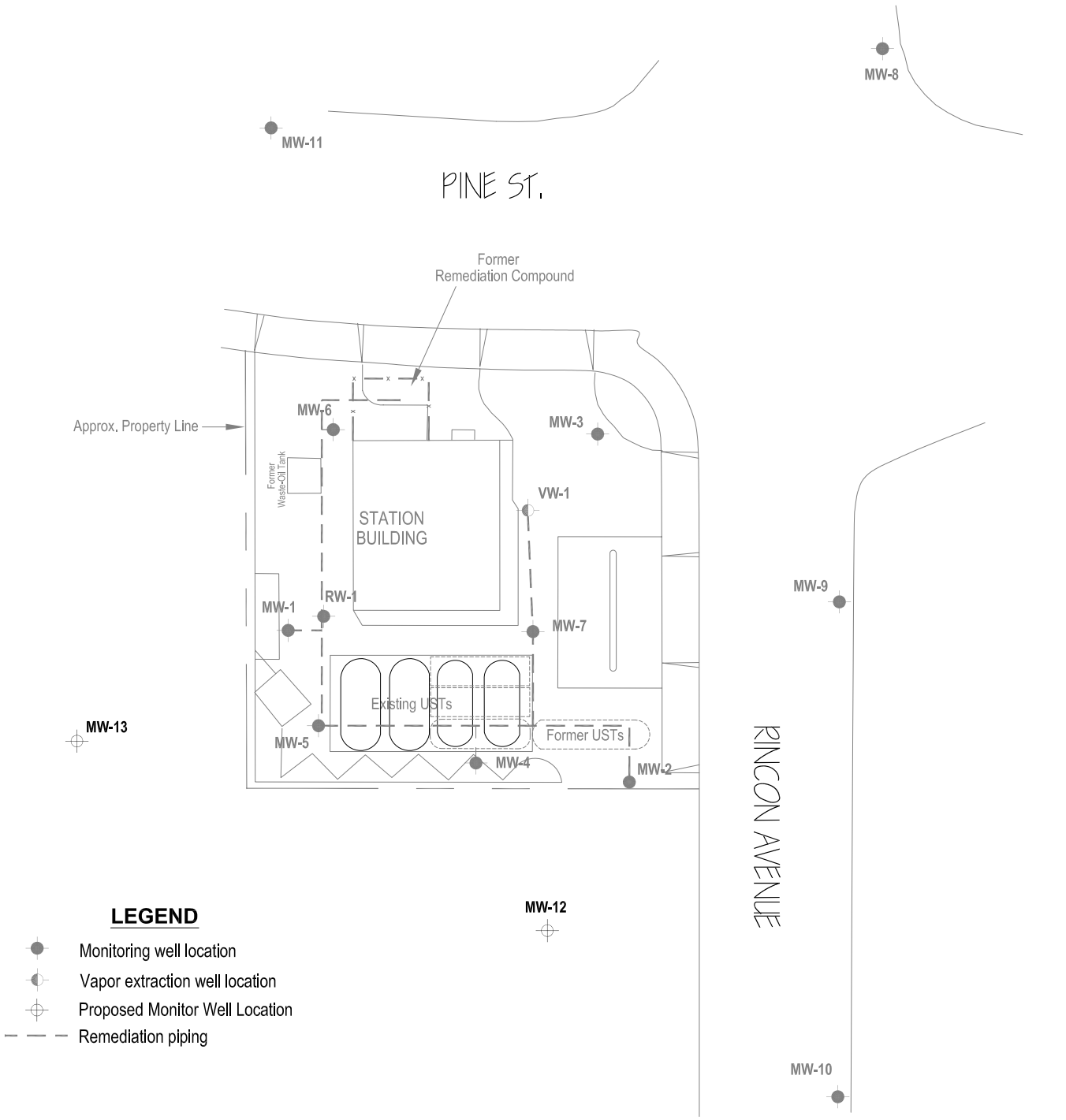
NOTE: SITE MAP ADAPTED FROM URS FIGURES.SITE DIMESIONS AND FACILITY LOCATIONS NOT VERIFIED.

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California
Project No.: 06-02-608 Date: 10/8/2008

Station #771
899 Rincon Avenue
Livermore, California

Ground-Water Elevation Contour and Analytical Summary Map
July 7, 2008

Drawing
2



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: 2/3/2009

Station #771
899 Rincon Avenue
Livermore, California

Proposed Well Location

Drawing
3

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								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	--		451.73	32.00	**41.00**	25.60	426.13	81,000	2,000	1,400	990	4,600	--	--	--
8/23/1995	--		451.73	32.00	**41.00**	29.04	422.69	44,000	2,400	1,900	670	3,800	<300	--	--
12/4/1995	--		451.73	32.00	**41.00**	31.31	420.42	22,000	870	660	390	2,200	--	--	--
2/20/1996	--		451.73	32.00	**41.00**	22.26	429.47	21,000	1,500	1,200	650	3,500	<300	--	--
5/15/1996	--		451.73	32.00	**41.00**	23.42	428.31	36,000	3,000	2,500	960	5,700	<250	--	--
8/13/1996	--		451.73	32.00	**41.00**	26.83	424.90	19,000	730	580	450	2,500	<200	--	--
11/13/1996	--		451.73	32.00	**41.00**	31.05	420.68	6,600	47	16	74	160	<30	--	--
3/26/1997	--		451.73	32.00	**41.00**	26.29	425.44	1,900	100	55	37	200	<30	--	--
5/15/1997	--		451.73	32.00	**41.00**	28.65	423.08	16,000	490	250	250	1,100	<120	--	--
8/26/1997	--		451.73	32.00	**41.00**	31.53	420.20	190	6.7	3	6.3	25	<3	--	--
11/5/1997	--		451.73	32.00	**41.00**	33.93	417.80	63	0.5	<0.5	0.8	2.4	29	--	--
2/18/1998	--		451.73	32.00	**41.00**	20.46	431.27	23,000	1,500	610	550	3,000	<120	--	--
5/20/1998	--		451.73	32.00	**41.00**	23.84	427.89	50,000	4,400	1,900	1,400	80,000	<300	--	--
7/30/1998	P		451.73	32.00	**41.00**	26.94	424.79	150	<0.5	<0.5	<0.5	1.6	<3	8.74	--
10/29/1998	NP		451.73	32.00	**41.00**	32.58	419.15	<50	<0.5	<0.5	<0.5	1.8	<3	2.0	--
3/16/1999	P		451.73	32.00	**41.00**	26.20	425.53	3,200	160	32	89	390	270	2.0	--
5/5/1999	P		451.73	32.00	**41.00**	27.57	424.16	3,600	140	46	76	290	170	11.65	--
8/26/1999	P		451.73	32.00	**41.00**	30.25	421.48	3,200	210	29	100	220	120	1.43	--
12/3/1999	NP		451.73	32.00	**41.00**	32.70	419.03	53	<0.5	<0.5	<0.5	1	<3	2.12	--
3/13/2000	P		451.73	32.00	**41.00**	24.45	427.28	<50	<0.5	<0.5	<0.5	<1	<3	5.81	--
6/20/2000	--	b	451.73	32.00	**41.00**	--	--	67.4	3.88	<0.500	1.78	1.48	<2.50	--	--
6/20/2000	P		451.73	32.00	**41.00**	27.79	423.94	356	40.1	7.17	11.9	22.7	<2.50	5.1	--
8/31/2000	--		451.73	32.00	**41.00**	30.35	421.38	--	--	--	--	--	--	--	--
2/9/2001	--		451.73	32.00	**41.00**	30.95	420.78	--	--	--	--	--	--	--	--
9/17/2001	--		451.73	32.00	**41.00**	30.85	420.88	--	--	--	--	--	--	--	--
1/21/2002	--		451.73	32.00	**41.00**	30.61	421.12	--	--	--	--	--	--	--	--
7/19/2002	--		451.73	32.00	**41.00**	31.55	420.18	--	--	--	--	--	--	--	--
1/15/2003	--		451.73	32.00	**41.00**	22.99	428.74	--	--	--	--	--	--	--	--
7/9/2003	--		451.73	32.00	**41.00**	30.35	421.38	--	--	--	--	--	--	--	--
02/19/2004	--		451.73	32.00	41.00	26.24	425.49	--	--	--	--	--	--	--	--

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-1 Cont.															
08/04/2004	--		454.23	32.00	41.00	26.36	427.87	--	--	--	--	--	--	--	--
01/18/2005	--		454.23	32.00	41.00	24.47	429.76	--	--	--	--	--	--	--	--
07/15/2005	--		454.23	32.00	41.00	29.44	424.79	--	--	--	--	--	--	--	--
01/10/2006	--		454.23	32.00	41.00	22.58	431.65	--	--	--	--	--	--	--	--
7/21/2006	--		454.23	32.00	41.00	20.73	433.50	--	--	--	--	--	--	--	--
1/17/2007	--		454.23	32.00	41.00	31.88	422.35	--	--	--	--	--	--	--	--
7/18/2007	--		454.23	32.00	41.00	32.85	421.38	--	--	--	--	--	--	--	--
1/15/2008	--		454.23	32.00	41.00	28.76	425.47	--	--	--	--	--	--	--	--
7/7/2008	--		**454.23**	**32.00**	**41.00**	**35.56**	**418.67**	--	--	--	--	--	--	--	--
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	--		449.49	30.00	38.00	22.32	427.17	37,000	2,200	800	980	4,800	--	--	--
8/23/1995	--		449.49	30.00	38.00	25.69	423.80	65,000	1,100	310	840	3,000	<500	--	--
12/4/1995	--		449.49	30.00	38.00	28.52	420.97	19,000	680	150	410	1,600	--	--	--
2/20/1996	--		449.49	30.00	38.00	19.00	430.49	22,000	1,200	240	590	2,200	<300	--	--
5/15/1996	--		449.49	30.00	38.00	20.03	429.46	25,000	1,200	240	610	2,100	<300	--	--
8/13/1996	--		449.49	30.00	38.00	24.44	425.05	19,000	640	110	420	1,200	<300	--	--
11/13/1996	--		449.49	30.00	38.00	28.42	421.07	15,000	260	52	220	640	<200	--	--
3/26/1997	--		449.49	30.00	38.00	22.98	426.51	17,000	580	120	360	980	<120	--	--
5/15/1997	--		449.49	30.00	38.00	25.40	424.09	18,000	420	63	340	730	<120	--	--
8/26/1997	--		449.49	30.00	38.00	28.38	421.11	5,300	210	26	140	270	<120	--	--
11/5/1997	--		449.49	30.00	38.00	31.93	417.56	560	42	2.6	7	9	<40	--	--
2/18/1998	--		449.49	30.00	38.00	16.87	432.62	18,000	710	120	480	1,100	130	--	--
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		449.49	30.00	38.00	23.51	425.98	9,700	240	33	210	490	<120	9.21	--
10/29/1998	NP		449.49	30.00	38.00	30.08	419.41	58	<0.5	<0.5	<0.5	1.2	<3	1.0	--
3/16/1999	P		449.49	30.00	38.00	23.22	426.27	4,700	120	13	90	220	60	2.0	--
5/5/1999	P		449.49	30.00	38.00	24.05	425.44	5,500	58	7.1	58	98	17	9.09	--
8/26/1999	P		449.49	30.00	38.00	26.44	423.05	3,700	55	11	60	64	26	1.9	--
12/3/1999	NP		449.49	30.00	38.00	30.15	419.34	130	<0.5	<0.5	0.7	1.8	<3	1.96	--

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-2 Cont.															
3/13/2000	P		449.49	30.00	38.00	20.68	428.81	<50	<0.5	<0.5	<0.5	<1	<3	--	--
6/20/2000	P		449.49	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		449.49	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	--		449.49	30.00	38.00	29.65	419.84	--	--	--	--	--	--	--	--
9/17/2001	P		449.49	30.00	38.00	27.62	421.87	3,100	300	12	8.8	18	120	1.7	--
1/21/2002	--		449.49	30.00	38.00	27.09	422.40	--	--	--	--	--	--	--	--
7/19/2002	P	a	449.49	30.00	38.00	27.82	421.67	4,700	280	13	120	19	16	0.8	7.4
1/15/2003	--		449.49	30.00	38.00	22.18	427.31	--	--	--	--	--	--	--	--
7/9/2003	--		449.49	30.00	38.00	26.40	423.09	3,900	170	<5.0	100	19	39	2.5	7.0
02/19/2004	--		449.49	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	--		452.05	30.00	38.00	20.86	431.19	--	--	--	--	--	--	--	--
07/15/2005	P		452.05	30.00	38.00	25.92	426.13	5,200	160	5.3	56	10	46	3.1	6.9
01/10/2006	--		452.05	30.00	38.00	19.25	432.80	--	--	--	--	--	--	--	--
7/21/2006	P		452.05	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	--		452.05	30.00	38.00	28.70	423.35	--	--	--	--	--	--	--	--
7/18/2007	P		452.05	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	--		452.05	30.00	38.00	24.65	427.40	--	--	--	--	--	--	--	--
7/7/2008	**NP**		**452.05**	**30.00**	**38.00**	**32.41**	**419.64**	**3,600**	**28**	**<5.0**	**<5.0**	**<5.0**	**19**	**2.81**	**7.24**
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	--		450.28	32.00	40.00	23.28	427.00	72	<0.5	<0.5	<0.5	<0.5	--	--	--
8/23/1995	--		450.28	32.00	40.00	26.55	423.73	98	<0.5	<0.5	<0.6	0.5	<3	--	--
12/4/1995	--		450.28	32.00	40.00	29.52	420.76	<50	<0.5	<0.5	<0.5	<0.5	--	--	--
2/20/1996	--		450.28	32.00	40.00	19.83	430.45	130	<0.5	<0.5	<0.5	<0.5	<3	--	--
5/15/1996	--		450.28	32.00	40.00	21.03	429.25	120	<0.5	<0.5	<0.5	<0.5	<0.5	--	--
8/13/1996	--		450.28	32.00	40.00	25.67	424.61	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
11/13/1996	--		450.28	32.00	40.00	21.57	428.71	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
3/26/1997	--		450.28	32.00	40.00	24.15	426.13	<50	1.1	<0.5	<0.5	<0.5	<3	--	--
5/15/1997	--		450.28	32.00	40.00	26.85	423.43	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-3 Cont.															
8/26/1997	--		450.28	32.00	**40.00**	30.07	420.21	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
11/5/1997	--		450.28	32.00	**40.00**	32.46	417.82	<50	<0.5	0.7	<0.5	<0.5	<3	--	--
2/18/1998	--		450.28	32.00	**40.00**	17.82	432.46	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
5/20/1998	--		450.28	32.00	**40.00**	21.41	428.87	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
7/30/1998	P		450.28	32.00	**40.00**	26.41	423.87	<50	<0.5	<0.5	<0.5	<0.5	<3	9.56	--
10/29/1998	P		450.28	32.00	**40.00**	31.33	418.95	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	--
3/16/1999	P		450.28	32.00	**40.00**	24.61	425.67	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	--
5/5/1999	P		450.28	32.00	**40.00**	25.75	424.53	140	<0.5	<0.5	0.6	<0.5	<3	4.43	--
8/26/1999	P		450.28	32.00	**40.00**	28.49	421.79	80	0.6	0.6	0.6	1	<3	1.69	--
12/3/1999	P		450.28	32.00	**40.00**	31.45	418.83	<50	<0.5	<0.5	<0.5	<1	<3	2.26	--
3/13/2000	P		450.28	32.00	**40.00**	22.18	428.10	<50	<0.5	<0.5	<0.5	<1	<3	4.41	--
6/20/2000	P		450.28	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	--		450.28	32.00	**40.00**	28.75	421.53	--	--	--	--	--	--	--	--
2/9/2001	--		450.28	32.00	**40.00**	31.04	419.24	--	--	--	--	--	--	--	--
9/17/2001	--		450.28	32.00	**40.00**	29.04	421.24	--	--	--	--	--	--	--	--
1/21/2002	--		450.28	32.00	**40.00**	28.81	421.47	--	--	--	--	--	--	--	--
7/19/2002	--		450.28	32.00	**40.00**	28.92	421.36	--	--	--	--	--	--	--	--
1/15/2003	--		450.28	32.00	**40.00**	22.88	427.40	--	--	--	--	--	--	--	--
7/9/2003	--		450.28	32.00	**40.00**	28.00	422.28	--	--	--	--	--	--	--	--
02/19/2004	--		450.28	32.00	40.00	25.29	424.99	--	--	--	--	--	--	--	--
08/04/2004	--		452.75	32.00	40.00	27.40	425.35	--	--	--	--	--	--	--	--
01/18/2005	--		452.75	32.00	40.00	22.76	429.99	--	--	--	--	--	--	--	--
07/15/2005	--		452.75	32.00	40.00	25.95	426.80	--	--	--	--	--	--	--	--
01/10/2006	--		452.75	32.00	40.00	21.18	431.57	--	--	--	--	--	--	--	--
7/21/2006	--		452.75	32.00	40.00	25.73	427.02	--	--	--	--	--	--	--	--
1/17/2007	--		452.75	32.00	40.00	30.51	422.24	--	--	--	--	--	--	--	--
7/18/2007	--		452.75	32.00	40.00	29.53	423.22	--	--	--	--	--	--	--	--
1/15/2008	--		452.75	32.00	40.00	27.65	425.10	--	--	--	--	--	--	--	--
7/7/2008	--		**452.75**	**32.00**	**40.00**	**33.38**	**419.37**	--	--	--	--	--	--	--	--
MW-4															

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-4 Cont.															
3/20/1995	--		451.09	26.00	42.00	22.68	428.41	12,000	1,000	100	450	700	--	--	--
6/2/1995	--		451.09	26.00	42.00	24.41	426.68	9,000	850	56	380	430	--	--	--
8/23/1995	--		451.09	26.00	42.00	27.72	423.37	5,300	400	25	240	170	<100	--	--
12/4/1995	--		451.09	26.00	42.00	29.85	421.24	6,700	100	<10	90	38	--	--	--
2/20/1996	--		451.09	26.00	42.00	21.16	429.93	7,000	360	22	180	160	<70	--	--
5/15/1996	--		451.09	26.00	42.00	22.18	428.91	--	--	--	--	--	--	--	--
8/13/1996	--		451.09	26.00	42.00	26.20	424.89	--	--	--	--	--	--	--	--
11/13/1996	--		451.09	26.00	42.00	29.72	421.37	--	--	--	--	--	--	--	--
3/26/1997	--		451.09	26.00	42.00	21.86	429.23	8,900	390	33	200	250	<70	--	--
5/15/1997	--		451.09	26.00	42.00	26.92	424.17	--	--	--	--	--	--	--	--
8/26/1997	--		451.09	26.00	42.00	29.30	421.79	--	--	--	--	--	--	--	--
11/5/1997	--		451.09	26.00	42.00	32.14	418.95	--	--	--	--	--	--	--	--
2/18/1998	--		451.09	26.00	42.00	19.30	431.79	5,300	220	19	160	130	120	--	--
5/20/1998	--		451.09	26.00	42.00	22.40	428.69	--	--	--	--	--	--	--	--
7/30/1998	--		451.09	26.00	42.00	25.74	425.35	--	--	--	--	--	--	--	--
10/29/1998	--		451.09	26.00	42.00	31.26	419.83	--	--	--	--	--	--	--	--
3/16/1999	P		451.09	26.00	42.00	25.05	426.04	1,900	49	<5	43	<5	82	1.5	--
5/5/1999	--		451.09	26.00	42.00	26.15	424.94	--	--	--	--	--	--	--	--
8/26/1999	--		451.09	26.00	42.00	28.60	422.49	--	--	--	--	--	--	1.43	--
12/3/1999	--		451.09	26.00	42.00	31.53	419.56	--	--	--	--	--	--	--	--
3/13/2000	P		451.09	26.00	42.00	23.61	427.48	<50	<0.5	<0.5	<0.5	<1	<3	3.82	--
6/20/2000	--		451.09	26.00	42.00	26.38	424.71	--	--	--	--	--	--	0.4	--
8/31/2000	NP		451.09	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		451.09	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		451.09	26.00	42.00	29.90	421.19	3,400	51	<5.0	16	23	360	0.92	--
1/21/2002	NP		451.09	26.00	42.00	29.51	421.58	1,900	140	12	27	48	300	1.03	--
7/19/2002	NP	a	451.09	26.00	42.00	30.77	420.32	2,700	150	9.9	<5.0	<5.0	130	1.0	7.3
1/15/2003	--	a	451.09	26.00	42.00	23.56	427.53	4,800	150	5.3	28	46	150	1.3	7.0
7/9/2003	--		451.09	26.00	42.00	29.50	421.59	3,000	210	9.4	6	20	150	2.0	6.9
02/19/2004	P	c	451.09	26.00	42.00	26.35	424.74	4,800	270	11	25	19	180	1.8	6.2
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

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Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-4 Cont.															
01/18/2005	P		453.80	26.00	42.00	23.15	430.65	4,500	250	9.5	62	22	160	1.2	6.9
07/15/2005	NP		453.80	26.00	42.00	28.13	425.67	3,500	230	6.1	19	15	230	0.5	7.0
01/10/2006	P		453.80	26.00	42.00	21.49	432.31	5,500	250	7.6	37	25	190	1.3	7.1
7/21/2006	NP		453.80	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		453.80	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		453.80	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	f (MTBE)	453.80	26.00	42.00	27.30	426.50	220	1.2	<0.50	<0.50	0.50	61	3.29	6.94
7/7/2008	**NP**		**453.80**	**26.00**	**42.00**	**34.78**	**419.02**	**<50**	**3.1**	**<0.50**	**<0.50**	**0.66**	**17**	**4.03**	**7.26**
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	--		451.40	31.50	**41.00**	24.80	426.60	39,000	940	160	740	1,900	--	--	--
8/23/1995	--		451.40	31.50	**41.00**	28.10	423.30	14,000	490	74	250	890	<300	--	--
12/4/1995	--		451.40	31.50	**41.00**	29.83	421.57	7,600	230	13	61	80	--	--	--
2/20/1996	--		451.40	31.50	**41.00**	21.63	429.77	4,300	220	12	45	130	<50	--	--
5/15/1996	--		451.40	31.50	**41.00**	22.87	428.53	2,200	380	17	58	84	<40	--	--
8/13/1996	--		451.40	31.50	**41.00**	26.48	424.92	1,700	150	16	24	35	47	--	--
11/13/1996	--		451.40	31.50	**41.00**	29.68	421.72	850	150	11	19	37	66	--	--
3/26/1997	--		451.40	31.50	**41.00**	25.14	426.26	2,400	440	21	79	210	68	--	--
5/15/1997	--		451.40	31.50	**41.00**	27.38	424.02	3,900	510	19	140	240	48	--	--
8/26/1997	--		451.40	31.50	**41.00**	29.89	421.51	76	4.9	<0.5	1.5	2	9	--	--
11/5/1997	--		451.40	31.50	**41.00**	32.57	418.83	63	0.8	<0.5	<0.5	1.2	34	--	--
2/18/1998	--		451.40	31.50	**41.00**	19.99	431.41	6,200	630	70	320	640	320	--	--
5/20/1998	--		451.40	31.50	**41.00**	23.21	428.19	2,300	340	21	110	140	62	--	--
7/30/1998	P		451.40	31.50	**41.00**	26.19	425.21	<50	0.8	<0.5	0.6	0.9	<3	8.83	--
10/29/1998	NP		451.40	31.50	**41.00**	31.92	419.48	<50	<0.5	<0.5	<0.5	<0.5	<3	2.0	--
3/16/1999	P		451.40	31.50	**41.00**	25.80	425.60	1,300	170	8	59	65	120	2.0	--
5/5/1999	P		451.40	31.50	**41.00**	27.09	424.31	320	31	1.1	13	13	19	12.09	--
8/26/1999	P		451.40	31.50	**41.00**	29.67	421.73	260	13	1.7	4.2	6.3	150	1.31	--
12/3/1999	--	d	451.40	31.50	**41.00**	--	--	--	--	--	--	--	--	--	--
3/13/2000	P		451.40	31.50	**41.00**	24.51	426.89	<50	<0.5	<0.5	<0.5	<1	<3	4.41	--

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-5 Cont.															
6/20/2000	P		451.40	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		451.40	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	--		451.40	31.50	**41.00**	30.19	421.21	--	--	--	--	--	--	--	--
9/17/2001	P		451.40	31.50	**41.00**	30.71	420.69	2,700	120	10	90	77	330	0.81	--
1/21/2002	--		451.40	31.50	**41.00**	30.40	421.00	--	--	--	--	--	--	--	--
7/19/2002	P	a	451.40	31.50	**41.00**	31.93	419.47	1,600	170	7	120	<5.0	180	1.7	7.2
1/15/2003	--		451.40	31.50	**41.00**	23.12	428.28	--	--	--	--	--	--	--	--
7/9/2003	--		451.40	31.50	**41.00**	30.95	420.45	2,000	160	5.7	67	27	260	1.5	6.9
02/19/2004	--		451.40	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	--		453.52	31.50	41.00	24.10	429.42	--	--	--	--	--	--	--	--
07/15/2005	P		453.52	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	--		453.52	31.50	41.00	22.19	431.33	--	--	--	--	--	--	--	--
7/21/2006	P		453.52	31.50	41.00	30.36	423.16	2,100	29	<5.0	7.5	11	14	2.98	7.1
1/17/2007	--		453.52	31.50	41.00	31.77	421.75	--	--	--	--	--	--	--	--
7/18/2007	NP		453.52	31.50	41.00	33.42	420.10	470	36	0.84	0.97	2.2	110	1.73	7.50
1/15/2008	--		453.52	31.50	41.00	28.60	424.92	--	--	--	--	--	--	--	--
7/7/2008	**NP**		**453.52**	**31.50**	**41.00**	**35.80**	**417.72**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**7.55**	**7.79**
MW-6															
3/20/1995	--		451.37	32.00	**42.00**	25.19	426.18	2,600	210	87	82	140	--	--	--
6/2/1995	--		451.37	32.00	**42.00**	25.75	425.62	1,600	55	7.9	40	26	--	--	--
8/23/1995	--		451.37	32.00	**42.00**	29.53	421.84	1,400	42	2.5	36	13	<20	--	--
12/4/1995	--		451.37	32.00	**42.00**	32.28	419.09	2,500	52	5.8	59	13	--	--	--
2/20/1996	--		451.37	32.00	**42.00**	22.27	429.10	2,500	120	16	73	12	<30	--	--
5/15/1996	--		451.37	32.00	**42.00**	23.86	427.51	2,000	71	6.4	47	25	<15	--	--
8/13/1996	--		451.37	32.00	**42.00**	28.55	422.82	3,800	91	8.2	69	25	<20	--	--
11/13/1996	--		451.37	32.00	**42.00**	32.04	419.33	1,900	55	3.3	55	8.5	16	--	--
3/26/1997	--		451.37	32.00	**42.00**	26.84	424.53	1,800	51	5	32	15	<30	--	--
5/15/1997	--		451.37	32.00	**42.00**	29.58	421.79	2,400	46	3	29	9	<12	--	--
8/26/1997	--		451.37	32.00	**42.00**	32.67	418.70	1,400	61	6	33	10	<12	--	--

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-6 Cont.															
11/5/1997	--		451.37	32.00	**42.00**	34.62	416.75	690	29	2.7	18	3.4	9	--	--
2/18/1998	--		451.37	32.00	**42.00**	20.09	431.28	1,800	74	5	24	12	19	--	--
5/20/1998	--		451.37	32.00	**42.00**	24.05	427.32	1,900	280	4	31	16	9	--	--
7/30/1998	P		451.37	32.00	**42.00**	28.72	422.65	2,300	110	7	36	20	<15	--	--
10/29/1998	P		451.37	32.00	**42.00**	32.77	418.60	2,500	14	13	17	12	<12	1.0	--
3/16/1999	P		451.37	32.00	**42.00**	26.45	424.92	1,200	65	4	27	13	18	0.5	--
5/5/1999	P		451.37	32.00	**42.00**	27.86	423.51	2,200	53	4	26	6	25	5.59	--
8/26/1999	P		451.37	32.00	**42.00**	30.49	420.88	1,100	11	6	10	4	13	2.35	--
12/3/1999	P		451.37	32.00	**42.00**	32.35	419.02	370	<0.5	<0.5	0.8	<1	4	2.36	--
3/13/2000	P		451.37	32.00	**42.00**	28.36	423.01	54	2.1	0.5	0.9	1.4	<3	4.22	--
6/20/2000	P		451.37	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		451.37	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		451.37	32.00	**42.00**	30.70	420.67	253	5.44	2.93	0.924	0.977	48.9	0.59	--
2/9/2001	--	b	451.37	32.00	**42.00**	--	--	222	4.49	2.73	0.579	0.523	57.1	--	--
9/17/2001	--	b	451.37	32.00	**42.00**	--	--	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	--
9/17/2001	P		451.37	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		451.37	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	a	451.37	32.00	**42.00**	30.27	421.10	60	2	<0.50	<0.50	<0.50	<0.50	3.5	7.9
1/15/2003	--	a	451.37	32.00	**42.00**	22.86	428.51	83	9.1	<0.50	3.4	4.6	1	2.5	7.2
7/9/2003	P		451.37	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	--		451.37	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	--		453.83	32.00	42.00	24.56	429.27	--	--	--	--	--	--	--	--
07/15/2005	P		453.83	32.00	42.00	27.61	426.22	4,600	210	44	150	670	32	3.5	7.1
01/10/2006	--		453.83	32.00	42.00	23.75	430.08	--	--	--	--	--	--	--	--
7/21/2006	P		453.83	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	--		453.83	32.00	42.00	30.57	423.26	--	--	--	--	--	--	--	--
7/18/2007	P		453.83	32.00	42.00	30.96	422.87	<50	<0.50	<0.50	<0.50	<0.50	<0.50	4.95	7.57
1/15/2008	--		453.83	32.00	42.00	28.89	424.94	--	--	--	--	--	--	--	--
7/7/2008	**NP**		**453.83**	**32.00**	**42.00**	**34.57**	**419.26**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**6.00**	**7.19**

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
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	--		450.33	30.00	**40.00**	23.42	426.91	40,000	1,400	280	610	2,400	--	--	--
8/23/1995	--		450.33	30.00	**40.00**	27.13	423.20	25,000	1,400	200	600	1,600	350	--	--
12/4/1995	--		450.33	30.00	**40.00**	29.45	420.88	23,000	1,100	74	490	720	--	--	--
2/20/1996	--		450.33	30.00	**40.00**	20.25	430.08	39,000	1,200	140	640	1,800	<400	--	--
5/15/1996	--		450.33	30.00	**40.00**	21.38	428.95	--	--	--	--	--	--	--	--
8/13/1996	--		450.33	30.00	**40.00**	25.52	424.81	--	--	--	--	--	--	--	--
11/13/1996	--		450.33	30.00	**40.00**	29.38	420.95	--	--	--	--	--	--	--	--
3/26/1997	--		450.33	30.00	**40.00**	24.36	425.97	35,000	1,100	180	460	1,700	<300	--	--
5/15/1997	--		450.33	30.00	**40.00**	26.90	423.43	--	--	--	--	--	--	--	--
8/26/1997	--		450.33	30.00	**40.00**	30.21	420.12	--	--	--	--	--	--	--	--
11/5/1997	--		450.33	30.00	**40.00**	32.49	417.84	--	--	--	--	--	--	--	--
2/18/1998	--		450.33	30.00	**40.00**	18.10	432.23	19,000	1,100	120	460	1,700	240	--	--
5/20/1998	--		450.33	30.00	**40.00**	21.68	428.65	--	--	--	--	--	--	--	--
7/30/1998	--		450.33	30.00	**40.00**	26.07	424.26	--	--	--	--	--	--	--	--
10/29/1998	--		450.33	30.00	**40.00**	31.13	419.20	--	--	--	--	--	--	--	--
3/16/1999	P		450.33	30.00	**40.00**	24.45	425.88	8,600	430	51	200	680	<120	1.5	--
5/5/1999	--		450.33	30.00	**40.00**	25.84	424.49	--	--	--	--	--	--	--	--
8/26/1999	--		450.33	30.00	**40.00**	28.28	422.05	--	--	--	--	--	--	1.51	--
12/3/1999	--		450.33	30.00	**40.00**	31.57	418.76	--	--	--	--	--	--	--	--
3/13/2000	--	d	450.33	30.00	**40.00**	--	--	--	--	--	--	--	--	--	--
6/20/2000	--		450.33	30.00	**40.00**	25.91	424.42	--	--	--	--	--	--	5.4	--
8/31/2000	--		450.33	30.00	**40.00**	28.40	421.93	8,410	344	58.9	276	581	202	0.09	--
2/9/2001	--		450.33	30.00	**40.00**	30.04	420.29	2,030	203	12	17.9	49.4	128	1.55	--
9/17/2001	P		450.33	30.00	**40.00**	29.03	421.30	4,800	200	14	9.9	27	160	0.29	--
1/21/2002	--	b	450.33	30.00	**40.00**	--	--	2,600	280	17	41	50	97	--	--
1/21/2002	P		450.33	30.00	**40.00**	28.98	421.35	4,200	350	20	52	63	99	0.81	--
7/19/2002	P	a	450.33	30.00	**40.00**	28.70	421.63	5,700	630	31	330	160	64	0.7	7.3
1/15/2003	--	a	450.33	30.00	**40.00**	21.91	428.42	12,000	470	19	340	310	91	1.5	7.0
7/9/2003	P		450.33	30.00	**40.00**	27.88	422.45	6,700	590	23	280	92	110	1.0	6.9
02/19/2004	P	c	450.33	30.00	40.00	25.12	425.21	8,900	670	24	470	120	100	0.8	6.6

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-7 Cont.															
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		452.70	30.00	40.00	22.31	430.39	16,000	770	33	590	220	87	1.0	6.9
07/15/2005	P		452.70	30.00	40.00	27.20	425.50	12,000	1,000	38	490	220	150	1.5	6.9
01/10/2006	P		452.70	30.00	40.00	20.61	432.09	13,000	1,200	50	760	330	120	0.8	7.1
7/21/2006	P		452.70	30.00	40.00	28.10	424.60	8,000	110	<50	380	180	54	3.20	7.8
1/17/2007	P		452.70	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		452.70	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		452.70	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**		**452.70**	**30.00**	**40.00**	**33.10**	**419.60**	**70**	**0.76**	**<0.50**	**<0.50**	**<0.50**	**0.69**	**7.81**	**8.24**
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	--		449.43	27.50	42.50	24.95	424.48	--	--	--	--	--	--	--	--
8/23/1995	--		449.43	27.50	42.50	30.94	418.49	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
12/4/1995	--		449.43	27.50	42.50	31.99	417.44	--	--	--	--	--	--	--	--
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	--		449.43	27.50	42.50	21.96	427.47	--	--	--	--	--	--	--	--
8/13/1996	--		449.43	27.50	42.50	30.20	419.23	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
11/13/1996	--		449.43	27.50	42.50	33.24	416.19	--	--	--	--	--	--	--	--
3/26/1997	--		449.43	27.50	42.50	26.85	422.58	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
5/15/1997	--		449.43	27.50	42.50	29.69	419.74	--	--	--	--	--	--	--	--
8/26/1997	--		449.43	27.50	42.50	34.00	415.43	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
11/5/1997	--		449.43	27.50	42.50	35.94	413.49	--	--	--	--	--	--	--	--
2/18/1998	--		449.43	27.50	42.50	18.18	431.25	<50	0.6	0.6	<0.5	1.1	<3	--	--
5/20/1998	--		449.43	27.50	42.50	22.85	426.58	--	--	--	--	--	--	--	--
7/30/1998	NP		449.43	27.50	42.50	30.31	419.12	<50	<0.5	<0.5	<0.5	<0.5	<3	8.21	--
10/29/1998	--		449.43	27.50	42.50	35.88	413.55	--	--	--	--	--	--	--	--
3/16/1999	NP		449.43	27.50	42.50	28.50	420.93	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	--
5/5/1999	--		449.43	27.50	42.50	29.76	419.67	--	--	--	--	--	--	--	--
8/26/1999	P		449.43	27.50	42.50	33.51	415.92	<50	<0.5	<0.5	<0.5	<0.5	<3	4.93	--
12/3/1999	--		449.43	27.50	42.50	35.83	413.60	--	--	--	--	--	--	--	--

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-8 Cont.															
3/13/2000	P		449.43	27.50	42.50	26.12	423.31	<50	<0.5	<0.5	<0.5	<1	<3	2.81	--
6/20/2000	--		449.43	27.50	42.50	30.91	418.52	--	--	--	--	--	--	5.8	--
8/31/2000	--		449.43	27.50	42.50	33.70	415.73	--	--	--	--	--	--	--	--
2/9/2001	--		449.43	27.50	42.50	30.90	418.53	--	--	--	--	--	--	--	--
9/17/2001	--		449.43	27.50	42.50	33.95	415.48	--	--	--	--	--	--	--	--
1/21/2002	--		449.43	27.50	42.50	33.71	415.72	--	--	--	--	--	--	--	--
7/19/2002	--		449.43	27.50	42.50	35.30	414.13	--	--	--	--	--	--	--	--
1/15/2003	--		449.43	27.50	42.50	27.10	422.33	--	--	--	--	--	--	--	--
7/9/2003	--		449.43	27.50	42.50	33.10	416.33	--	--	--	--	--	--	--	--
02/19/2004	--		449.43	27.50	42.50	28.92	420.51	--	--	--	--	--	--	--	--
08/04/2004	--		451.80	27.50	42.50	34.28	417.52	--	--	--	--	--	--	--	--
01/18/2005	--		451.80	27.50	42.50	26.76	425.04	--	--	--	--	--	--	--	--
07/15/2005	--		451.80	27.50	42.50	31.14	420.66	--	--	--	--	--	--	--	--
01/10/2006	--		451.80	27.50	42.50	22.88	428.92	--	--	--	--	--	--	--	--
7/21/2006	--		451.80	27.50	42.50	30.84	420.96	--	--	--	--	--	--	--	--
1/17/2007	--		451.80	27.50	42.50	33.20	418.60	--	--	--	--	--	--	--	--
7/18/2007	--		451.80	27.50	42.50	31.92	419.88	--	--	--	--	--	--	--	--
1/15/2008	--		451.80	27.50	42.50	31.52	420.28	--	--	--	--	--	--	--	--
7/7/2008	--		**451.80**	**27.50**	**42.50**	**36.32**	**415.48**	--	--	--	--	--	--	--	--
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	--		449.21	29.50	39.50	21.23	427.98	--	--	--	--	--	--	--	--
8/23/1995	--		449.21	29.50	39.50	24.33	424.88	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
12/4/1995	--		449.21	29.50	39.50	27.90	421.31	--	--	--	--	--	--	--	--
2/20/1996	--		449.21	29.50	39.50	17.86	431.35	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
5/15/1996	--		449.21	29.50	39.50	18.69	430.52	--	--	--	--	--	--	--	--
8/13/1996	--		449.21	29.50	39.50	24.17	425.04	--	--	--	--	--	--	--	--
11/13/1996	--		449.21	29.50	39.50	28.01	421.20	--	--	--	--	--	--	--	--
3/26/1997	--		449.21	29.50	39.50	22.58	426.63	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
5/15/1997	--		449.21	29.50	39.50	25.12	424.09	--	--	--	--	--	--	--	--

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-9 Cont.															
8/26/1997	--		449.21	29.50	**39.50**	28.28	420.93	--	--	--	--	--	--	--	--
11/5/1997	--		449.21	29.50	**39.50**	31.18	418.03	--	--	--	--	--	--	--	--
2/18/1998	--		449.21	29.50	**39.50**	16.03	433.18	<50	0.6	0.5	<0.5	1	<3	--	--
5/20/1998	--		449.21	29.50	**39.50**	19.31	429.90	--	--	--	--	--	--	--	--
7/30/1998	--		449.21	29.50	**39.50**	24.90	424.31	--	--	--	--	--	--	--	--
10/29/1998	--		449.21	29.50	**39.50**	30.08	419.13	--	--	--	--	--	--	--	--
3/16/1999	P		449.21	29.50	**39.50**	22.68	426.53	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	--
5/5/1999	--		449.21	29.50	**39.50**	23.82	425.39	--	--	--	--	--	--	--	--
8/26/1999	--		449.21	29.50	**39.50**	26.57	422.64	--	--	--	--	--	--	5.08	--
12/3/1999	--	d	449.21	29.50	**39.50**	--	--	--	--	--	--	--	--	--	--
3/13/2000	P		449.21	29.50	**39.50**	25.62	423.59	<50	<0.5	<0.5	<0.5	<1	<3	5.43	--
6/20/2000	--		449.21	29.50	**39.50**	23.55	425.66	--	--	--	--	--	--	6.2	--
8/31/2000	--		449.21	29.50	**39.50**	27.39	421.82	--	--	--	--	--	--	--	--
2/9/2001	--		449.21	29.50	**39.50**	28.65	420.56	--	--	--	--	--	--	--	--
9/17/2001	--		449.21	29.50	**39.50**	27.51	421.70	--	--	--	--	--	--	--	--
1/21/2002	--		449.21	29.50	**39.50**	27.09	422.12	--	--	--	--	--	--	--	--
7/19/2002	--		449.21	29.50	**39.50**	27.06	422.15	--	--	--	--	--	--	--	--
1/15/2003	--		449.21	29.50	**39.50**	21.78	427.43	--	--	--	--	--	--	--	--
7/9/2003	--		449.21	29.50	**39.50**	26.18	423.03	--	--	--	--	--	--	--	--
02/19/2004	--		449.21	29.50	39.50	23.45	425.76	--	--	--	--	--	--	--	--
08/04/2004	--		451.63	29.50	39.50	29.24	422.39	--	--	--	--	--	--	--	--
01/18/2005	--		451.63	29.50	39.50	20.64	430.99	--	--	--	--	--	--	--	--
07/15/2005	--		451.63	29.50	39.50	25.72	425.91	--	--	--	--	--	--	--	--
01/10/2006	--		451.63	29.50	39.50	18.86	432.77	--	--	--	--	--	--	--	--
7/21/2006	--		451.63	29.50	39.50	25.58	426.05	--	--	--	--	--	--	--	--
1/17/2007	--		451.63	29.50	39.50	29.11	422.52	--	--	--	--	--	--	--	--
7/18/2007	--	d	451.63	29.50	39.50	--	--	--	--	--	--	--	--	--	--
1/15/2008	--		451.63	29.50	39.50	24.89	426.74	--	--	--	--	--	--	--	--
7/7/2008	--		**451.63**	**29.50**	**39.50**	**32.06**	**419.57**	--	--	--	--	--	--	--	--
MW-10															

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-10 Cont.															
3/20/1995	--		449.22	29.00	37.00	20.96	428.26	--	--	--	--	--	--	--	--
6/2/1995	--		449.22	29.00	37.00	22.15	427.07	--	--	--	--	--	--	--	--
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	--		449.22	29.00	37.00	26.97	422.25	--	--	--	--	--	--	--	--
2/20/1996	--		449.22	29.00	37.00	18.40	430.82	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
5/15/1996	--	d	449.22	29.00	37.00	--	--	--	--	--	--	--	--	--	--
8/13/1996	--		449.22	29.00	37.00	23.70	425.52	--	--	--	--	--	--	--	--
11/13/1996	--		449.22	29.00	37.00	27.15	422.07	--	--	--	--	--	--	--	--
3/26/1997	--		449.22	29.00	37.00	22.23	426.99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
5/15/1997	--		449.22	29.00	37.00	24.57	424.65	--	--	--	--	--	--	--	--
8/26/1997	--		449.22	29.00	37.00	27.62	421.60	--	--	--	--	--	--	--	--
11/5/1997	--		449.22	29.00	37.00	30.79	418.43	--	--	--	--	--	--	--	--
2/18/1998	--	d	449.22	29.00	37.00	--	--	--	--	--	--	--	--	--	--
5/20/1998	--		449.22	29.00	37.00	--	--	--	--	--	--	--	--	--	--
7/30/1998	--		449.22	29.00	37.00	23.90	425.32	--	--	--	--	--	--	--	--
10/29/1998	--		449.22	29.00	37.00	30.55	418.67	--	--	--	--	--	--	--	--
3/16/1999	P		449.22	29.00	37.00	23.05	426.17	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	--
5/5/1999	--		449.22	29.00	37.00	24.00	425.22	--	--	--	--	--	--	--	--
8/26/1999	--		449.22	29.00	37.00	26.50	422.72	--	--	--	--	--	--	5.15	--
12/3/1999	--		449.22	29.00	37.00	30.80	418.42	--	--	--	--	--	--	--	--
3/13/2000	--	d	449.22	29.00	37.00	26.21	423.01	--	--	--	--	--	--	--	--
6/20/2000	--		449.22	29.00	37.00	23.52	425.70	--	--	--	--	--	--	5.5	--
8/31/2000	--		449.22	29.00	37.00	27.52	421.70	--	--	--	--	--	--	--	--
2/9/2001	--		449.22	29.00	37.00	28.71	420.51	--	--	--	--	--	--	--	--
9/17/2001	--		449.22	29.00	37.00	27.94	421.28	--	--	--	--	--	--	--	--
1/21/2002	--		449.22	29.00	37.00	27.44	421.78	--	--	--	--	--	--	--	--
7/19/2002	--		449.22	29.00	37.00	27.80	421.42	--	--	--	--	--	--	--	--
1/15/2003	--		449.22	29.00	37.00	23.09	426.13	--	--	--	--	--	--	--	--
7/9/2003	--		449.22	29.00	37.00	26.87	422.35	--	--	--	--	--	--	--	--
02/19/2004	--		449.22	29.00	37.00	23.39	425.83	--	--	--	--	--	--	--	--
01/18/2005	--		451.65	29.00	37.00	21.40	430.25	--	--	--	--	--	--	--	--

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-10 Cont.															
07/15/2005	--		451.65	29.00	37.00	25.37	426.28	--	--	--	--	--	--	--	--
01/10/2006	--		451.65	29.00	37.00	19.81	431.84	--	--	--	--	--	--	--	--
7/21/2006	--		451.65	29.00	37.00	25.16	426.49	--	--	--	--	--	--	--	--
1/17/2007	--		451.65	29.00	37.00	28.95	422.70	--	--	--	--	--	--	--	--
7/18/2007	--	d	451.65	29.00	37.00	--	--	--	--	--	--	--	--	--	--
1/15/2008	--		451.65	29.00	37.00	24.62	427.03	--	--	--	--	--	--	--	--
7/7/2008	--	**d**	**451.65**	**29.00**	**37.00**	--	--	--	--	--	--	--	--	--	--
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	--		448.02	29.00	39.00	23.82	424.20	--	--	--	--	--	--	--	--
8/23/1995	--		448.02	29.00	39.00	30.15	417.87	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
12/4/1995	--		448.02	29.00	39.00	31.63	416.39	--	--	--	--	--	--	--	--
2/20/1996	--		448.02	29.00	39.00	20.94	427.08	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
5/15/1996	--		448.02	29.00	39.00	23.03	424.99	--	--	--	--	--	--	--	--
8/13/1996	--		448.02	29.00	39.00	29.19	418.83	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
11/13/1996	--		448.02	29.00	39.00	31.96	416.06	--	--	--	--	--	--	--	--
3/26/1997	--		448.02	29.00	39.00	26.61	421.41	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
5/15/1997	--		448.02	29.00	39.00	29.39	418.63	--	--	--	--	--	--	--	--
8/26/1997	--		448.02	29.00	39.00	33.47	414.55	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--
11/5/1997	--		448.02	29.00	39.00	35.12	412.90	--	--	--	--	--	--	--	--
2/18/1998	--		448.02	29.00	39.00	18.03	429.99	<50	<0.5	<0.5	<0.5	1	<3	--	--
5/20/1998	--		448.02	29.00	39.00	23.00	425.02	--	--	--	--	--	--	--	--
7/30/1998	P		448.02	29.00	39.00	29.30	418.72	<50	<0.5	<0.5	<0.5	<0.5	<3	5.59	--
10/29/1998	--		448.02	29.00	39.00	34.47	413.55	--	--	--	--	--	--	--	--
3/16/1999	P		448.02	29.00	39.00	27.88	420.14	<50	<0.5	<0.5	<0.5	<0.5	<3	1.0	--
5/5/1999	--		448.02	29.00	39.00	26.85	421.17	--	--	--	--	--	--	--	--
8/26/1999	P		448.02	29.00	39.00	32.74	415.28	<50	<0.5	<0.5	<0.5	<0.5	<3	4.59	--
12/3/1999	--		448.02	29.00	39.00	34.70	413.32	--	--	--	--	--	--	--	--
3/13/2000	P		448.02	29.00	39.00	25.94	422.08	<50	<0.5	<0.5	<0.5	<1	<3	3.21	--
6/20/2000	--		448.02	29.00	39.00	30.40	417.62	--	--	--	--	--	--	3.3	--

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
MW-11 Cont.															
8/31/2000	NP		448.02	29.00	39.00	32.68	415.34	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	0.4	--
8/31/2000	--	b	448.02	29.00	39.00	--	--	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	--	--
2/9/2001	--		448.02	29.00	39.00	31.17	416.85	--	--	--	--	--	--	--	--
9/17/2001	NP		448.02	29.00	39.00	32.98	415.04	<50	<0.50	<0.50	<0.50	<0.50	<2.5	0.62	--
1/21/2002	--		448.02	29.00	39.00	31.05	416.97	--	--	--	--	--	--	--	--
7/19/2002	P		448.02	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	--		448.02	29.00	39.00	23.75	424.27	--	--	--	--	--	--	--	--
7/9/2003	P		448.02	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	--		448.02	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	--		450.41	29.00	39.00	24.80	425.61	--	--	--	--	--	--	--	--
07/15/2005	P		450.41	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	--		450.41	29.00	39.00	20.87	429.54	--	--	--	--	--	--	--	--
7/21/2006	P		450.41	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	--		450.41	29.00	39.00	31.59	418.82	--	--	--	--	--	--	--	--
7/18/2007	NP		450.41	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	--		450.41	29.00	39.00	29.12	421.29	--	--	--	--	--	--	--	--
7/7/2008	**NP**		**450.41**	**29.00**	**39.00**	**34.21**	**416.20**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**4.08**	**7.94**
RW-1															
3/20/1995	--		451.67	25.50	40.50	23.76	427.91	15,000	1,000	140	310	950	--	--	--
6/2/1995	--		451.67	25.50	40.50	25.12	426.55	12,000	1,300	280	420	1,100	--	--	--
8/23/1995	--		451.67	25.50	40.50	28.80	422.87	8,200	520	190	240	610	<50	--	--
12/4/1995	--		451.67	25.50	40.50	31.15	420.52	2,600	140	59	83	210	--	--	--
2/20/1996	--		451.67	25.50	40.50	21.45	430.22	6,300	410	160	180	650	<40	--	--
5/15/1996	--		451.67	25.50	40.50	22.97	428.70	--	--	--	--	--	--	--	--
8/13/1996	--		451.67	25.50	40.50	24.74	426.93	--	--	--	--	--	--	--	--
11/13/1996	--		451.67	25.50	40.50	30.69	420.98	--	--	--	--	--	--	--	--
3/26/1997	--		451.67	25.50	40.50	25.69	425.98	500	57	3	6.4	18	54	--	--
5/15/1997	--		451.67	25.50	40.50	28.19	423.48	--	--	--	--	--	--	--	--
8/26/1997	--		451.67	25.50	40.50	31.21	420.46	--	--	--	--	--	--	--	--

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
RW-1 Cont.															
11/5/1997	--		451.67	25.50	**40.50**	33.67	418.00	--	--	--	--	--	--	--	--
2/18/1998	--		451.67	25.50	**40.50**	20.14	431.53	9,400	200	70	190	710	<60	--	--
5/20/1998	--		451.67	25.50	**40.50**	23.43	428.24	--	--	--	--	--	--	--	--
7/30/1998	--		451.67	25.50	**40.50**	27.42	424.25	--	--	--	--	--	--	--	--
10/29/1998	--		451.67	25.50	**40.50**	32.47	419.20	--	--	--	--	--	--	--	--
3/16/1999	NP		451.67	25.50	**40.50**	25.45	426.22	1,100	140	19	45	83	530	1.0	--
5/5/1999	--		451.67	25.50	**40.50**	27.23	424.44	--	--	--	--	--	--	--	--
8/26/1999	--		451.67	25.50	**40.50**	29.98	421.69	--	--	--	--	--	--	1.39	--
12/3/1999	--		451.67	25.50	**40.50**	32.38	419.29	--	--	--	--	--	--	--	--
3/13/2000	NP		451.67	25.50	**40.50**	25.53	426.14	1,100	130	3.5	0.7	95	230	4.43	--
6/20/2000	--		451.67	25.50	**40.50**	28.31	423.36	--	--	--	--	--	--	1.9	--
8/31/2000	NP		451.67	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		451.67	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		451.67	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		451.67	25.50	**40.50**	30.15	421.52	<50	7.7	<0.50	<0.50	1.5	18	0.63	--
7/19/2002	NP		451.67	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	--	a	451.67	25.50	**40.50**	22.20	429.47	860	9	1.6	17	42	1.5	2.8	7.2
7/9/2003	--		451.67	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	c	451.67	25.50	40.50	23.53	428.14	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	6.7
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		454.11	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		454.11	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		454.11	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	--	d	454.11	25.50	40.50	--	--	--	--	--	--	--	--	--	--
1/17/2007	P		454.11	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		454.11	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		454.11	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**		**454.11**	**25.50**	**40.50**	**35.19**	**418.92**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**0.53**	**2.51**	**7.05**
VW-1															
8/31/2000	P		--	18.50	**28.50**	20.61	--	<50.0	<0.500	<0.500	<0.500	<0.500	<2.50	10.08	--

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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	P/NP	Comments	TOC (feet msl)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet bgs)	Water Level Elevation (feet msl)	Concentrations in (µg/L)						DO (mg/L)	pH
								GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
VW-1 Cont.															
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	--		453.29	18.50	28.50	21.72	431.57	--	--	--	--	--	--	--	--
07/15/2005	P		453.29	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	--		453.29	18.50	28.50	20.17	433.12	--	--	--	--	--	--	--	--
7/21/2006	P	e	453.29	18.50	28.50	22.50	430.79	220	<0.50	<0.50	<0.50	<0.50	<0.50	5.91	7.3
1/17/2007	--		453.29	18.50	28.50	21.67	431.62	--	--	--	--	--	--	--	--
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	--		453.29	18.50	28.50	21.87	431.42	--	--	--	--	--	--	--	--
7/7/2008	**NP**		**453.29**	**18.50**	**28.50**	**23.70**	**429.59**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**7.54**	**8.46**

SYMBOLS AND 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.

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.

Note: 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

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-1									
02/19/2004	--	--	--	--	--	--	--	--	
08/04/2004	--	--	--	--	--	--	--	--	
01/18/2005	--	--	--	--	--	--	--	--	
07/15/2005	--	--	--	--	--	--	--	--	
01/10/2006	--	--	--	--	--	--	--	--	
MW-2									
7/9/2003	<1,000	<200	39	<5.0	<5.0	<5.0	<5.0	<5.0	
02/19/2004	--	--	--	--	--	--	--	--	
08/04/2004	<2,000	<400	78	<10	<10	<10	<10	<10	
01/18/2005	--	--	--	--	--	--	--	--	
07/15/2005	<500	120	46	<2.5	<2.5	<2.5	<2.5	<2.5	
01/10/2006	--	--	--	--	--	--	--	--	
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**	**--**	
MW-3									
02/19/2004	--	--	--	--	--	--	--	--	
08/04/2004	--	--	--	--	--	--	--	--	
01/18/2005	--	--	--	--	--	--	--	--	
07/15/2005	--	--	--	--	--	--	--	--	
01/10/2006	--	--	--	--	--	--	--	--	
MW-4									
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	

Table 2. Summary of Fuel Additives Analytical Data

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-4 Cont.									
7/18/2007	<300	830	74	<0.50	<0.50	<0.50	0.76	<0.50	
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**	**--**	
MW-5									
7/9/2003	<1,000	1,100	260	<5.0	<5.0	<5.0	<5.0	<5.0	
02/19/2004	--	--	--	--	--	--	--	--	
08/04/2004	<1,000	850	250	<5.0	<5.0	<5.0	<5.0	<5.0	
01/18/2005	--	--	--	--	--	--	--	--	
07/15/2005	<1,000	720	270	<5.0	<5.0	<5.0	<5.0	<5.0	
01/10/2006	--	--	--	--	--	--	--	--	
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**	**--**	
MW-6									
7/9/2003	<100	<20	0.98	<0.50	<0.50	<0.50	<0.50	<0.50	
02/19/2004	--	--	--	--	--	--	--	--	
08/04/2004	<100	<20	5.2	<0.50	<0.50	<0.50	<0.50	<0.50	
01/18/2005	--	--	--	--	--	--	--	--	
07/15/2005	<500	110	32	<2.5	<2.5	<2.5	<2.5	<2.5	
01/10/2006	--	--	--	--	--	--	--	--	
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**	**--**	
MW-7									
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
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	

Table 2. Summary of Fuel Additives Analytical Data

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-7 Cont.									
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**	**--**	
MW-8									
02/19/2004	--	--	--	--	--	--	--	--	
08/04/2004	--	--	--	--	--	--	--	--	
01/18/2005	--	--	--	--	--	--	--	--	
07/15/2005	--	--	--	--	--	--	--	--	
01/10/2006	--	--	--	--	--	--	--	--	
MW-9									
02/19/2004	--	--	--	--	--	--	--	--	
08/04/2004	--	--	--	--	--	--	--	--	
01/18/2005	--	--	--	--	--	--	--	--	
07/15/2005	--	--	--	--	--	--	--	--	
01/10/2006	--	--	--	--	--	--	--	--	
MW-10									
02/19/2004	--	--	--	--	--	--	--	--	
01/18/2005	--	--	--	--	--	--	--	--	
07/15/2005	--	--	--	--	--	--	--	--	
01/10/2006	--	--	--	--	--	--	--	--	
MW-11									
7/9/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
02/19/2004	--	--	--	--	--	--	--	--	
08/04/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
01/18/2005	--	--	--	--	--	--	--	--	
07/15/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
01/10/2006	--	--	--	--	--	--	--	--	

Table 2. Summary of Fuel Additives Analytical Data

Station #771, 899 Rincon Ave., Livermore, CA

Well and Sample Date	Concentrations in (µg/L)								Comments
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
MW-11 Cont.									
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**	**--**	
RW-1									
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**	**--**	
VW-1									
7/9/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
02/19/2004	--	--	--	--	--	--	--	--	
08/04/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
01/18/2005	--	--	--	--	--	--	--	--	
07/15/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
01/10/2006	--	--	--	--	--	--	--	--	
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**	**--**	

SYMBOLS AND 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.

Note: 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 Ground-Water Flow Direction and Gradient

Station #771, 899 Rincon Ave., Livermore, CA

Date Sampled	Approximate Flow Direction	Approximate Hydraulic Gradient
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**

Note: 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.

Figure 1. TPH-g Concentrations over Time

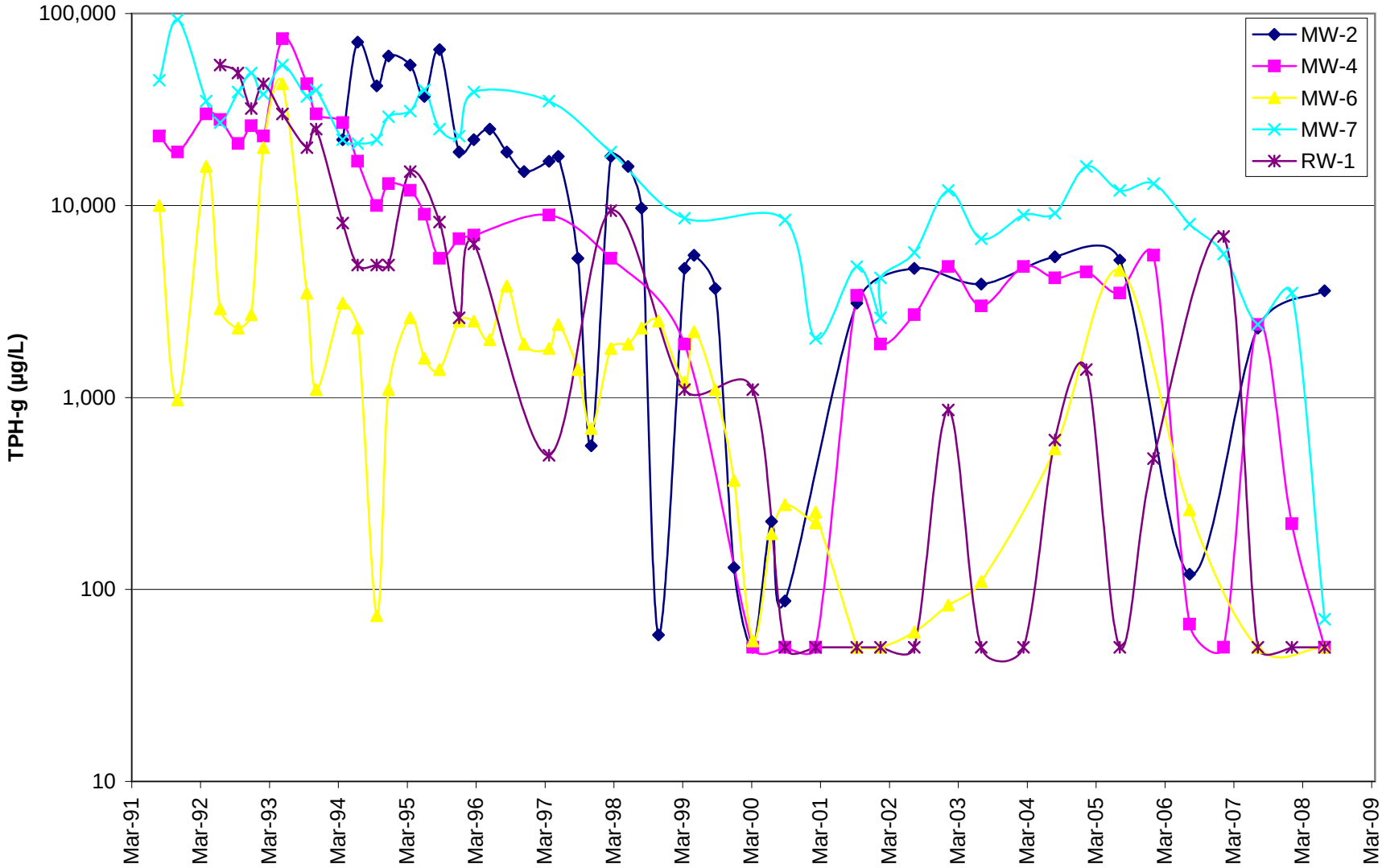


Figure 2. Benzene Concentrations over Time

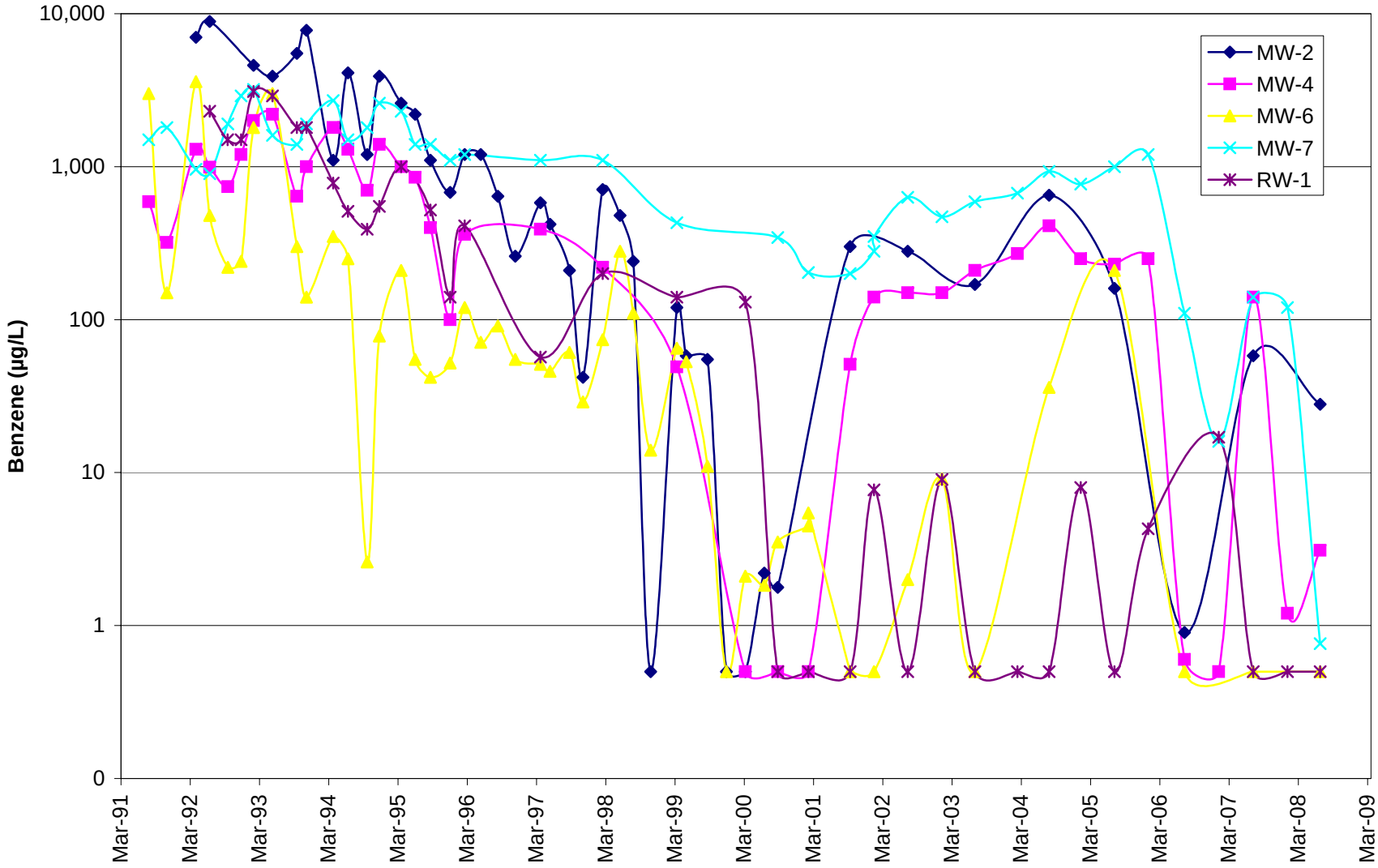


Figure 3. MTBE Concentrations over Time

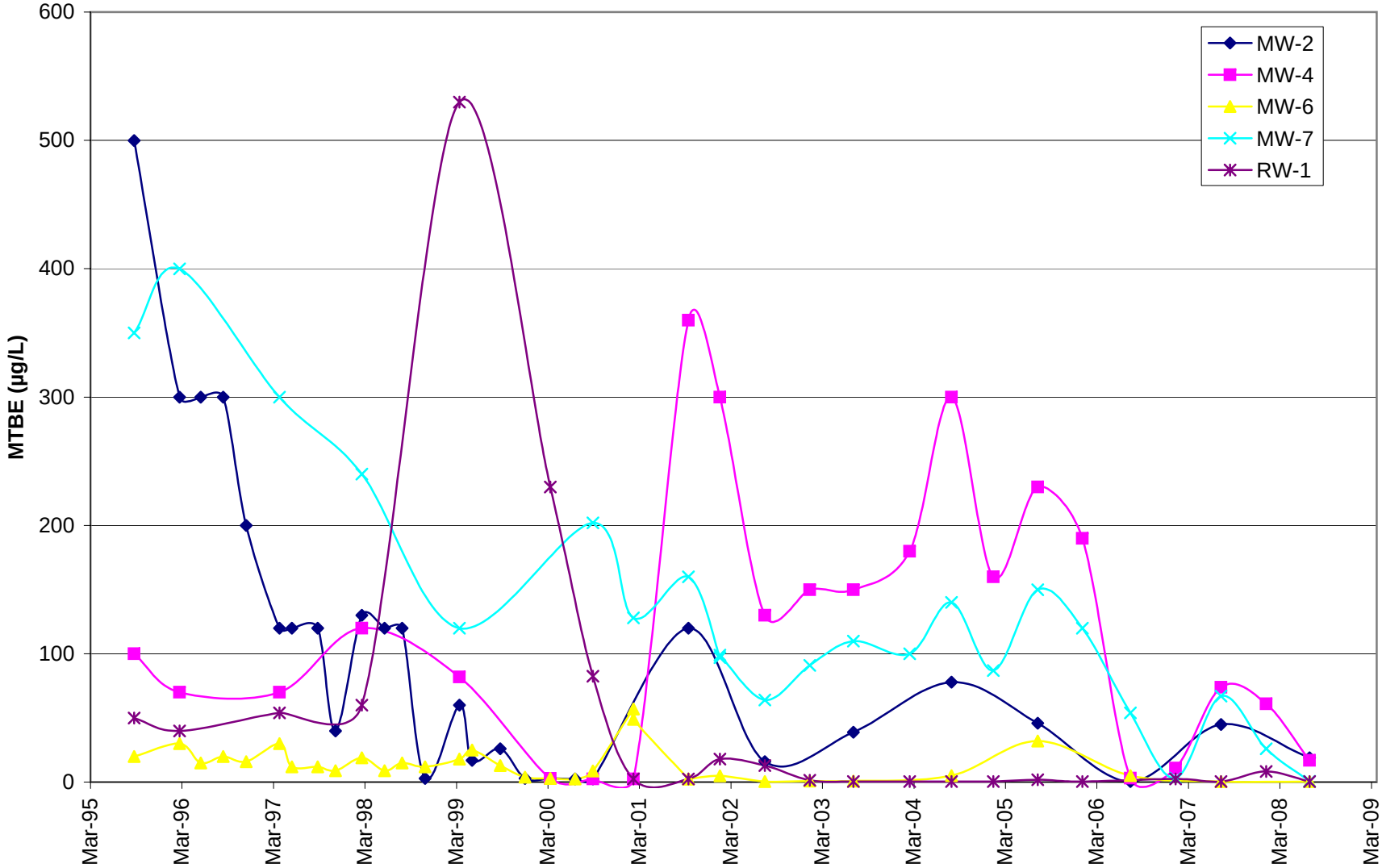
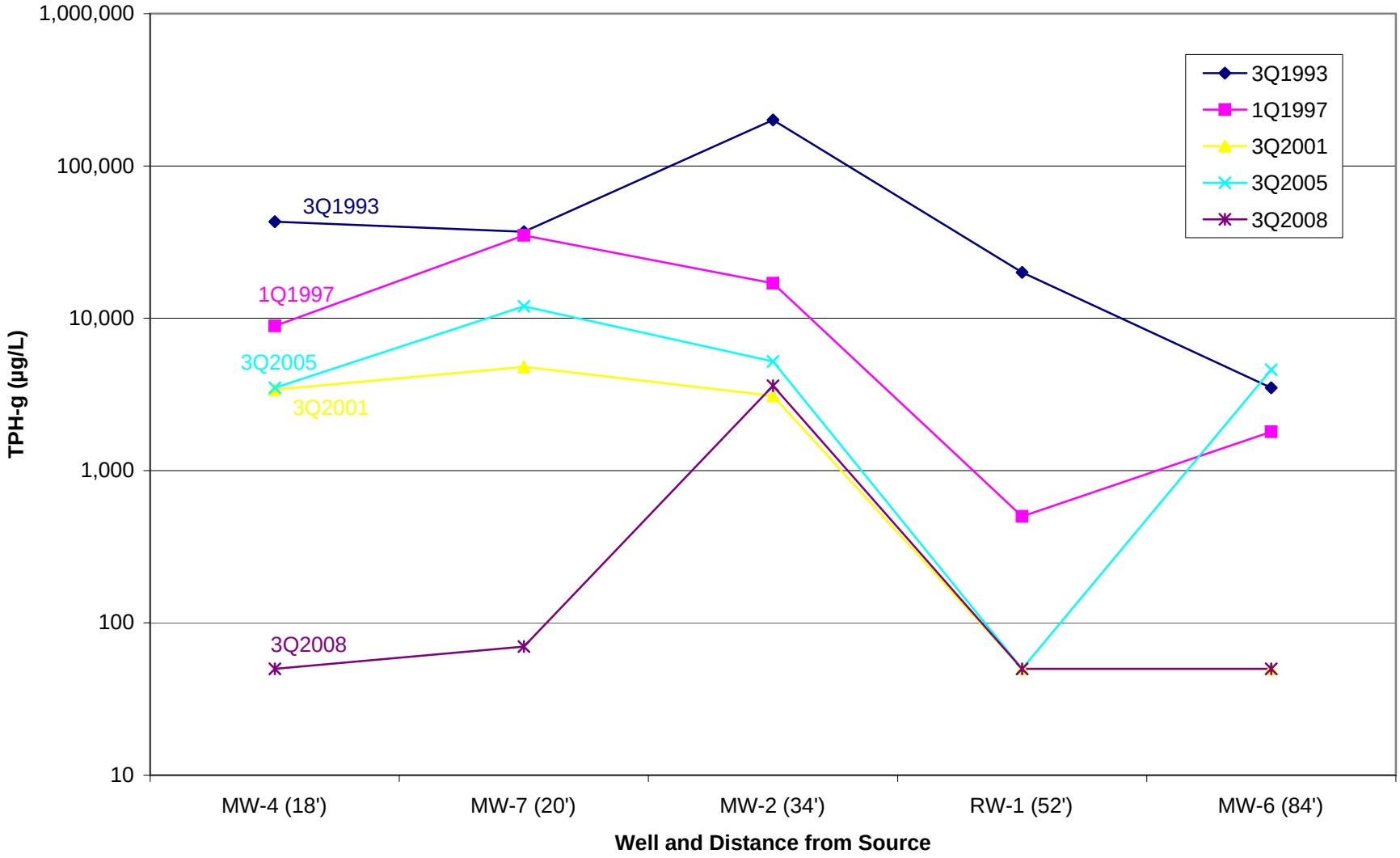
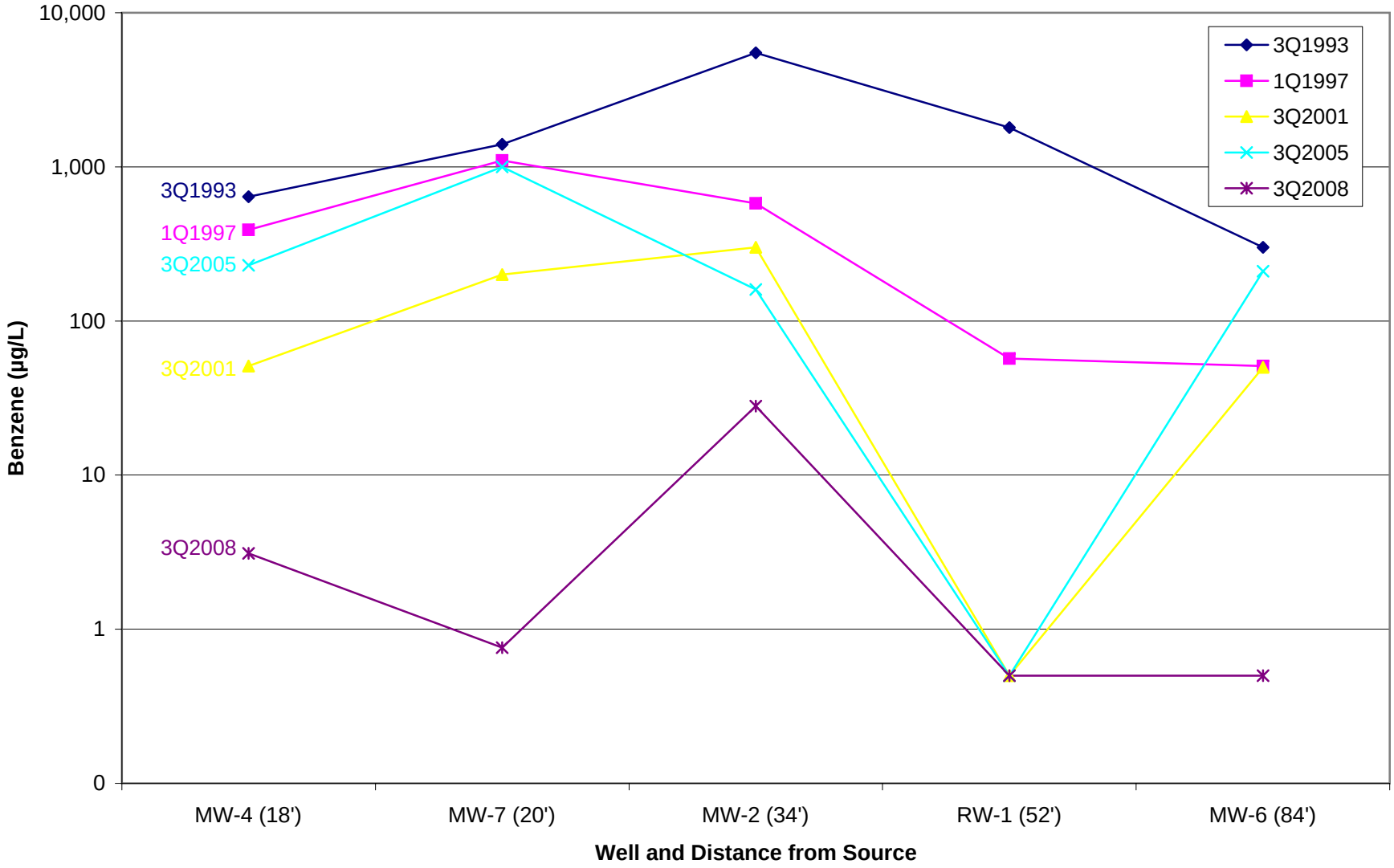


Figure 4. TPH-g Concentrations and Distance from Source



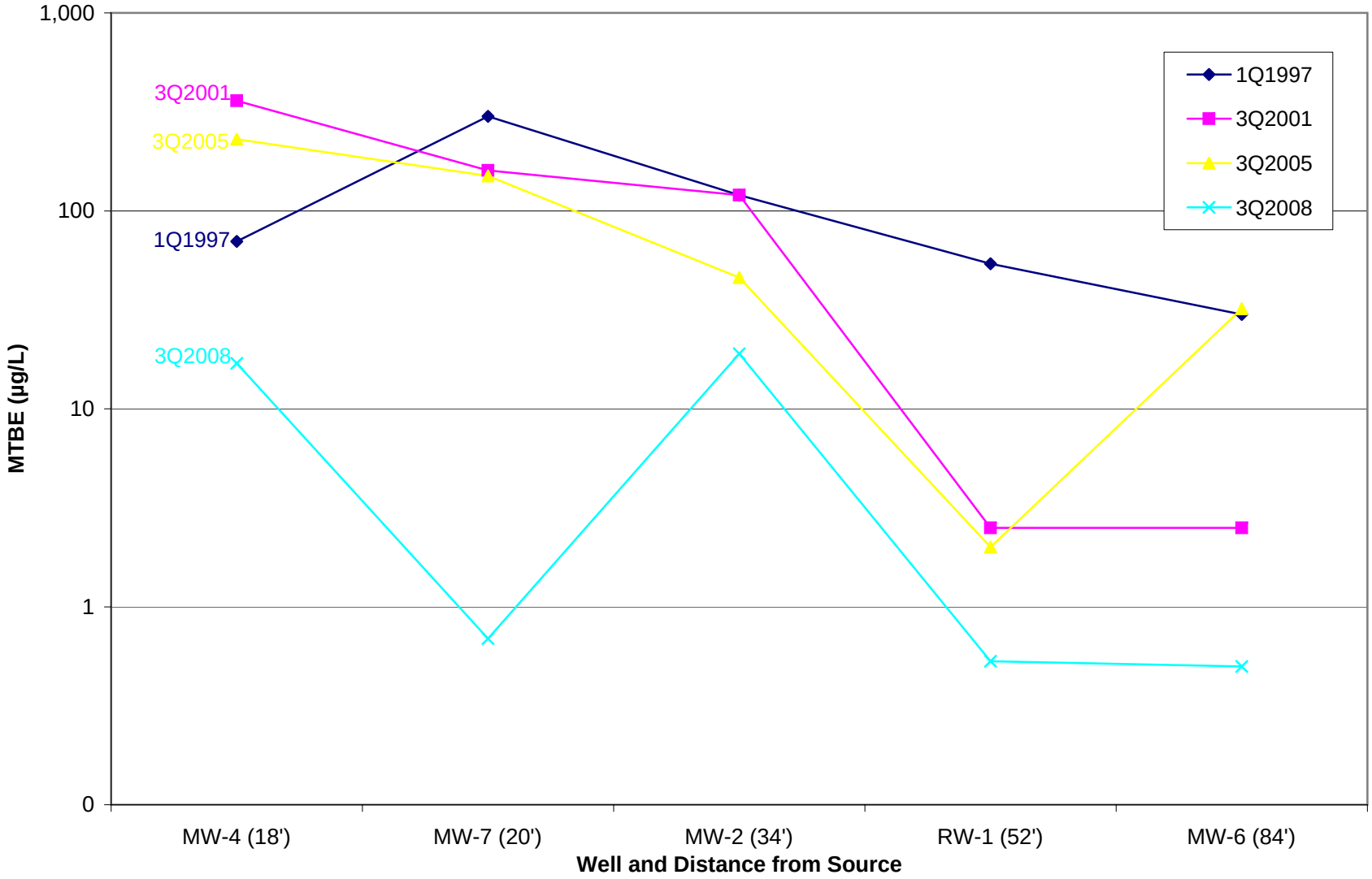
For purposes of distance from the source, the source as a point is estimated to be in between soil sample T4A and T1A (from tank removal activities)

Figure 5. Benzene Concentrations and Distance from Source



For purposes of distance from the source, the source as a point is estimated to be in between soil sample T4A and T1A (from tank removal activities)

Figure 6. MTBE Concentrations and Distance from Source



For purposes of distance from the source, the source as a point is estimated to be in between soil sample T4A and T1A (from tank removal activities)

Figure 7. TPH-g Concentrations and Ground-Water Elevations over Time for MW-2

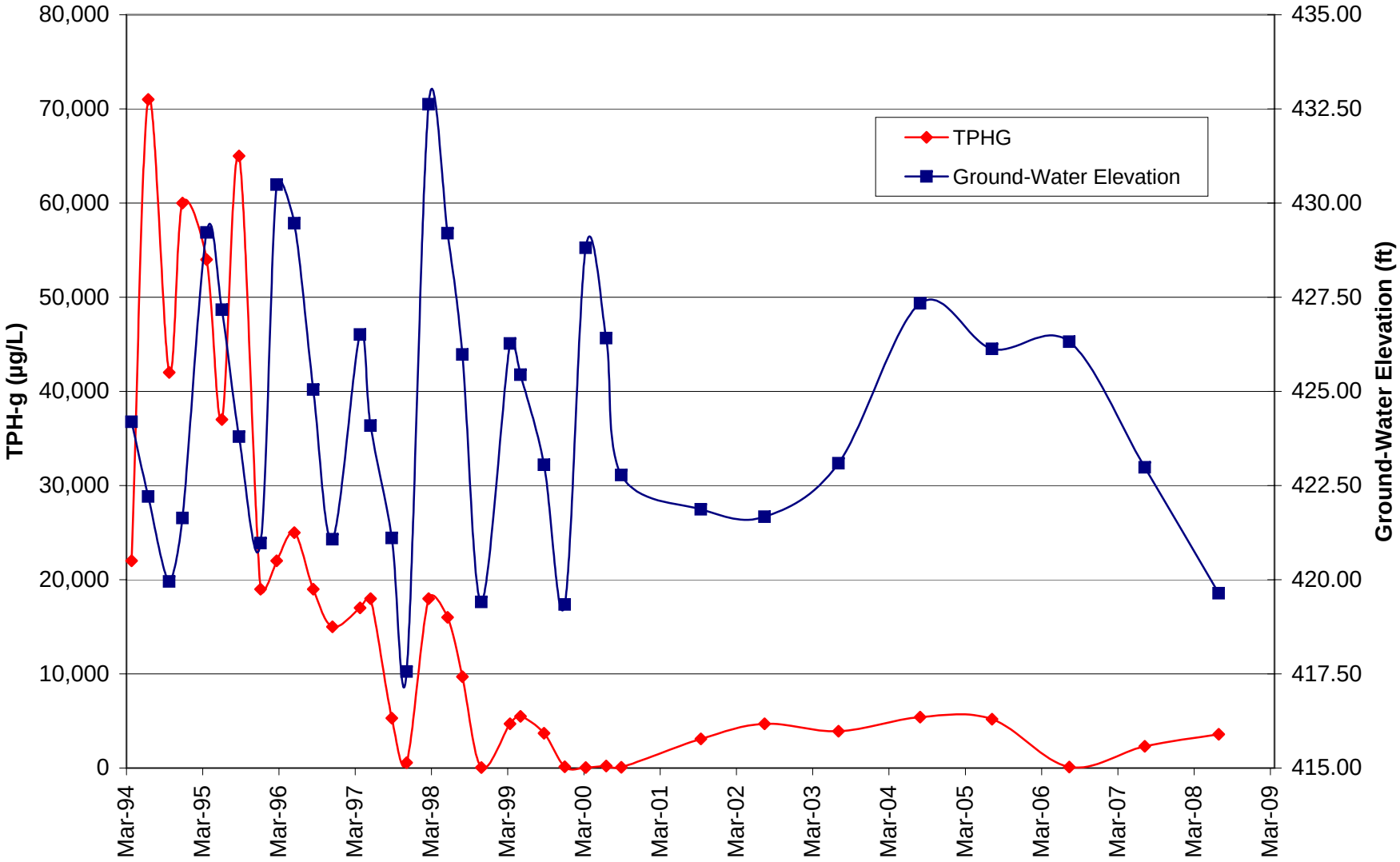


Figure 8. Benzene Concentrations and Ground-Water Elevations over Time for MW-2

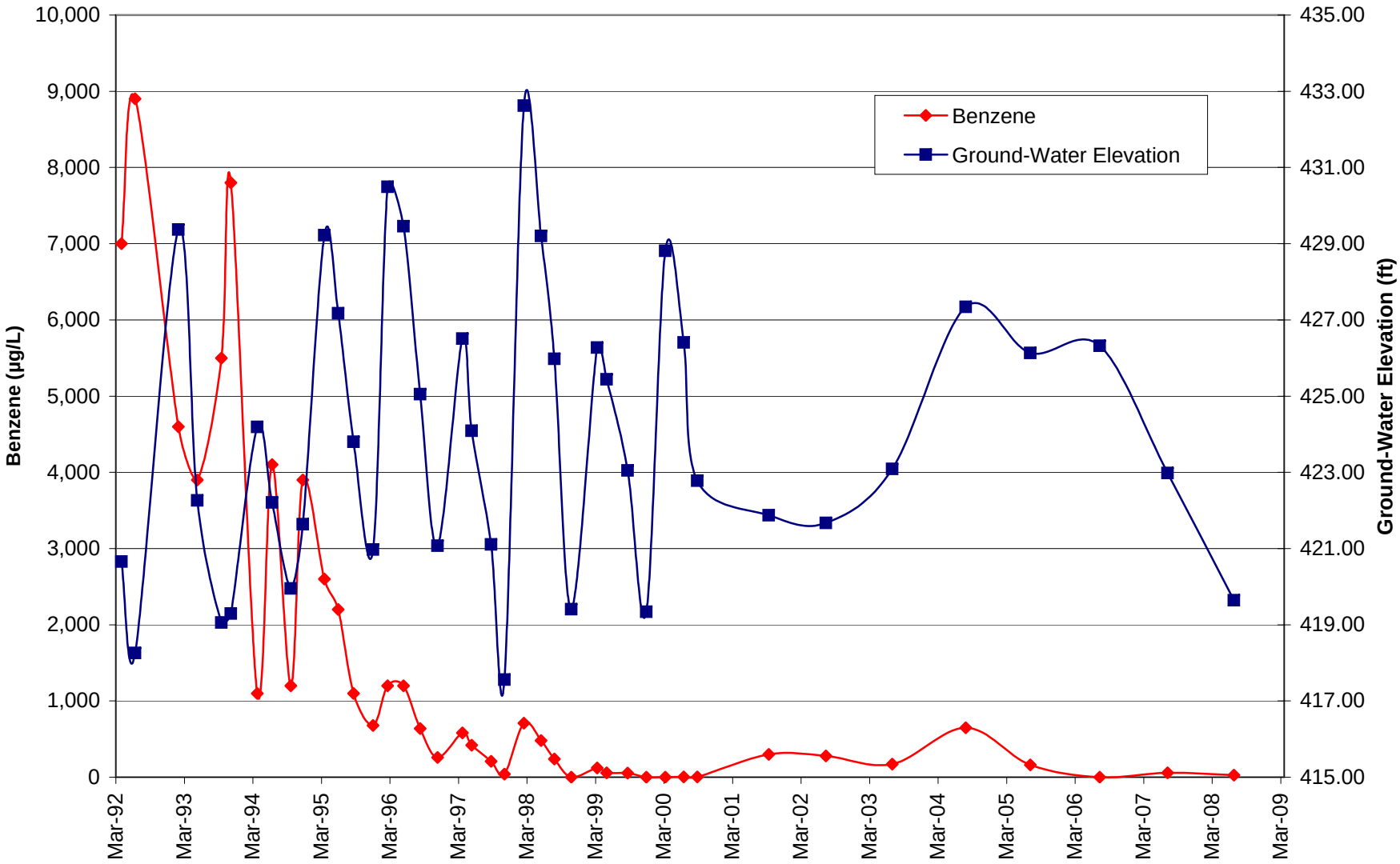
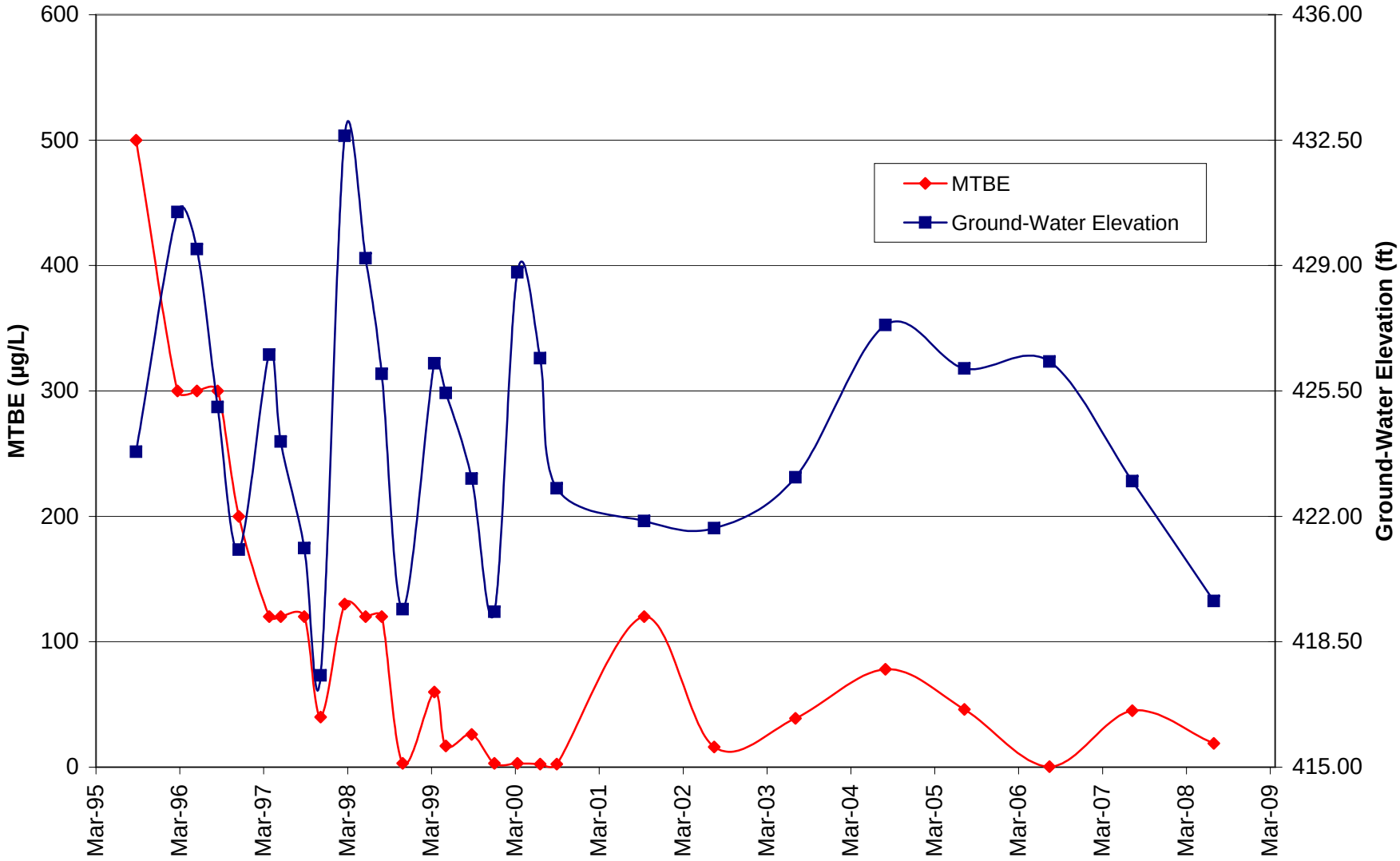


Figure 9. MTBE Concentrations and Ground-Water Elevations over Time for MW-2



APPENDIX A

Historical Soil Data with Maps Showing Sample Locations

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.

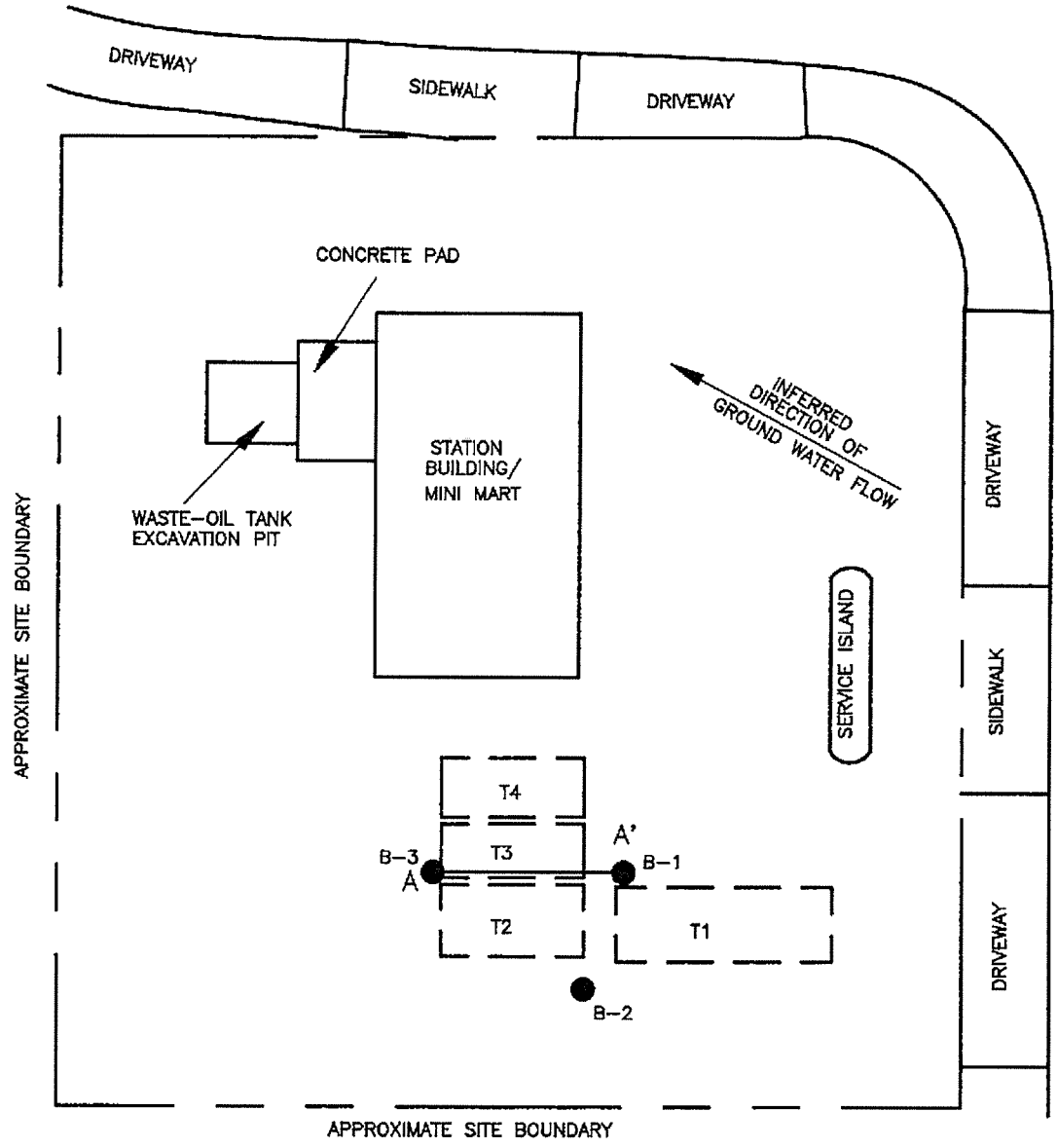
Sample designation: LS-2
- Sample number
- AL = Soil sample
- LS = Stockpile sample
- WO = Waste oil sample

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]

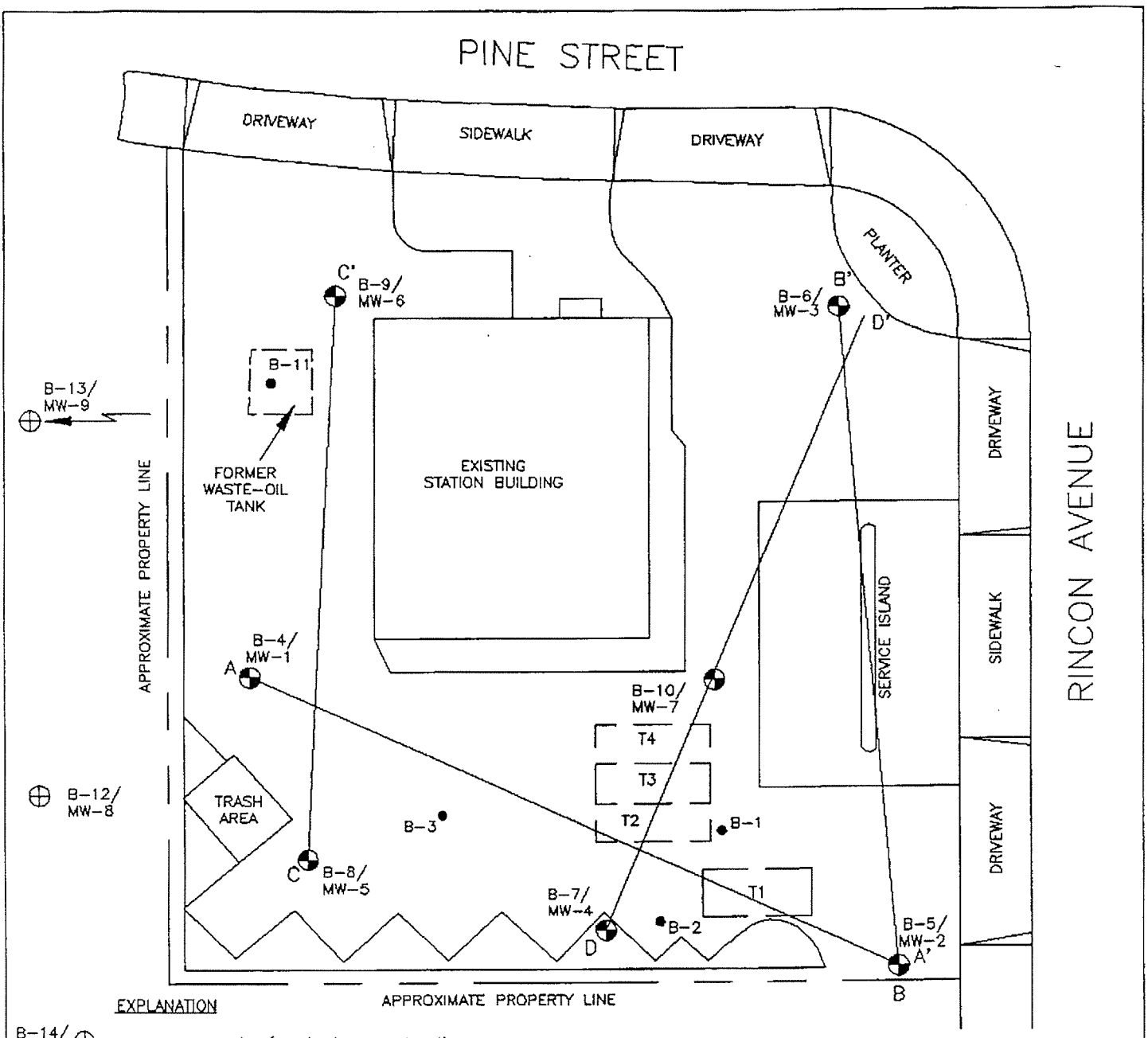
See notes on page 4 of 4.

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).

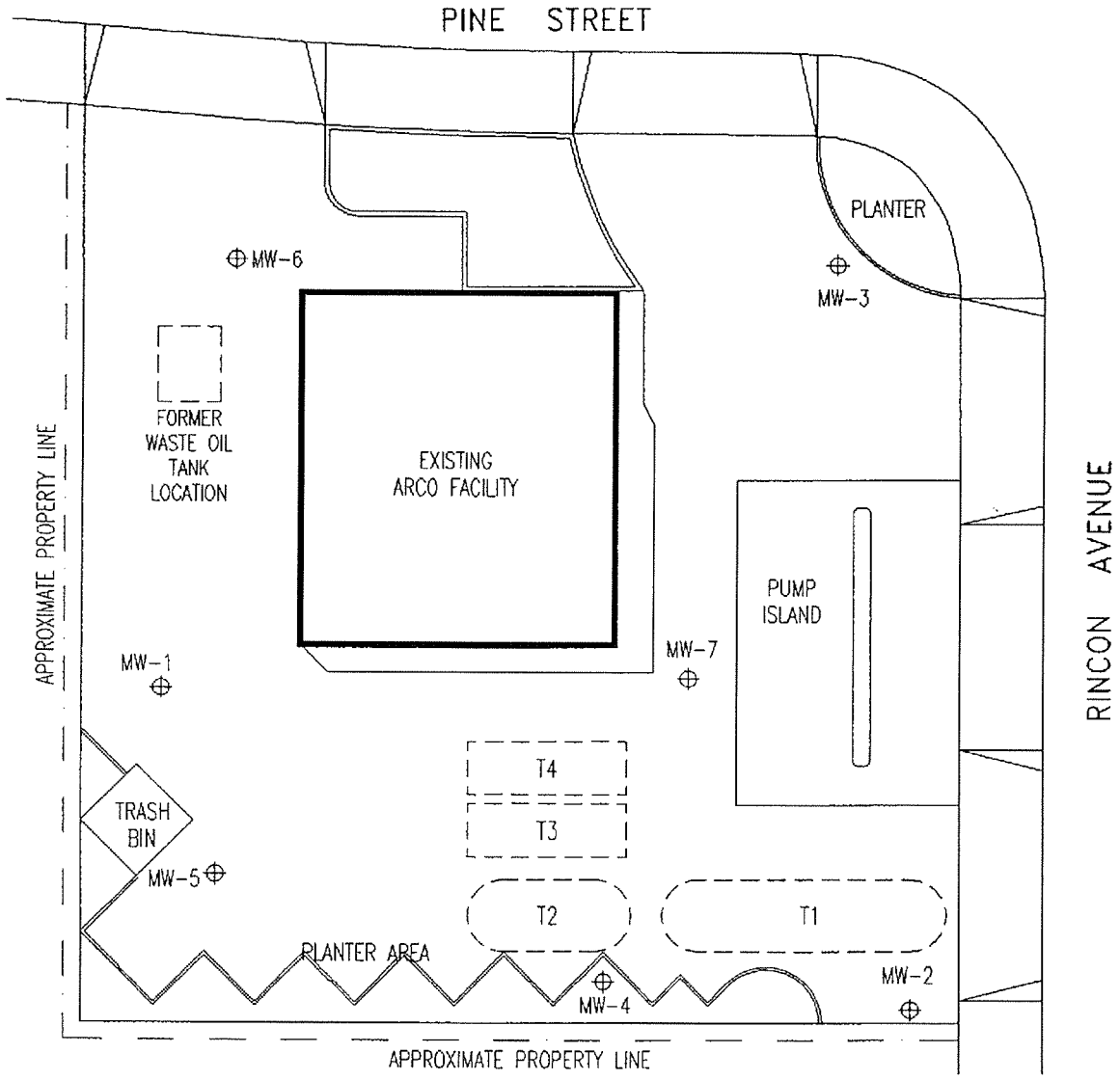
BTEX Distinction (USEPA Method 8020).

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

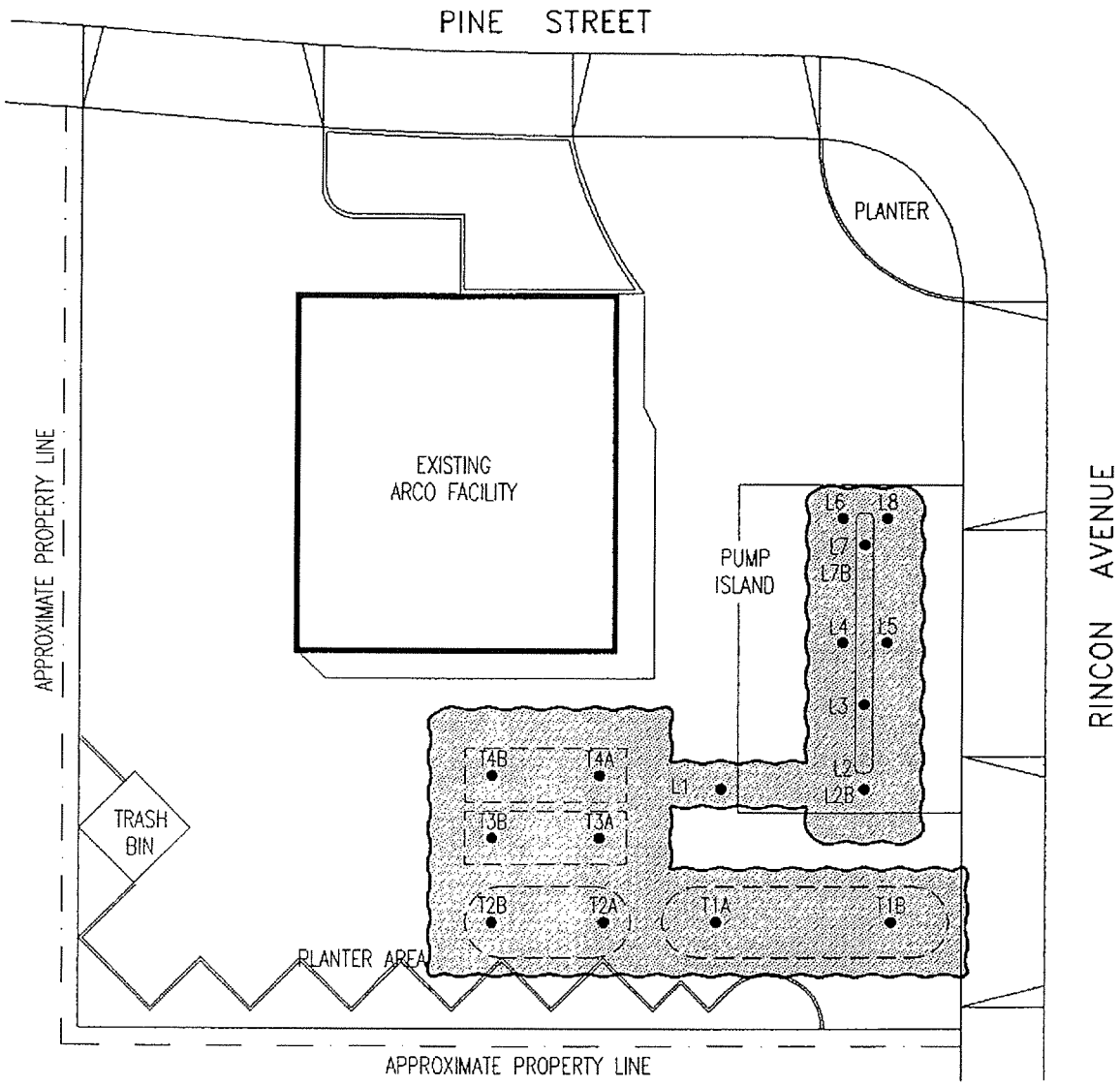
COMPILED BY:	G.M.
PREPARED BY:	R.P.
PROJECT MNGR.	G.M.
DATE:	01/92
SCALE:	AS SHOWN
PROJECT NO.	A135W01
FILE NAME:	AR_771XX

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

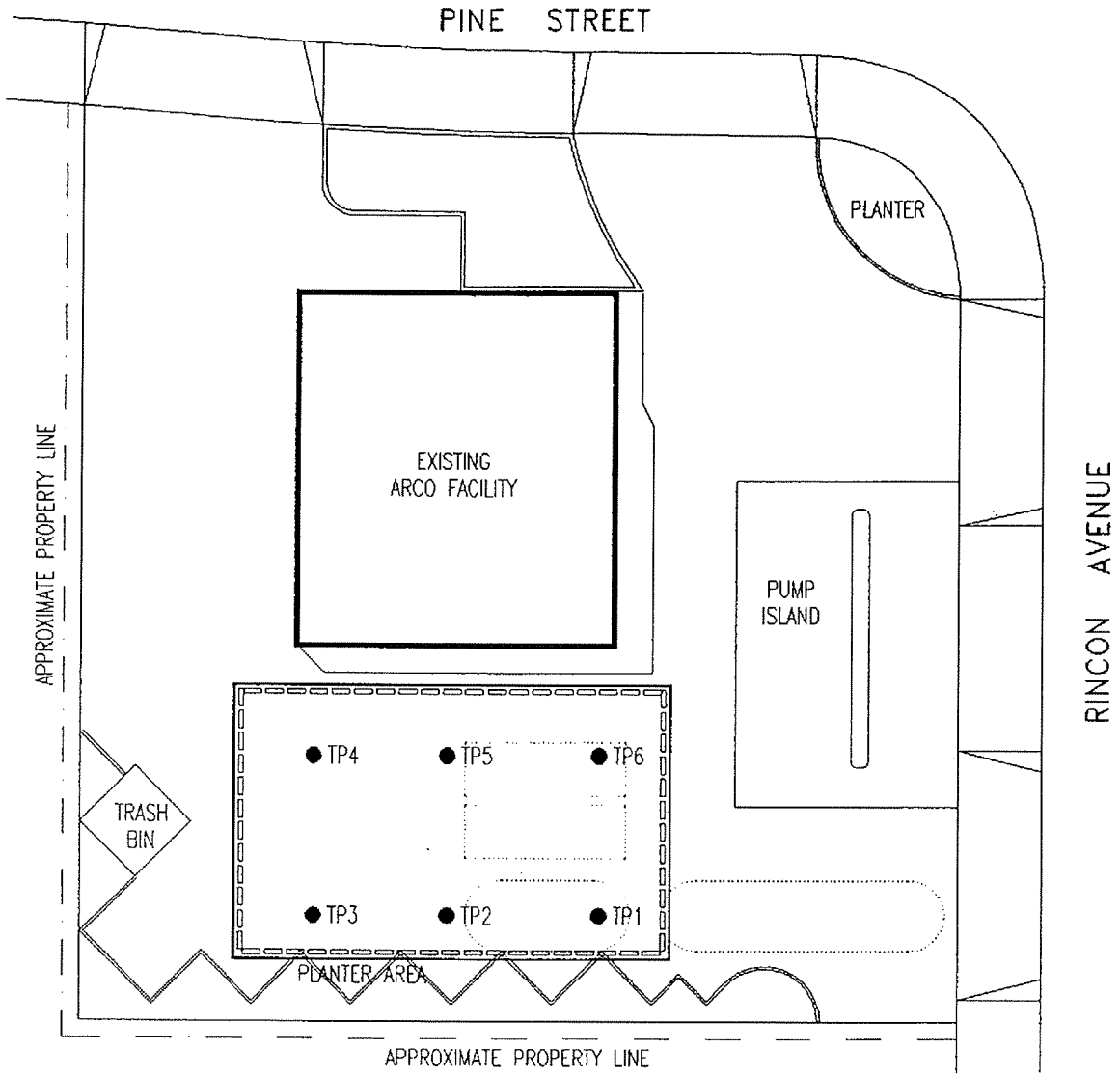
COMPILED BY:	T.R.
PREPARED BY:	R.P.
PROJECT MNGR.	G.M.
DATE:	04/92
SCALE:	AS SHOWN
PROJECT NO.	A135W01
FILE NAME:	AR_771XX

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

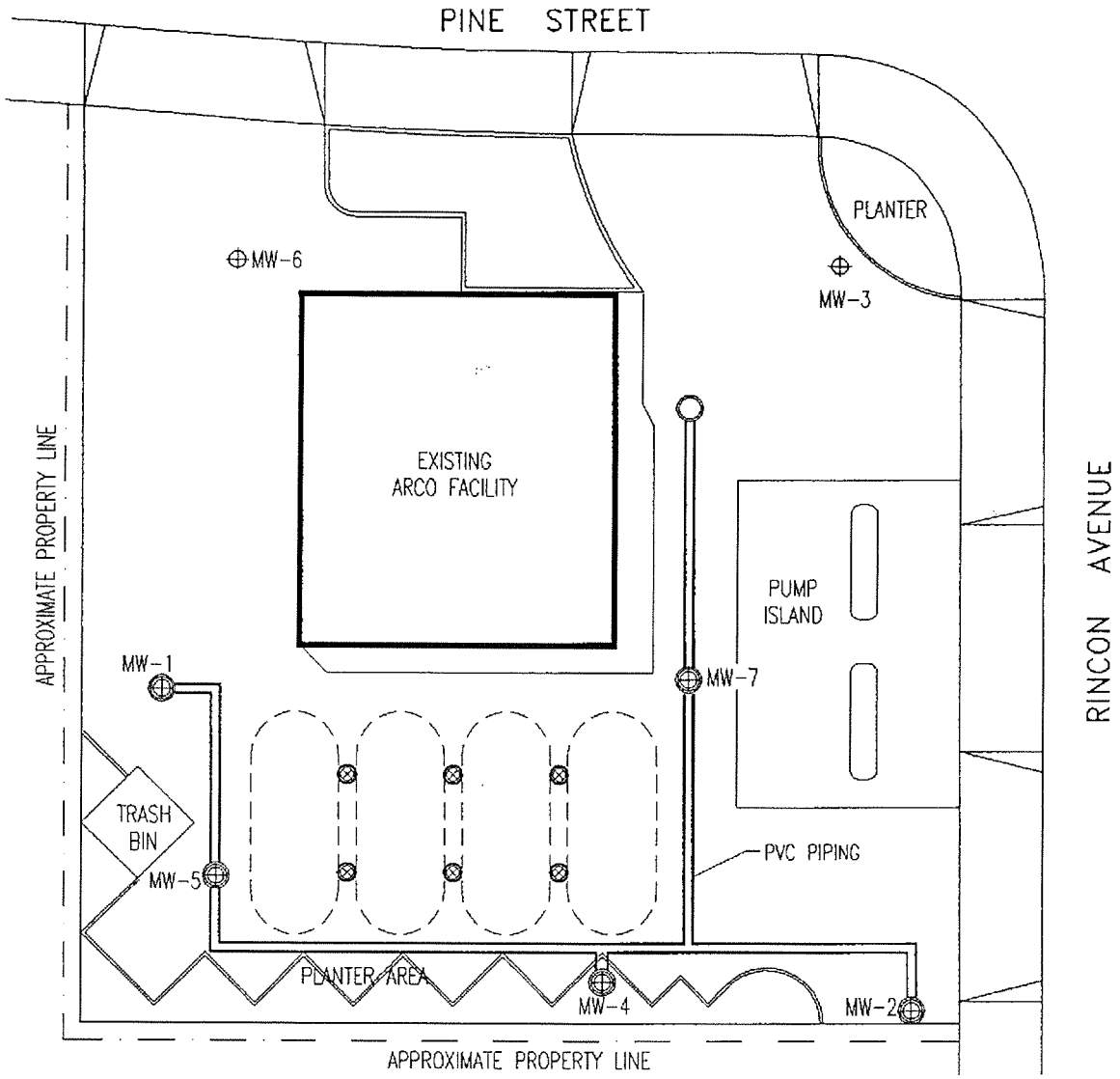
COMPILED BY:	G.M.
PREPARED BY:	R.P.
PROJECT MNGR.	G.M.
DATE:	01/92
SCALE:	AS SHOWN
PROJECT NO.	A135W01
FILE NAME:	AR_771XX

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

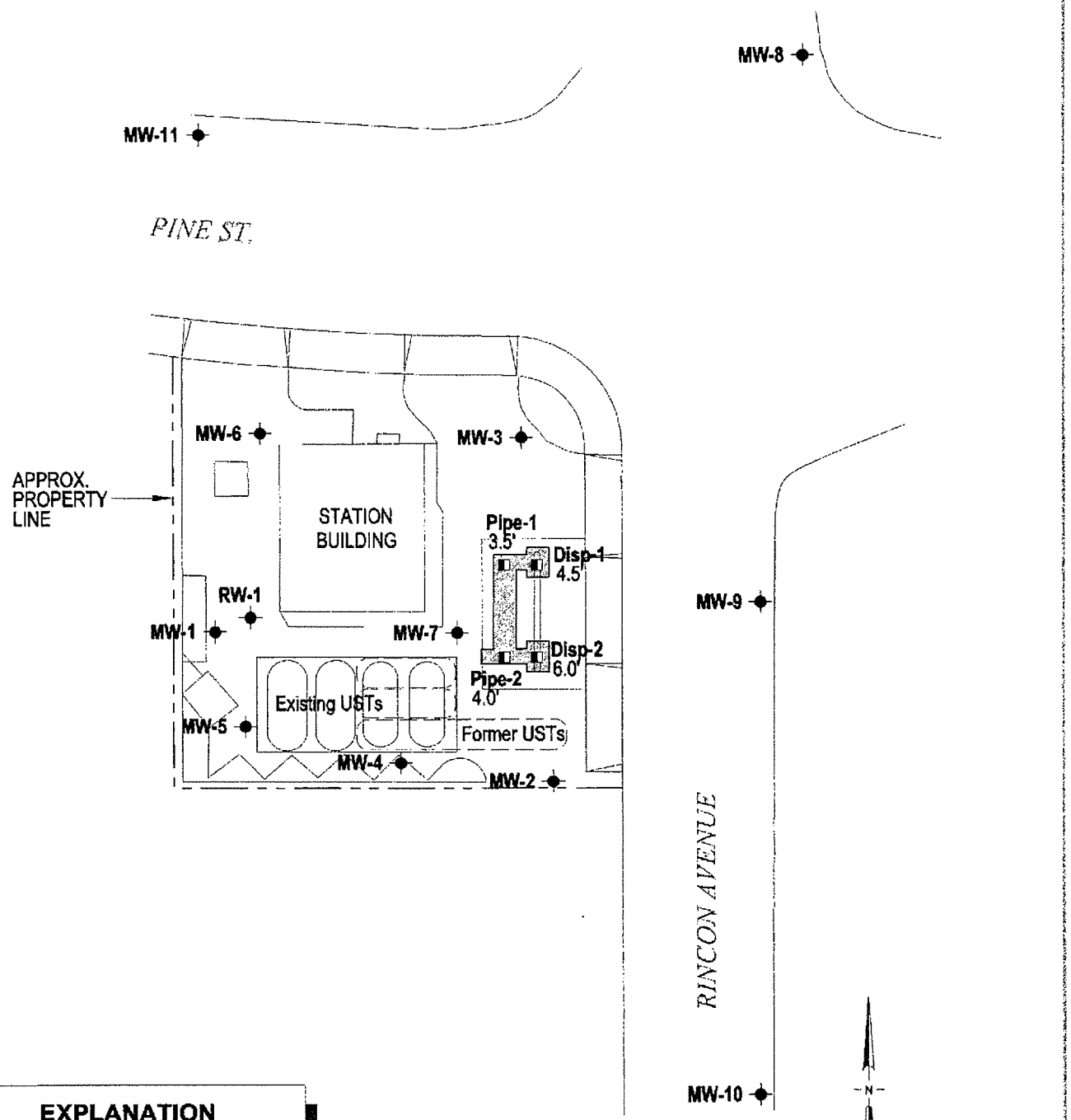


FIGURE
2

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

ARCO Service Station 0771
899 Rincon Avenue
Livermore, California

CAMBRIA

Site Plan and Soil Sampling Locations

APPENDIX B

Historical Ground-Water Data

TABLE 2
CUMULATIVE GROUND WATER MONITORING DATA
ARCO Station 771
Livermore, California

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product	Adjusted Water Elevation
MW-1					
1-15-91	451.80	32.77	419.03	---	---
2-27-91		32.23	419.57	---	---
MW-2					
1-15-91	449.52	30.89*	418.63*	0.16	418.76
2-27-91		29.11*	420.41*	0.02	420.43
MW-3					
1-15-91	450.29	32.34	417.95	---	---
2-27-91		31.78	418.51	---	---

Measurements in feet.
Calculated DTW when floating product is present is calculated using the attached protocol (Appendix A).
* = Floating product present in well.

TABLE 3
RESULTS OF LABORATORY ANALYSIS OF GROUND-WATER SAMPLES
ARCO Station 771
Livermore, California

Sample ID	TPHg	Benzene	Toluene	Ethyl-benzene	Total xylenes
MW1	N/S	N/S	N/S	N/S	N/S
MW2	N/S	N/S	N/S	N/S	N/S
MW3	230	<0.5	<0.5	2.2	2.1

Results in parts per billion (ppb)
<: Less than the laboratory detection limit.
N/S: Not Sampled.
BTEX: Measured by EPA Method 8020/602.
TPHg: Total petroleum hydrocarbons as gasoline (measured by EPA Method 5030/8015).

Sample Identification: MW3
└── Monitoring well number

TABLE 3
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California

Date Well Measured	Well Elevation	Depth to Water	Water Elevation	Floating Product	Adjusted Water Elevation
MW-1					
1-15-91	451.80	32.77	419.03	None	—
2-27-91		32.23	419.57	None	—
7-25-91	451.80*	36.67**	415.13**	0.1	415.21
8-13-91		37.88**	413.92**	0.17	414.06
MW-2					
1-15-91	449.52	30.89**	418.63**	0.16	418.76
2-27-91		29.11**	420.41**	0.02	420.43
7-25-91	449.51*	34.08**	415.43**	0.09	415.82
8-13-91		35.18**	414.33**	0.52	414.75
MW-3					
1-15-91	450.29	32.34	417.95	None	—
2-27-91		31.78	418.51	None	—
7-25-91	450.28*	35.02	415.26	None	—
8-13-91		36.50	413.78	None	—
MW-4					
7-25-91	451.56*	36.07	415.49	Odor	—
8-13-91		37.54	414.02	Odor	—
MW-5					
7-25-91	451.41*	36.76	414.65	Odor	—
8-13-91		37.96**	413.45**	0.03	413.47
MW-6					
7-25-91	451.38*	37.68	413.70	Odor	—
8-13-91		39.17	412.21	None	—
MW-7					
7-25-91	450.65*	34.88	415.77	None	—
8-13-91		36.17	414.48	Odor	—

Measurements in feet.
* = Surveyed July 29, 1991.
** = Floating product present in well. Adjusted water elevation calculated as:
Adjusted water elevation = well elevation - (depth to water - [product thickness x 0.8])

TABLE 4
CUMULATIVE RESULTS OF LABORATORY ANALYSIS OF GROUNDWATER SAMPLES
ARCO Station 771
Livermore, California

Sample ID	TPHg	Benzene	Toluene	Ethyl-benzene	Total xylenes
MW-1					
1-15-91	N/S	N/S	N/S	N/S	N/S
7-25-91	N/S	N/S	N/S	N/S	N/S
MW-2					
1-15-91	N/S	N/S	N/S	N/S	N/S
7-25-91	N/S	N/S	N/S	N/S	N/S
MW-3					
1-15-91	230	<0.5	<0.5	2.2	2.1
7-25-91	110	0.32	0.75	1.2	1.0
MW-4					
7-25-91	23,000	590	730	360	3,500
MW-5					
7-25-91	57,000	2,300	4,200	77	14,000
MW-6					
7-25-91	[redacted]	3,000	200	340	1,000
MW-7					
7-25-91	45,000	1,500	2,700	1,200	9,200
MCL	—	1	—	680	1,750
AL	—	—	100	—	—

Results in parts per billion (ppb)

<:	Less than the laboratory detection limit.
N/S:	Not Sampled due to presence of floating product.
BTEX:	Measured by EPA Method 5030/8015/8020.
TPHg:	Total petroleum hydrocarbons as gasoline (measured by EPA Method 5030/8015/8020).
MCL:	Maximum contaminant level.
AL:	Action level.

Sample Identification: MW-3
└── Monitoring well number

TABLE 3
CUMULATIVE RESULTS OF LABORATORY ANALYSES OF GROUNDWATER SAMPLES
ARCO Station 771
Livermore, California
(Page 1 of 3)

Sample	TPHg	B	T	E	X	TPHd	TOG
MW-1							
01-15-91	Not sampled--sheen						
04-10-91	98,000	11,000	18,000	2,800	20,000	NA	NA
07-25-91	Not sampled--floating product						
10-30-91	Not sampled--floating product						
03-31-92	Not sampled--floating product						
06-12-92	Not sampled--floating product						
09-16-92	Not sampled--floating product						
11-25-92	Not sampled--floating product						
01-29-93	360,000	2,500	9,300	5,100	41,000	NA	NA
MW-2							
01-15-91	Not sampled--floating product						
04-10-91	Not sampled--floating product						
07-25-91	Not sampled--floating product						
10-30-91	Not sampled--sheen						
03-31-92	270,000	7,000	12,000	4,400	40,000	NA	NA
06-12-92	110,000	8,900	13,000	2,800	16,000	NA	NA
09-16-92	Not sampled--sheen						
11-25-92	Not sampled--floating product						
01-29-93	89,000	4,600	5,700	1,800	15,000	NA	NA
MW-3							
01-15-91	230	<0.5	<0.5	2.2	2.1	NA	NA
04-10-91	530	12	8.4	4.0	7.0	NA	NA
07-25-91	110	0.32	0.75	1.2	1.0	NA	NA
10-30-91	Not sampled--dry						
03-31-92	670	12	1.1	7.4	27	NA	NA
06-12-92	280	<0.5	<0.5	2.1	2.0	NA	NA
09-15-92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
11-25-92	220	1.0	<0.5	4.9	1.2	NA	NA
01-29-93	380***	0.8	0.6	2.1	2.0	NA	NA
MW-4							
07-25-91	23,000	590	730	360	3,500	NA	NA
10-30-91	19,000	320	340	230	180	NA	NA
03-31-92	30,000	1,300	740	770	4,800	NA	NA
06-12-92	28,000	990	440	550	3,200	NA	NA
09-16-92	21,000	740	240	350	1,300	NA	NA
11-25-92	26,000	1,200	300	350	730	NA	NA
01-29-93	23,000	2,000	580	770	2,500	NA	NA

See notes on Page 3 of 3.

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

Sample	TPHg	B	T	E	X	TPHd	TOG
MW-5							
07-25-91	57,000	2,300	4,200	77	14,000	NA	NA
10-30-91		Not sampled–sheen					
03-31-92	80,000	7,100	9,100	2,000	16,000	NA	NA
06-12-92	69,000	4,000	5,300	2,200	12,000	NA	NA
09-16-92	65,000	2,300	2,600	1,700	9,900	NA	NA
11-25-92	Inaccessible for sampling, L-shape fitting installed at wellhead for use in interim remediation system						
01-29-93	Inaccessible for sampling, L-shape fitting installed at wellhead for use in interim remediation system						
MW-6							
07-25-91	10,000	3,000	200	340	1,000	NA	NA
10-30-91	970	150	4.4	4.9	6.6	NA	NA
03-31-92	16,000	3,600	1,500	660	1,700	2,400*	2.5[a], 4.0[b]
06-12-92	2,900	480	17	190	170	1,100*	1.2[c]
09-16-92	2,300	220	<5**	92	43	810*	1.5[d]
11-25-92	2,700	240	11	103	32	720*	1.6[a], 1.8[b]
01-29-93	20,000	1,800	1,700	490	2,600	2,300*	3.6[a], 4.0[b]
MW-7							
07-25-91	45,000	1,500	2,700	1,200	9,200	NA	NA
10-30-91	93,000	1,800	770	780	6,700	NA	NA
03-31-92	35,000	960	350	300	5,900	NA	NA
06-12-92	27,000	900	270	340	4,800	NA	NA
09-16-92	39,000	1,900	410	470	5,000	NA	NA
11-25-92	49,000	2,900	810	750	5,300	NA	NA
01-29-93	38,000	3,200	1,100	740	4,300	NA	NA
MW-8							
01-29-93	<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-10							
01-29-93	<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
09-15-92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
11-25-92	<50	<0.5	<0.5	<0.5	<0.5	NA	NA
01-29-93	<50	<0.5	<0.5	<0.5	<0.5	NA	NA

See notes on Page 3 of 3.

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

Sample	TPHg	B	T	E	X	TPHd	TOG
RW-1							
06-12-92	54,000	2,300	4,400	1,200	12,000	NA	NA
09-15-92	49,000	1,500	2,200	870	6,900	NA	NA
11-25-92	32,000	1,500	2,500	1,000	5,500	NA	NA
01-29-93	43,000	3,100	2,500	990	7,400	NA	NA
MCLs	—	1	—	680	1,750		
DWAL	—	—	100	—	—		

Results in parts per billion (ppb), except TOG, which is reported in parts per million (ppm).
TPHg: Total petroleum hydrocarbons as gasoline (measured by EPA Method 5030/8015).
B: Benzene T: toluene E: ethylbenzene X: total xylene isomers
BTEX: Measured by EPA Method 5030/8020.
TPHd: Total petroleum hydrocarbons as diesel (measured by EPA Method 3510). May be weathered gasoline.
TOG: Total oil and grease: [a] by method 5520F-IR; [b] by method 5520C; [c] by method 413.2; [d] by method 418.1
NA: Not analyzed.
<: Less than the laboratory detection limit.
*: Sample contains a lower boiling point hydrocarbon mixture quantified as diesel. The chromatogram does not match the typical diesel fingerprint.
**: Method Reporting Limit raised due to high analyte concentration requiring sample dilution.
***: Sample contained components eluting in the gasoline range that were quantitated as gasoline. The chromatogram did not match the typical gasoline fingerprint.
MCL: State Maximum Contaminant Level in ppb (October 1990).
DWAL: State Recommended Drinking Water Action Level in ppb (October 1990).

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 1 of 5)

Well / Date	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-1				
01-15-91	451.80[a]	32.77	419.03	Sheen
02-27-91		32.23	419.57	None
03-20-91		27.38	424.42	Sheen
04-10-91		26.49	425.31	None
05-20-91	451.80[b]	Not measured - interface probe failure		
06-20-91		33.95	417.85	Sheen
07-25-91		36.59*	415.21*	0.10
08-13-91		37.72*	414.08*	0.20
09-12-91		39.25*	412.55*	0.23
10-30-91		39.14*	412.66*	0.20
11-13-91		Dry	Dry	None
12-26-91		39.30*	412.50	0.01
01-18-92		37.81**	NC	Skimmer
02-21-92		Well inaccessible due to construction		
03-31-92		31.90**	NC	Skimmer
04-24-92	451.42[c]	Well inaccessible due to construction		
05-20-92		33.00	418.42	Skimmer
06-12-92		33.25	418.17	0.02
07-28-92		32.31	419.11	None
08-24-92		30.87	420.55	None
09-15-92		32.24*	419.18*	0.01
10-29-92		32.29	419.13	None
11-25-92	451.73[d]	32.15	419.58	Floating product**
12-14-92		30.54	421.19	None
01-29-93		23.49	428.24	None
MW-2				
01-15-91	449.52[a]	30.89*	418.63*	0.16
02-27-91		29.11*	420.41*	0.02
03-20-91		24.57*	424.95*	0.02
04-10-91		22.85*	426.67*	0.05
05-20-91	449.51[b]	NM	NM	NM
06-20-91		31.42*	418.09*	0.15
07-25-91		33.69*	415.82*	0.49
08-13-91		34.80*	414.71*	0.47
09-12-91		36.39*	413.12*	0.45
10-30-91		Dry	Dry	None
11-13-91		Dry	Dry	None
12-26-91		36.45	413.06	Sheen
01-18-92		Well inaccessible due to construction		
02-21-92		26.27	NC	Skimmer
03-31-92		28.85	NC	Skimmer

See notes on Page 5 of 5.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 2 of 5)

Well Date	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-2 (cont')				
04-24-92	449.51[b]	30.95	418.56	Skimmer
05-20-92		30.69	418.82	Skimmer
06-12-92		31.25	418.26	None
07-28-92		30.31	419.20	None
08-24-92		29.83	419.68	None
09-15-92		30.06	419.45	Sheen
10-29-92		30.90	418.61	None
11-25-92	449.49[d]	31.13	418.36	Floating Product**
12-14-92		29.24	420.25	None
01-29-93		20.12	429.39	None
MW-3				
01-15-91	450.29[a]	32.34	417.95	None
02-27-91		31.78	418.51	None
03-20-91		27.74	422.55	None
04-10-91		25.05	425.24	None
05-20-91	450.28[b]	27.06	423.22	None
06-20-91		32.35	417.93	None
07-25-91		35.02	415.26	None
08-13-91		36.50	413.78	None
09-12-91		38.47	413.81	None
10-30-91		Dry	Dry	None
11-13-91		Dry	Dry	None
12-26-91		38.53	411.75	None
01-18-92		Well inaccessible due to construction		
02-21-92		Well inaccessible due to construction		
03-31-92		30.61	NC	None
04-24-92	450.28[c]	32.83	417.45	None
05-20-92		33.85	416.43	None
06-12-92		34.51	415.77	None
07-28-92		34.42	415.86	None
08-24-92		32.46	417.82	None
09-15-92		34.29	415.99	None
10-29-92		33.40	416.88	None
11-25-92		33.67	416.61	None
12-14-92		34.26	416.02	None
01-29-93		21.88	428.40	None
MW-4				
07-25-91	451.56[b]	36.07	415.49	None
08-13-91		37.54	414.02	None
09-12-91		38.73	412.83	None

See notes on Page 5 of 5.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 3 of 5)

Well Date	Well Elevation	Depth-to- Water	Water Elevation	Floating Product
MW-4 (cont')				
10-10-91	451.56[b]	39.90	411.66	None
11-13-91		40.56	411.00	None
12-26-91	450.99[c]	38.78	412.78	None
01-18-92		38.71	NC	None
02-21-92		31.91	NC	None
03-31-92		30.36	NC	None
04-24-92		32.65	418.34	None
05-20-92		32.62	418.37	None
06-12-92		32.73	418.26	None
07-28-92		31.48	419.51	None
08-24-92		32.84	418.15	None
09-15-92		31.37	419.62	None
10-29-92		32.58	418.41	None
11-25-92	451.09[d]	32.37	418.72	None
12-14-92		30.99	420.10	None
01-29-93		22.30	428.79	None
MW-5				
07-25-91	451.41[b]	36.67	414.74	Sheen
08-13-91		37.98*	413.43*	0.01
09-12-91		39.01*	412.40*	0.05
10-30-91		38.28	412.13	Sheen
11-13-91		39.24	412.17	Sheen
12-26-91		39.11	412.30	Sheen
01-18-92		38.15	NC	Skimmer
02-21-92		30.59	NC	Skimmer
03-18-92		30.84	NC	Skimmer
04-24-92	451.40[c]	33.00	418.40	Skimmer
05-20-92		32.86	418.54	Skimmer
06-12-92		33.03	418.37	None
07-28-92		31.92	419.48	None
08-24-92		32.17	419.23	None
09-15-92		31.90	419.50	None
10-29-92		32.94	418.46	None
11-25-92	Not measured - new L-shape wellhead fitting prevented sounder from going down well			
12-14-92		30.90***	NC	None
01-29-93		23.25***	NC	None
MW-6				
07-25-91	451.38[b]	37.68	413.70	None
08-13-91		39.17	412.21	None
09-12-91		41.14	410.24	None

See notes on Page 5 of 5.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 4 of 5)

Well Date	Well Elevation	Depth-to-Water	Water Elevation	Floating Product
MW-6(cont')				
10-30-91	451.38[b]	42.10	409.28	None
11-13-91		41.45	409.93	None
12-26-91		41.23	410.15	None
01-18-92		38.23	NC	None
02-21-92	451.37[c]	35.21	NC	None
03-31-92		32.26	NC	None
04-24-92		33.24	418.13	None
05-20-92		33.14	418.23	None
06-12-92		33.43	417.94	None
07-28-92		32.52	418.85	None
08-24-92		32.57	418.80	None
09-15-92		32.58	418.79	None
10-29-92		32.33	419.04	None
11-25-92		32.43	418.94	None
12-14-92		31.52	419.85	None
01-29-93		23.70	427.67	None
MW-7				
07-25-91	450.65[b]	34.88	415.77	Sheen
08-13-91		36.17	414.48	None
09-12-91		37.81	412.84	None
10-30-91		38.50	412.15	None
11-13-91		38.31	412.34	None
12-26-91		37.90	412.75	None
01-18-92		Well inaccessible due to construction		
02-21-92		31.50	NC	None
03-31-92		29.40	NC	None
04-24-92	450.63[c]	32.14	418.49	None
05-20-92		32.51	418.12	None
06-12-92		32.45	418.18	None
07-28-92		32.08	418.55	None
08-24-92		32.29	418.34	None
09-15-92		31.93	418.70	None
10-29-92		32.37	418.26	None
11-25-92	450.33[d]	31.80	418.53	None
12-14-92		30.44	419.89	None
01-29-93		21.76	428.57	None
MW-8				
01-29-93	449.43[d]	23.23	426.20	None

See notes on Page 5 of 5.

TABLE 1
CUMULATIVE GROUNDWATER MONITORING DATA
ARCO Station 771
Livermore, California
(Page 5 of 5)

Well Date	Well Elevation	Depth-to- Water	Water Elevation	Floating Product
MW-9				
01-29-93	449.21[d]	18.91	430.30	None
MW-10				
01-29-93	449.22[d]	19.27	429.95	None
MW-11				
04-24-92	448.02[c]	35.06	412.96	None
05-20-92		34.10	413.92	None
06-12-92		34.48	413.54	None
07-28-92		35.13	412.89	None
08-24-92		33.32	414.70	None
09-15-92		35.72	412.30	None
10-29-92		35.26	412.76	None
11-25-92		36.44	411.58	None
12-14-92		33.18	414.84	None
01-29-93		23.89	424.13	None
RW-1				
04-24-92	451.44[c]	32.85	418.59	None
05-20-92		32.60	418.84	None
06-12-92		32.72	418.72	None
07-28-92		31.94	419.50	None
08-24-92		31.73	419.71	None
09-15-92		31.94	419.50	None
10-29-92		32.15	419.29	None
11-25-92	451.67[d]	32.21	419.46	None
12-14-92		30.58	421.09	None
01-29-93		22.89	428.78	None

Measurements in feet.

* = Floating product present in well; DTW with floating product present was calculated using the following: The recorded thickness of the floating product was multiplied by 0.80 to obtain an approximate value for the displacement of water by the floating product. This approximate displacement value was then subtracted from the measured depth to water to obtain an adjusted depth to water. These adjusted groundwater depths were subtracted from wellhead elevations to calculate the differences in groundwater elevations.

** = Floating product not initially present but came into well during purging.

*** = DTW measurement may not be accurate due to L-shape wellhead fitting.

[a] = Surveyed by Ron Archer, Civil Engineer, in January 1991.

[b] = Surveyed by John Koch, Licensed Land Surveyor, in July 1991.

[c] = Surveyed by John Koch, Licensed Land Surveyor, in May 1992.

[d] = Surveyed by John Koch, Licensed Land Surveyor, in January 1993.

Wellhead elevations based on benchmark: top of pin in standard monument, west side of intersection of Rincon Avenue and Pine Street. Elevation taken as 448.741 feet. City of Livermore Datum.

NC = Not calculated; wellhead elevations may no longer be correct due to construction of remediation system.

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-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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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-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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		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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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-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

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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-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
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
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
899 Rincon Avenue, Livermore, California

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

Well Desig-nation	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
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-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
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-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

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-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 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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ARCO Service Station 771
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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-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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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-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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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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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-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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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-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

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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
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
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
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-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
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-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
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-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

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 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

APPENDIX C

Historical Soil Vapor Extraction System 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 D

Soil Boring/Well Construction 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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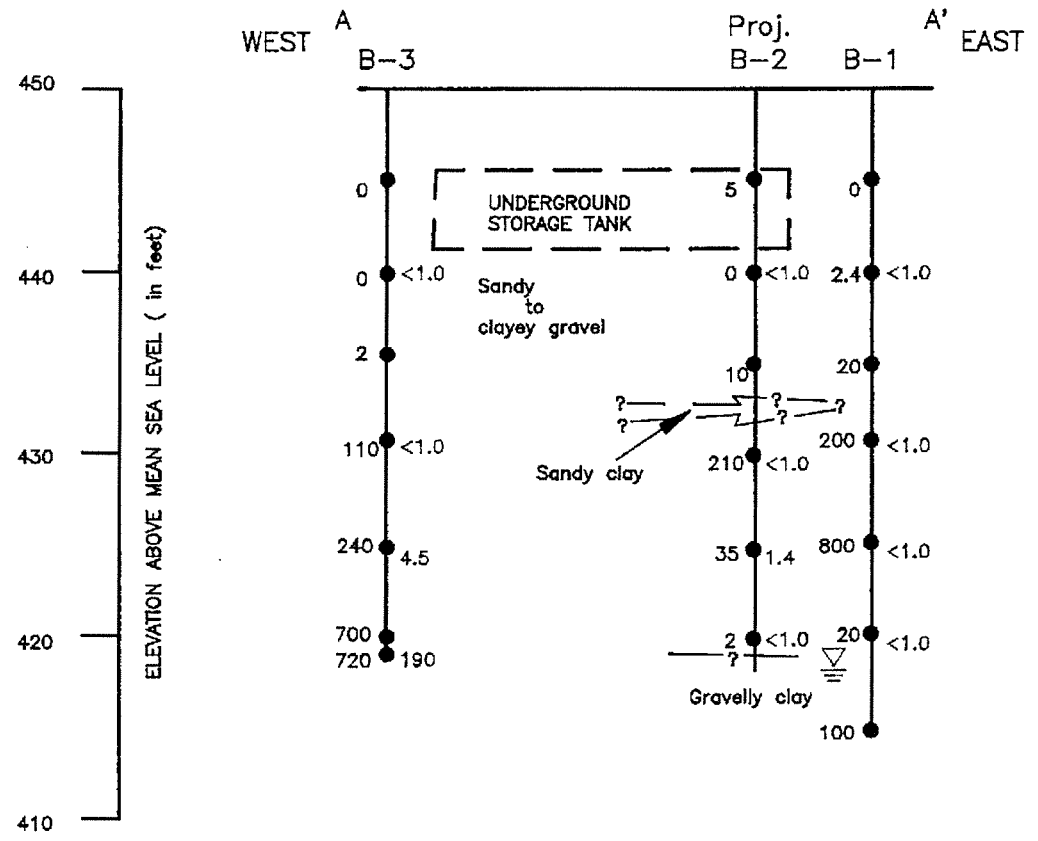
PROJECT 60000-1

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						

Applied GeoSystems

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)

Applied GeoSystems

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

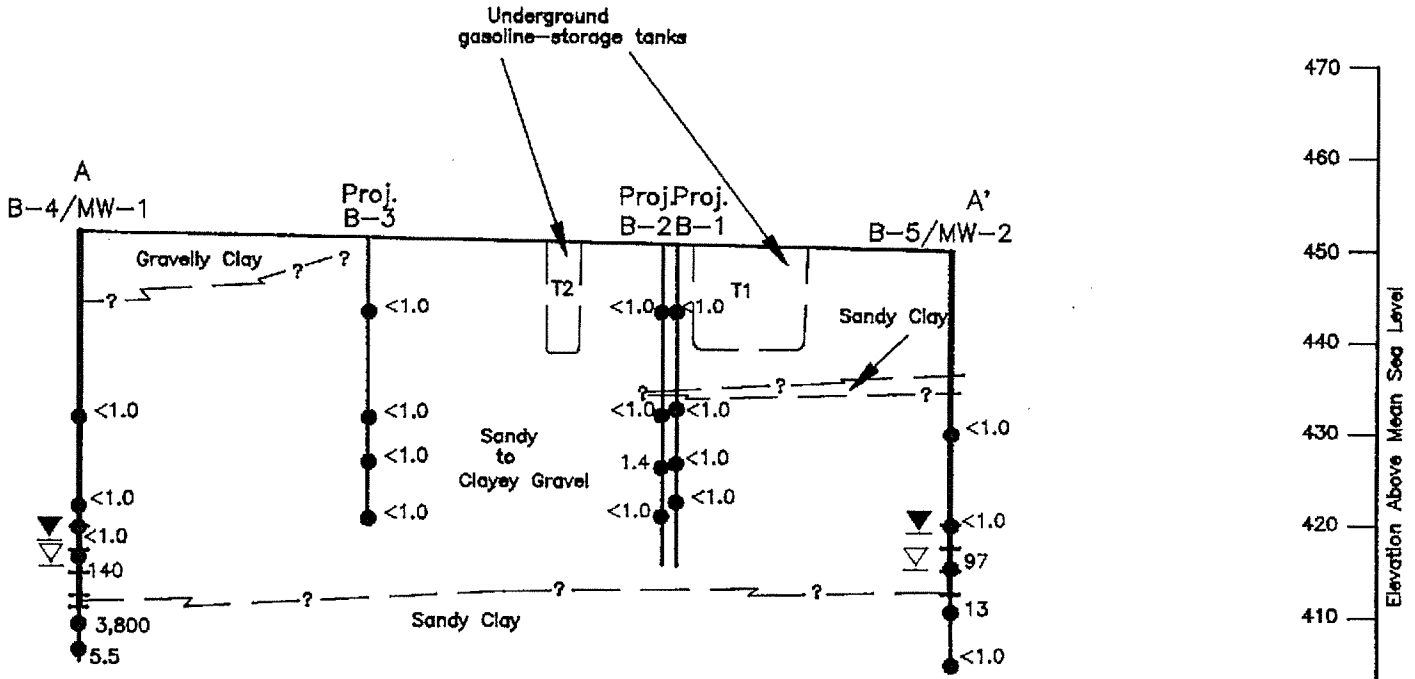
Depth	Sample No.	BLOWS	P.I.D.	USCS Code	Description	Well Const.
22				GW	Sandy gravel with clay, brown, moist, very dense.	
24	S-25	35 50	6.8		Clayier.	
26						
28				GC	Clayey gravel with sand, brown, moist, very dense.	
30	S-29.5 S-30	35 35 35	4.2			
32					12/12/90	
34	S-34.5	50 50	2.8	GW	Sandy gravel 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						

Applied GeoSystems

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

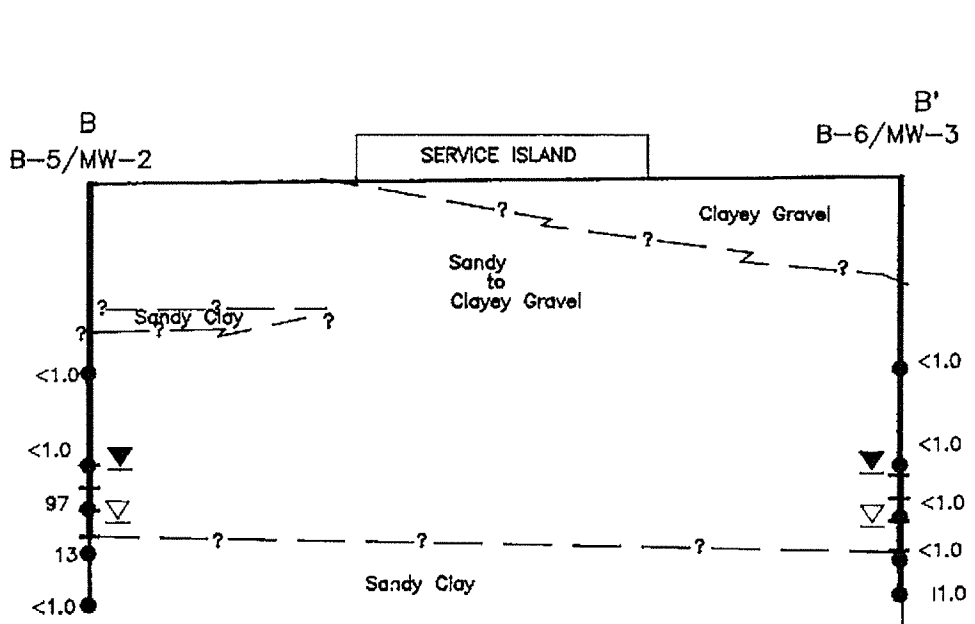
= Static water level in well

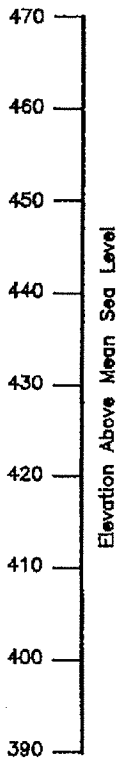
Approximate Horizontal and Vertical Scale

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)	

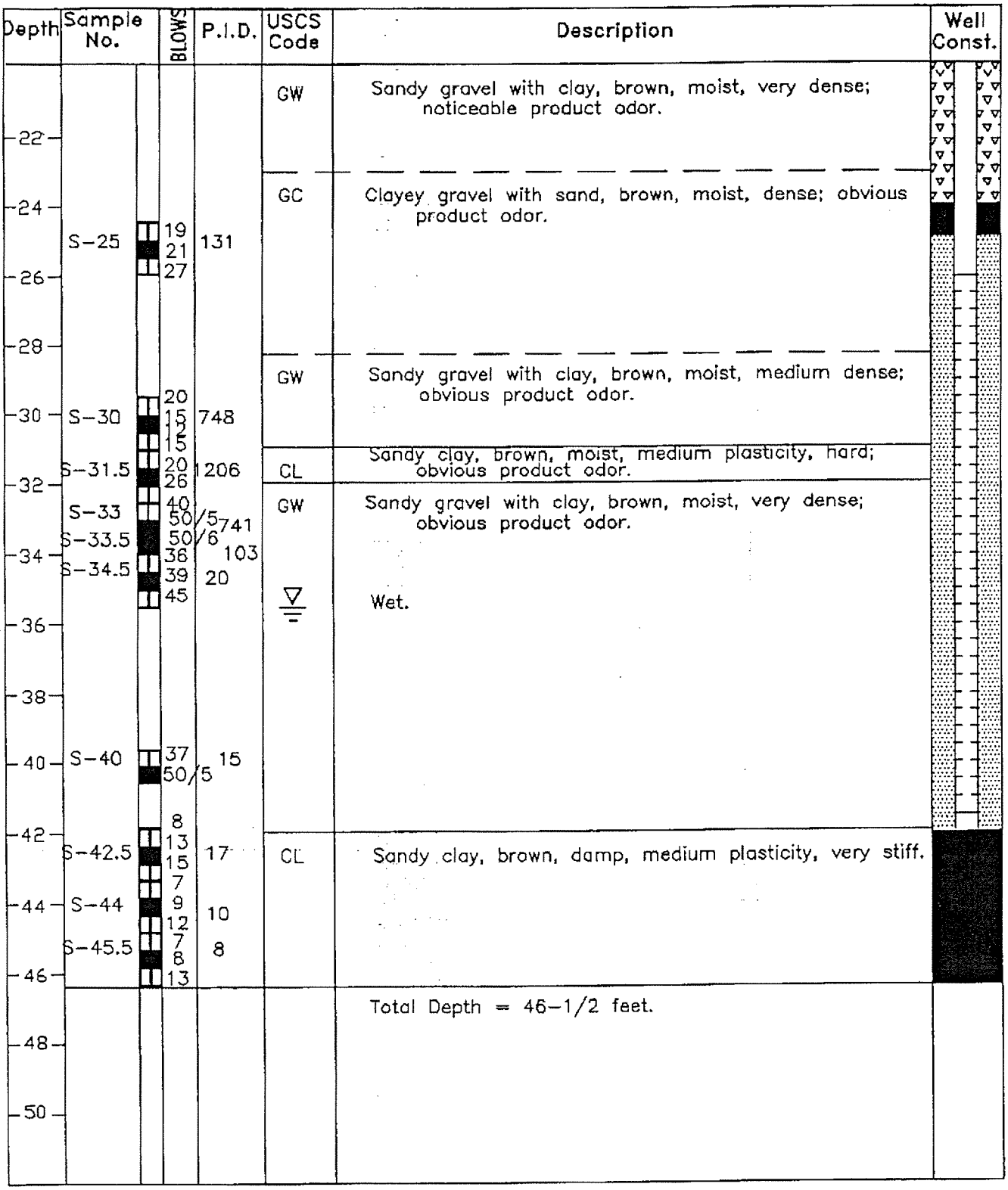
RESNA

PROJECT: 60000.06

LOG OF BORING B-7/MW-4

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 4



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)	

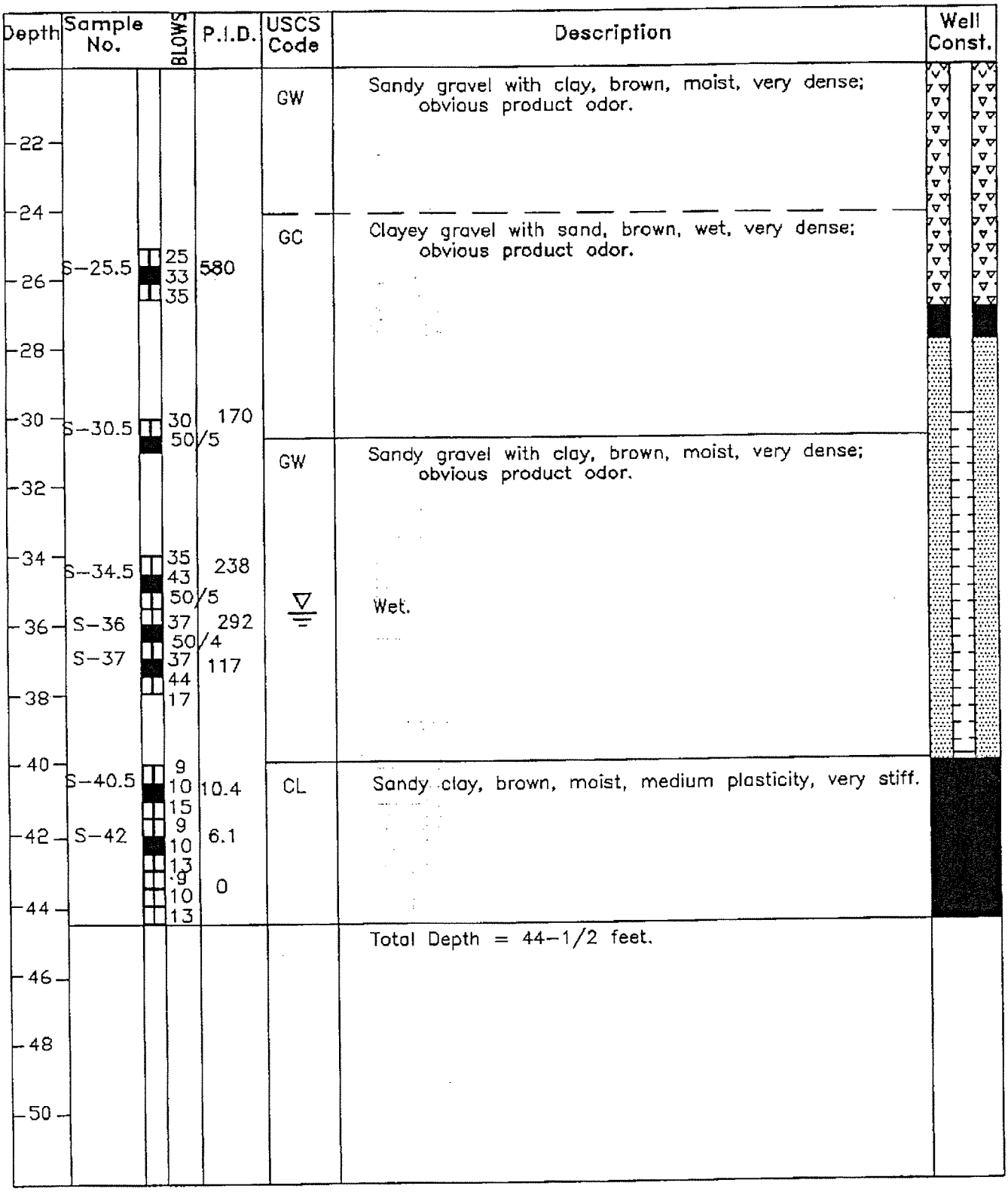
RESNA

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						

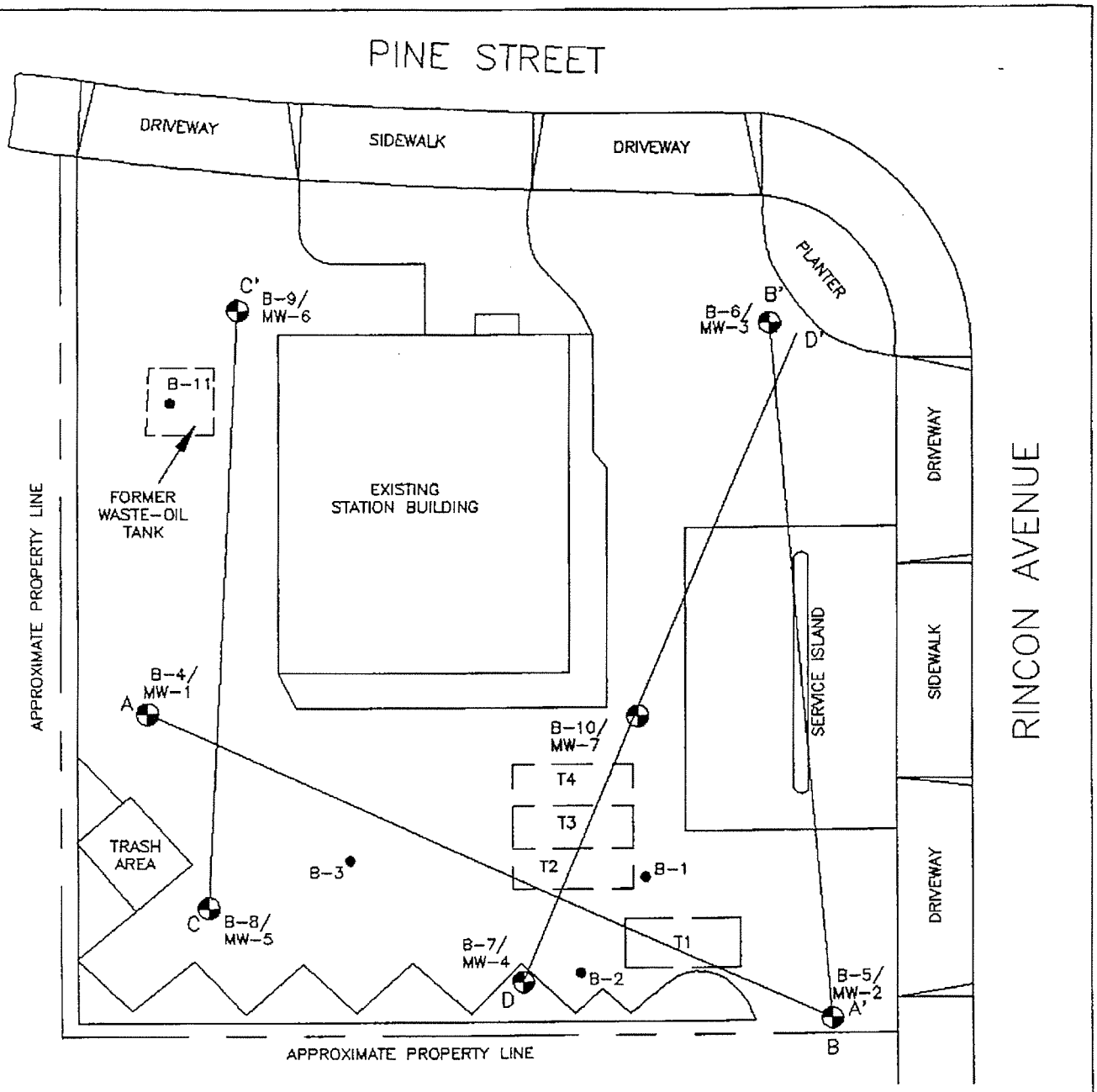
RESNA

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

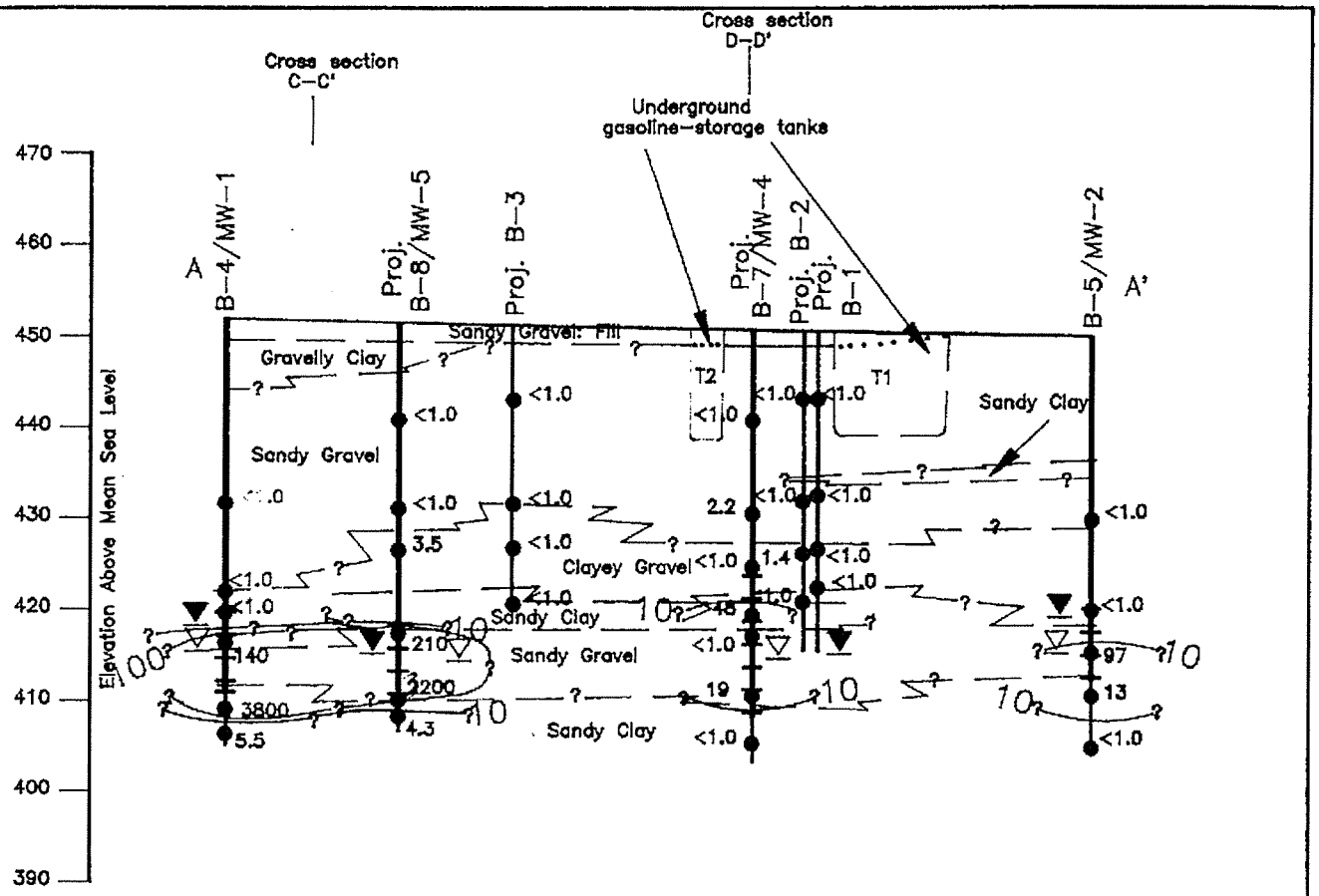
Source: Surveyed by John Koch, Licenced Land Surveyor.

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

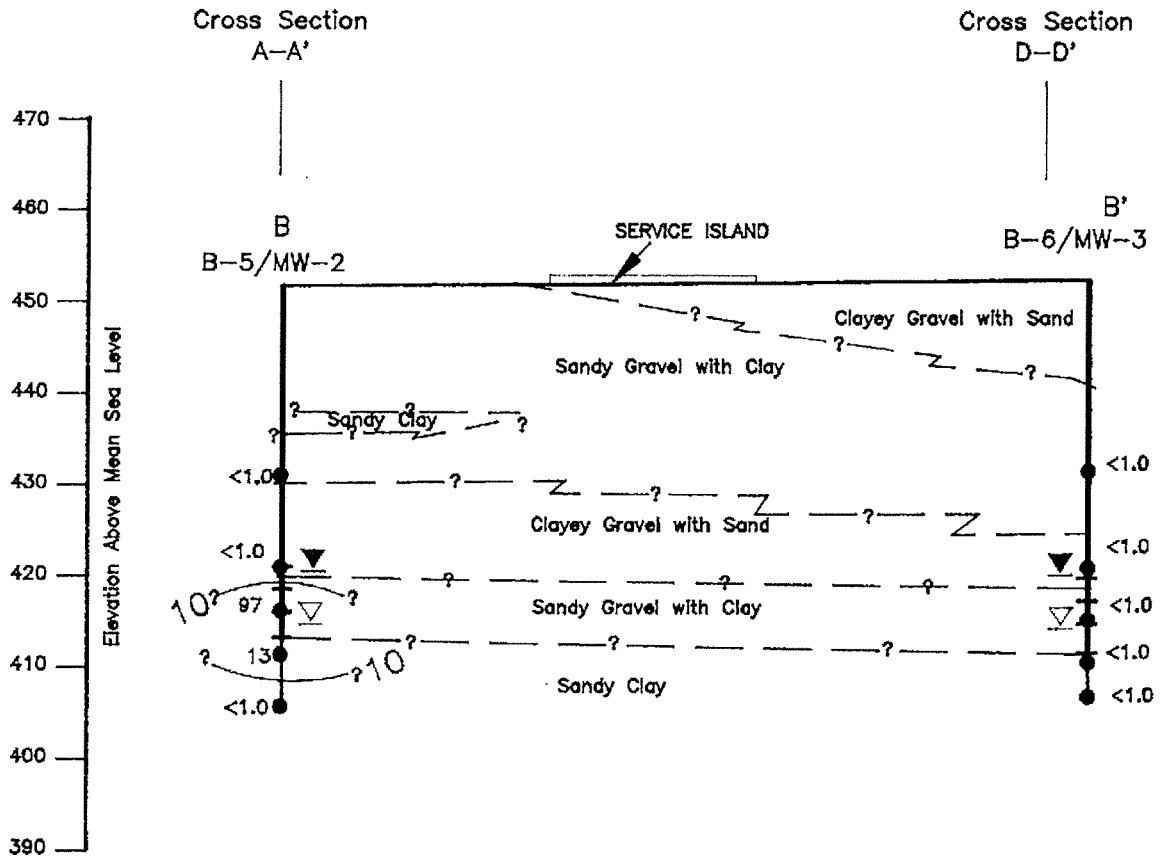
= Static water level in well

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

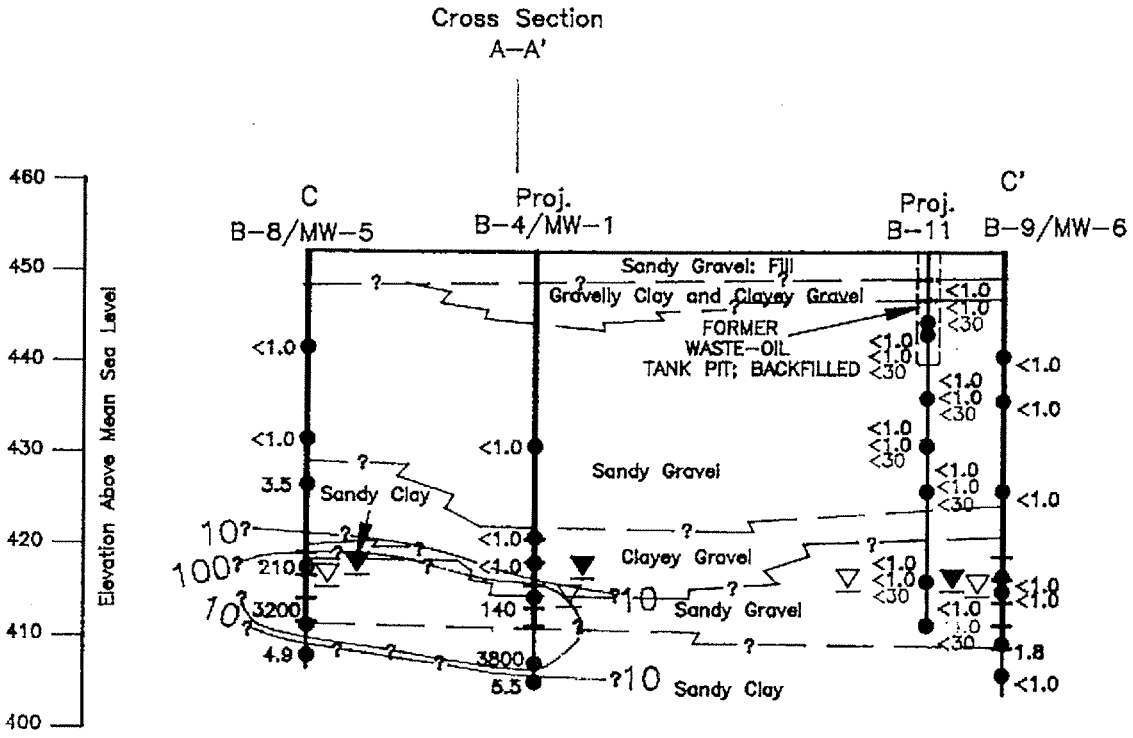
= Static water level in well

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

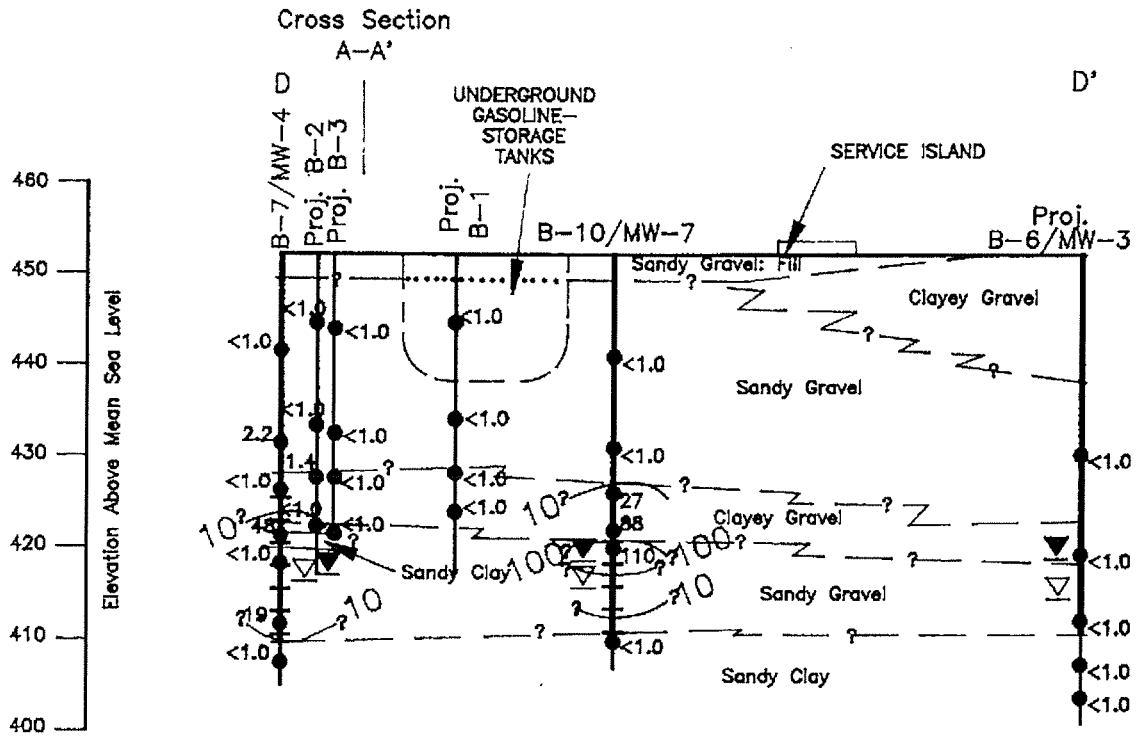
= Static water level in well

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						

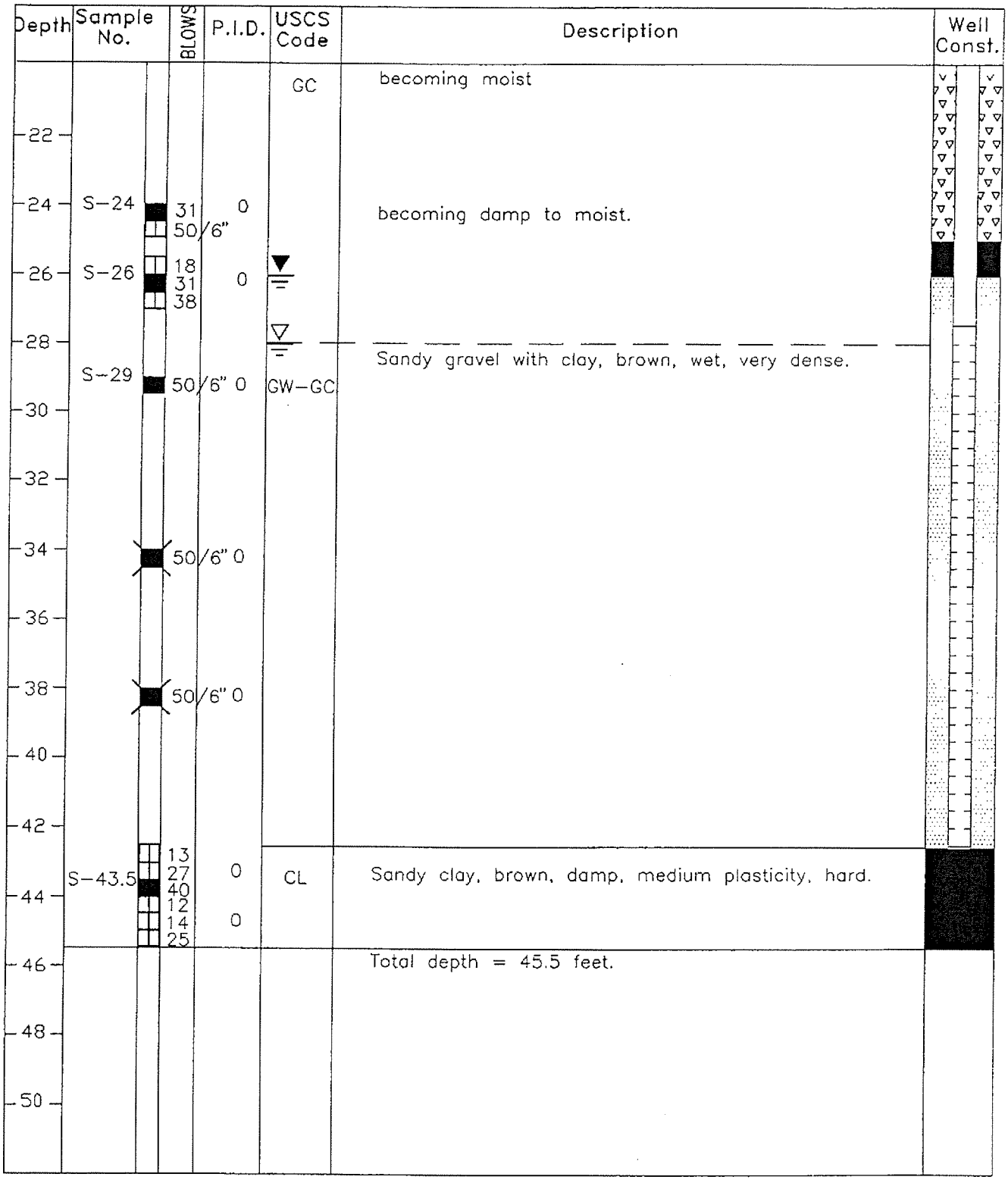
(Section continues downward)

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)

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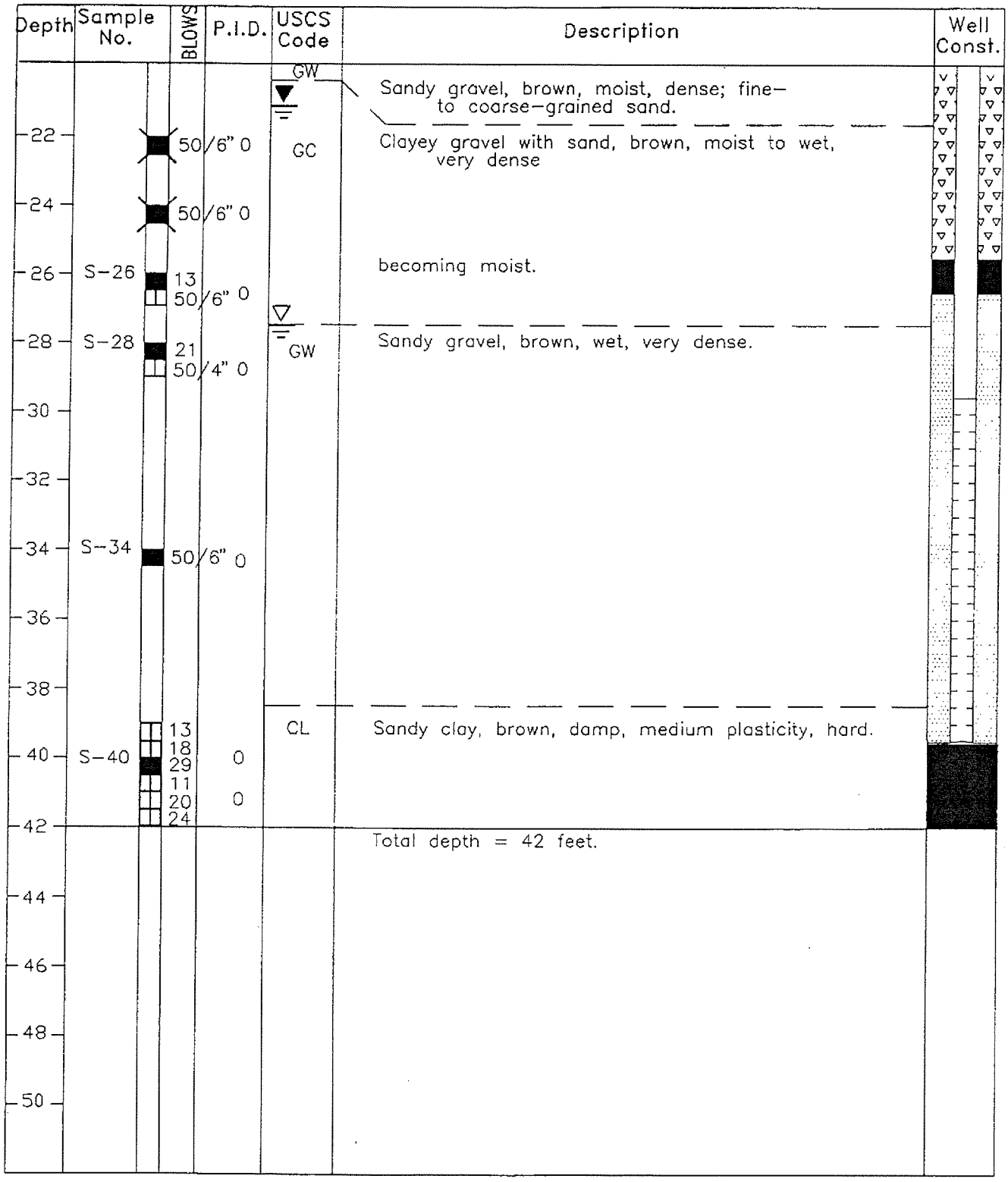
LOG OF BORING B-13/MW-9
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
6



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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)

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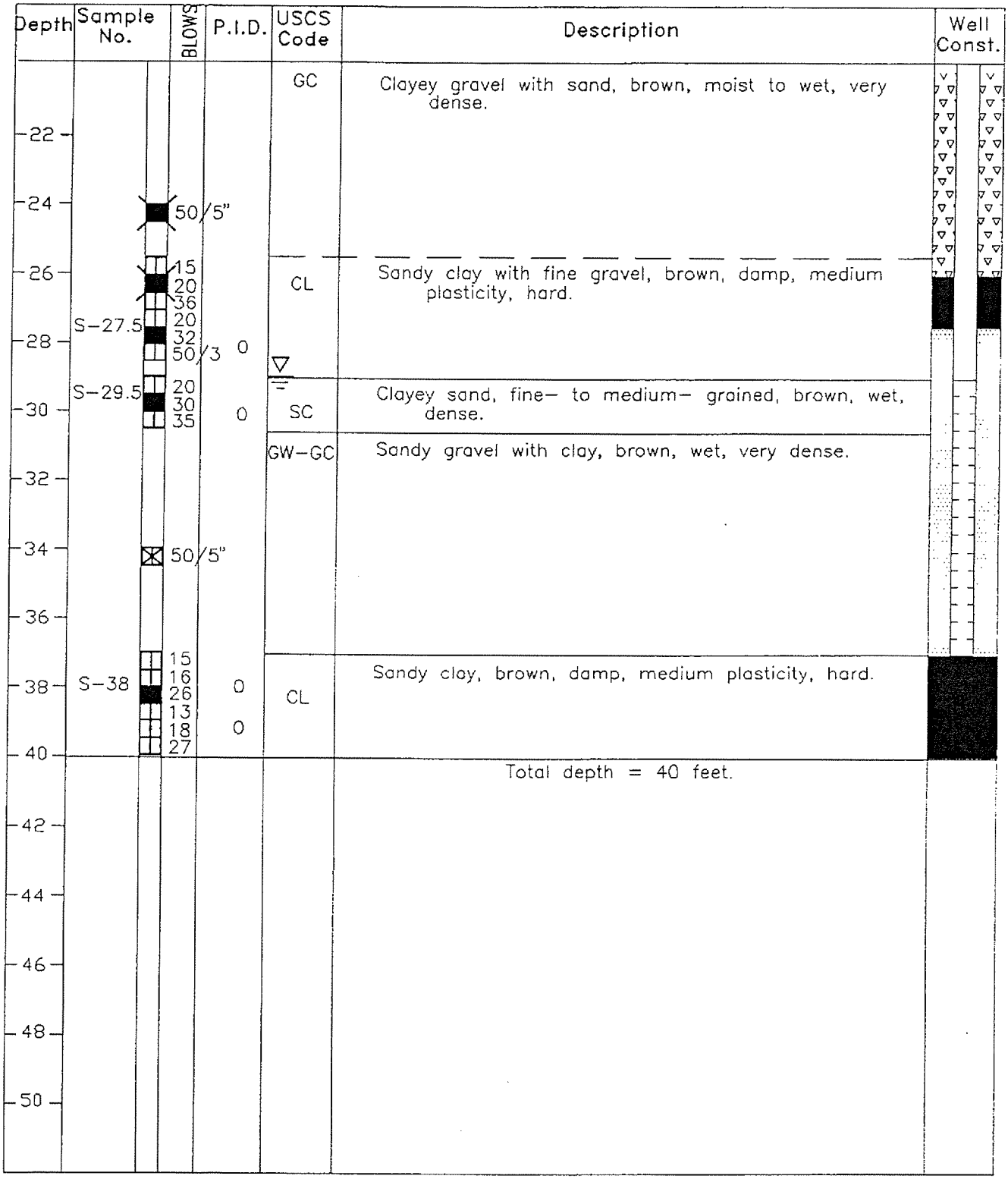
LOG OF BORING B-14/MW-10
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
8



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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)

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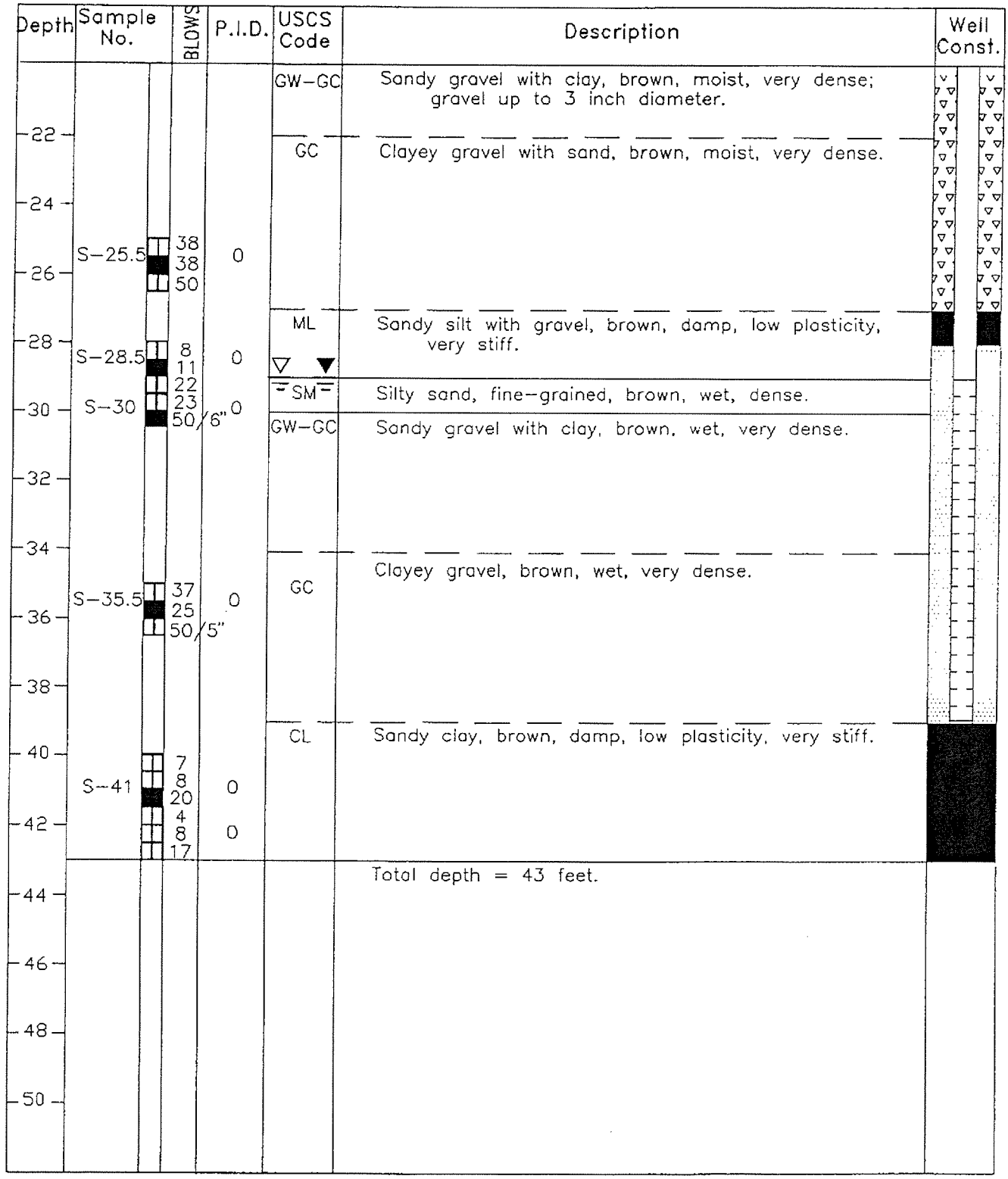
LOG OF BORING B-15/MW-11
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
10



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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)

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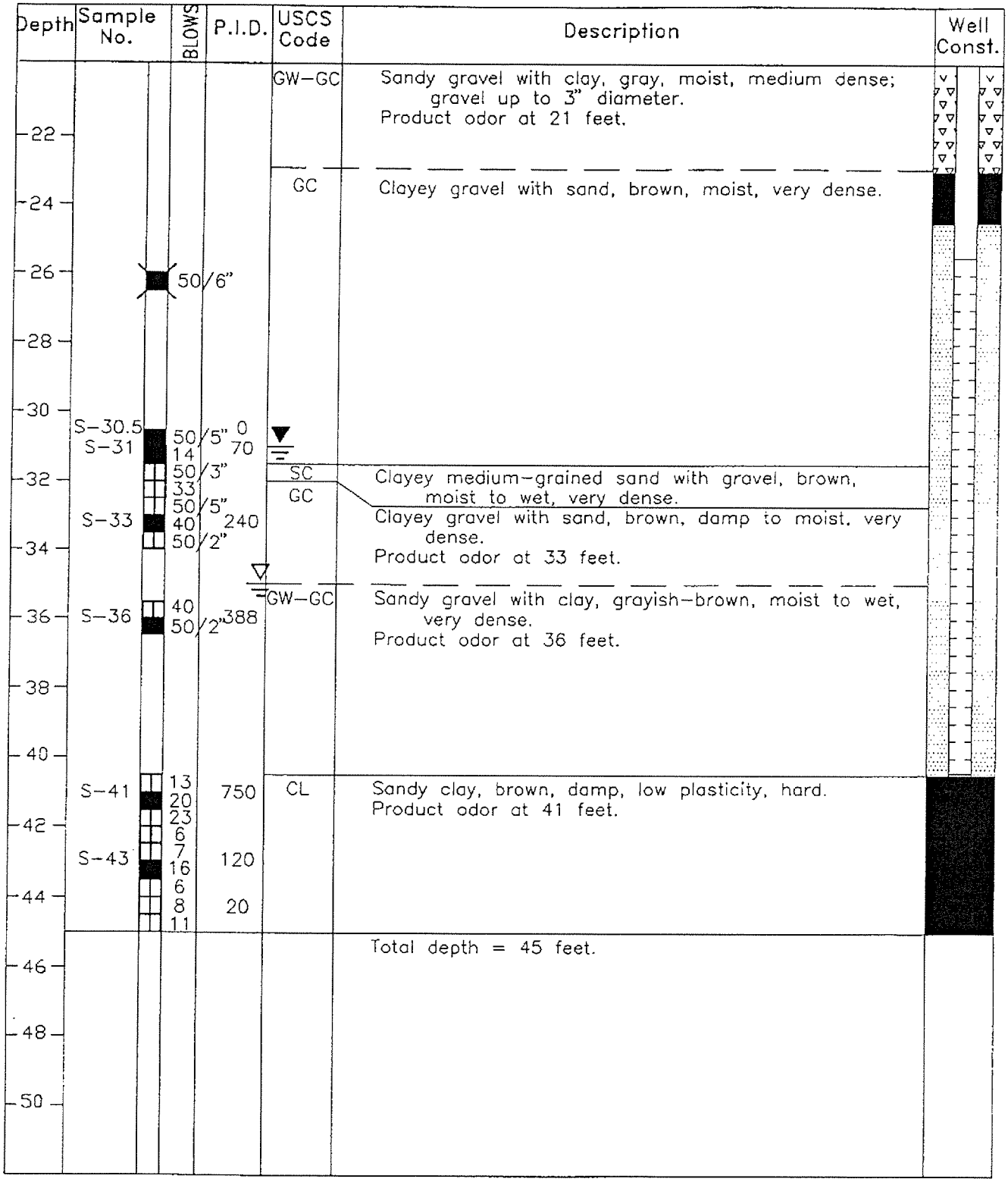
LOG OF BORING B-17/RW-1
ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE
14



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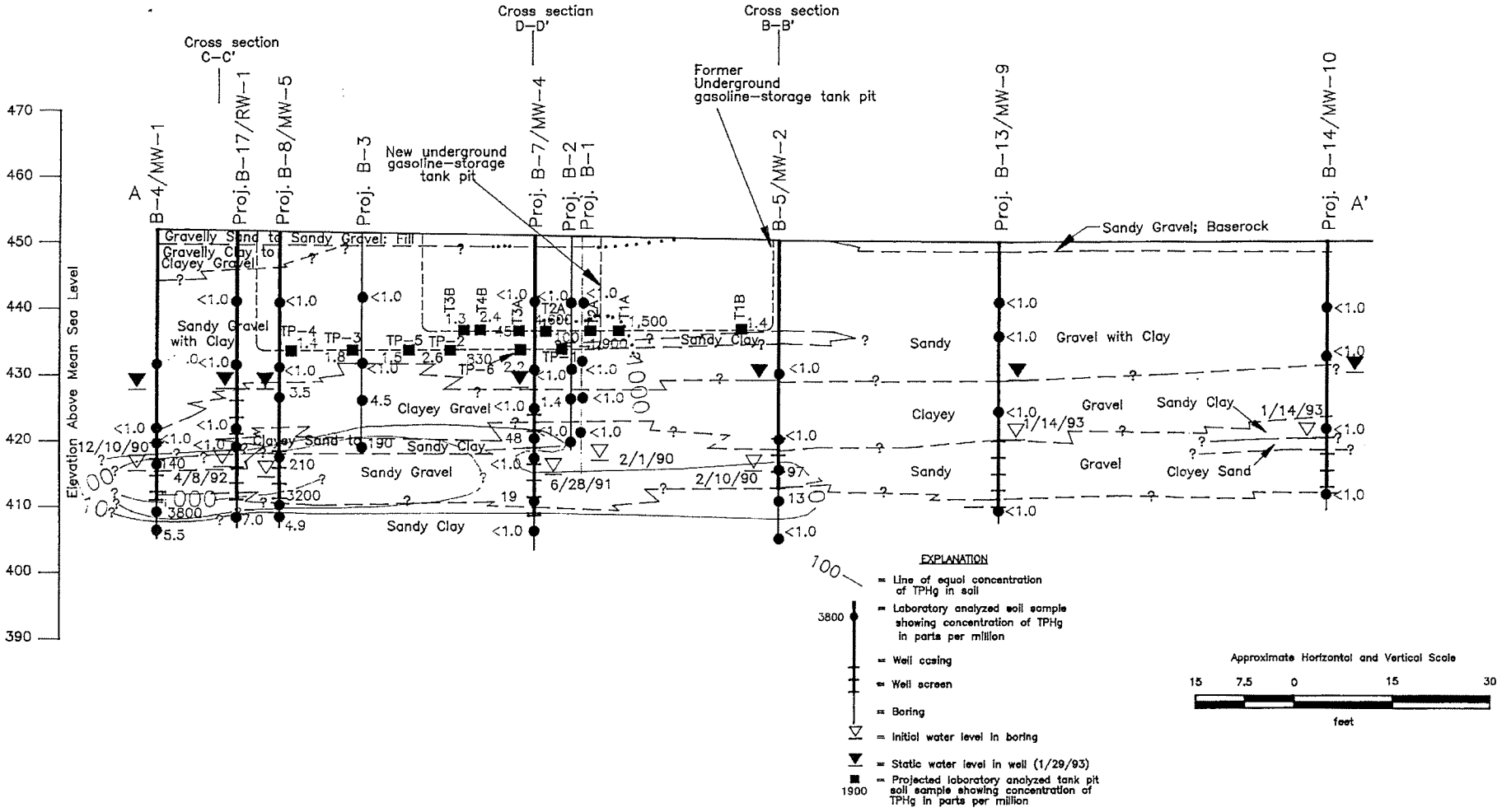
LOG OF BORING B–17/RW–1

ARCO Station 771
899 Rincon Avenue
Livermore, California

PLATE 15



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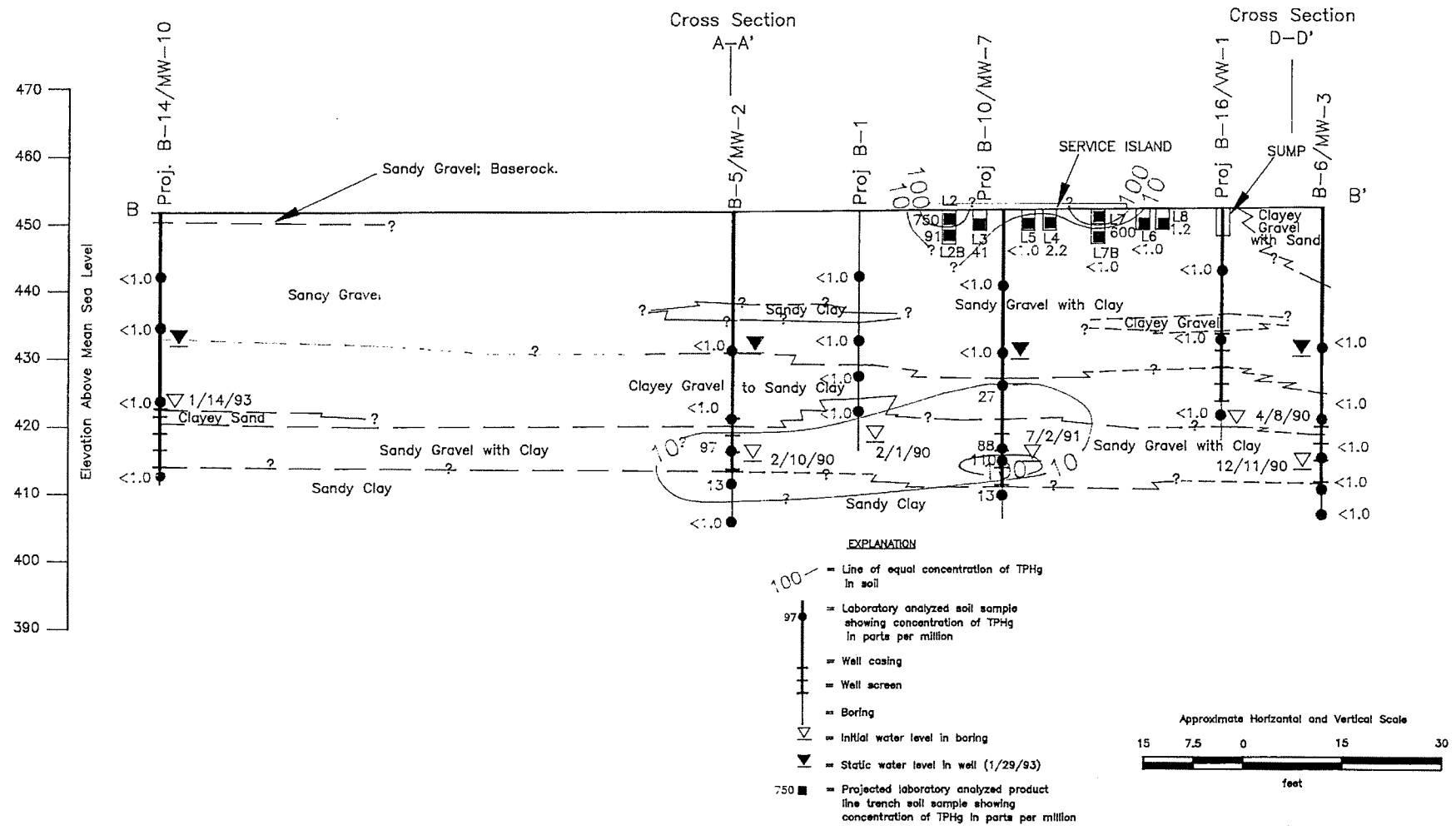
PROJECT 60000.09 DRAWN: DVW 2/12

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

PLATE
16
CAD FILE: 600009A



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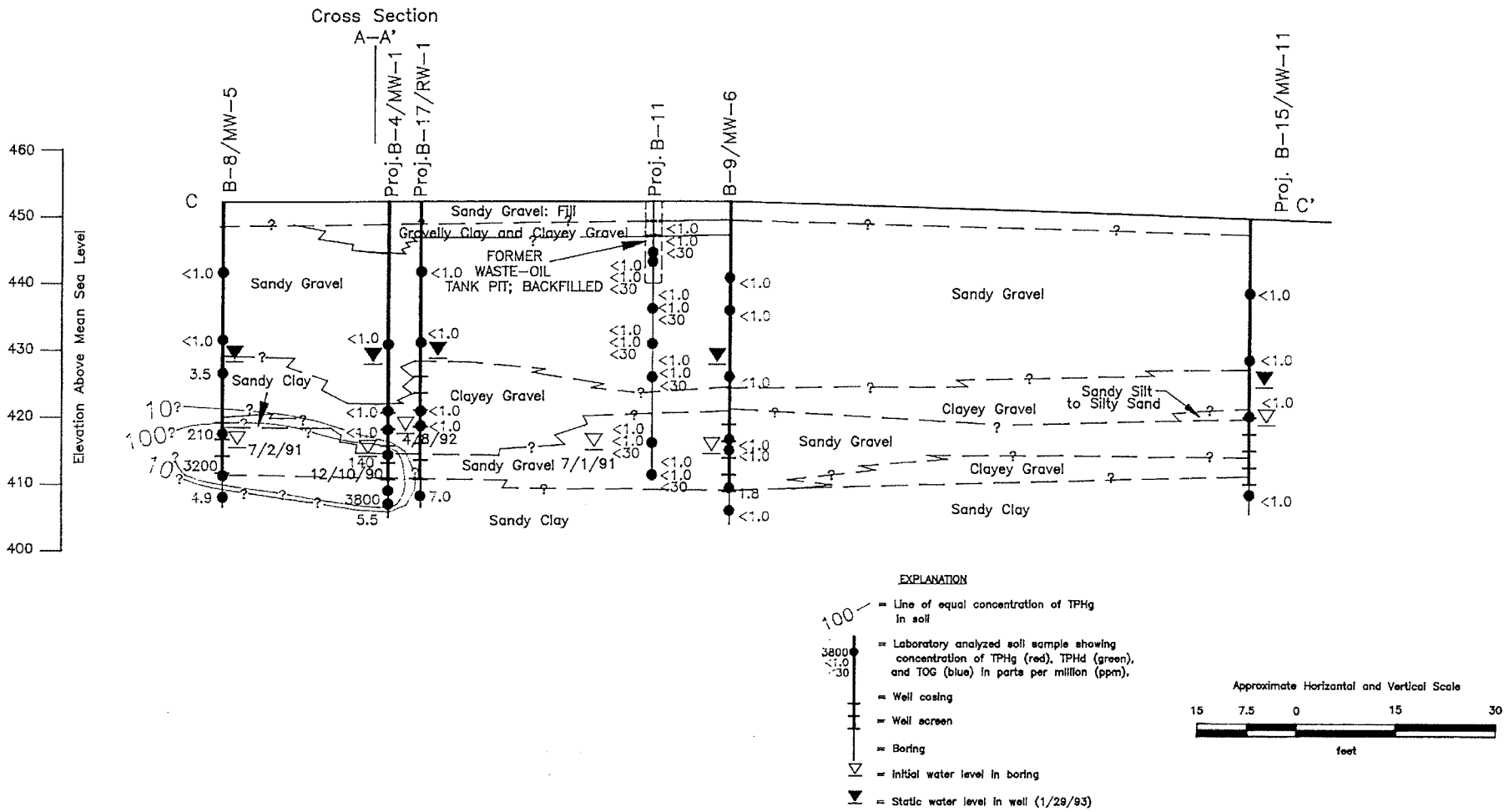
PROJECT 60000.09

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

PLATE
17



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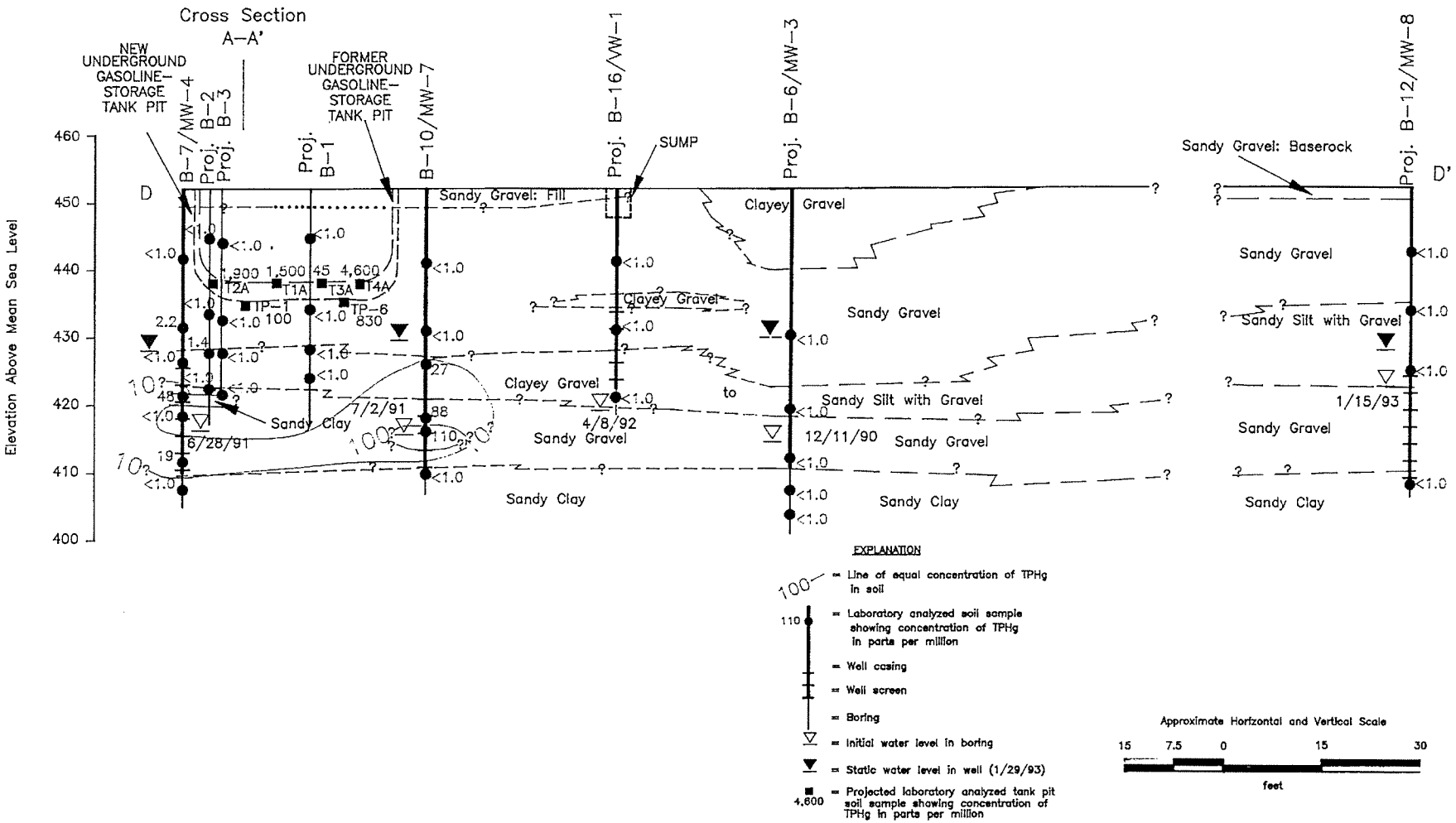
PROJECT 600006.09 DRAWN: DVW 2/12

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

PLATE
18
CAD FILE: 600009C



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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

APPENDIX E

Historic Water Well Survey

URS

FILE COPY

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.

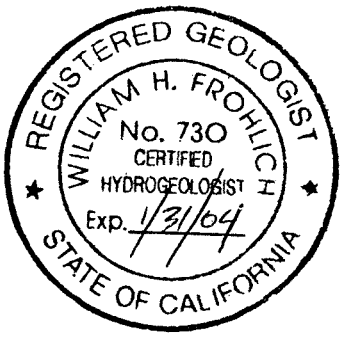
Should you have any concerns or questions, please contact me at (510) 874-3280.

Sincerely,

URS CORPORATION

Scott Robinson
Project Manager

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



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.

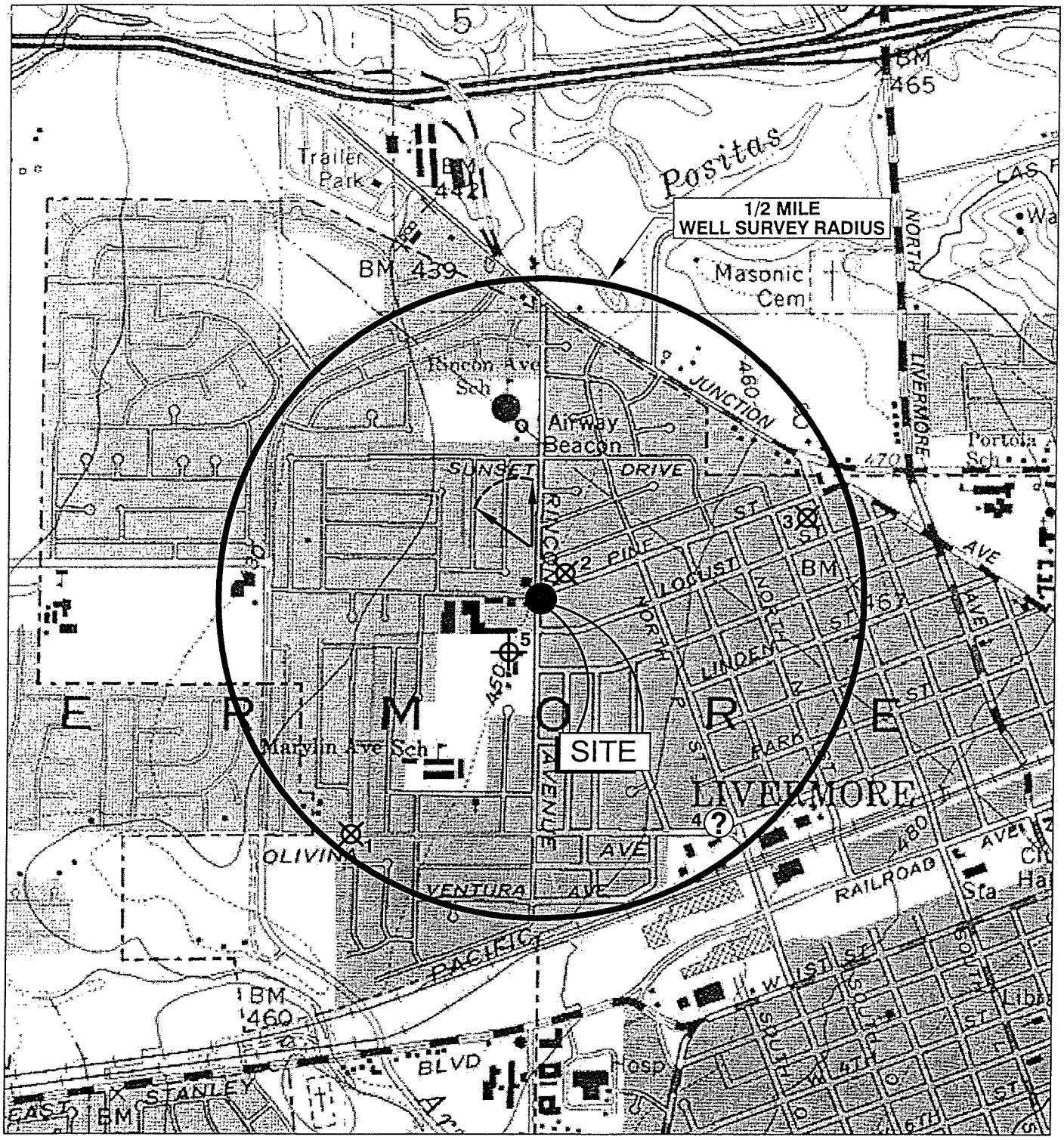
a Well log did not provide an accurate address. The location on the well survey map is approximate.

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\0771sensitive receptor survey\WSM.dwg, 09/17/2003 10:06:18 AM, JKMT, URS