RECEIVED
By Alameda County Environmental Health at 2:44 pm, Apr 03, 2014

Atlantic Richfield Company

Chuck Carmel
Project Manager

PO Box 1257
San Ramon, CA 94583
Phone: (925) 275-3803
Fax: (925) 275-3815
E-Mail: charles.carmel@bp.com

March 26, 2014

Re: Conceptual Site Model and Case Closure Request
Atlantic Richfield Company Station #2169
889 West Grand Avenue, Oakland, California
ACEH Case #RO0000072

"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,

Chuck Carmel
Project Manager

Attachment

CONCEPTUAL SITE MODEL AND CASE CLOSURE REQUEST
Atlantic Richfield Company Station #2169
889 West Grand Avenue
Oakland, Alameda County, California

Prepared for:

Mr. Chuck Carmel
Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583

Prepared by:

Broadbent & Associates, Inc.
1370 Ridgewood Drive, Suite 5
Chico, California 95973
(530) 566-1400

March 26, 2014

No. 06-88-621

BROADBENT
1370 Ridgewood Drive, Suite 5, Chico, CA 95973
[T] 530-566-1400 [F] 530-566-1401
broadbentinc.com

March 26, 2014

Project No. 06-88-621

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

Attn.: Mr. Chuck Carmel

RE: Conceptual Site Model and Case Closure Request, Atlantic Richfield Company Station #2169, 889 West Grand Avenue, Oakland, Alameda County, California
ACEH Case #RO0000072; GeoTracker Global ID #T0600100112

Dear Mr. Carmel:

Broadbent & Associates, Inc. (Broadbent) is pleased to submit this *Conceptual Site Model and Case Closure Request* for Atlantic Richfield Company Station #2169 located at 889 West Grand Avenue, Oakland, Alameda County, California (Site). This report has been prepared on behalf of Atlantic Richfield Company (a BP affiliated company) for submittal to Alameda County Environmental Health (ACEH) for use in evaluation of the Site for closure under the State Water Resources Control Board's Low-Threat Underground Storage Tank Case Closure Policy.

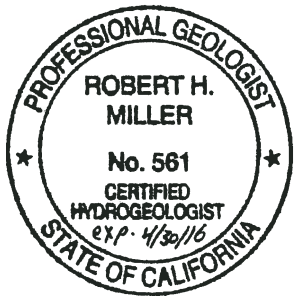
Please do not hesitate to contact us at (530) 566-1400 if you should have any questions or require additional information.

Sincerely,

BROADBENT & ASSOCIATES, INC.

Jason Duda
Project Scientist

Robert H. Miller, P.G., C.HG.
Principal Hydrogeologist



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

CONCEPTUAL SITE MODEL AND CASE CLOSURE REQUEST

Atlantic Richfield Company Station No. 2169
889 West Grand Avenue, Oakland, California
Fuel Leak Case No. RO0000072

TABLE OF CONTENTS

LIST OF DRAWINGS

LIST OF TABLES

LIST OF FIGURES

APPENDICES

CONCEPTUAL SITE MODEL AND CASE CLOSURE REQUEST
Atlantic Richfield Company Station No. 2169
889 West Grand Avenue, Oakland, California
Fuel Leak Case No. RO0000072

1.0 INTRODUCTION

On behalf of the Atlantic Richfield Company– (ARC, a BP affiliated company) Broadbent & Associates, Inc. (Broadbent) has prepared this *Conceptual Site Model and Case Closure Request* (CSM and CCR) for the Atlantic Richfield Company (ARCO) Station No. 2169 (herein referred to as Station No. 2169), located at 889 West Grand Avenue in Oakland, California (Site). This CSM and CCR was prepared in order to evaluate the Site's eligibility to be closed under the California State Water Resources Control Board's (CSWRCB) *Low Threat Underground Storage Tank Case Closure Policy* (LTCP; CSWRCB, 2012). This CSM and CCR includes discussions on the Site background and previous environmental activities, regional and Site geology and hydrogeology, and justification for case closure.

1.1 Site Setting

The Site is an active ARC-branded service station located at the southeastern corner of West Grand Avenue and Market Street in Oakland, California. The land use in the immediate vicinity of the Site is mixed commercial and residential. Current structures at the Site include four underground storage tanks (USTs), four fuel dispenser islands with a total of eight dispensers, a car wash, and a station building. The majority of the Site is paved with asphalt and concrete. The location of the Site is presented in Drawing 1. A Site Plan that shows current and former well locations is provided as Drawing 2. A Groundwater Elevation Contour Map presenting the most current groundwater data (August 2013) is provided as Drawing 3.

The Site is bounded by West Grand Avenue to the north, Market Street to the west, residential, commercial buildings to the east, and 22nd Street to the south. A cleaners and auto body and paint shop are present immediately south of 22nd Street adjacent to the Site. Located across Market Street, to the west, is the Burke Property, which is currently an open leaking UST case, ACEH Case #RO0002514 / GeoTracker Global ID No.T06019749466. A former dry cleaner and auto repair facility with three associated USTs previously operated on the property.

1.2 Site Background

The Site has operated as a gasoline fueling station since the environmental case was open in 1991. The Site is likely to remain a service station for the foreseeable future. A detailed history of previous Site activities is presented in Appendix A. Historic soil and groundwater data are presented in Appendix B. Copies of available soil boring and monitoring well construction logs and geologic cross-sections are provided in Appendix C. Remediation system data is provided in Appendix D.

1.3 Document Purpose and Organization

The purpose of this document is to summarize and present current Site conditions in the form of a CSM and evaluate these conditions and data gathered for Site closure based on the LTCP. The following section presents justification for closure based on the CSM. The CSM is presented as Table 1. Tables 2 and 3 present historical and current groundwater analytical data. Table 4 summarizes historical and current groundwater gradients. Table 5 summarizes laboratory analytical results for post-remediation verification soil boring samples

In order to evaluate Site conditions against the LTCP, each category in the policy has been individually evaluated using the data presented in the CSM (Table 1). These evaluations are presented in the following sections.

2.0 JUSTIFICATION FOR SITE CLOSURE

As indicated in Section 1.3 above, the Site was evaluated for Closure based on comparing data presented in the CSM (Table 1) against the LTCP (CSWRCB, 2012). Closure criteria in the LTCP are organized into the following categories:

- General Criteria
- Media Specific Criteria-Groundwater
- Media Specific Criteria – Petroleum Vapor Intrusion to Indoor Air
- Media Specific Criteria – Direct Contact and Outdoor Air Exposure

The following sections present the details of the evaluation.

2.1 General Criteria

The general criteria relates to the Site use, presence of free product, petroleum sources, and completeness of the Site understanding. As evidenced in the data presented in the CSM, a sufficiently good understanding of Site conditions, on- and offsite receptors, and Site history has been established. These general criteria and a discussion on how the Site is consistent with these criteria are presented below.

The unauthorized release is located within the service area of a public water system
The Site is located within the East Bay Municipal Utility District service area.

The unauthorized release consists only of petroleum
The release at the Site occurred in the area of the former UST basin and near the dispensers. Additionally, all analytical data collected to date has shown no indication of any other contaminant releases other than petroleum (Table 2, Table 3, and Appendix A). The Site has been a retail service station since at least 1977 based on a review of historical aerial photographs and there is no evidence that any other activities have occurred at the Site which may have caused non-petroleum releases.

The unauthorized release has been stopped

The USTs, product piping, and product dispensers where the releases occurred have been removed and replaced; thereby, removing the leak sources (Table 1; Appendix A).

Free product has been removed to the maximum extent practicable

Free product has not been measured in Site wells since 1995. As free product has not been observed for 20 years, removal of the free product has been completed to the maximum extent practicable.

A conceptual site model (CSM) that assesses the nature, extent, and mobility of the release has been developed

A CSM has been prepared for this Site and is presented as Table 1.

Secondary source has been removed to the extent practical

Soils around the former UST complex, dispensers and product piping have been over-excavated. Approximately 2,196 cubic tons of petroleum impacted soil were over-excavated and disposed of offsite in 1992 (Table 1; Roux, 1992). Additionally, approximately 9,151 pounds of hydrocarbons were removed from the soil and groundwater on-site during operation of soil vapor extraction and air sparging remediation system between 1994 and 2001 (Appendix D).

Soil and groundwater have been tested for MTBE and results reported in accordance with Health and Safety Code 25296.15

Soil and groundwater samples collected have been analyzed for methyl tert-butyl ether (MTBE). Historical MTBE analytical data are included in Tables 2 and 3 and Appendix B.

Nuisance as defined by the Water Code section 13050 does not exist at this site

A nuisance as defined by the water code does not exist at this Site.

2.2 Media-Specific Criteria - Groundwater

The LTCP lists four scenarios for groundwater plumes. According to the petroleum plume sizes indicated in Drawings 5, 7 and 8, the plume is less than 100 feet in length. Current hydrocarbon concentrations do not exceed the maximum levels listed within the LTCP. Free product has not been observed at the Site since 1995. A previous sensitive receptor survey indicated that no domestic or water supply wells were located within a ½ mile radius of the Site, as presented in the CSM (Table 1). The closest surface water is Glen Echo Creek, located approximately 0.85 miles east of the Site (Table 1). Based on these criteria, the Site is eligible for closure under the LTCP groundwater category 1.

2.3 Media Specific Criteria – Petroleum Vapor Intrusion to Indoor Air

The Site is an active service station, and therefore the LTCP considers that petroleum vapors from onsite fueling activities are a far greater risk than those associated with exposure to vapors from historic petroleum releases. Concentrations above cleanup levels do not extend beyond the property boundaries. There are no vapor intrusion risks to offsite buildings. This Site data meets the criteria for closure according to the LTCP.

2.4 Media Specific Criteria – Direct Contact and Outdoor Air Exposure

Two soil borings (SB-1 and SB-2) were advanced at the Site in 2010 prior to Site raze and rebuild activities and soil samples were collected from each boring adjacent to the former UST complex (Table 5). Shallow soil samples collected during this investigation between approximately 8 and 9.5 feet bgs did not contain benzene, and ethylbenzene was only observed in the sample collected from SB-2 at a concentration of 0.0025 mg/kg. However, no samples above eight feet bgs were collected during this investigation. The most representative soil samples collected from 0 to 5 feet bgs were collected in 1992 during UST and piping/dispenser replacement activities. During these activities, the highest concentrations of benzene and ethylbenzene detected in confirmation soil samples at 3.0 feet bgs were 2.2 mg/kg and 2.2 mg/kg, respectively. These concentrations are well below the values listed in Table 1 of the LTCP. Table A below summarizes these results. Locations of the soil samples collected, as well as further historical data, are presented in Appendix B.

Table A: Representative Maximum Concentrations of Benzene and Ethylbenzene in Soil Samples - 0 to 5 feet bgs and 5 to 10 feet bgs

Sample Identification and Depth	Sample Date	Benzene (mg/kg)	Ethylbenzene (mg/kg)
SB-1 @ 8-9.5’	6/17/2010	<0.0010	0.0010
SB-2 @ 8-9.5’	6/17/2010	<0.0010	0.0025
Line-4 @ 3.0’	2/19/1992	2.2	2.2
LTCP Maximum* - 0-5/5-10 feet bgs		8.2/12	89/134

*Under a commercial/industrial exposure setting
mg/kg = milligrams per kilogram

Soil samples collected from 1992 and 2010 (mentioned above) were not analyzed for naphthalene or poly-aromatic hydrocarbons (PAHs). Naphthalene has not been included in the analysis of past soil samples collected at the site. This apparent data gap can be addressed using the published relative concentrations of naphthalene and benzene in gasoline. This approach has been used by State Water Board staff in recent Closure Orders pursuant to the Policy (e.g., SWB WQ Order 2013-0003): Gasoline mixtures contain an average of approximately 2 percent benzene and 0.25 percent naphthalene (Potter and Simmons 1998); therefore, benzene concentrations can be directly substituted for naphthalene concentrations with a safety factor of about 10. The maximum benzene concentrations from the Site are less than the naphthalene criteria in Table 1 of the Policy. Therefore, the estimated naphthalene

concentrations at the Site meet the Policy criteria for direct contact by a factor of about 10. It is highly unlikely that naphthalene concentrations in the soil, if any, exceed the Policy criteria. Based on the data presented herein and in Appendix B, remaining petroleum concentrations in soil appear to be within acceptable levels for closure under the LTCP.

2.5 Recommendation for Case Closure

As presented above and in the attached CSM table (Table 1), this Site appears to meet all applicable criteria for case closure under the LTCP. Over 20 years of groundwater monitoring data and effective remedial efforts have shown that petroleum hydrocarbons exhibit a stable-to-decreasing trend at the Site. Adequate Site characterization both on- and off-Site, evaluation of receptors, historical descriptions, and technical analysis have been performed at the Site and in this document to support a recommendation for case closure. We hereby recommend that a determination of No Further Action be made for this Site. Upon concurrence of this recommendation from the ACEH, closure activities including well decommissioning should be carried out.

3.0 LIMITATIONS

This document has been prepared for the exclusive use of Atlantic Richfield Company. The findings presented in this report are based upon the observations of previous consultants' field personnel, points of investigation and results of laboratory tests. Services were performed in accordance with the generally accepted standard of practice at the time this report was written. No warranty, expressed or implied, is intended. It is possible that variations in the soil or ground-water conditions could exist beyond the points explored in this investigation. Also, changes in site conditions could occur at some time in the future due to variations in rainfall, temperature, regional water usage or other factors.

4.0 REFERENCES

Alameda County Environmental Health Services, 25 May 2010. RE: Raze and Rebuild at ARCO #2169 / ACEH Case #RO72. Email reply from Mr. Paresh Khatri (ACEH) to Mr. Tom Venus (BAI).

Alameda County Environmental Health Services, 6 April 2012. Notice of Enforcement Referral; Fuel Leak Case No. RO00002514 and GeoTracker Global ID T06019749466; Burke Property, 949 W. Grand Ave., Oakland, CA 94607

Broadbent & Associates, Inc., April 6, 2009. Preferential Pathway Evaluation and Soil & Ground-Water Investigation Work Plan, Atlantic Richfield Company (A BP affiliated company) Station No. 2169, 889 West Grand Avenue, Oakland, California.

Broadbent & Associates, Inc., September 24, 2010. Soil & Ground-Water Investigation with Well Abandonment Report. Atlantic Richfield Company Station No. 2169, 889 West Grand Avenue, Oakland, California.

Broadbent & Associates, Inc., October 25, 2013. Third Quarter 2013 Monitoring Report. Atlantic Richfield Company Station #2169, 889 West Grand Avenue, Oakland, California ACEH Case #RO000007.

California Regional Water Quality Control Board, San Francisco Bay Region, Groundwater Committee, June 1999. East Bay Plain Groundwater Basin Beneficial Use Evaluation Report, Alameda County and Contra Costa Counties, CA.

California Regional Water Quality Control Board, San Francisco Bay Region, November 2007 (Revised May 2008; ESL Workbook updated February 2013). Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater.

GeoStrategies, Inc., June 30, 1992. Well Installation Report, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.
GeoStrategies, Inc., November 24, 1992. Continuing Site Assessment/Quarterly Monitoring Report, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.

GeoStrategies, Inc., April 9, 1993. Quarterly Monitoring/Well Installation Report, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.

GeoStrategies, Inc., May 6, 1994. Additional Subsurface Investigation and Remedial Action Plan, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.

GeoStrategies, Inc., September 27, 1994. Letter Report Vapor Extraction Start Up and Quarterly Ground-Water Monitoring Second Quarter 1994, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.

Gettler-Ryan, Inc., July 1, 1991. Preliminary Tank Replacement Report, ARCO Service Station No. 2169, 889 West Grand Avenue, Oakland, California.

Potter, T.L. and K.E. Simmons, 1998. Composition of Petroleum Mixtures. TPHCWG Series, Vol. 2 Amherst Scientific Publishers, MA.

ROUX Associates, 14 July 1992. Underground Storage Tank Removal and Soil Sampling, ARCO Facility No. 2169, 889 West Grand Avenue, Oakland, California.

State Water Resources Control Board, 2012. Low-Threat Underground Storage Tank Case Closure Policy, August 17.

DRAWINGS

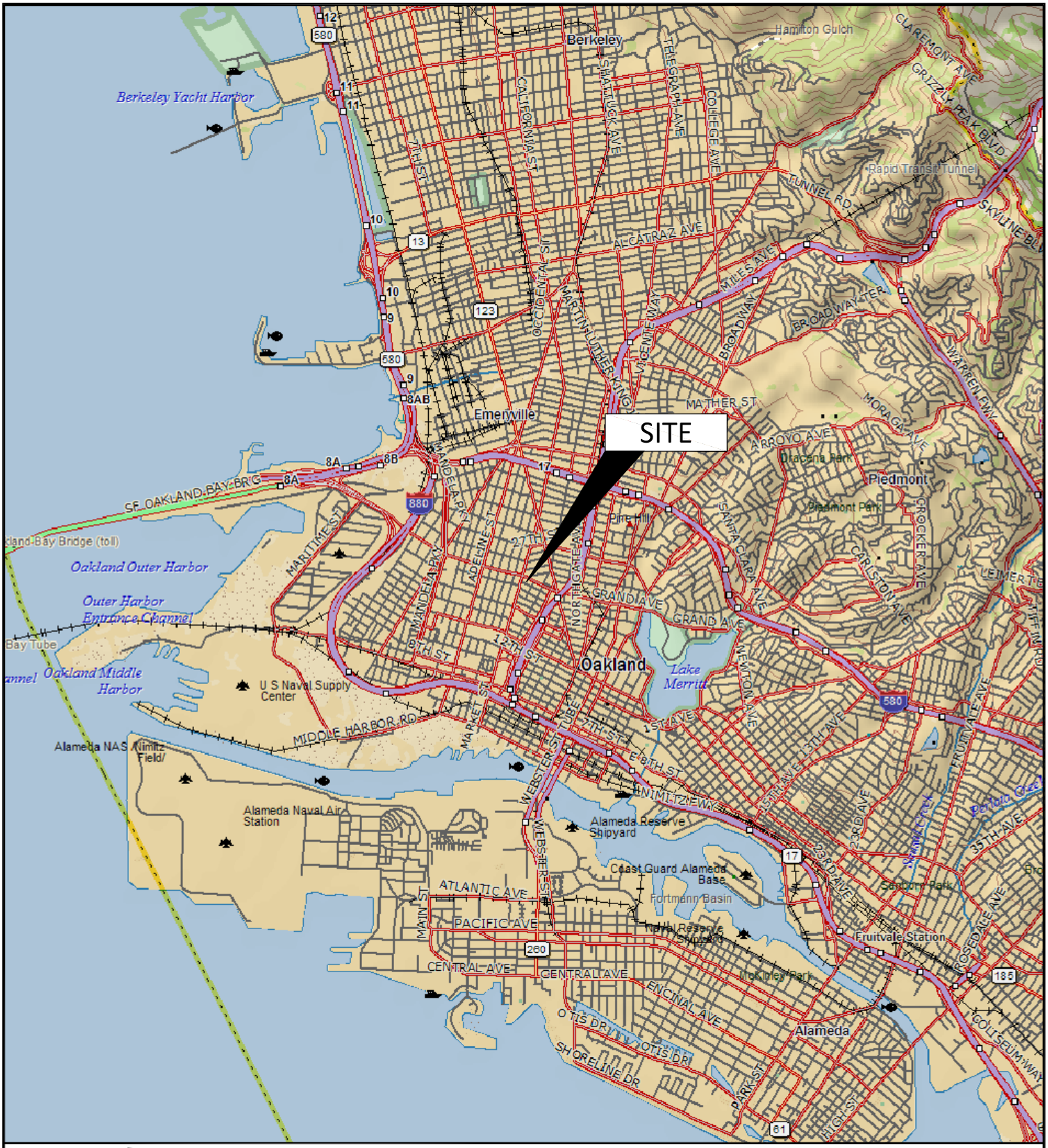


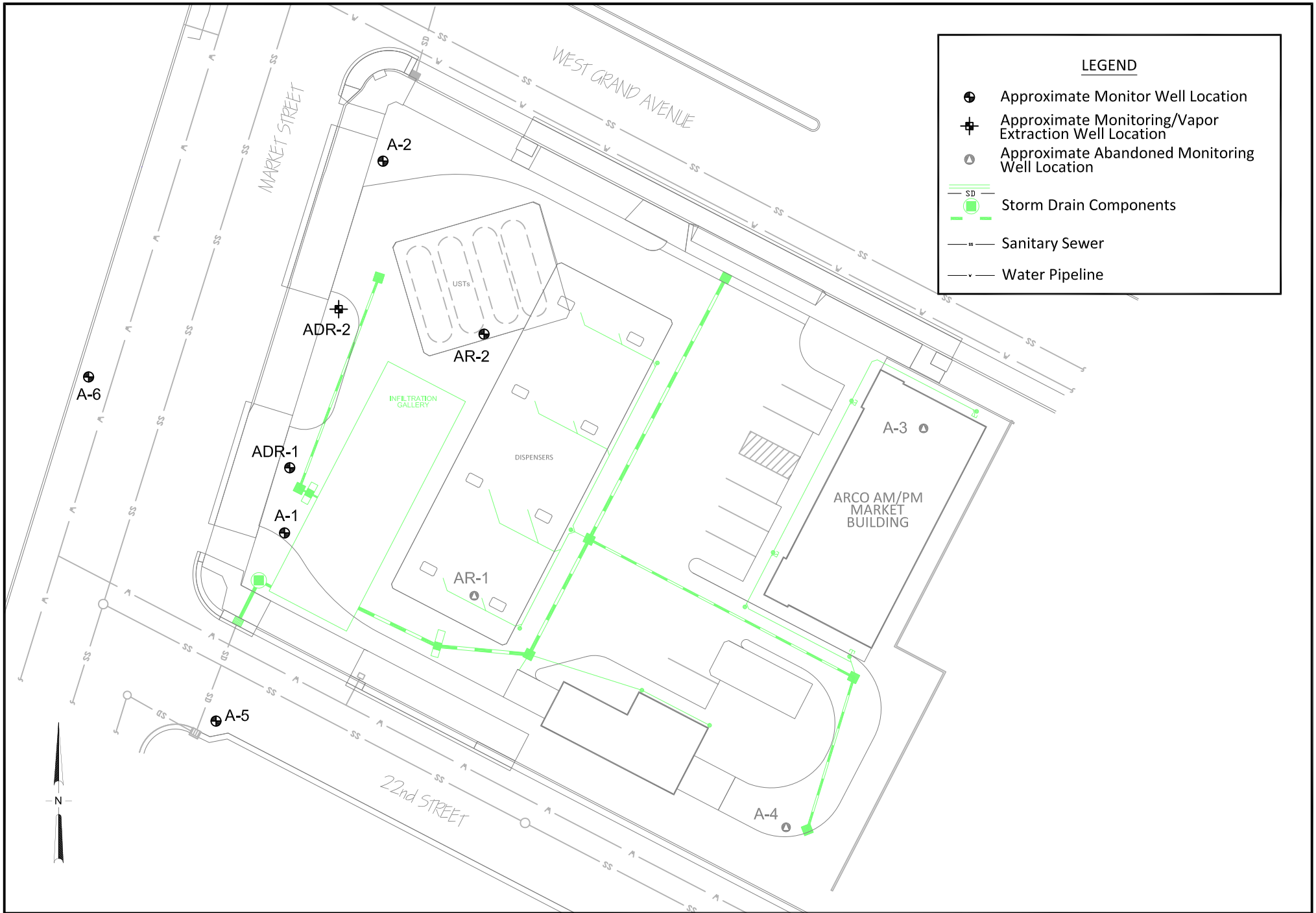
IMAGE SOURCE: DELORME

BROADBENT
1324 Mangrove Ave., Suite 212
Chico, California 95926
Project No.: 06-88-621 Date: 4/17/2013

ARCO Station #2169
889 West Grand Avenue
Oakland, California

Site Location Map

Drawing
1



0 40 80

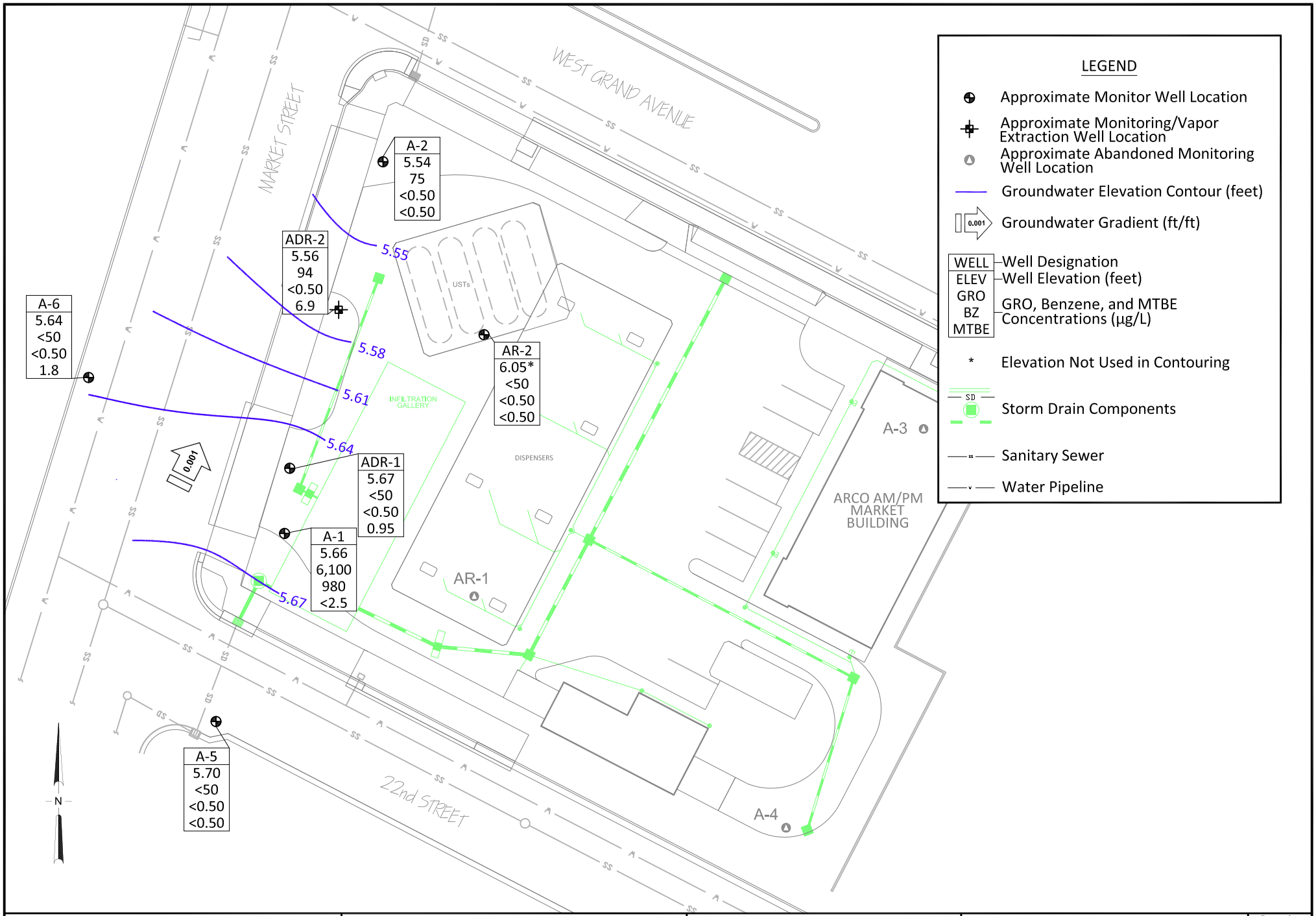
SCALE (ft)

BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-621 Date: 12/18/2013

ARCO Station #2169
889 West Grand Avenue
Oakland, California

Site Map

Drawing
2



0 40 80

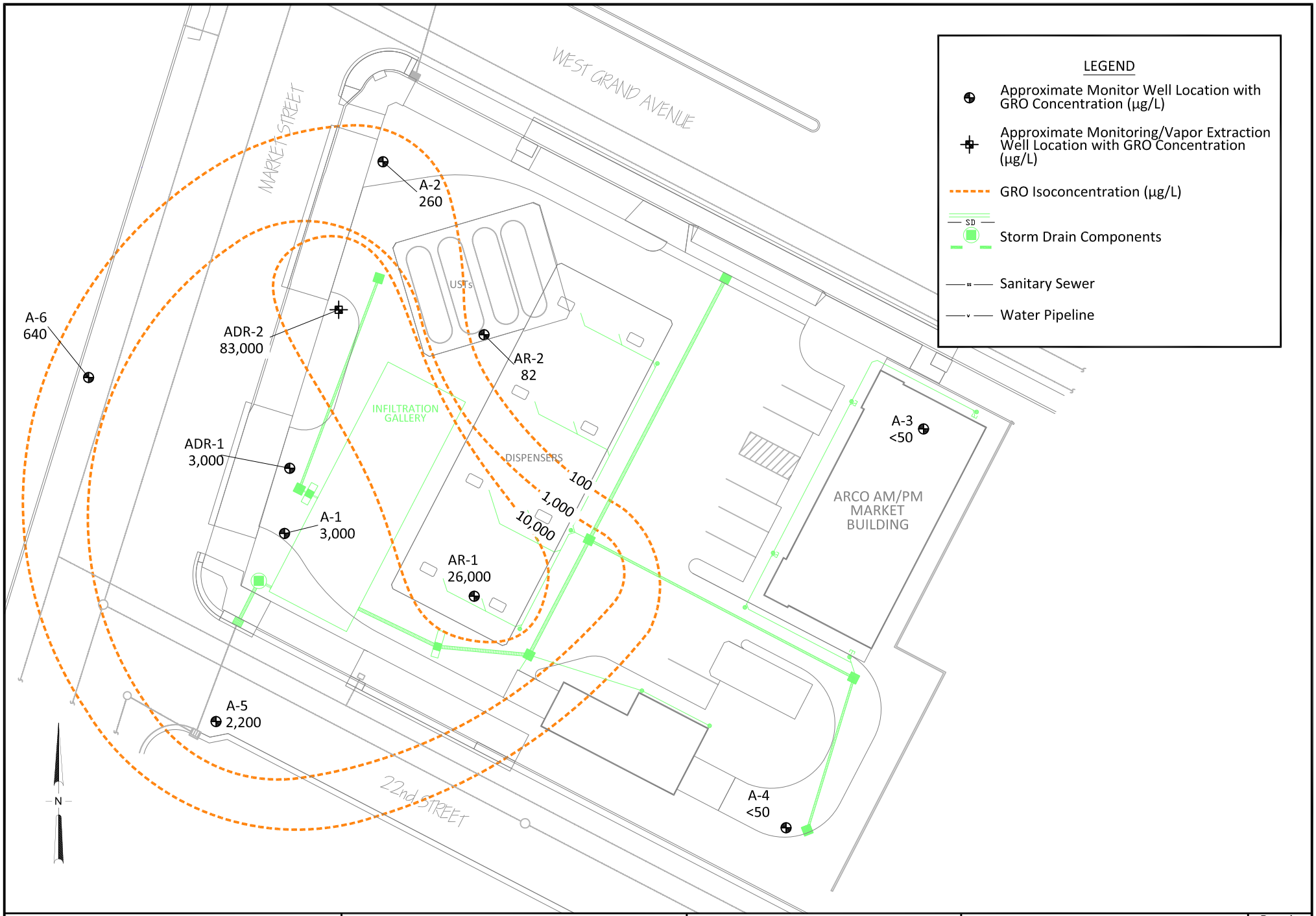
SCALE (ft)

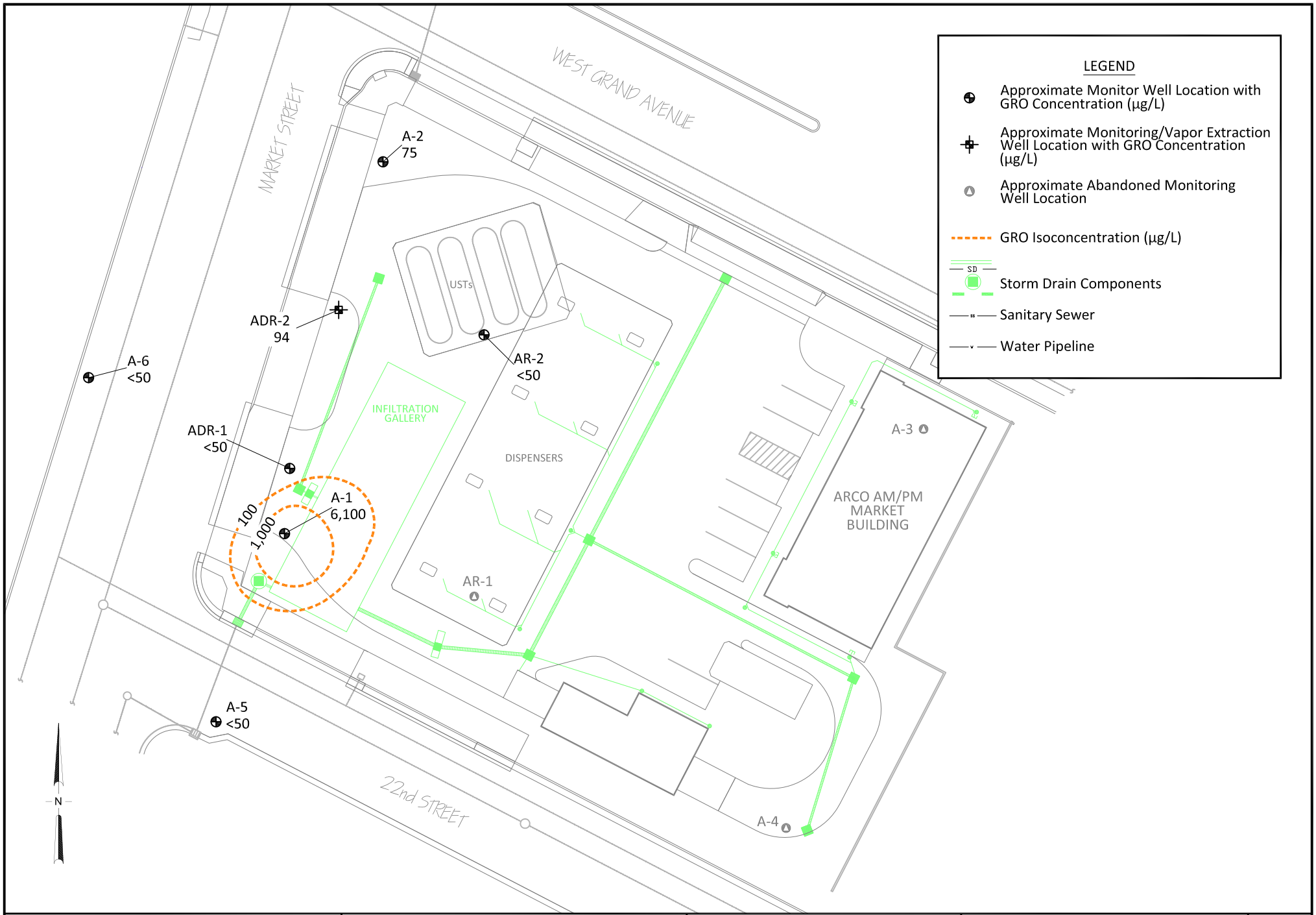
BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-621 Date: 12/18/2013

ARCO Station #2169
889 West Grand Avenue
Oakland, California

Groundwater Elevation Contours and Analytical Summary Map
August 8, 2013

Drawing
3


LEGEND
Approximate Monitor Well Location with GRO Concentration (µg/L)
Approximate Monitoring/Vapor Extraction Well Location with GRO Concentration (µg/L)
GRO Isoconcentration (µg/L)
SD
Storm Drain Components
Sanitary Sewer
Water Pipeline
WEST GRAND AVENUE
MARKET STREET
22nd STREET
A-2
260
A-6
640
ADR-2
83,000
AR-2
82
USTs
INFILTRATION GALLERY
DISPENSERS
ADR-1
3,000
A-1
3,000
AR-1
26,000
100
1,000
10,000
A-3
<50
ARCO AM/PM MARKET BUILDING
A-5
2,200
A-4
<50
N
0
40
80
SCALE (ft)
BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-621 Date: 3/6/2014
ARCO Station #2169
889 West Grand Avenue
Oakland, California
GRO Isoconcentration Contour Map
February 1994
Drawing
4



0 40 80

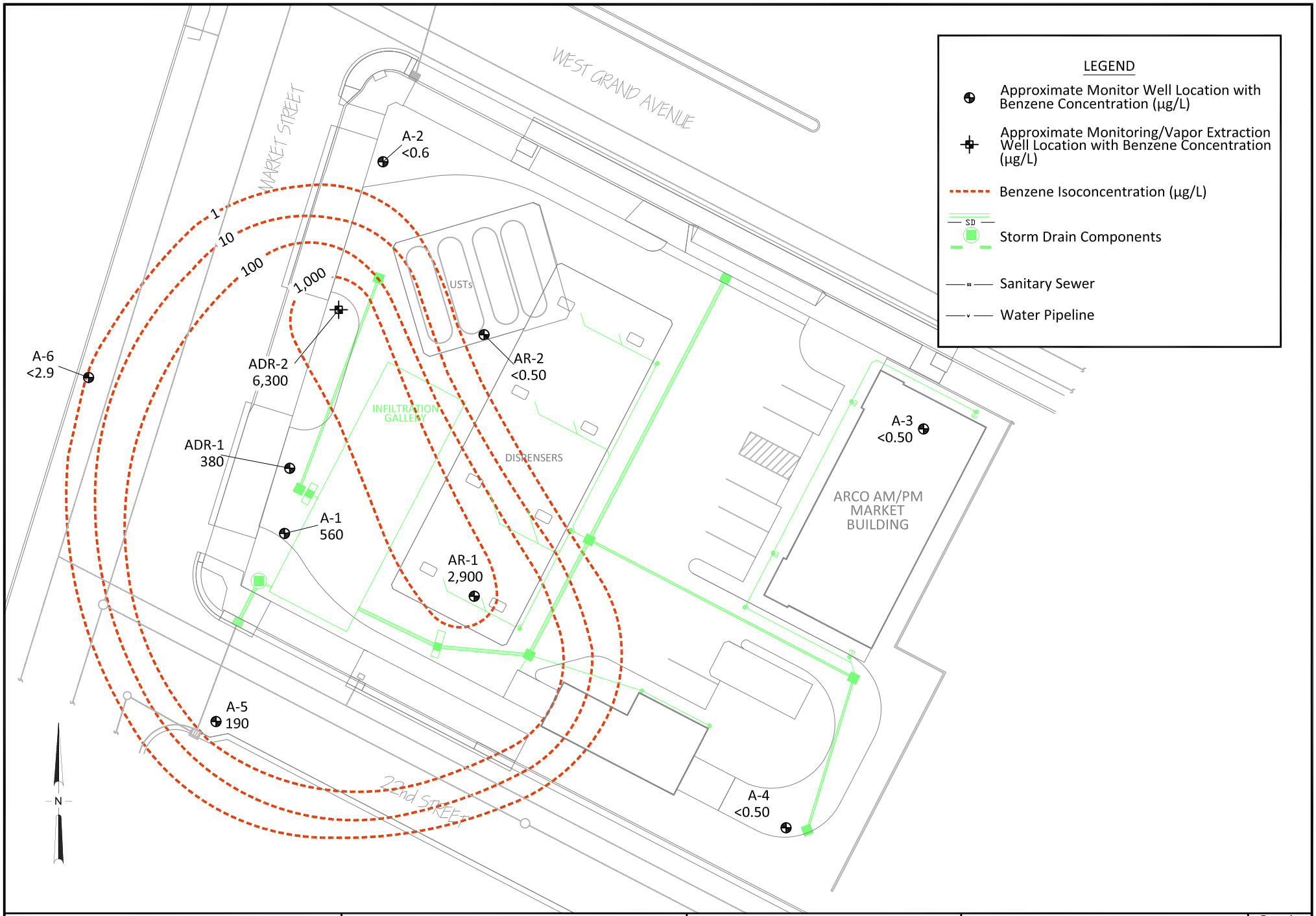
SCALE (ft)

BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-621 Date: 3/6/2014

ARCO Station #2169
889 West Grand Avenue
Oakland, California

GRO Isoconcentration Contour Map
August 2013

Drawing
5



0 40 80

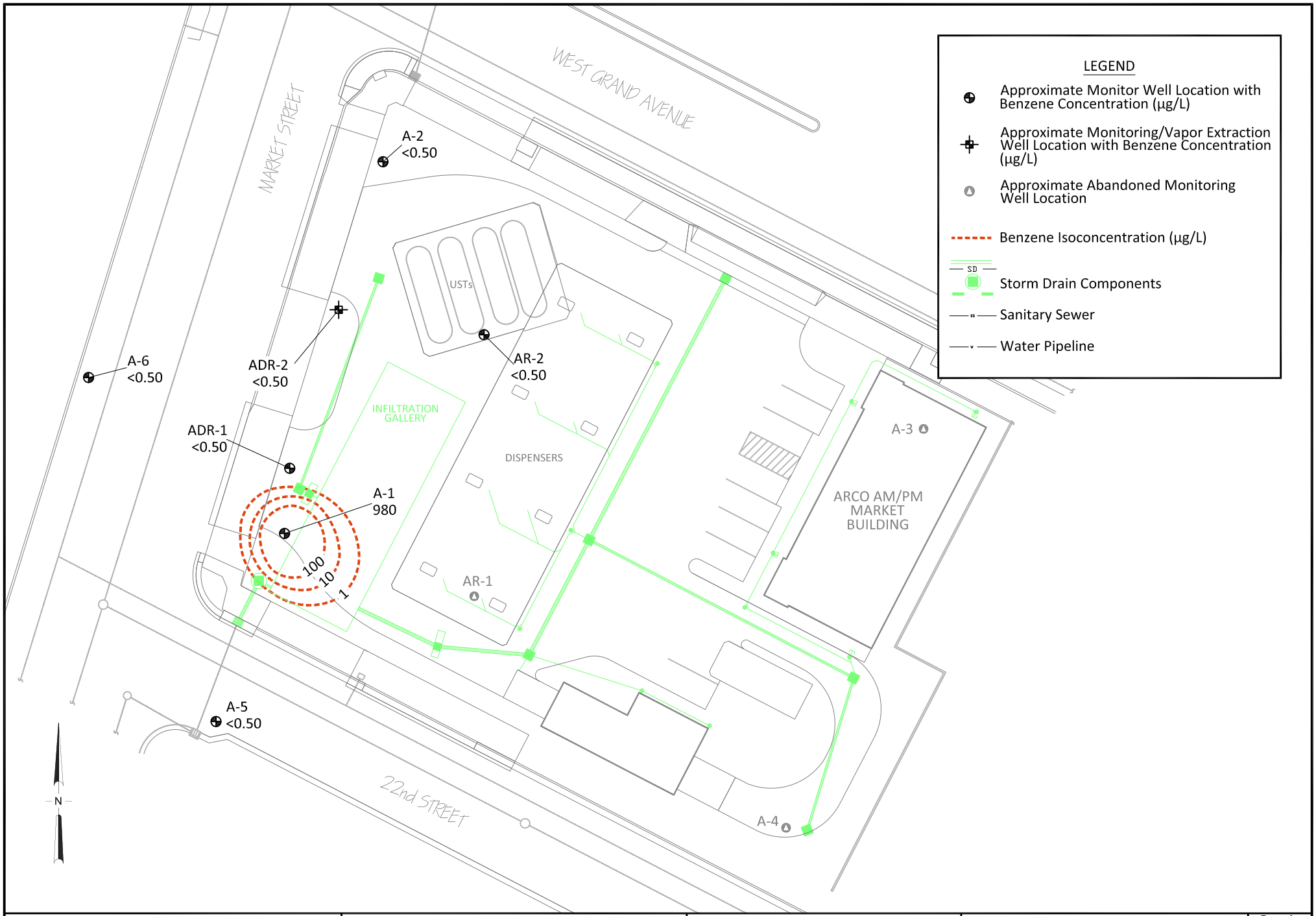
SCALE (ft)

BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-621 Date: 3/6/2014

ARCO Station #2169
889 West Grand Avenue
Oakland, California

Benzene Isoconcentration Contour Map
February 1994

Drawing
6



0 40 80

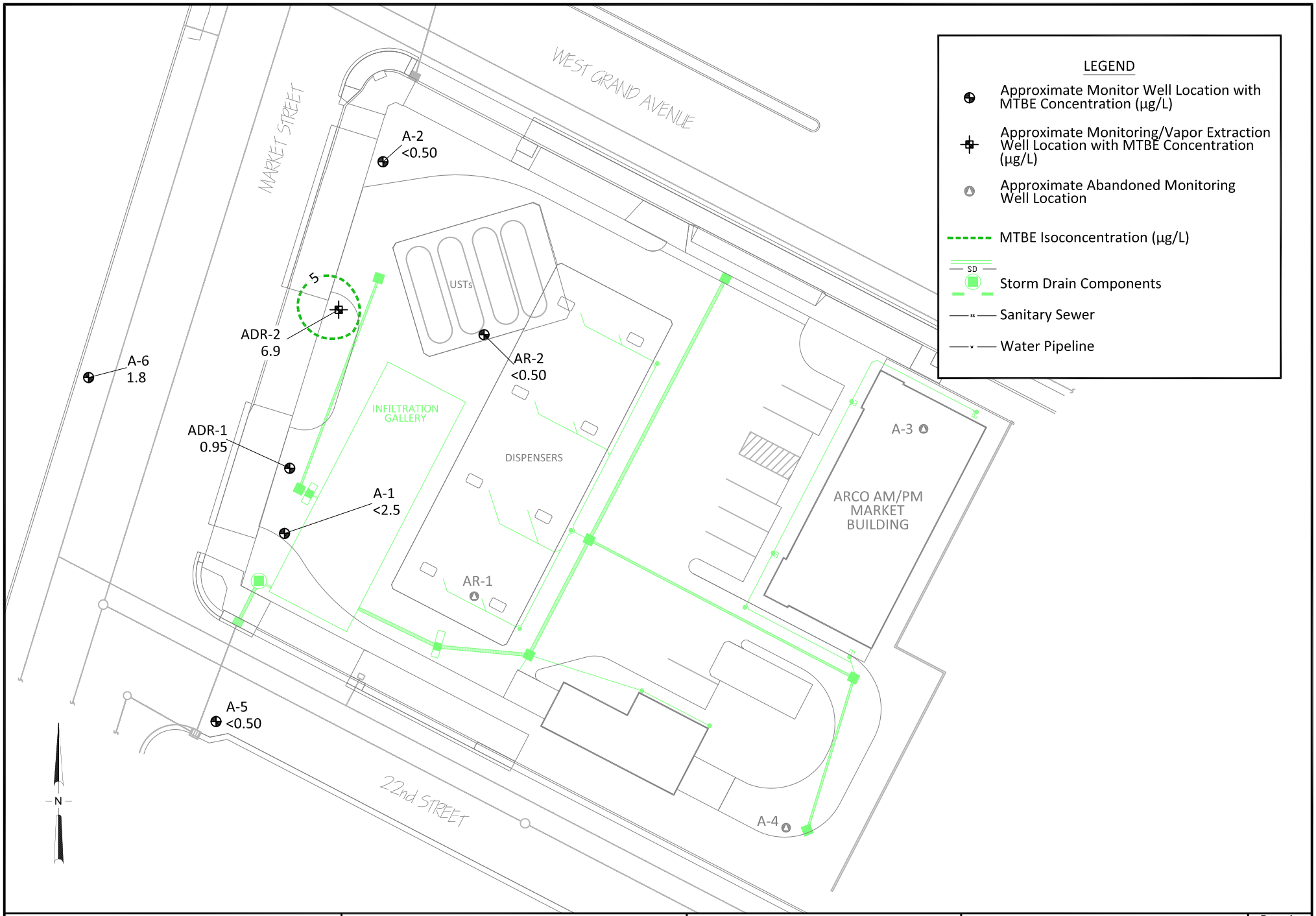
SCALE (ft)

BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-621 Date: 3/6/2014

ARCO Station #2169
889 West Grand Avenue
Oakland, California

Benzene Isoconcentration Contour Map
August 2013

Drawing
7



0 40 80

SCALE (ft)

BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973
Project No.: 06-88-621 Date: 3/6/2014

ARCO Station #2169
889 West Grand Avenue
Oakland, California

MTBE Isoconcentration Contour Map
August 2013

Drawing
8

TABLES

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology	Regional	According to the East Bay Plain Groundwater Basin Beneficial Use Evaluation Report (California Regional Water Quality Control Board – San Francisco Bay Region/SFRWQCB, June 1999), the Site is located within the Oakland Sub-Area of the East Bay Plain of the San Francisco Basin. The Oakland Sub-Area contains a sequence of alluvial fans. The alluvial fill thickness ranges from 300 to 700 feet deep. There are no well-defined aquitards such as estuarine muds. The largest and deepest wells in this sub-area historically pumped one to two million gallons per day at depths greater than 200 feet. Overall, sustainable yields are low due in part to low recharge potential. The Merrit sand in West Oakland was an important part of the early water supply for the City of Oakland. It is shallow (up to 60 feet), but before the turn of the last century, septic systems contaminated the water supply wells. Throughout most of the Alameda County portion of the East Bay Plain, from Hayward north to Albany, water level contours show that the general direction of groundwater flow is from east to west or from the Hayward Fault to the San Francisco Bay. Groundwater flow direction generally correlates to topography. Flow direction and velocity are also influenced by buried stream channels that typically are oriented in an east to west direction. In the southern end of the study area however, near the San Lorenzo Sub-Area, the direction of flow may not be this simple. According to information presented in East Bay Plain Groundwater Basin Beneficial Use Evaluation Report, the small set of water level measurements available seemed to show that the groundwater in the upper aquifers may be flowing south, with the deeper aquifers, the Alameda Formation, moving north. The nearest natural drainage is Glen Echo Creek, located approximately 0.85 miles east of the Site. Glen Echo Creek flows generally north to south near the Site vicinity. Drawing 1 depicts the Site Location.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology	Site	The Site elevation is approximately 18 feet above mean sea level. The water table fluctuates seasonally. Historically, depth-to-water measurements have ranged from approximately 7 to 13 feet bgs. Historically (since 2000), the groundwater flow direction has ranged from a southerly direction moving clockwise to a northerly direction with the predominant groundwater flow direction toward the northwest. Since the decommissioning of three groundwater wells in June 2010 flow direction has shifted to the northeast which may not represent an actual change in site conditions, but rather a shift due to lack of water level data from the eastern portion of the Site. Soils encountered underlying the Site consisted primarily of silty to sandy clay, silt, and clayey to gravelly sand to the total explored depth of approximately 30 feet bgs. A stratum of silty to sandy clay, which may act as a local aquitard, was encountered in several borings beneath the water bearing zone at depths ranging from approximately 21 to 28 feet bgs. Cross-sections within Appendix B illustrate subsurface conditions. Drawing 2 depicts the Site Map with Historical Soil Boring Locations. Drawing 3 depicts the water level contours from the most recent monitoring and sampling event (3Q2013) on the current site map following reconstruction of the Site in 2010.	None	NA
Surface Water Bodies		The nearest natural drainage is Glen Echo Creek, located approximately 0.85 miles east of the Site. Glen Echo Creek flows generally north to south near the Site vicinity and is the main tributary into Lake Merritt's western finger. Lake Merrit, located approximately 1 mile east-southeast of the Site, is a natural lake fed mainly by the Oakland inner harbor to the south. Storm drains from downtown Oakland and surrounding areas drain directly into the lake. Its banks are fully developed.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Nearby Wells		Well logs were requested from the California Department of Water Resources (DWR) in January 2009 in order to identify the presence of water wells within a ½ mile radius of the Site. Based on a review of well completion reports furnished by the DWR, no domestic or municipal wells were located within the ½ mile search radius.	None	NA
Constituents of Concern	Light-Non Aqueous Phase Liquids (LNAPL)	LNAPL was first detected at onsite wells ADR-1 and ADR-2 in 1994. The approximate maximum thickness of LNAPL in well ADR-2 was greater than three feet observed in March and June of 1995. A measureable amount of LNAPL was only observed once at ADR-1 in March of 1994. Free product has not been detected in ADR-1 or any other Site wells since December 1995. The observance of LNAPL appears to have been an isolated incident and does not correlate with an historic high or low water level. The geology observed during installation of both ADR-1 and ADR-2 is comparable to other on-site wells. The one slight difference between these two wells and others on-site pertains to their well screen intervals, which extend higher than other wells (five feet bgs). However, since the depth to water at the time LNAPL was observed ranged from approximately eight feet bgs to approximately 12 feet bgs, the higher screen interval would not have been a factor in the appearance of LNAPL. Free product has not been detected in ADR-1 or any other Site wells since December 1995, at a time prior to cessation of active remediation.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Constituents of Concern	Gasoline Range Organics (GRO)	Concentrations of GRO have historically been detected in 8 of the 10 monitoring wells (A-1, A-2, A-5, A-6, ADR-1, ADR-2, AR-1, and AR-2). Concentrations of GRO were below laboratory detection limits in wells A-5, A-6, ADR-1 and AR-2 during the Third Quarter 2013. These wells delineate the GRO plume to the east (A-3) and to the southeast (A-4). Concentrations at offsite well A-5 to the southwest of the Site have exhibited a significant decline from the historical high in 2009 of 39,000 µg/l (the maximum concentration detected site-wide) to below the laboratory reporting limit of 0.5 µg/l in the Third Quarter 2013. Wells delineating the extent of GRO concentrations to the west (A-6) and to the north (A-2) have exhibited intermittent detections of concentrations historically. Drawings 4 and 5 present isoconcentration contours for the groundwater monitoring and sampling event after all site wells were installed in 1994 and the most recent groundwater monitoring and sampling event (3Q2013), respectively. The GRO plume concentration has decreased by an order of magnitude since investigations in 1994 and current detections above laboratory reporting limits are limited to onsite wells. GRO concentration trend graphs for select wells are depicted on Figure 1. With the exception of an increase in concentration starting in 2007 in offsite well A-5 and onsite well A-1, these graphs show a strong decreasing trend for GRO in all Site wells. The direction of groundwater flow was north-northwest at the time this increase in GRO concentration was observed primarily in offsite well A-5 to the south of the Site, and to a much lesser extent in well A-1 and a slight increase in well ADR-1 further to the north. This may be indicative of offsite contamination to the south migrating downgradient (north) and depleting with distance. The possibility of an offsite secondary source impacting well A-5 was also discussed by GSI in 1993. This increase was not initially observed as far north as onsite well ADR-2. By the third quarter 2009, the concentrations dropped to below or near concentrations prior to the initial increase in all three wells. However, the GRO concentration in onsite well A-1 was most recently (3Q2013) greater than concentrations prior to the 2007 increase. An evaluation of the well construction details, geology, and	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Constituents of Concern (Cont.)	GRO (Cont.)	groundwater elevations associated with wells A-1 and A-5 did not lead to an explanation for the concentration spikes observed in these two wells between approximately 2007 and 2009, but as a result of the review, the data are considered valid. Additionally, an evaluation of the GRO concentrations within A-1 versus ADR-1, which is located approximately 20 ft downgradient of A-1, was conducted to determine a possible explanation for the disparity between the elevated GRO concentrations observed in A-1 compared with non-detect values in ADR-1. As with the previous discussion for A-1 and A-5, an evaluation of well construction details, geology, and groundwater elevations did not provide a clear explanation for the difference. However, as a result of the review, the data are considered valid. Table 2 lists historical groundwater analytical results from 2000 to present. Historic groundwater analytical data is provided in Appendix B.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Constituents of Concern	Benzene	Concentrations of benzene have historically been detected in 7 of the 10 monitoring wells (A-1, A-5, A-6, ADR-1, ADR-2, AR-1, and AR-2). Concentrations of benzene in wells A-2, A-5, A-6, AR-2, ADR-1 and ADR-2 were below the laboratory reporting limit in the Third Quarter 2013 monitoring event. The only detection for benzene in Third Quarter 2013 was observed in well A-1 at a concentration of 980 µg/l (a decline from the maximum concentration of 2,400 µg/l observed in September 2000). Drawings 6 and 7 present isoconcentration contours for the groundwater monitoring and sampling event after all site wells were installed in 1994 and the most recent groundwater monitoring and sampling event (3Q2013), respectively. The benzene plume concentration has decreased an order of magnitude and appears to be localized onsite. Benzene concentration trend graphs for select wells are depicted on Figure 2. Similar to GRO concentrations, the increase in late 2006-early 2007 is observed in benzene concentrations at offsite well A-5 initially, which may be due to a secondary offsite source as previously discussed by GSI in 1993, then later at onsite wells A-1 and ADR-1 to a much lesser extent. The most recent concentration of benzene at well A-1 is above the concentration detected prior to the 2007 increase at this well. However, benzene concentrations at all other wells have declined to below laboratory reporting limits. Again, it is unclear as to what caused the concentration spikes observed between approximately 2007 and 2009 aside from a potential off-site source. However, Benzene appears to be isolated within the vicinity of A-1, as concentrations in wells located to the north, east, south, and west are below laboratory reporting limits. Groundwater analytical data from 2000 to present are provided in Table 2. Historical groundwater analytical data is provided in Appendix B.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Constituents of Concern	MTBE	Methyl tert butyl ether (MTBE) has been historically detected in 7 of the 10 monitoring wells (A-1, A-2, A-6, ADR-1, ADR-2, AR-1 and AR-2). Concentrations of MTBE were below the laboratory reporting limit in all wells associated with the Site during the Third Quarter 2013 with the exception of A-6, ADR-1 and ADR-2, in which concentrations were slightly above the laboratory reporting limit at 1.8 µg/l, 0.95 µg/l, and 6.9 µg/l, respectively. MTBE was not sampled during the initial investigations so no comparison can be made to pre-remediation events. However, Drawing 8 presents isoconcentration contours for the most recent groundwater monitoring and sampling event (3Q2013). MTBE concentration trend graphs for select wells are depicted on Figure 3. These graphs show a strong decreasing trend for MTBE for all Site wells with the exception of an anomalously high concentration detected at well ADR-2 in the Third Quarter 2012 of 320 µg/l, an historical maximum concentration for this well. In Third quarter 2012 the sampling procedure was altered to include manual bailing of three casing volumes prior to sampling. Since then, low-flow sampling using a peristaltic pump has been adopted site-wide and the concentration of MTBE at ADR-2 was 6.9 µg/l during the Third Quarter 2013. The concentration increase may be associated with this change in sampling procedure, however, it appears to be anomalous and does not warrant additional sampling or investigation at this time if concentrations continue to be consistent with historically low values in subsequent semi-annual sampling events. Tables 2 provides groundwater analytical data from 2000 to present. Historical groundwater analytical data is provided in Appendix B.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Potential Sources	Onsite	The exact release source and volume released at the Site is unknown. However, in May 1991, Gettler-Ryan advanced four soil borings near four UST tanks on the southern portion of the property near 22nd street during a preliminary soil investigation prior to UST replacement and detected GRO, DRO, and BTEX. In February and March of 1992, four UST tanks (the primary source) were removed and subsequently replaced. Additional soil sampling during excavation activities confirmed that petroleum hydrocarbons had impacted soil in the former tank complex vicinity to a depth of 12 feet bgs. This impacted area was excavated, removing the secondary source to the extent practical. However, residual GRO and DRO was detected in soil beneath the excavated areas as documented in the Work Plan for Additional Subsurface Investigation and Evaluation of Remedial Alternatives at ARCO Station 2169 (GeoStrategies, 1993).An unknown amount of residual petroleum hydrocarbon contamination has remained within the soil matrix in this area and has potentially contributed to groundwater contamination onsite both at the source area and downgradient. Groundwater flow direction has been historically variable, potentially contributing to the equilateral distribution of groundwater contamination from the source area. However, residual petroleum hydrocarbons have declined in concentrations both on- and off-site by an order of magnitude or greater, exhibiting degradation over time and a lessening impact to groundwater concentrations (Drawings 4 through 8; Figures 1 through 3). The Site is an active service station. Current USTs and dispensers are present. Data presented herein does not indicate that an ongoing hydrocarbon release is occurring. With the exception of the anomalous high of MTBE at ADR-2 previously discussed, hydrocarbon concentrations have exhibited generally declining trends since historical maximum concentrations were detected in the early 1990's.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Potential Sources	Offsite	The increase in concentration of GRO and benzene in late 2006-early 2007 initially detected in offsite well A-5 to the south of the site boundary appears to be indicative of a potential offsite source of contamination, as first suggested by GSI in September 1993. Further investigation into this area just south and west of the Site was proposed to aid in determining potential petroleum hydrocarbon sources and migration. The four offsite borings proposed in the Preferential Pathway Evaluation and Soil & Groundwater Investigation Work Plan (Broadbent, 2009) were not able to be installed due to the lack of cooperation regarding access from offsite property owners at 949 West Grand Avenue and 885 22nd Street as referenced in the Soil & Ground-Water Investigation with Well Abandonment Report (Broadbent, 2010). An increase in petroleum hydrocarbon concentrations in groundwater were observed in offsite well A-5 from late 2006 throμgh 2009. As of April 6, 2012, ACEH referred the site immediately west of BP 2169 at 925 - 949 West Grand Avenue (Geotracker T06019749466) to the San Francisco Bay Regional Water Quality Control Board for enforcement actions. Well A-6 is adjacent to this property and the GRO concentration in groundwater was recently observed at 620 μg/L in First Quarter 2013, which may be the result of influence from this open case. However, an MTBE concentration of 1.8 μg/L was the only hydrocarbon constituent analyzed for that was detected above laboratory reporting limits in Third Quarter 2013. Additional investigations to the west and southwest of the site no longer appear to be warranted due to current concentrations in well A-5 below laboratory reporting limits and the presence of an open leaking UST case immediately west of the Site. In general, delineation and control of plume migration offsite has been achieved to the north, south, east, and west of the Site.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Nature and Extent of Environmental Impacts	Extent in Soil	Soil appears defined at the Site. The highest concentrations of GRO, DRO and BTEX were historically detected near the former UST complex. These locations have since been excavated and the majority of the impacted soil has been removed. The highest concentrations of residual petroleum hydrocarbons detected on-site are located in the vicinity of the former USTs. Following a request from ACEH on January 8, 2009, the completion of an on-site soil investigation within the former source area to evaluate the effectiveness of previous remedial activities and to further define the vertical extent of impacted soil in the former source area was completed. Two soil borings (SB-1 and SB-2) were installed on June 17, 2010 directly adjacent to the former UST complex. Boring SB-1 was located between and in close proximity to the historic boring sample A-C collected in May 1991 and historic sidewall sample SW-1 collected in January 1992. Boring SB-2 was located on the opposite side of the former UST area in the vicinity of soil vapor extraction wells AV-2 and SW-7 (Appendix B). Post-remediation soil concentrations of petroleum hydrocarbons in both SB-1 and SB-2 were below laboratory reporting limits or less than those left in place in 1992 with the exception of higher DRO concentrations in samples collected from 8 - 17.5 ft bgs at SB-2. The post-remediation verification soil boring samples show that past remediation efforts (including operation of a vapor extraction and air-sparge remediation system between 1994 and 2001) were successful in reducing the onsite concentrations of residual petroleum hydrocarbons in soil on the Site property. Table 5 compares post-remediation soil sample results to pre-remediation results. Additional proposed offsite soil borings were not completed due to lack of access granted by adjacent property owners.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Nature and Extent of Environmental Impacts	Extent in Groundwater	The current groundwater monitoring network at the Site includes onsite wells A-1, A-2, AR-2, ADR-1 and ADR-2 and offsite wells A-5 and A-6. Groundwater monitoring wells A-3, A-4 (on the eastern border of the property and generally cross-gradient of the source area) and AR-1 were abandoned in June 2010 to accommodate construction and remodeling activities at Station #2169. Concentrations of petroleum hydrocarbons in the decommissioned wells were below laboratory reporting limits when last sampled. Isoconcentration maps for the most recent groundwater monitoring and sampling event (3Q2013) for GRO, benzene and MTBE are included as Drawings 6, 8 and 9, respectively. Isoconcentrations maps for the first sitewide groundwater monitoring and sampling event occurred in February of 1994, after the installation of monitor wells ADR-1 and ADR-2. Drawings 4 and 6 depict GRO and benzene isoconcentrations, respectively, from this sampling event for comparison purposes. The first wells installed onsite, wells A-1 thoμgh A-4, were initially sampled in April of 1992. Historical sampling results for GRO, benzene and MTBE for select wells are plotted in Figures 1, 2, and 3, respectively. The top of the well screens onsite range from 5 ft to 10 ft bgs and water levels have ranged from approximately 7 to 13 ft bgs historically. This has resulted in some submerged well screens while others are partially penetrating the water table. When comparing the results collected from well screens that are submerged to those collected from partially penetrating wells, the data appears consistent sitewide and when compared to periods when individual wells had a reversal of conditions. Additionally, free product is no longer present at the Site, and dissolved petroleum concentrations are decreasing. No submerged screen intervals were observed during the Third Quarter 2013 sampling event.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Nature and Extent of Environmental Impacts	Extent in Soil Vapor	On December 6 and 7, 1993, GSI oversaw the installation of two air sparge wells (AS-4 and AS-5), two vapor extraction wells (AV-6 and AV-7), and two dual groundwater recovery/vapor extraction wells ADR-1 and ADR-2. The vapor extraction and air sparging remediation system began operation on June 2, 1994. Vapor treatment was accomplished using a thermal/catalytic oxidizer. The remediation system consisted of a vapor extraction blower, moisture separator, oxidizer, and controls. Operation of the air sparge and vapor extraction system continued until December 2001 when it was shutdown due to the observation of low concentrations. During remediation system operation, approximately 9,151 pounds of hydrocarbons were removed from the soil and groundwater on-site. Additionally, the LTCP states that the exposure from current fueling operations represents a greater risk than any associated with potential groundwater or soil vapor exposure (CSWRCB, 2012). As the Site is currently an operational gas station, additional soil vapor assessment is not warranted.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Migration Pathways	Potential Conduits	Maps from the City of Oakland Sewer and Sidewalk Department, East Bay Municipal Utility District (EBMUD), AT&T and Pacific Gas and Electric (PG&E) were reviewed in 2009 to evaluate the potential for conduits to cause preferential flow of impacted groundwater from the Property. Storm drains, water and sanitary sewer utilities are shown in Drawing 2. Underground utilities run along West Grand Avenue, Market Street and 22nd Street surrounding the Site. Utilities include storm drain, water, sanitary sewer, telephone, electric and natural gas. North of the property along West Grand Avenue storm drain, water, sanitary sewer, telephone, electric and natural gas are present. West of the property along Market street storm drain, water, sanitary sewer, electric and natural gas are present. South of the property along 22nd street water, sanitary sewer, electric and natural gas are present. The potential depth of utility conduits found in the area surrounding the property range from 2 to 3 feet bgs. As mentioned above, depth to groundwater from monitor wells on the Site has historically ranged from approximately 7 feet bgs to 13 feet bgs. Based on incomplete information regarding depth and backfill material of utilities, it is unclear whether or not utilities have in the past or are presently acting as preferential paths for the flow of impacted groundwater, however, it is unlikely. Well A-5, which was specifically mentioned in the ACEH January 8, 2009 letter, has storm water drains, water, sanitary sewer, electric, and natural gas utilities located in the near vicinity. Offsite contaminant migration from the area of A-5 has been considered. However, this well is upgradient of the Site and petroleum hydrocarbon concentrations in groundwater have been steadily declining to below laboratory reporting limits. As such, this is not considered a data gap.	None	NA
Potential Receptors	Onsite	No onsite water supply wells or surface water exists. The only potential onsite receptor would be onsite workers exposed to gasoline by vapors. However, the exposure from current fueling operations represents a greater risk than any associated with potential groundwater or soil vapor exposure (SWRCB, 2012).	None	NA

TABLE 1

CONCEPTUAL SITE MODEL
Atlantic Richfield Oil Company Station #2169
889 West Grand Avenue
Oakland, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Potential Receptors	Offsite	Well logs were requested from the California Department of Water Resources (DWR) in January 2009 in order to identify the presence of water wells within a ½ mile radius of the Site. Based on a review of well completion reports furnished by the DWR, no domestic or municipal wells were located within the ½ mile search radius. Areas surrounding Station #2169 are developed, paved, and/or occupied by structures/buildings with limited areas of landscaping. Two schools, New Day Pre School & Learning Center (460 W Grand Ave) and Lafayette Elementary school (1700 Market St.), are located within a ½ mile from the Site. Neither location is downgradient from the Site, rather they are located to the west and south of the Site. Potential exposure to shallow contaminated groundwater by the public is not considered a risk due to its depth and restricted access. Exposure to residual contaminated soil is also limited as extensive effort would be required to provide access (i.e., excavation) and pollutant migration within soils diminishes offsite with increasing distance from the source area onsite.	None	NA

Notes:

bgs = below ground surface

GRO = Gasoline Range Organics

DRO = Diesel Range Organics

MTBE = Methyl tert-butyl Ether

BTEX = benzene, toluene, ethylbenzene, xylenes

µg/L = micrograms per liter

mg/Kg = milligrams per kilogram

All report references are included in the preceding report

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
A-1															
6/26/2000	--	14.16	9.00	25.00	10.75	3.41	--	--	--	--	--	--	--	--	
7/20/2000	--		9.00	25.00	11.01	3.15	3,900	1,100	28	12	46	25	--	--	
9/19/2000	--		9.00	25.00	11.26	2.90	4,800	2,400	27	20	57	32	--	--	
12/26/2000	--		9.00	25.00	10.96	3.20	429	104	2.85	12.2	9.91	18.7	--	--	
3/20/2001	--		9.00	25.00	9.59	4.57	<500	13.9	7.12	13.9	23.2	<25	--	--	
6/12/2001	--		9.00	25.00	10.83	3.33	140	2.2	<0.5	8.7	9.2	25	--	--	
9/23/2001	--		9.00	25.00	11.43	2.73	<50	<0.50	<0.50	<0.50	<0.50	4.5	--	--	
12/28/2001	--		9.00	25.00	8.66	5.50	930	250	7.6	21	13	<25	--	--	
3/21/2002	--		9.00	25.00	8.43	5.73	<50	<0.5	<0.5	<0.5	1.2	<2.5	--	--	
4/17/2002	--		9.00	25.00	9.36	4.80	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
8/14/2002	--		9.00	25.00	11.12	3.04	170	8.4	<0.5	<0.5	1.4	4.9	5.7	7.4	b
11/27/2002	--		9.00	25.00	11.11	3.05	98	2.9	0.75	<0.5	<0.5	6.4	1.6	7.0	b
2/12/2003	--		9.00	25.00	10.10	4.06	73	9.3	<0.50	1	0.53	2.9	2.1	7.2	d
5/22/2003	--		9.00	25.00	10.18	3.98	400	88	1.6	4.6	11	4.9	1.3	7.4	
7/23/2003	--		9.00	25.00	10.85	3.31	140	3.2	<0.50	<0.50	0.56	10	10.8	7.4	
11/13/2003	P		9.00	25.00	11.35	2.81	<50	0.64	<0.50	<0.50	<0.50	4.2	4.3	7.75	f
02/16/2004	P	16.75	9.00	25.00	9.65	7.10	99	18	<0.50	1.2	0.96	3.2	7.2	7.6	f, i
05/06/2004	P		9.00	25.00	10.57	6.18	<50	0.73	<0.50	<0.50	<0.50	1.9	1.23	6.93	
09/02/2004	P		9.00	25.00	11.05	5.70	64	1.1	<0.50	<0.50	<0.50	1.7	12.1	8.7	
11/29/2004	P		9.00	25.00	10.50	6.25	<50	1.4	<0.50	<0.50	<0.50	<0.50	0.62	7.0	
02/02/2005	P		9.00	25.00	9.18	7.57	56	14	<0.50	<0.50	0.55	5.1	3.2	7.2	
05/09/2005	P		9.00	25.00	9.28	7.47	52	7.8	<0.50	0.53	0.52	2.7	2.1	7.2	
08/11/2005	P		9.00	25.00	10.70	6.05	420	61	<0.50	1.8	1.0	4.2	3.2	6.8	
02/09/2006	P		9.00	25.00	9.04	7.71	170	60	1.5	3.5	5.1	5.6	1.69	7.1	o
8/11/2006	P		9.00	25.00	10.44	6.31	200	18	<0.50	0.73	0.60	3.7	--	7.2	
2/7/2007	NP		9.00	25.00	10.34	6.41	270	5.5	<0.50	0.95	1.2	20	1.15	7.27	
8/14/2007	NP		9.00	25.00	10.43	6.32	3,500	350	21	110	68	1.8	1.32	7.46	
2/22/2008	P		9.00	25.00	8.75	8.00	2,600	160	7.2	16	11	<2.5	4.16	7.65	
8/12/2008	NP		9.00	25.00	10.30	6.45	7,400	420	28	190	170	<2.5	0.54	9.38	
1/8/2009	NP		9.00	25.00	10.07	6.68	14,000	400	130	530	790	<10	0.49	7.26	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
A-1 Cont.															
9/4/2009	NP	16.75	9.00	25.00	11.22	5.53	990	19	2.2	0.80	1.5	7.4	0.48	7.25	
3/5/2010	P		9.00	25.00	7.84	8.91	800	12	1.3	5.6	3.6	3.3	0.84	7.09	
3/11/2011	NP		9.00	25.00	9.02	7.73	4900	260	68	43	380	<5.0	2.11	7.3	
8/26/2011	P		9.00	25.00	10.50	6.25	5,500	320	260	230	650	<5.0	0.63	7.1	
2/22/2012	P		9.00	25.00	10.68	6.07	4,700	350	65	200	140	7.6	0.57	7.66	
8/16/2012	P		9.00	25.00	11.09	5.66	1,300	120	5.2	30	23	<1.0	2.57	7.60	
2/26/2013	P		9.00	25.00	10.46	6.29	3,000	350	98	490	230	<10	1.00	7.79	
8/8/2013	**P**		**9.00**	**25.00**	**11.09**	**5.66**	**6,100**	**980**	**36**	**130**	**99**	**<2.5**	**2.12**	**7.33**	
A-2															
6/26/2000	--	14.55	10.00	25.00	11.27	3.28	--	--	--	--	--	--	--	--	
7/20/2000	--		10.00	25.00	11.52	3.03	<50	<0.5	<0.5	<0.5	<1.0	<3	--	--	
9/19/2000	--		10.00	25.00	11.63	2.92	--	--	--	--	--	--	--	--	
12/26/2000	--		10.00	25.00	11.44	3.11	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/20/2001	--		10.00	25.00	10.08	4.47	--	--	--	--	--	--	--	--	
6/12/2001	--		10.00	25.00	11.35	3.20	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
9/23/2001	--		10.00	25.00	11.92	2.63	--	--	--	--	--	--	--	--	
12/28/2001	--		10.00	25.00	9.31	5.24	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/21/2002	--		10.00	25.00	9.05	5.50	--	--	--	--	--	--	--	--	
4/17/2002	--		10.00	25.00	9.88	4.67	52	<0.5	<0.5	<0.5	<0.5	26	--	--	
8/14/2002	--		10.00	25.00	11.62	2.93	<50	<0.5	<0.5	<0.5	1.2	<2.5	3.7	7.2	c
11/27/2002	--		10.00	25.00	11.56	2.99	--	--	--	--	--	--	--	--	
2/12/2003	--		10.00	25.00	10.75	3.80	<50	<0.50	<0.50	<0.50	<0.50	12	2.9	7.1	d
5/22/2003	--		10.00	25.00	10.72	3.83	--	--	--	--	--	--	--	--	
7/23/2003	--		10.00	25.00	11.39	3.16	<50	<0.50	<0.50	<0.50	<0.50	2.6	1.3	6.8	
11/13/2003	--		10.00	25.00	11.60	2.95	--	--	--	--	--	--	--	--	
02/16/2004	--	17.18	10.00	25.00	10.27	6.91	--	--	--	--	--	--	--	--	i
05/06/2004	--		10.00	25.00	11.05	6.13	--	--	--	--	--	--	--	--	
09/02/2004	P		10.00	25.00	11.45	5.73	130	<0.50	<0.50	<0.50	<0.50	2.5	5.1	7.4	
11/29/2004	--		10.00	25.00	11.12	6.06	--	--	--	--	--	--	--	--	
02/02/2005	--		10.00	25.00	9.73	7.45	--	--	--	--	--	--	--	--	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
A-2 Cont.															
05/09/2005	--	17.18	10.00	25.00	12.82	4.36	--	--	--	--	--	--	--	--	
08/11/2005	P		10.00	25.00	11.29	5.89	120	<0.50	<0.50	<0.50	<0.50	1.2	1.6	7.1	m
02/09/2006	--		10.00	25.00	10.43	6.75	--	--	--	--	--	--	--	--	
8/11/2006	P		10.00	25.00	11.12	6.06	<50	<0.50	<0.50	<0.50	<0.50	1.4	1.1	7.0	
2/7/2007	--		10.00	25.00	11.07	6.11	--	--	--	--	--	--	--	--	
8/14/2007	NP		10.00	25.00	11.28	5.90	<50	<0.50	<0.50	<0.50	<0.50	0.65	0.64	7.57	
2/22/2008	--		10.00	25.00	9.50	7.68	--	--	--	--	--	--	--	--	
8/12/2008	NP		10.00	25.00	11.28	5.90	64	<0.50	<0.50	<0.50	<0.50	0.96	0.57	9.44	
1/8/2009	--		10.00	25.00	10.90	6.28	--	--	--	--	--	--	--	--	
9/4/2009	NP		10.00	25.00	11.77	5.41	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.43	7.39	
3/5/2010	--		10.00	25.00	8.53	8.65	--	--	--	--	--	--	--	--	
3/11/2011	P		10.00	25.00	9.67	7.51	76	<0.50	<0.50	<0.50	<0.50	<0.50	0.84	7.3	p (GRO)
8/26/2011	P		10.00	25.00	11.29	5.89	100	<2.0	<2.0	<2.0	<2.0	<2.0	1.01	7.6	r (GRO), s
2/22/2012	P		10.00	25.00	11.21	5.97	190	<2.0	<2.0	<2.0	<2.0	<2.0	0.54	7.68	r (GRO), s, t
8/16/2012	P		10.00	25.00	11.57	5.61	140	<0.50	<0.50	<0.50	<1.0	<0.50	3.09	7.45	
2/26/2013	P		10.00	25.00	11.02	6.16	110	<0.50	<0.50	<0.50	<1.0	<0.50	1.37	7.63	
8/8/2013	**P**		**10.00**	**25.00**	**11.64**	**5.54**	**75**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**3.38**	**7.48**	
A-3															
6/26/2000	--	15.75	9.00	29.50	11.98	3.77	--	--	--	--	--	--	--	--	
7/20/2000	--		9.00	29.50	12.21	3.54	--	--	--	--	--	--	--	--	
9/19/2000	--		9.00	29.50	12.50	3.25	--	--	--	--	--	--	--	--	
12/26/2000	--		9.00	29.50	12.17	3.58	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/20/2001	--		9.00	29.50	10.70	5.05	--	--	--	--	--	--	--	--	
6/12/2001	--		9.00	29.50	12.09	3.66	--	--	--	--	--	--	--	--	
9/23/2001	--		9.00	29.50	12.65	3.10	--	--	--	--	--	--	--	--	
12/28/2001	--		9.00	29.50	9.94	5.81	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/21/2002	--		9.00	29.50	9.69	6.06	--	--	--	--	--	--	--	--	
4/17/2002	--		9.00	29.50	10.61	5.14	--	--	--	--	--	--	--	--	
8/14/2002	--		9.00	29.50	12.27	3.48	--	--	--	--	--	--	--	--	
11/27/2002	--		9.00	29.50	12.22	3.53	--	--	--	--	--	--	--	--	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
A-3 Cont.															
2/12/2003	--	15.75	9.00	29.50	11.40	4.35	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	6.9	d
5/22/2003	--		9.00	29.50	11.42	4.33	--	--	--	--	--	--	--	--	
7/23/2003	--		9.00	29.50	12.00	3.75	--	--	--	--	--	--	--	--	
02/16/2004	--	18.37	9.00	29.50	10.94	7.43	--	--	--	--	--	--	--	--	g, i
05/06/2004	--		9.00	29.50	11.75	6.62	--	--	--	--	--	--	--	--	
09/02/2004	--		9.00	29.50	12.15	6.22	--	--	--	--	--	--	--	--	
11/29/2004	--		9.00	29.50	11.87	6.50	--	--	--	--	--	--	--	--	
02/02/2005	--		9.00	29.50	10.42	7.95	--	--	--	--	--	--	--	--	
05/09/2005	--		9.00	29.50	10.49	7.88	--	--	--	--	--	--	--	--	
08/11/2005	--		9.00	29.50	12.02	6.35	--	--	--	--	--	--	--	--	
02/09/2006	--		9.00	29.50	11.27	7.10	--	--	--	--	--	--	--	--	
8/11/2006	--		9.00	29.50	11.83	6.54	--	--	--	--	--	--	--	--	
2/7/2007	--		9.00	29.50	11.82	6.55	--	--	--	--	--	--	--	--	
8/14/2007	--		9.00	29.50	12.06	6.31	--	--	--	--	--	--	--	--	
2/22/2008	--		9.00	29.50	10.25	8.12	--	--	--	--	--	--	--	--	
8/12/2008	--		9.00	29.50	12.10	6.27	--	--	--	--	--	--	--	--	
1/8/2009	--		9.00	29.50	11.71	6.66	--	--	--	--	--	--	--	--	
9/4/2009	--		9.00	29.50	12.57	5.80	--	--	--	--	--	--	--	--	
3/5/2010	--		9.00	29.50	9.13	9.24	--	--	--	--	--	--	--	--	
3/11/2011	--		9.00	29.50	--	--	--	--	--	--	--	--	--	--	q
A-4															
6/26/2000	--	15.25	8.00	28.00	10.99	4.26	--	--	--	--	--	--	--	--	
7/20/2000	--		8.00	28.00	11.16	4.09	--	--	--	--	--	--	--	--	
9/19/2000	--		8.00	28.00	11.97	3.28	--	--	--	--	--	--	--	--	
12/26/2000	--		8.00	28.00	11.19	4.06	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/20/2001	--		8.00	28.00	9.81	5.44	--	--	--	--	--	--	--	--	
6/12/2001	--		8.00	28.00	11.12	4.13	--	--	--	--	--	--	--	--	
9/23/2001	--		8.00	28.00	11.63	3.62	--	--	--	--	--	--	--	--	
12/28/2001	--		8.00	28.00	8.41	6.84	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/21/2002	--		8.00	28.00	8.63	6.62	--	--	--	--	--	--	--	--	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
A-4 Cont.															
4/17/2002	--	15.25	8.00	28.00	9.68	5.57	--	--	--	--	--	--	--	--	
8/14/2002	--		8.00	28.00	11.31	3.94	--	--	--	--	--	--	--	--	
11/27/2002	--		8.00	28.00	11.25	4.00	--	--	--	--	--	--	--	--	
2/12/2003	--		8.00	28.00	10.37	4.88	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.9	7.1	d
5/22/2003	--		8.00	28.00	10.42	4.83	--	--	--	--	--	--	--	--	
7/23/2003	--		8.00	28.00	11.02	4.23	--	--	--	--	--	--	--	--	
02/16/2004	--	18.01	8.00	28.00	9.65	8.36	--	--	--	--	--	--	--	--	g, i
05/06/2004	--		8.00	28.00	10.68	7.33	--	--	--	--	--	--	--	--	
09/02/2004	--		8.00	28.00	10.83	7.18	--	--	--	--	--	--	--	--	
11/29/2004	--		8.00	28.00	10.50	7.51	--	--	--	--	--	--	--	--	
02/02/2005	--		8.00	28.00	9.22	8.79	--	--	--	--	--	--	--	--	
05/09/2005	--		8.00	28.00	8.98	9.03	--	--	--	--	--	--	--	--	
08/11/2005	--		8.00	28.00	10.99	7.02	--	--	--	--	--	--	--	--	
02/09/2006	--		8.00	28.00	10.15	7.86	--	--	--	--	--	--	--	--	
8/11/2006	--		8.00	28.00	10.30	7.71	--	--	--	--	--	--	--	--	
2/7/2007	--		8.00	28.00	10.63	7.38	--	--	--	--	--	--	--	--	
8/14/2007	--		8.00	28.00	10.70	7.31	--	--	--	--	--	--	--	--	
2/22/2008	--		8.00	28.00	8.90	9.11	--	--	--	--	--	--	--	--	
8/12/2008	--		8.00	28.00	10.60	7.41	--	--	--	--	--	--	--	--	
1/8/2009	--		8.00	28.00	10.90	7.11	--	--	--	--	--	--	--	--	
9/4/2009	--		8.00	28.00	11.80	6.21	--	--	--	--	--	--	--	--	
3/5/2010	--		8.00	28.00	7.64	10.37	--	--	--	--	--	--	--	--	
3/11/2011	--		8.00	28.00	--	--	--	--	--	--	--	--	--	--	q
A-5															
6/26/2000	--	13.51	8.00	30.00	10.04	3.47	--	--	--	--	--	--	--	--	
7/20/2000	--		8.00	30.00	10.31	3.20	730	140	11	<0.5	8.9	3	--	--	
9/19/2000	--		8.00	30.00	10.55	2.96	160	13	<0.5	2.8	1.9	<3	--	--	
12/26/2000	--		8.00	30.00	10.37	3.14	8,120	465	108	659	1,450	<250	--	--	
3/20/2001	--		8.00	30.00	8.81	4.70	7,990	1,110	473	611	1,580	<250	--	--	
6/12/2001	--		8.00	30.00	10.13	3.38	450	91	18	35	95	<5.0	--	--	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
A-5 Cont.															
9/23/2001	--	13.51	8.00	30.00	10.80	2.71	110	20	<0.5	5	5	2.7	--	--	
12/28/2001	--		8.00	30.00	8.17	5.34	320	24	2	20	27	5	--	--	
3/21/2002	--		8.00	30.00	7.78	5.73	2,500	420	85	130	350	31	--	--	
4/17/2002	--		8.00	30.00	8.68	4.83	1,300	190	36	67	210	<25	--	--	
8/14/2002	--		8.00	30.00	10.41	3.10	840	150	<5.0	68	41	<25	1.4	6.8	b
11/27/2002	--		8.00	30.00	10.50	3.01	300	26	2.3	17	6	<0.5	1.16	7.2	b
2/12/2003	--		8.00	30.00	10.81	2.70	<500	74	7	34	45	<5.0	1.0	7.3	d
5/22/2003	--		8.00	30.00	9.46	4.05	500	100	9	28	47	<5.0	1.0	7.6	
7/23/2003	--		8.00	30.00	10.29	3.22	900	100	5.7	65	57	<5.0	4.5	8.4	
11/13/2003	NP		8.00	30.00	11.24	2.27	1,800	210	5.1	190	140	<5.0	4.3	7.32	f
02/16/2004	NP	16.09	8.00	30.00	9.45	6.64	680	52	15	50	77	<0.50	5.0	7.8	h, i
05/06/2004	P		8.00	30.00	10.28	5.81	1,500	140	13	72	110	<2.5	1.03	6.93	
09/02/2004	NP		8.00	30.00	10.78	5.31	690	69	1.3	42	35	<1.0	1.3	7.1	
11/29/2004	NP		8.00	30.00	10.05	6.04	<5,000	360	<50	190	290	<50	1.0	7.0	
02/02/2005	NP		8.00	30.00	8.37	7.72	220	31	2.3	10	13	<0.50	0.6	7.4	
05/09/2005	NP		8.00	30.00	8.45	7.64	110	1.7	<0.50	1.4	1.1	<0.50	2.5	7.6	
08/11/2005	NP		8.00	30.00	10.11	5.98	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.8	7.3	
02/09/2006	NP		8.00	30.00	9.02	7.07	<50	0.62	<0.50	<0.50	<0.50	<0.50	0.89	7.3	o
8/11/2006	NP		8.00	30.00	9.77	6.32	400	13	3.4	8.0	58	<0.50	2.16	7.2	
2/7/2007	P		8.00	30.00	9.90	6.19	10,000	670	120	1,100	3,100	<10	2.12	7.03	
8/14/2007	NP		8.00	30.00	9.70	6.39	28,000	260	68	3,000	7,800	<10	1.37	7.80	
2/22/2008	NP		8.00	30.00	8.02	8.07	27,000	410	98	2,600	4,400	<50	1.36	7.42	
8/12/2008	NP		8.00	30.00	9.50	6.59	31,000	140	<50	1,800	3,900	<50	0.62	9.70	
1/8/2009	NP		8.00	30.00	9.29	6.80	39,000	300	53	2,400	5,400	<50	0.67	7.59	
9/4/2009	NP		8.00	30.00	10.42	5.67	130	<0.50	<0.50	<0.50	<0.50	<0.50	0.46	7.19	
3/5/2010	P		8.00	30.00	7.55	8.54	110	1.4	<0.50	6.1	7.3	<0.50	0.59	7.18	
3/11/2011	NP		8.00	30.00	8.30	7.79	190	7.4	<0.50	15	10	<0.50	2.33	7.6	p (GRO)
8/26/2011	P		8.00	30.00	9.81	6.28	1,900	36	1.4	190	52	<0.50	0.57	7.0	
2/22/2012	P		8.00	30.00	9.98	6.11	93	<0.50	<0.50	1.0	<0.50	<0.50	0.66	7.51	r (GRO)
8/16/2012	P		8.00	30.00	10.33	5.76	130	1.4	<0.50	18	1.1	<0.50	2.64	7.95	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
A-5 Cont.															
2/26/2013	P	16.09	8.00	30.00	9.78	6.31	<50	<0.50	<0.50	<0.50	<1.0	<0.50	1.65	7.31	
8/8/2013	**P**		**8.00**	**30.00**	**10.39**	**5.70**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**3.82**	**7.70**	
A-6															
6/26/2000	--	13.51	8.00	28.50	10.09	3.42	--	--	--	--	--	--	--	--	
7/20/2000	--		8.00	28.50	10.91	2.60	170	<0.5	<0.5	0.6	2	6	--	--	
9/19/2000	--		8.00	28.50	11.27	2.24	<50	<0.5	<0.5	<0.5	<1.0	6	--	--	
12/26/2000	--		8.00	28.50	10.65	2.86	56.2	<0.5	<0.5	<0.5	<0.5	8.17	--	--	
3/20/2001	--		8.00	28.50	8.72	4.79	216	<0.5	<0.5	<0.5	1.8	19.9	--	--	
6/12/2001	--		8.00	28.50	10.80	2.71	80	0.62	<0.5	<0.5	<0.5	15	--	--	
9/23/2001	--		8.00	28.50	10.79	2.72	450	1.7	1.9	2.3	3.3	53	--	--	
12/28/2001	--		8.00	28.50	8.05	5.46	270	0.98	3.5	0.77	1.4	26	--	--	
3/21/2002	--		8.00	28.50	7.83	5.68	130	<0.5	<0.5	<0.5	<0.5	19	--	--	
4/17/2002	--		8.00	28.50	8.73	4.78	<50	<0.5	<0.5	<0.5	<0.5	16	--	--	
8/14/2002	--		8.00	28.50	10.43	3.08	980	4.8	2.6	2	4.9	75	1.5	7.1	b
11/27/2002	--		8.00	28.50	10.47	3.04	280	<0.5	0.74	<0.5	<0.5	16	0.9	6.9	b
2/12/2003	--		8.00	28.50	10.44	3.07	51	<0.50	<0.50	<0.50	<0.50	9.9	0.8	7.1	d
5/22/2003	--		8.00	28.50	9.43	4.08	<50	<0.50	<0.50	<0.50	<0.50	11	1.2	8.2	
7/23/2003	--		8.00	28.50	10.27	3.24	120	<0.50	<0.50	<0.50	<0.50	14	>20	9.6	
11/13/2003	NP		8.00	28.50	11.20	2.31	<50	<0.50	<0.50	<0.50	<0.50	2.3	6.2	9.0	f
02/16/2004	NP	16.10	8.00	28.50	9.76	6.34	50	<0.50	<0.50	<0.50	<0.50	3.9	6.5	8.3	h, i
05/06/2004	P		8.00	28.50	10.03	6.07	110	<0.50	<0.50	<0.50	<0.50	7.1	1.01	7.02	
09/02/2004	NP		8.00	28.50	10.47	5.63	56	<0.50	<0.50	<0.50	<0.50	4.4	3.2	7.4	
11/29/2004	NP		8.00	28.50	9.99	6.11	<50	<0.50	<0.50	<0.50	<0.50	2.9	0.92	6.9	
02/02/2005	NP		8.00	28.50	8.46	7.64	150	<0.50	<0.50	<0.50	<0.50	14	0.5	7.4	
05/09/2005	NP		8.00	28.50	8.55	7.55	93	<0.50	<0.50	<0.50	<0.50	12	3.0	7.2	
08/11/2005	NP		8.00	28.50	10.13	5.97	780	<0.50	<0.50	<0.50	<0.50	14	1.0	6.9	
02/09/2006	NP		8.00	28.50	9.23	6.87	210	<0.50	<0.50	<0.50	<0.50	17	1.27	6.8	o
8/11/2006	NP		8.00	28.50	9.95	6.15	920	<0.50	<0.50	<0.50	<0.50	21	1.6	7.0	
2/7/2007	P		8.00	28.50	9.72	6.38	170	<0.50	<0.50	<0.50	1.4	7.1	2.18	7.24	
8/14/2007	NP		8.00	28.50	9.82	6.28	<50	<0.50	<0.50	<0.50	<0.50	2.3	1.72	8.22	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
A-6 Cont.															
2/22/2008	NP	16.10	8.00	28.50	8.07	8.03	350	<0.50	<0.50	<0.50	<0.50	11	0.79	7.48	
8/12/2008	NP		8.00	28.50	9.70	6.40	<50	<0.50	<0.50	<0.50	<0.50	2.4	0.58	9.58	
1/8/2009	NP		8.00	28.50	9.45	6.65	<50	<0.50	<0.50	<0.50	<0.50	1.6	0.61	7.32	
9/4/2009	NP		8.00	28.50	10.60	5.50	<50	<0.50	<0.50	<0.50	<0.50	4.9	0.51	7.18	
3/5/2010	P		8.00	28.50	7.27	8.83	320	<0.50	<0.50	<0.50	<0.50	4.1	0.65	7.11	
3/11/2011	NP		8.00	28.50	8.37	7.73	160	<0.50	<0.50	<0.50	<0.50	5.7	1.56	7.7	p (GRO)
8/26/2011	P		8.00	28.50	9.90	6.20	70	<0.50	<0.50	<0.50	<0.50	2.2	1.22	7.3	
2/22/2012	P		8.00	28.50	10.03	6.07	<50	<0.50	<0.50	<0.50	<0.50	2.3	0.69	7.45	
8/16/2012	P		8.00	28.50	10.44	5.66	<50	<0.50	<0.50	<0.50	<1.0	1.5	8.18	7.58	
2/26/2013	P		8.00	28.50	9.83	6.27	620	<0.50	<0.50	<0.50	<1.0	3.6	1.36	7.44	
8/8/2013	**P**		**8.00**	**28.50**	**10.46**	**5.64**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**1.8**	**3.76**	**7.32**	
ADR-1															
6/26/2000	--	13.95	5.00	22.00	10.55	3.40	--	--	--	--	--	--	--	--	
7/20/2000	--		5.00	22.00	10.85	3.10	180	29	<0.5	0.8	<1.0	22	--	--	
9/19/2000	--		5.00	22.00	11.08	2.87	120	7.4	<0.5	1.2	<1.0	22	--	--	
12/26/2000	--		5.00	22.00	10.93	3.02	<50	1.29	<0.5	<0.5	<0.5	14.7	--	--	
3/20/2001	--		5.00	22.00	9.32	4.63	225	23.4	<0.5	8.71	4.13	10.8	--	--	
6/12/2001	--		5.00	22.00	10.65	3.30	250	23	0.5	13	4.2	7.5	--	--	
9/23/2001	--		5.00	22.00	11.25	2.70	<50	1.4	<0.5	<0.5	0.57	2.8	--	--	
12/28/2001	--		5.00	22.00	8.43	5.52	250	16	<0.5	1.2	4.1	6.8	--	--	
3/21/2002	--		5.00	22.00	8.27	5.68	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
4/17/2002	--		5.00	22.00	9.17	4.78	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
8/14/2002	--		5.00	22.00	11.88	2.07	<50	1.1	<0.5	<0.5	<0.5	<2.5	3.4	6.7	
11/27/2002	--		5.00	22.00	10.91	3.04	<50	0.54	<0.5	<0.5	<0.5	1.1	1.8	6.8	
2/12/2003	--		5.00	22.00	9.95	4.00	<50	<0.50	<0.50	<0.50	<0.50	0.73	1.9	7.2	d
5/22/2003	--		5.00	22.00	9.86	4.09	<50	0.96	<0.50	<0.50	<0.50	3.5	1.2	7.3	
7/23/2003	--		5.00	22.00	10.59	3.36	<50	2.5	<0.50	0.56	<0.50	4	>20	9.4	
11/13/2003	--		5.00	22.00	11.15	2.80	<50	0.60	<0.50	<0.50	<0.50	1.6	8.5	8.2	f
02/16/2004	NP	16.56	5.00	22.00	9.43	7.13	<50	<0.50	<0.50	<0.50	<0.50	1.6	5.5	9.6	f, i
05/07/2004	NP		5.00	22.00	10.41	6.15	<500	5.3	<5.0	<5.0	<5.0	<5.0	1.72	7.0	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ADR-1 Cont.															
09/02/2004	NP	16.56	5.00	22.00	10.73	5.83	<50	<0.50	<0.50	<0.50	<0.50	0.84	18.1	8.4	
11/29/2004	NP		5.00	22.00	10.30	6.26	<50	3.0	<0.50	<0.50	<0.50	<0.50	0.77	6.9	
02/02/2005	NP		5.00	22.00	9.02	7.54	<50	<0.50	<0.50	<0.50	<0.50	3.4	0.5	7.5	
05/09/2005	NP		5.00	22.00	8.92	7.64	<50	<0.50	<0.50	<0.50	<0.50	2.6	2.9	7.3	
08/11/2005	NP		5.00	22.00	10.57	5.99	67	2.8	<0.50	<0.50	<0.50	4.0	0.6	6.0	
02/09/2006	NP		5.00	22.00	10.05	6.51	<50	<0.50	<0.50	<0.50	<0.50	2.9	1.09	7.0	o
8/11/2006	NP		5.00	22.00	10.20	6.36	76	<0.50	<0.50	<0.50	<0.50	2.2	1.06	7.1	
2/7/2007	NP		5.00	22.00	10.15	6.41	<50	<0.50	<0.50	<0.50	<0.50	3.8	0.64	7.33	
8/14/2007	NP		5.00	22.00	10.30	6.26	560	11	1.7	12	2.5	3.6	0.94	7.38	
2/22/2008	NP		5.00	22.00	8.55	8.01	120	<0.50	<0.50	<0.50	<0.50	3.9	1.52	6.95	
8/12/2008	NP		5.00	22.00	10.20	6.36	1,400	46	7.7	13	19	6.5	0.50	9.32	
1/8/2009	NP		5.00	22.00	9.95	6.61	740	<0.50	0.94	<0.50	0.58	2.4	0.47	7.36	
9/4/2009	NP		5.00	22.00	11.06	5.50	810	<0.50	0.65	<0.50	<0.50	<0.50	0.61	7.17	
3/5/2010	NP		5.00	22.00	7.62	8.94	62	<0.50	<0.50	<0.50	<0.50	0.92	1.33	7.01	
3/11/2011	NP		5.00	22.00	8.88	7.68	<50	<0.50	<0.50	<0.50	<0.50	1.4	1.60	7.3	
8/26/2011	P		5.00	22.00	10.42	6.14	840	54	2.7	13	48	1.7	0.46	7.0	
2/22/2012	P		5.00	22.00	10.48	6.08	90	0.99	<0.50	<0.50	<0.50	1.1	0.70	7.64	r (GRO)
8/16/2012	P		5.00	22.00	10.90	5.66	480	16	0.52	1.4	2.0	1.6	2.90	7.50	
2/26/2013	P		5.00	22.00	10.26	6.30	<50	<0.50	<0.50	<0.50	<1.0	1.3	1.09	7.73	
8/8/2013	**P**		**5.00**	**22.00**	**10.89**	**5.67**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**0.95**	**2.61**	**7.49**	
ADR-2															
6/26/2000	--	14.64	5.00	22.00	11.22	3.42	--	--	--	--	--	--	--	--	
7/20/2000	--		5.00	22.00	11.60	3.04	12,000	410	2.5	540	720	23	--	--	
9/19/2000	--		5.00	22.00	11.81	2.83	1,400	530	5	680	740	34	--	--	
12/26/2000	--		5.00	22.00	11.52	3.12	901	26.6	<5.0	21.4	32.5	32.8	--	--	
3/20/2001	--		5.00	22.00	10.10	4.54	--	--	--	--	--	--	--	--	j
6/12/2001	--		5.00	22.00	11.41	3.23	--	--	--	--	--	--	--	--	j
9/23/2001	--		5.00	22.00	11.98	2.66	5,300	370	<5.0	550	96	60	--	--	
12/28/2001	--		5.00	22.00	9.48	5.16	2,600	190	<5.0	160	29	61	--	--	
3/21/2002	--		5.00	22.00	9.10	5.54	180	6	<0.5	4.5	3.2	15	--	--	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
ADR-2 Cont.															
4/17/2002	--	14.64	5.00	22.00	9.93	4.71	730	86	<0.5	13	<0.5	<25	--	--	
8/14/2002	--		5.00	22.00	12.09	2.55	1,300	170	<10	100	47	<50	0.9	7.0	b
11/27/2002	--		5.00	22.00	11.66	2.98	1,800	240	3.1	120	14	74	0.6	6.9	b
2/12/2003	--		5.00	22.00	10.74	3.90	760	120	<5.0	15	5.2	22	1.3	7.1	d
5/22/2003	--		5.00	22.00	10.67	3.97	520	110	<5.0	7.1	<5.0	9.7	0.7	7.6	
7/23/2003	--		5.00	22.00	11.38	3.26	140	2.8	<0.50	5	0.98	8.4	>20	9.4	
02/16/2004	--	17.24	5.00	22.00	10.26	6.98	--	--	--	--	--	--	--	--	f, i
05/06/2004	--		5.00	22.00	11.05	6.19	--	--	--	--	--	--	--	--	
09/02/2004	P		5.00	22.00	11.50	5.74	<500	67	<5.0	71	12	5.6	0.7	7.4	
11/29/2004	--		5.00	22.00	11.20	6.04	--	--	--	--	--	--	--	--	
02/02/2005	--		5.00	22.00	9.76	7.48	--	--	--	--	--	--	--	--	
05/09/2005	--		5.00	22.00	11.18	6.06	--	--	--	--	--	--	--	--	
08/11/2005	NP		5.00	22.00	11.30	5.94	1,900	200	<2.5	160	9.6	9.0	0.6	6.6	
02/09/2006	--		5.00	22.00	9.60	7.64	--	--	--	--	--	--	--	--	
8/11/2006	NP		5.00	22.00	11.13	6.11	570	54	<1.0	2.2	<1.0	4.6	0.8	7.1	
2/7/2007	--		5.00	22.00	11.08	6.16	--	--	--	--	--	--	--	--	
8/14/2007	NP		5.00	22.00	11.28	5.96	520	5.4	<0.50	3.6	<0.50	5.3	0.65	7.37	
2/22/2008	--		5.00	22.00	9.47	7.77	--	--	--	--	--	--	--	--	
8/12/2008	NP		5.00	22.00	11.27	5.97	560	0.92	<0.50	0.80	<0.50	4.2	0.71	9.40	
1/8/2009	--		5.00	22.00	10.88	6.36	--	--	--	--	--	--	--	--	
9/4/2009	NP		5.00	22.00	11.79	5.45	330	0.66	<0.50	<0.50	<0.50	1.9	0.55	7.38	
3/5/2010	--		5.00	22.00	8.55	8.69	--	--	--	--	--	--	--	--	
3/11/2011	NP		5.00	22.00	9.65	7.59	230	0.55	<0.50	0.56	<0.50	1.9	1.27	7.6	p (GRO)
8/26/2011	P		5.00	22.00	11.27	5.97	1,900	6.7	<0.50	7.1	<0.50	40	1.18	7.3	j
2/22/2012	P		5.00	22.00	11.29	5.95	310	4.8	<0.50	1.4	<0.50	11	0.34	7.72	r (GRO)
8/16/2012	P		5.00	22.00	11.69	5.55	280	13	<1.0	7.1	<2.0	320	2.67	7.46	
2/26/2013	P		5.00	22.00	11.09	6.15	120	1.3	<0.50	<0.50	<1.0	6.4	1.17	7.76	
8/8/2013	**P**		**5.00**	**22.00**	**11.68**	**5.56**	**94**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**6.9**	**2.79**	**7.75**	
AR-1															
6/26/2000	--	15.61	8.00	28.00	11.59	4.02	--	--	--	--	--	--	--	--	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
AR-1 Cont.															
7/20/2000	--	15.61	8.00	28.00	12.06	3.55	<50	<0.5	<0.5	<0.5	<1.0	6	--	--	
9/19/2000	--		8.00	28.00	11.89	3.72	<50	<0.5	<0.5	<0.5	<1.0	<3	--	--	
12/26/2000	--		8.00	28.00	11.95	3.66	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
03/20/2001	--		8.00	28.00	--	--	--	--	--	--	--	--	--	--	a
6/12/2001	--		8.00	28.00	11.87	3.74	<50	<0.5	<0.5	<0.5	<0.5	17	--	--	
9/23/2001	--		8.00	28.00	12.42	3.19	--	--	--	--	--	--	--	--	
12/28/2001	--		8.00	28.00	7.62	7.99	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/21/2002	--		8.00	28.00	9.37	6.24	--	--	--	--	--	--	--	--	
4/17/2002	--		8.00	28.00	10.43	5.18	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
8/14/2002	--		8.00	28.00	12.08	3.53	<50	<0.5	<0.5	<0.5	1.3	<2.5	2.2	7.9	
11/27/2002	--		8.00	28.00	12.00	3.61	--	--	--	--	--	--	--	--	
2/12/2003	--		8.00	28.00	10.89	4.72	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	7.9	d
5/22/2003	--		8.00	28.00	11.18	4.43	--	--	--	--	--	--	--	--	
7/23/2003	--		8.00	28.00	11.73	3.88	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	7.7	
11/13/2003	--		8.00	28.00	12.05	3.56	--	--	--	--	--	--	--	--	
02/16/2004	--	18.18	8.00	28.00	10.35	7.83	--	--	--	--	--	--	--	--	
05/06/2004	--		8.00	28.00	11.60	6.58	--	--	--	--	--	--	--	--	
09/02/2004	P		8.00	28.00	11.88	6.30	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	7.8	
11/29/2004	--		8.00	28.00	11.55	6.63	--	--	--	--	--	--	--	--	
02/02/2005	--		8.00	28.00	9.92	8.26	--	--	--	--	--	--	--	--	
05/09/2005	--		8.00	28.00	10.19	7.99	--	--	--	--	--	--	--	--	
08/11/2005	P		8.00	28.00	11.80	6.38	<50	<0.50	<0.50	<0.50	<0.50	<0.50	7.4	7.6	n
02/09/2006	--		8.00	28.00	10.49	7.69	--	--	--	--	--	--	--	--	
8/11/2006	P		8.00	28.00	11.48	6.70	<50	<0.50	<0.50	<0.50	<0.50	<0.50	5.42	8.1	
2/7/2007	--		8.00	28.00	--	--	--	--	--	--	--	--	--	--	e
8/14/2007	--		8.00	28.00	--	--	--	--	--	--	--	--	--	--	e
2/22/2008	--		8.00	28.00	--	--	--	--	--	--	--	--	--	--	e
8/12/2008	NP		8.00	28.00	11.57	6.61	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.42	9.51	
1/8/2009	--		8.00	28.00	11.43	6.75	--	--	--	--	--	--	--	--	
9/4/2009	NP		8.00	28.00	12.52	5.66	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	7.61	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
AR-1 Cont.															
3/5/2010	--	18.18	8.00	28.00	8.66	9.52	--	--	--	--	--	--	--	--	
3/11/2011	--		8.00	28.00	--	--	--	--	--	--	--	--	--	--	q
AR-2															
6/26/2000	--	15.28	8.50	28.50	11.79	3.49	--	--	--	--	--	--	--	--	
7/20/2000	--		8.50	28.50	12.07	3.21	<50	<0.5	<0.5	<0.5	<1.0	<3	--	--	
9/19/2000	--		8.50	28.50	12.08	3.20	<50	<0.5	<0.5	<0.5	<1.0	<3	--	--	
12/26/2000	--		8.50	28.50	11.95	3.33	<50	<0.5	<0.5	<0.5	<0.5	<2.5	--	--	
3/20/2001	--		8.50	28.50	10.50	4.78	--	--	--	--	--	--	--	--	
6/12/2001	--		8.50	28.50	11.73	3.55	<50	<0.5	<0.5	<0.5	<0.5	82	--	--	
9/23/2001	--		8.50	28.50	12.43	2.85	--	--	--	--	--	--	--	--	
12/28/2001	--		8.50	28.50	8.60	6.68	<50	<0.5	<0.5	<0.5	<0.5	30	--	--	
3/21/2002	--		8.50	28.50	9.49	5.79	--	--	--	--	--	--	--	--	
4/17/2002	--		8.50	28.50	10.37	4.91	<50	<0.5	<0.5	<0.5	<0.5	3.2	--	--	
8/14/2002	--		8.50	28.50	12.13	3.15	<50	<0.5	<0.5	<0.5	<0.5	<2.5	1.4	7.9	
11/27/2002	--		8.50	28.50	12.08	3.20	--	--	--	--	--	--	--	--	
2/12/2003	--		8.50	28.50	11.15	4.13	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.2	7.5	d
5/22/2003	--		8.50	28.50	11.18	4.10	--	--	--	--	--	--	--	--	
7/23/2003	--		8.50	28.50	11.85	3.43	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.3	8.2	
11/13/2003	--		8.50	28.50	11.98	3.30	--	--	--	--	--	--	--	--	f
02/16/2004	--	17.87	8.50	28.50	10.69	7.18	--	--	--	--	--	--	--	--	f, i
05/06/2004	--		8.50	28.50	11.55	6.32	--	--	--	--	--	--	--	--	
09/02/2004	--		8.50	28.50	--	--	--	--	--	--	--	--	--	--	k
09/20/2004	NP		8.50	28.50	11.98	5.89	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.2	10.4	
11/29/2004	--		8.50	28.50	12.62	5.25	--	--	--	--	--	--	--	--	
02/02/2005	--		8.50	28.50	10.12	7.75	--	--	--	--	--	--	--	--	
05/09/2005	--		8.50	28.50	10.13	7.74	--	--	--	--	--	--	--	--	
08/11/2005	NP		8.50	28.50	11.73	6.14	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.8	7.3	
02/09/2006	--		8.50	28.50	10.03	7.84	--	--	--	--	--	--	--	--	
8/11/2006	NP		8.50	28.50	11.61	6.26	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.1	7.4	
2/7/2007	--		8.50	28.50	11.52	6.35	--	--	--	--	--	--	--	--	

Table 2. Summary of Groundwater Monitoring Data: Relative Water Elevations and Laboratory Analyses

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	P/NP	TOC (feet)	Top of Screen (ft bgs)	Bottom of Screen (ft bgs)	DTW (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	pH	Footnote
							GRO/ TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE			
AR-2 Cont.															
8/14/2007	NP	17.87	8.50	28.50	11.75	6.12	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.86	7.41	
2/22/2008	--		8.50	28.50	9.82	8.05	--	--	--	--	--	--	--	--	
8/12/2008	NP		8.50	28.50	11.78	6.09	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.37	9.13	
1/8/2009	--		8.50	28.50	11.40	6.47	--	--	--	--	--	--	--	--	
9/4/2009	NP		8.50	28.50	11.32	6.55	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.53	7.56	
3/5/2010	--		8.50	28.50	9.04	8.83	--	--	--	--	--	--	--	--	
3/11/2011	NP		8.50	28.50	9.80	8.07	150	<0.50	<0.50	<0.50	<0.50	<0.50	2.40	8.6	p (GRO)
8/26/2011	P		8.50	28.50	11.39	6.48	<50	<0.50	<0.50	<0.50	<0.50	<0.50	2.03	8.4	
2/22/2012	P		8.50	28.50	11.42	6.45	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.38	8.69	
8/16/2012	P		8.50	28.50	11.83	6.04	<50	<0.50	<0.50	<0.50	<1.0	<0.50	3.19	8.35	
2/26/2013	P		8.50	28.50	11.17	6.70	<50	<0.50	<0.50	<0.50	<1.0	<0.50	1.29	8.80	
8/8/2013	**P**		**8.50**	**28.50**	**11.82**	**6.05**	**<50**	**<0.50**	**<0.50**	**<0.50**	**<1.0**	**<0.50**	**3.70**	**8.77**	

Symbols & Abbreviations:
-- = Not analyzed/applicable/measured/available
< = 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
GWE = Groundwater elevation measured in ft MSL
mg/L = Milligrams per liter
MTBE = Methyl tert-butyl ether analyzed by EPA Method 8021B unless otherwise noted
NP = Well not purged prior to sampling
P = Well purged prior to sampling
TOC = Top of casing measured in ft MSL
TPH-g = Total petroleum hydrocarbons as gasoline
µg/L = Micrograms per liter

Footnotes:
a = Well was covered by stockpiled soil and not accessible
b = GRO/TPH-g chromatogram pattern: Gasoline C6-C10
c = Primary and confirmation results for xylene varied by greater than 40% RPD. The values may still be useful for their intended purpose
d = TPH-g, BTEX, and MTBE analyzed using EPA Method 8260B starting first quarter 2003
e = Well inaccessible
f = ORC sock in well
g = Well removed from annual sampling schedule
h = ORC sock removed prior to gauging
i = Site re-survey to NAV'88 datum on January 30, 2004
j = Sheen in well
k = Car parked over well AR-2 during monitoring event on 9/2/04. Well was sampled 9/20/04
m = Hydrocarbon result partly due to individual peak(s) in quant. range
n = Possible low bias for GRO due to CCV falling outside acceptance criteria
o = Initial analysis within holding time but failed QA/QC criteria
p = Quantitation of unknown hydrocarbon(s) in sample based on gasoline
q = Well decommissioned 6/16/2010
r = Quantitated against gasoline
s = Reporting limits raised due to high level of non-target analytes
t = Sample preserved improperly

Notes:
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 of non-TPH-g analytes within the requested fuel range resulting in a higher concentration being reported

Beginning in the second quarter 2004, the carbon range for GRO was changed from C6-C10 to C4-C12

Top and bottom of screen depths for wells ADR-1 and ADR-2 are estimated from EMCON sampling sheets

Values for DO and pH were obtained through field measurements

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

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

the accuracy of this information

Table 3. Summary of Fuel Additives Analytical Data

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
A-1									
7/20/2000	--	--	25	--	--	--	--	--	
9/19/2000	--	--	32	--	--	--	--	--	
12/26/2000	--	--	18.7	--	--	--	--	--	
3/20/2001	--	--	<25	--	--	--	--	--	
6/12/2001	--	--	25	--	--	--	--	--	
9/23/2001	--	--	4.5	--	--	--	--	--	
12/28/2001	--	--	<25	--	--	--	--	--	
3/21/2002	--	--	<2.5	--	--	--	--	--	
4/17/2002	--	--	<2.5	--	--	--	--	--	
8/14/2002	--	--	4.9	--	--	--	--	--	
11/27/2002	--	--	6.4	--	--	--	--	--	
2/12/2003	<40	<20	2.9	<0.50	<0.50	<0.50	--	--	
5/22/2003	<100	<20	4.9	<0.50	<0.50	<0.50	--	--	
7/23/2003	<100	<20	10	<0.50	<0.50	<0.50	<0.50	<0.50	
11/13/2003	<100	<20	4.2	<0.50	<0.50	<0.50	--	--	
02/16/2004	<100	<20	3.2	<0.50	<0.50	<0.50	<0.50	<0.50	
05/06/2004	<100	<20	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
09/02/2004	<100	<20	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	
11/29/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
02/02/2005	<100	<20	5.1	<0.50	<0.50	<0.50	<0.50	<0.50	a
05/09/2005	<100	<20	2.7	<0.50	<0.50	<0.50	<0.50	<0.50	
08/11/2005	<100	<20	4.2	<0.50	<0.50	<0.50	<0.50	<0.50	a
02/09/2006	<300	<20	5.6	<0.50	<0.50	<0.50	<0.50	<0.50	b
8/11/2006	<300	<20	3.7	<0.50	<0.50	<0.50	<0.50	<0.50	
2/7/2007	<300	<20	20	<0.50	<0.50	<0.50	<0.50	<0.50	
8/14/2007	<300	<20	1.8	<0.50	<0.50	<0.50	<0.50	<0.50	d (1,2-DCA)
2/22/2008	<1,500	<50	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	
8/12/2008	<1,500	<50	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	
1/8/2009	<6,000	<200	<10	<10	<10	<10	<10	<10	
9/4/2009	<300	<10	7.4	<0.50	<0.50	<0.50	<0.50	<0.50	
3/5/2010	<300	<10	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	
3/11/2011	<3,000	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	

Table 3. Summary of Fuel Additives Analytical Data

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
A-1 Cont.									
8/26/2011	<3,000	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
2/22/2012	<3,000	<100	7.6	<5.0	<5.0	<5.0	<5.0	<5.0	
8/16/2012	<300	<20	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
2/26/2013	<3,000	<200	<10	<10	<10	<10	<10	<10	
8/8/2013	**<750**	**<50**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	**<2.5**	
A-2									
7/20/2000	--	--	<3	--	--	--	--	--	
12/26/2000	--	--	<2.5	--	--	--	--	--	
6/12/2001	--	--	<2.5	--	--	--	--	--	
12/28/2001	--	--	<2.5	--	--	--	--	--	
4/17/2002	--	--	26	--	--	--	--	--	
8/14/2002	--	--	<2.5	--	--	--	--	--	
2/12/2003	<40	<20	12	<0.50	<0.50	<0.50	--	--	
7/23/2003	<100	<20	2.6	<0.50	<0.50	<0.50	<0.50	<0.50	
09/02/2004	<100	<20	2.5	<0.50	<0.50	<0.50	<0.50	<0.50	
08/11/2005	<100	<20	1.2	<0.50	<0.50	<0.50	<0.50	<0.50	a
8/11/2006	<300	<20	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	
8/14/2007	<300	<20	0.65	<0.50	<0.50	<0.50	<0.50	<0.50	d (1,2-DCA)
8/12/2008	<300	<10	0.96	<0.50	<0.50	<0.50	<0.50	<0.50	
9/4/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
3/11/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/26/2011	<1,200	<40	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
2/22/2012	<1,200	<40	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	
8/16/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/26/2013	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
A-3									
12/26/2000	--	--	<2.5	--	--	--	--	--	
12/28/2001	--	--	<2.5	--	--	--	--	--	
2/12/2003	<40	<20	<0.50	<0.50	<0.50	<0.50	--	--	

Table 3. Summary of Fuel Additives Analytical Data

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
A-4									
12/26/2000	--	--	<2.5	--	--	--	--	--	
12/28/2001	--	--	<2.5	--	--	--	--	--	
2/12/2003	<40	<20	<0.50	<0.50	<0.50	<0.50	--	--	
A-5									
7/20/2000	--	--	3	--	--	--	--	--	
9/19/2000	--	--	<3	--	--	--	--	--	
12/26/2000	--	--	<250	--	--	--	--	--	
3/20/2001	--	--	<250	--	--	--	--	--	
6/12/2001	--	--	<5.0	--	--	--	--	--	
9/23/2001	--	--	2.7	--	--	--	--	--	
12/28/2001	--	--	5	--	--	--	--	--	
3/21/2002	--	--	31	--	--	--	--	--	
4/17/2002	--	--	<25	--	--	--	--	--	
8/14/2002	--	--	<25	--	--	--	--	--	
11/27/2002	--	--	<0.5	--	--	--	--	--	
2/12/2003	<400	<200	<5.0	<5.0	<5.0	<5.0	--	--	
5/22/2003	<1,000	<200	<5.0	<5.0	<5.0	<5.0	--	--	
7/23/2003	<1,000	<200	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
11/13/2003	<1,000	<200	<5.0	<5.0	<5.0	<5.0	--	--	
02/16/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
05/06/2004	<500	<100	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	
09/02/2004	<200	<40	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	
11/29/2004	<10,000	<2,000	<50	<50	<50	<50	<50	<50	
02/02/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
05/09/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/11/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
02/09/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	b
8/11/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/7/2007	<6,000	<400	<10	<10	<10	<10	<10	<10	
8/14/2007	<6,000	<400	<10	<10	<10	<10	<10	<10	d (1,2-DCA)
2/22/2008	<30,000	<1,000	<50	<50	<50	<50	<50	<50	

Table 3. Summary of Fuel Additives Analytical Data

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
A-5 Cont.									
8/12/2008	<30,000	<1,000	<50	<50	<50	<50	<50	<50	
1/8/2009	<30,000	<1,000	<50	<50	<50	<50	<50	<50	
9/4/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
3/5/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
3/11/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/26/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/22/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/16/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/26/2013	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
A-6									
7/20/2000	--	--	6	--	--	--	--	--	
9/19/2000	--	--	6	--	--	--	--	--	
12/26/2000	--	--	8.17	--	--	--	--	--	
3/20/2001	--	--	19.9	--	--	--	--	--	
6/12/2001	--	--	15	--	--	--	--	--	
9/23/2001	--	--	53	--	--	--	--	--	
12/28/2001	--	--	26	--	--	--	--	--	
3/21/2002	--	--	19	--	--	--	--	--	
4/17/2002	--	--	16	--	--	--	--	--	
8/14/2002	--	--	75	--	--	--	--	--	
11/27/2002	--	--	16	--	--	--	--	--	
2/12/2003	<40	<20	9.9	<0.50	<0.50	<0.50	--	--	
5/22/2003	<100	<20	11	<0.50	<0.50	0.6	--	--	
7/23/2003	<100	<20	14	<0.50	<0.50	0.54	<0.50	<0.50	
11/13/2003	<100	<20	2.3	<0.50	<0.50	<0.50	--	--	
02/16/2004	<100	<20	3.9	<0.50	<0.50	<0.50	<0.50	<0.50	
05/06/2004	<100	<20	7.1	<0.50	<0.50	<0.50	<0.50	<0.50	
09/02/2004	<100	<20	4.4	<0.50	<0.50	<0.50	<0.50	<0.50	
11/29/2004	<100	<20	2.9	<0.50	<0.50	<0.50	<0.50	<0.50	
02/02/2005	<100	<20	14	<0.50	<0.50	0.91	<0.50	<0.50	a

Table 3. Summary of Fuel Additives Analytical Data

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
A-6 Cont.									
05/09/2005	<100	<20	12	<0.50	<0.50	0.66	<0.50	<0.50	
08/11/2005	<100	<20	14	<0.50	<0.50	2.2	<0.50	<0.50	a
02/09/2006	<300	<20	17	<0.50	<0.50	1.2	<0.50	<0.50	b
8/11/2006	<300	<20	21	<0.50	<0.50	<0.50	<0.50	<0.50	
2/7/2007	<300	<20	7.1	<0.50	<0.50	<0.50	<0.50	<0.50	
8/14/2007	<300	<20	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	d (1,2-DCA)
2/22/2008	<300	<10	11	<0.50	<0.50	0.89	<0.50	<0.50	
8/12/2008	<300	<10	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	
1/8/2009	<300	<10	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	
9/4/2009	<300	<10	4.9	<0.50	<0.50	<0.50	<0.50	<0.50	
3/5/2010	<300	<10	4.1	<0.50	<0.50	<0.50	<0.50	<0.50	
3/11/2011	<300	<10	5.7	<0.50	<0.50	<0.50	<0.50	<0.50	
8/26/2011	<300	<10	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	
2/22/2012	<300	<10	2.3	<0.50	<0.50	<0.50	<0.50	<0.50	
8/16/2012	<150	<10	1.5	<0.50	<0.50	<0.50	<0.50	<0.50	
2/26/2013	<150	<10	3.6	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2013	**<150**	**<10**	**1.8**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
ADR-1									
7/20/2000	--	--	22	--	--	--	--	--	
9/19/2000	--	--	22	--	--	--	--	--	
12/26/2000	--	--	14.7	--	--	--	--	--	
3/20/2001	--	--	10.8	--	--	--	--	--	
6/12/2001	--	--	7.5	--	--	--	--	--	
9/23/2001	--	--	2.8	--	--	--	--	--	
12/28/2001	--	--	6.8	--	--	--	--	--	
3/21/2002	--	--	<2.5	--	--	--	--	--	
4/17/2002	--	--	<2.5	--	--	--	--	--	
8/14/2002	--	--	<2.5	--	--	--	--	--	
11/27/2002	--	--	1.1	--	--	--	--	--	
2/12/2003	<40	<20	0.73	<0.50	<0.50	<0.50	--	--	
5/22/2003	<100	<20	3.5	<0.50	<0.50	<0.50	--	--	

Table 3. Summary of Fuel Additives Analytical Data

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ADR-1 Cont.									
7/23/2003	<100	<20	4	<0.50	<0.50	<0.50	<0.50	<0.50	
11/13/2003	<100	<20	1.6	<0.50	<0.50	<0.50	--	--	
02/16/2004	<100	<20	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	
05/07/2004	<1,000	<200	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	
09/02/2004	<100	<20	0.84	<0.50	<0.50	<0.50	<0.50	<0.50	
11/29/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
02/02/2005	<100	<20	3.4	<0.50	<0.50	<0.50	<0.50	<0.50	a
05/09/2005	<100	<20	2.6	<0.50	<0.50	<0.50	<0.50	<0.50	
08/11/2005	<100	<20	4.0	<0.50	<0.50	<0.50	<0.50	<0.50	a
02/09/2006	<300	<20	2.9	<0.50	<0.50	<0.50	<0.50	<0.50	b
8/11/2006	<300	<20	2.2	<0.50	<0.50	<0.50	<0.50	<0.50	
2/7/2007	<300	<20	3.8	<0.50	<0.50	<0.50	<0.50	<0.50	
8/14/2007	<300	<20	3.6	<0.50	<0.50	<0.50	<0.50	<0.50	d (1,2-DCA)
2/22/2008	<300	<10	3.9	<0.50	<0.50	<0.50	<0.50	<0.50	
8/12/2008	<600	<20	6.5	<1.0	<1.0	<1.0	<1.0	<1.0	
1/8/2009	<300	<10	2.4	<0.50	<0.50	<0.50	<0.50	<0.50	
9/4/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
3/5/2010	<300	<10	0.92	<0.50	<0.50	<0.50	<0.50	<0.50	
3/11/2011	<300	<10	1.4	<0.50	<0.50	<0.50	<0.50	<0.50	
8/26/2011	<300	<10	1.7	<0.50	<0.50	<0.50	<0.50	<0.50	
2/22/2012	<300	<10	1.1	<0.50	<0.50	<0.50	<0.50	<0.50	
8/16/2012	<150	<10	1.6	<0.50	<0.50	<0.50	<0.50	<0.50	
2/26/2013	<150	<10	1.3	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2013	**<150**	**<10**	**0.95**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	
ADR-2									
7/20/2000	--	--	23	--	--	--	--	--	
9/19/2000	--	--	34	--	--	--	--	--	
12/26/2000	--	--	32.8	--	--	--	--	--	
9/23/2001	--	--	60	--	--	--	--	--	
12/28/2001	--	--	61	--	--	--	--	--	
3/21/2002	--	--	15	--	--	--	--	--	

Table 3. Summary of Fuel Additives Analytical Data

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
ADR-2 Cont.									
4/17/2002	--	--	<25	--	--	--	--	--	
8/14/2002	--	--	<50	--	--	--	--	--	
11/27/2002	--	--	74	--	--	--	--	--	
2/12/2003	<400	<200	22	<5.0	<5.0	<5.0	--	--	
5/22/2003	<1,000	<200	9.7	<5.0	<5.0	<5.0	--	--	
7/23/2003	<100	<20	8.4	<0.50	<0.50	<0.50	<0.50	<0.50	
09/02/2004	<1,000	<200	5.6	<5.0	<5.0	<5.0	<5.0	<5.0	
08/11/2005	<500	<100	9.0	<2.5	<2.5	<2.5	<2.5	<2.5	a
8/11/2006	<600	<40	4.6	<1.0	<1.0	<1.0	<1.0	<1.0	a, c
8/14/2007	<300	<20	5.3	<0.50	<0.50	<0.50	<0.50	<0.50	d (1,2-DCA)
8/12/2008	<300	<10	4.2	<0.50	<0.50	<0.50	<0.50	<0.50	
9/4/2009	<300	<10	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
3/11/2011	<300	<10	1.9	<0.50	<0.50	<0.50	<0.50	<0.50	
8/26/2011	<300	11	40	<0.50	<0.50	14	<0.50	<0.50	
2/22/2012	<300	<10	11	<0.50	<0.50	1.7	<0.50	<0.50	
8/16/2012	<300	<20	320	<1.0	<1.0	140	<1.0	<1.0	
2/26/2013	<150	<10	6.4	<0.50	<0.50	0.76	<0.50	<0.50	
8/8/2013	**<150**	**<10**	**6.9**	**<0.50**	**<0.50**	**0.71**	**<0.50**	**<0.50**	
AR-1									
7/20/2000	--	--	6	--	--	--	--	--	
9/19/2000	--	--	<3	--	--	--	--	--	
12/26/2000	--	--	<2.5	--	--	--	--	--	
6/12/2001	--	--	17	--	--	--	--	--	
12/28/2001	--	--	<2.5	--	--	--	--	--	
4/17/2002	--	--	<2.5	--	--	--	--	--	
8/14/2002	--	--	<2.5	--	--	--	--	--	
2/12/2003	<40	<20	<0.50	<0.50	<0.50	<0.50	--	--	
7/23/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
09/02/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/11/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/11/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

Table 3. Summary of Fuel Additives Analytical Data

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
AR-1 Cont.									
8/12/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/4/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
AR-2									
7/20/2000	--	--	<3	--	--	--	--	--	
9/19/2000	--	--	<3	--	--	--	--	--	
12/26/2000	--	--	<2.5	--	--	--	--	--	
6/12/2001	--	--	82	--	--	--	--	--	
12/28/2001	--	--	30	--	--	--	--	--	
4/17/2002	--	--	3.2	--	--	--	--	--	
8/14/2002	--	--	<2.5	--	--	--	--	--	
2/12/2003	<40	<20	<0.50	<0.50	<0.50	<0.50	--	--	
7/23/2003	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
09/20/2004	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
08/11/2005	<100	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	a
8/11/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/14/2007	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	d (1,2-DCA)
8/12/2008	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/4/2009	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
3/11/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/26/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/22/2012	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/16/2012	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/26/2013	<150	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
8/8/2013	**<150**	**<10**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	**<0.50**	

Symbols & Abbreviations:
-- = Not analyzed/applicable/measured/available
< = Not detected at or above specified laboratory reporting limit
1,2-DCA = 1,2-Dichloroethane
DIPE = Diisopropyl ether
EDB = 1,2-Dibromoethane
ETBE = Ethyl tert-butyl ether
MTBE = Methyl tert-butyl ether
TAME = tert-Amyl methyl ether
TBA = tert-Butyl alcohol
g/L = Micrograms per Liter

Footnotes:
a = Calibration verification was within method limits but outside contract limits for ethanol
b = Initial analysis within holding time but failed QA/QC criteria
c = Possible high bias due to CCV failing outside acceptance criteria for TBA.
d = CCV recovery above limit; analyte not detected

Notes:
All volatile organic compounds analyzed using EPA Method 8260B

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 4. Summary of Groundwater Gradient - Direction and Magnitude

ARCO Service Station #2169, 889 W. Grand Ave., Oakland, CA

Date Measured	Approximate Gradient Direction	Approximate Gradient Magnitude (ft/ft)
7/20/2000	Northwest	0.004
9/19/2000	West-Northwest	0.003
12/26/2000	Northwest	0.004
3/20/2001	Northwest	0.003
6/12/2001	Northwest	0.004
9/23/2001	Northwest	0.004
12/28/2001	Variable	Variable
3/21/2002	Northwest	0.004
4/17/2002	Northwest	0.003
8/14/2002	West	0.003
11/27/2002	West	0.003
2/12/2003	South	0.005
5/22/2003	West to Northwest	0.002 to 0.003
7/23/2003	Southwest to Northwest	0.005 to 0.004
11/13/2003	Southwest	0.009
2/16/2004	Southwest	0.009
5/6/2004	Southwest	0.004
9/2/2004	West-Northwest	0.005
11/29/2004	West to Southwest	0.005 to 0.006
2/2/2005	Northwest to Southwest	0.005
5/9/2005	Northwest	0.01
8/11/2005	West	0.004
2/9/2006	West	0.003
8/11/2006	Northwest*	0.005
2/7/2007	North-Northwest*	0.004
8/14/2007	Northwest	0.005
2/22/2008	North-Northwest	0.005
8/12/2008	North-Northwest	0.005
1/8/2009	North-Northwest	0.003
9/4/2009	Northwest	0.002
3/5/2010	West-Northwest	0.006
3/11/2011	Northeast	0.002
8/26/2011	Northeast	0.003
2/22/2012	Northeast	0.001
8/16/2012	Northeast	0.001
2/19/2013	Northeast	0.001
8/8/2013	**North-Northeast**	**0.001**

Symbols & Abbreviations:
* = Base map provided to Broadbent & Associates, Inc. incorrectly oriented north arrow 47° east of true north. Flow directions from Broadbent & Associates, Inc. reports for Third Quarter 2006 and First Quarter 2007 corrected in table above

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

Table 5 - Laboratory Analytical Results for Post-Remediation Verification Soil Boring Samples
ARCO Station No.2169, 889 W. Grand Ave, Oakland, Alameda County, California

Sample ID	Sample Date	GRO (C6-C12) (mg/kg)	DRO (C10-C28) (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	MTBE (mg/kg)	ETBE (mg/kg)	DIPE (mg/kg)	TAME (mg/kg)	TBA (mg/kg)	Ethanol (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)
SB-1 8-9.5M	6/17/2010	**0.63**	***300*** (LX)	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SB-1 12-13.5T	6/17/2010	***230***	**30**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	<0.20	<1.0	<10	<0.10	<0.10
SB-1 16-17.5T	6/17/2010	***95***	**9.1**	<0.10	<0.10	<0.10	<0.10	<0.10	<0.20	<0.20	<0.20	<1.0	<10	<0.10	<0.10
SB-1 20-21.5M	6/17/2010	<0.50	<5.0	***0.13***	<0.10	**0.63**	***2.4***	<0.10	<0.20	<0.20	<0.20	<1.0	<10	<0.10	<0.10
SB-1 24-25.5M	6/17/2010	**5.2**	<5.0	**0.020**	**0.012**	**0.044**	**0.17**	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SB-1 28-29.5B	6/17/2010	**5.2** (N1)	<5.0	**0.0087**	**0.0081**	**0.061**	**0.24**	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SW-1 (12')	1/16/1992	1200	620	6.8	47	22	140	NA	NA	NA	NA	NA	NA	NA	NA
SB-2 8-9.5M	6/17/2010	**18** (N1)	***640***	<0.0010	<0.0010	**0.0025**	**0.0032**	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SB-2 12-13.5B	6/17/2010	**8.8**	**52** (LX)	<0.0010	<0.0010	**0.0023**	**0.0016**	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SB-2 16-17.5M	6/17/2010	**31** (N1)	***150***	<0.10	<0.10	**0.15**	<0.10	<0.10	<0.20	<0.20	<0.20	<1.0	<10	<0.10	<0.10
SB-2 20-21.5M	6/17/2010	<0.50	<5.0	<0.0010	<0.0010	**0.0071**	**0.0033**	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SB-2 24-25.5M	6/17/2010	<0.50	<5.0	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SB-2 28-29.5T	6/17/2010	<0.50	<5.0	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0020	<0.0020	<0.0020	<0.010	<0.10	<0.0010	<0.0010
SW-6 (12')	1/16/1992	100	2.8	0.88	3.9	2.1	15	NA	NA	NA	NA	NA	NA	NA	NA
SW-7 (12')	1/16/1992	420	10	4.2	16	8.0	53	NA	NA	NA	NA	NA	NA	NA	NA
ESL - Res./Shallow/DW		83	83	0.044	2.9	2.3	2.3	0.023	NE	NE	NE	0.075	NE	0.0045	0.00033
ESL - Res./Deep/DW		83	83	0.044	2.9	3.3	2.3	0.023	NE	NE	NE	0.075	NE	0.0045	0.00033
ESL - Comm./Shallow/DW		83	83	0.044	2.9	3.3	2.3	0.023	NE	NE	NE	0.075	NE	0.0045	0.00033
ESL - Comm./Deep/DW		83	83	0.044	2.9	3.3	2.3	0.023	NE	NE	NE	0.075	NE	0.0045	0.00033
ESL - Res./Shallow/NDW		100	100	0.12	9.3	2.3	11	8.4	NE	NE	NE	100	NE	0.22	0.019
ESL - Res./Deep/NDW		180	180	2.0	9.3	4.7	11	8.4	NE	NE	NE	110	NE	1.8	1.0
ESL - Comm./Shallow/NDW		180	180	0.27	9.3	4.7	11	8.4	NE	NE	NE	110	NE	0.48	0.044
ESL - Comm./Deep/NDW		180	180	2.0	9.3	4.7	11	8.4	NE	NE	NE	110	NE	1.8	1.0

Notes:

SB-1/SB-2 samples collected 6/17/2010 by BAI analyzed for GRO/DRO by EPA Method 8015 Modified with remaining analyses by EPA Method 8260B.

SW-1/SW-6/SW-7 samples collected 1/16/1992 by ROUX for TPH-G/TPH-D by EPA Method 8015 Modified, and BTEX by EPA Method 8020 (ROUX, 7/14/1992).

<X = Not detected above the given laboratory reporting limit (X) in milligrams per kilogram (mg/kg)

(LX) = Quantification of unknown hydrocarbon(s) in sample based on diesel.

(N1) = The sample chromatographic pattern for TPH matches the chromatographic pattern of the specified standard but heavier hydrocarbons are also present (or were detected).

NA = Not Analyzed.

ESL - Res./Shallow/DW = Environmental Screening Level (ESL) for a scenario with residential land use, shallow soils (<3m), where ground water is a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Res./Deep/DW = ESL for a scenario with residential land use, deep soils (>3m), where ground water is a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Comm./Shallow/DW = ESL for a scenario with commerical or industrial land use only, shallow soils (<3m), where ground water is a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Comm./Deep/DW = ESL for a scenario with commercial or industrial land use only, deep soils (>3m), where ground water is a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Res./Shallow/NDW = Environmental Screening Level (ESL) for a scenario with residential land use, shallow soils (<3m), where ground water is NOT a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Res./Deep/NDW = ESL for a scenario with residential land use, deep soils (>3m), where ground water is NOT a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Comm./Shallow/NDW = ESL for a scenario with commerical or industrial land use only, shallow soils (<3m), where ground water is NOT a current or potential source of drinking water (SFBRWQCB, 5/2008).

ESL - Comm./Deep/NDW = ESL for a scenario with commercial or industrial land use only, deep soils (>3m), where ground water is NOT a current or potential source of drinking water (SFBRWQCB, 5/2008).

NE = Value Not Established.

BOLD = Analyte detected above the laboratory reporting limit.

BOLD/ITALICS = Analyte detected above the depth-specific ESL for residential or commercial land use scenario where ground water is a current or potential source of drinking water.

FIGURES

Figure 1
GRO Concentrations vs. Time
ARCO Station #2169
889 West Grand Avenue, Oakland, California

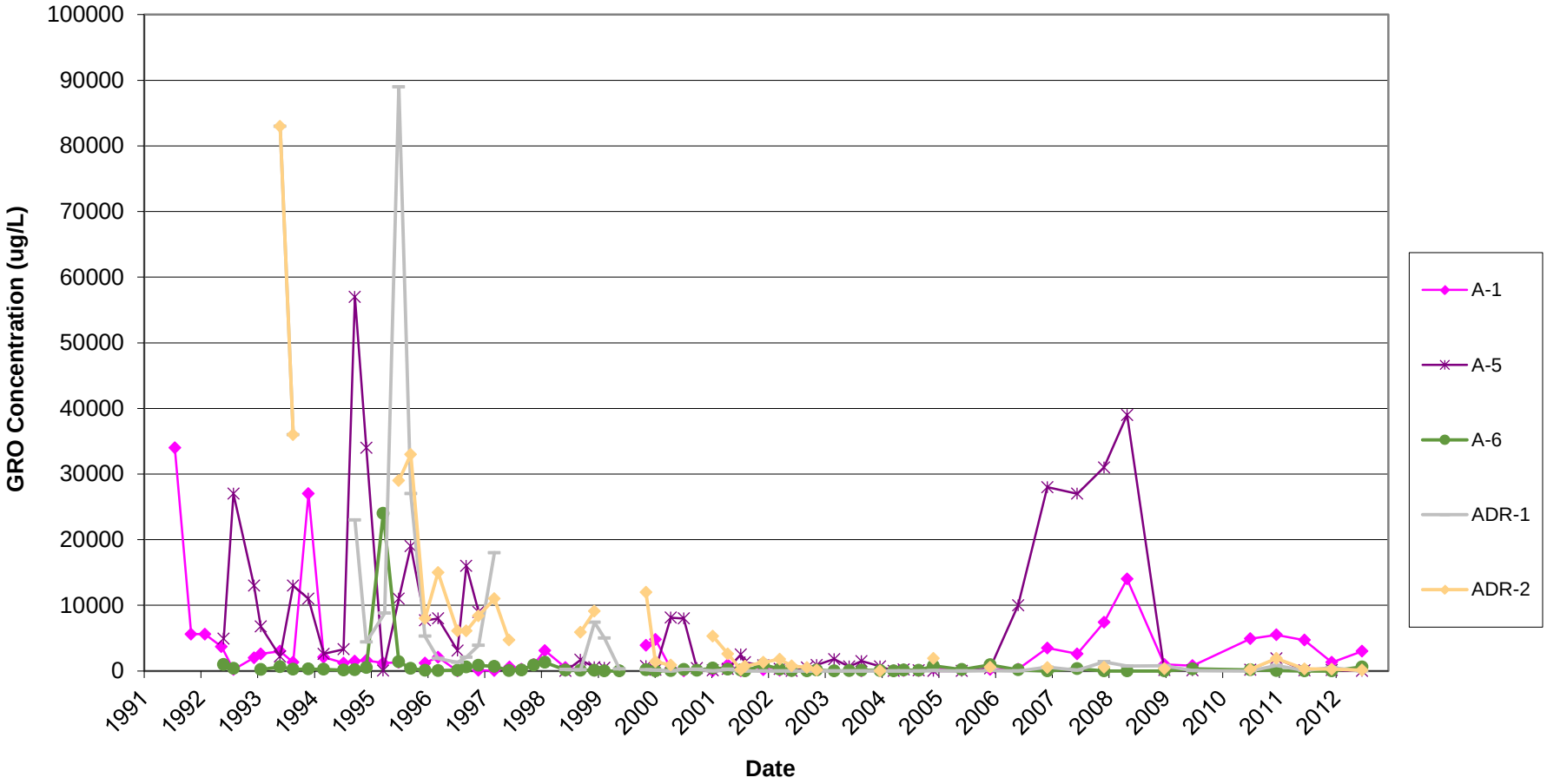


Figure 2
Benzene Concentrations vs. Time
ARCO Station #2169
889 West Grand Avenue, Oakland, California

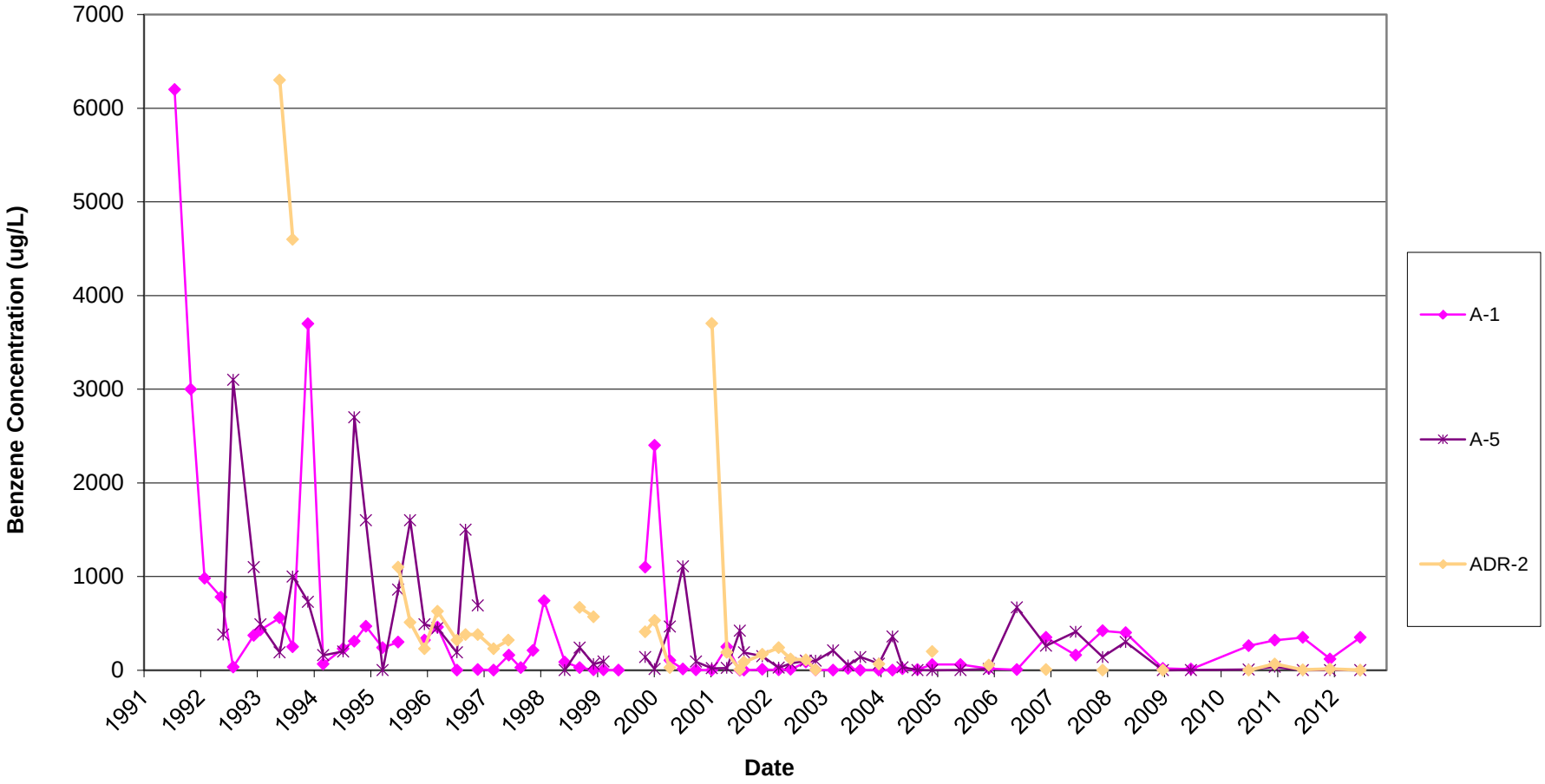
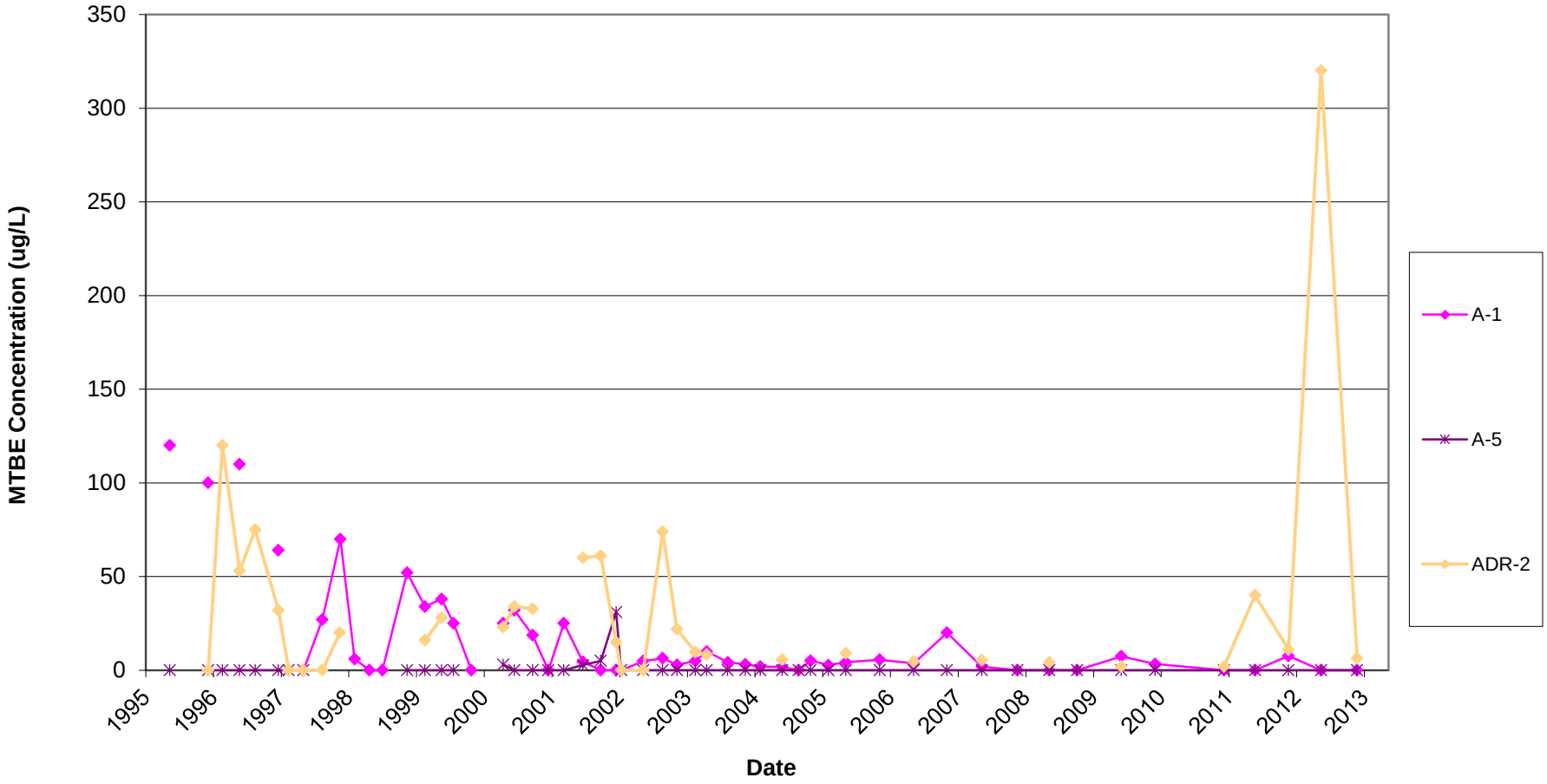


Figure 3
MTBE Concentrations vs. Time
ARCO Station #2169
889 West Grand Avenue, Oakland, California



APPENDIX A

Site Background

On May 14, 1991, Gettler-Ryan, Inc. conducted a preliminary soil investigation and well abandonment prior to UST replacement. Four soil borings (A-B through A-E) were advanced to an approximate depth of 15 feet below ground surface (bgs) adjacent to the existing UST complex at the time. One soil boring (A-A) was drilled to an approximate depth of 20 feet bgs within the area of the proposed UST complex at the time. Groundwater was encountered within each boring at approximately 13.5 feet bgs. Two soil samples were collected from each boring at approximate five foot intervals. Soil samples were analyzed for Total Petroleum Hydrocarbons as Gasoline (TPHg), Total Petroleum Hydrocarbons as Diesel (TPHd), and Benzene, Toluene, Ethylbenzene, and Total Xylenes (BTEX). An eight inch diameter monitoring well approximately 20 feet in depth located in the vicinity of the existing UST complex was also abandoned by Gettler-Ryan, Inc. on May 14, 1991. Based on the review of available historical documents, the purpose of this monitoring well is unknown. Summarized analytical results, boring locations, soil boring logs, and geologic cross-sections from this investigation are provided in Appendices B and C.

In January 1992, Roux Associates (Roux) oversaw Golden West Builders perform the excavation and removal of four single-wall USTs on-site. According to Roux, the removed USTs appeared to be in good condition with no visible holes. The static groundwater level measured within the excavation was approximately 13 feet bgs. Following the UST removal, Roux collected nine soil samples (SW-1 through SW-9) from the sidewalls of the excavation at approximately 12 feet bgs. Soil samples were analyzed for TPHg, TPHd, and BTEX. Excavated soil was stockpiled on-site and aerated to reduce hydrocarbon concentrations. According to Roux, approximately 2,196 cubic yards of soil were transported to Redwood landfill for disposal and approximately 10,000 gallons of groundwater encountered during the excavation was transported by H & H for proper disposal at their facility in San Francisco, California. Four new, double-wall, 10,000 gallon fiberglass USTs were installed at the Site following the excavation and removal activities. Summarized analytical data and specific soil sampling locations from this investigation are provided in Appendix B.

On February 19, 1992, following the removal of the product lines, Roux collected five soil samples (L1 through L5) from the product line trenches at depths ranging from approximately three to four feet bgs. Each soil sample was analyzed for TPHg and BTEX. Samples L4 and L5 were also analyzed for TPHd. Based on elevated concentrations of TPHd observed in sample L4 collected adjacent to the pump island, over-excavation was conducted within this product line trench in order to remove additional contaminated soil. Following over-excavation, a confirmation soil sample (LINE-4A) was collected at approximately seven feet bgs. Summarized analytical data and specific sampling locations from this investigation are provided in Appendix B.

Components associated with a vapor and groundwater extraction system were installed concurrently with the installation of the new USTs and product piping to reduce future trenching. A 12-inch diameter slotted polyvinyl chloride (PVC) conductor casing was installed within the new UST complex to facilitate the future installation of a groundwater extraction well. Seven vault boxes were installed at locations chosen for the future installation of vapor extraction and groundwater monitoring wells, soil borings, or treatment systems. Assorted

horizontal PVC piping was installed within subsurface trenches between the vault boxes in anticipation of connection to a remediation system.

In March 1992, GeoStrategies, Inc. (GSI) advanced five soil borings (A-1 through A-4 and AR-1) on-site to total depths ranging from approximately 26.5 to 30.0 feet bgs. Soil samples were collected at five-foot intervals and analyzed for TPHg, TPHd, and BTEX. A total of six soil samples were selected for laboratory analysis. Borings A-1 through A-4 were converted into three-inch diameter monitoring wells A-1 through A-4 and installed to depths of 25.0, 25.0, 29.5, and 28.0 feet bgs, respectively. Boring AR-1 was converted into a six-inch diameter recovery well installed to a depth of 28.0 feet bgs. Summarized analytical data, boring logs, geologic cross-sections, and boring/well locations from this investigation are provided in Appendices B and C.

On June 8, 1992, four on-site exploratory borings (AV-1 through AV-3 and AR-2) were installed by GSI. Soil samples were collected at five-foot intervals and transported to a laboratory for analysis of TPHg, TPHd, and BTEX. A total of six soil samples were submitted for laboratory analysis. Borings AV-1 through AV-3 were converted into two-inch diameter vapor extraction wells. Wells AV-1 through AV-3 were installed to a total approximate depth of 14.5 feet bgs. Boring AR-2 was advanced through the 12-inch diameter conductor casing previously discussed and converted into a four-inch diameter recovery well to a total depth of approximately 28.5 feet bgs. Summarized analytical data, boring logs, and boring/well locations from this investigation are provided in Appendices B and C.

On June 11, 1992, GSI conducted a vapor extraction test utilizing well AV-2. Wells AV-1 and AV-3 were used as observation wells during the testing activities. According to GSI, based on vacuum pressure readings obtained from the observation wells, an estimated 50-foot radius of influence from the extraction well was calculated. An influent and effluent vapor sample was collected during the vapor extraction test. These samples were shipped to a laboratory for analysis of TPHg and BTEX.

On June 15 and 16, 1992, GSI performed a four-hour step-drawdown aquifer test and a 24-hour constant-rate aquifer test utilizing recovery well AR-1. These tests were conducted to assess the feasibility of using recovery well AR-1 to achieve hydrodynamic control of groundwater for extraction of petroleum hydrocarbons from the first encountered water-bearing zone. Drawdown was observed within each of the observation wells during aquifer testing. According to GSI, the results of the aquifer test indicated that pump and treat technology would be a feasible method for remediation at the Site.

On February 4, 1993, GSI advanced two off-site exploratory soil borings (A-5 and A-6) to a total depth of approximately 30 feet bgs. Soil samples were collected at five-foot intervals from each boring and submitted for laboratory analysis of TPHg and BTEX. Soil samples collected from boring A-5 were also analyzed for Halogenated Volatile Organics (HVO). A total of four soil samples were selected for laboratory analysis. Borings A-5 and A-6 were converted into two-inch groundwater monitoring wells A-5 and A-6. Well A-5 was installed to a total approximate depth of 30 feet bgs and well A-6 was installed to a total approximate depth of 28.5 feet bgs.

Summarized analytical data, boring/monitoring well construction logs, and boring/well locations from this investigation are provided in Appendices B and C.

In September 1993, GSI conducted an off-site well search and environmental records search. The results of the off-site well search concluded that forty off-site wells are located within a ½-mile radius of the Site. However, none of these wells included drinking water wells. The environmental records search indicated that forty one sites of environmental concern are located within a ½-mile radius of the Site, which included 5 sites located less than a ¼-mile in the predominant upgradient direction. Based on proximity, location, and historical data, GSI concluded that three of these sites (Chevron #91853 – 850 West Grand Ave., Fyne Building – 774 West Grand Ave., and Greyhound Bus Terminal – 2103 San Pablo Ave.) could be potential secondary sources of hydrocarbon contamination within off-site well A-5.

On September 7 and 8, 1993, GSI advanced five on-site soil borings (AS-1 through AS-3, AV-4 and AV-6). Borings AS-1 through AS-3 were converted into air sparge wells and borings AV-4 and AV-5 were converted into vapor extraction wells. Summarized analytical data, boring/monitoring well construction logs, and well locations are provided in Appendices A and B. On September 15 and 17, 1993, GSI performed two eight-hour air sparge/vapor extraction tests at two locations on-site. Well AV-4 was utilized as the vapor extraction well and well AS-2 as the sparge well during the first test. Well AV-2 was utilized as the vapor extraction well and well AS-1 as the sparge well during the second test.

On December 6 and 7, 1993, GSI oversaw the installation of two air sparge wells (AS-4 and AS-5), two vapor extraction wells (AV-6 and AV-7), and two dual groundwater recovery/vapor extraction wells ADR-1 and ADR-2. Summarized analytical data, boring/monitoring well construction logs, geologic cross-sections, and well locations are provided in Appendices A and B. In December 1993 and January 1994, installation of an on-site remediation system with the capability for air sparging (optional), vapor extraction, and groundwater extraction (optional) was completed.

The vapor extraction and air sparging remediation system began operation on June 2, 1994. Vapor treatment was accomplished using a thermal/catalytic oxidizer. The remediation system consisted of a vapor extraction blower, moisture separator, oxidizer, and controls. Operation of the air sparge and vapor extraction system continued until December 2001 when it was shutdown due to the observation of low concentrations. During remediation system operation, approximately 9,151 pounds of hydrocarbons were removed from the soil and groundwater on-site. Based on review of the available historical documents, the groundwater extraction system was not operated at the Site.

In June 2010, 15 monitor/remedial wells associated with the Site were abandoned due to scheduled raze and rebuild activities, which included installation of a carwash facility onsite. Additionally, during this same time two on-site borings, SB-1 and SB-2, were installed in order to collect post-remediation verification sampling data in the area of the former USTs. Summarized analytical data, boring logs, and boring locations are provided in Appendices B and C.

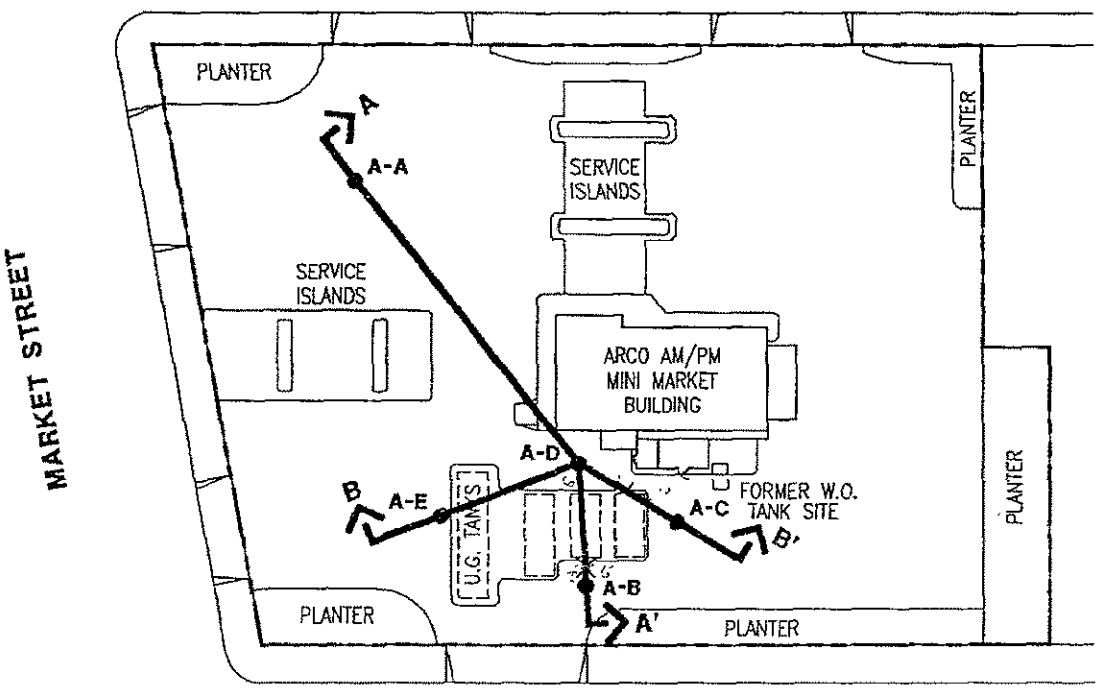
Groundwater monitoring has occurred at the Site since 1992. Historical groundwater analytical data (prior to 2000) is provided in Appendix B.

APPENDIX B

Historical Soil and Groundwater Data

EXPLANATION

- Soil Boring
- Abandoned well
- Sections



Base Map: ARCO Site Plan dated 6-17-83 and ARCO Tank & Line Replacement Site Plan dated 4-22-91

GeoStrategies Inc.

SITE PLAN
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792702-1	DHP	7/91	

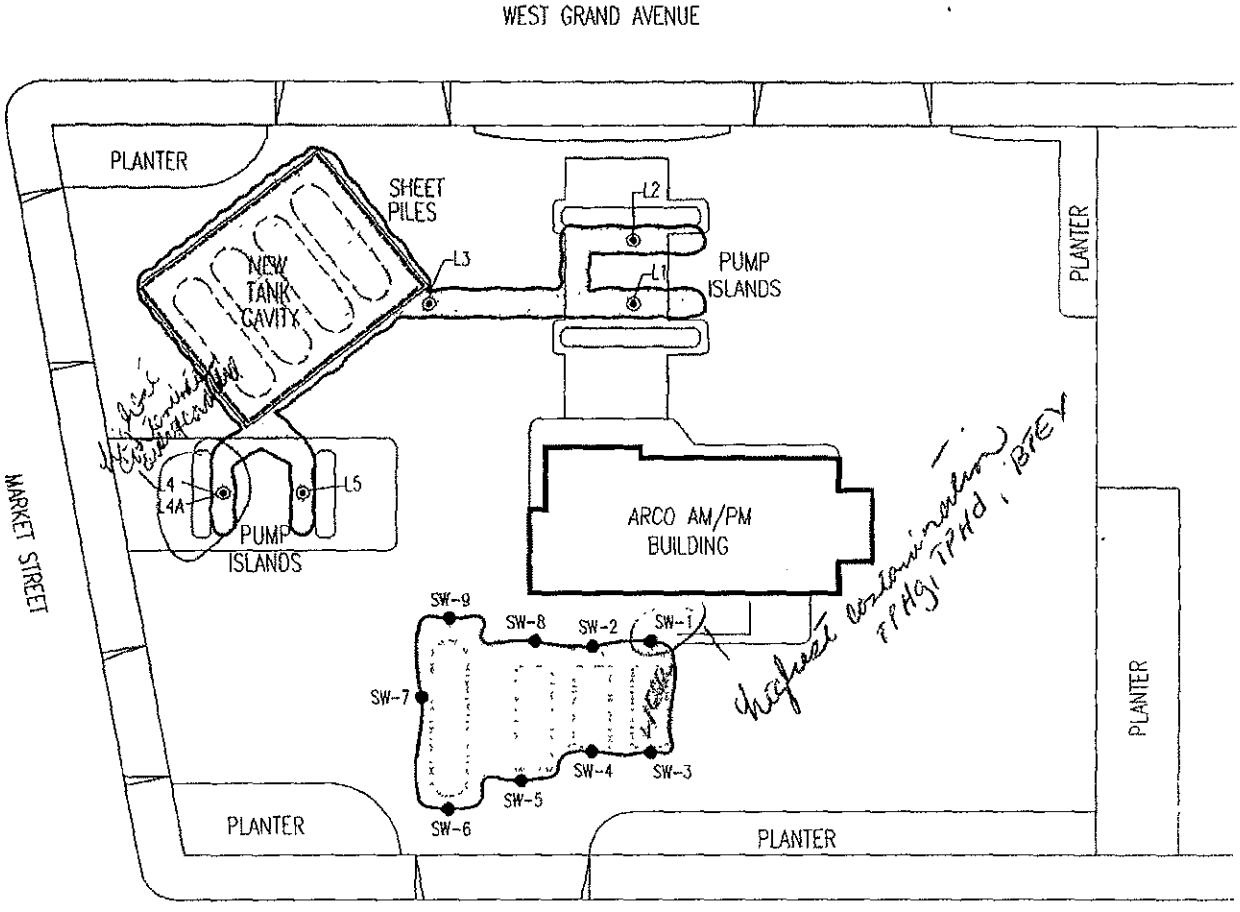
TABLE 1

SOIL ANALYSES DATA

SAMPLE NO	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	TPH-D (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
A-A-4.5	14-May-91	22-May-91	<1.0	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
A-A-9.5	14-May-91	22-May-91	69	31	1.0	3.8	1.6	7.8
A-B-5.5	14-May-91	22-May-91	250	31	2.1	6.2	4.5	30
A-B-10.5	14-May-91	22-May-91	960	280	16	61	19	110
A-C-6.0	14-May-91	22-May-91	<1.0	<1.0	<0.005	<0.005	<0.005	<0.0050
A-C-11.0	14-May-91	22-May-91	1,900	300	18	64	44	220
A-D-6.0	14-May-91	22-May-91	2.3	1.6	0.10	0.019	0.11	0.44
A-D-9.5	14-May-91	22-May-91	10	1.6	0.27	0.021	0.47	1.7
A-E-6.5	14-May-91	22-May-91	<1.0	<1.0	0.16	<0.0050	0.0070	<0.0050
A-E-10.5	14-May-91	22-May-91	330	130	3.9	17	6.5	39

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
TPH-D = Total Petroleum Hydrocarbons calculated as Diesel
PPM = Parts Per Million

Note: 1. All data shown as <x are reported as ND (none detected).



EXPLANATION:

EXCAVATED AREA

SW-4 LOCATION AND DESIGNATION OF SOIL SAMPLE

L1 LOCATION AND DESIGNATION OF LINE TRENCH SOIL SAMPLE.

SOURCE:

MAP MODIFIED FROM PLATE 1 10/91
PROVIDED BY GEOSTRATEGIES INC.

0' 40' 80'

APPROXIMATE SCALE

ROUX ASSOCIATES ENVIRONMENTAL CONSULTING & MANAGEMENT	COMPILED BY: P.S PREPARED BY: D.D PROJECT MNGR. P.S. DATE: 06/92 SCALE: AS SHOWN PROJECT NO A133W01 FILE NAME: AR2169XX	PREPARED FOR: ARCO PRODUCTS COMPANY TITLE: LOCATION OF FORMER TANK CAVITY AND PRODUCT LINE TRENCH SOIL SAMPLES ARCO FACILITY NO. 2169	FIGURE 3

TABLE 1: Summary of Soil Analyses: Former Tank Cavity and Product Line Trenches
ARCO Facility No. 2169, Oakland, California

Sample Designation	Date	Depth (feet bgs)	TPH-G(1)	TPH-D(1)	BTEX Distinction (1) Benzene	Toluene	Ethylbenzene	Xylenes
Former Tank Cavity								
SW-1	1/16/92	12	1200	620	6.8	47	22	140
SW-2	1/16/92	12	81	19	0.98	2.9	1.9	9.1
SW-3	1/16/92	12	200	7.1	3.0	10	4.6	25
SW-4	1/16/92	12	170	3.4	3.2	11	3.9	22
SW-5	1/16/92	12	3.0	ND	1.1	0.022	0.21	0.11
SW-6	1/16/92	12	100	2.8	0.88	3.9	2.1	15
SW-7	1/16/92	12	420	10	4.2	16	8.0	53
SW-8	1/16/92	12	180	4.4	2.5	2.7	3.7	23
SW-9	1/16/92	12	200	17	2	4.5	4.7	29
Product Line Trenches								
LINE-1	2/19/92	3	120	NA	0.36	0.81	0.56	3.8
LINE-2	2/19/92	3	4.7	NA	0.32	0.097	0.088	0.18
LINE-3	2/19/92	4	ND	NA	ND	ND	ND	ND
LINE-4	2/19/92	3	140	450	2.2	0.28	2.2	5.1
LINE-5	2/19/92	3	2.8	6.0	0.19	0.005	0.024	0.088
LINE-4A	3/3/92	7	4.6	54	0.054	0.059	0.14	0.64

FOOTNOTES

(1) = Concentrations reported in mg/kg (ppm)

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

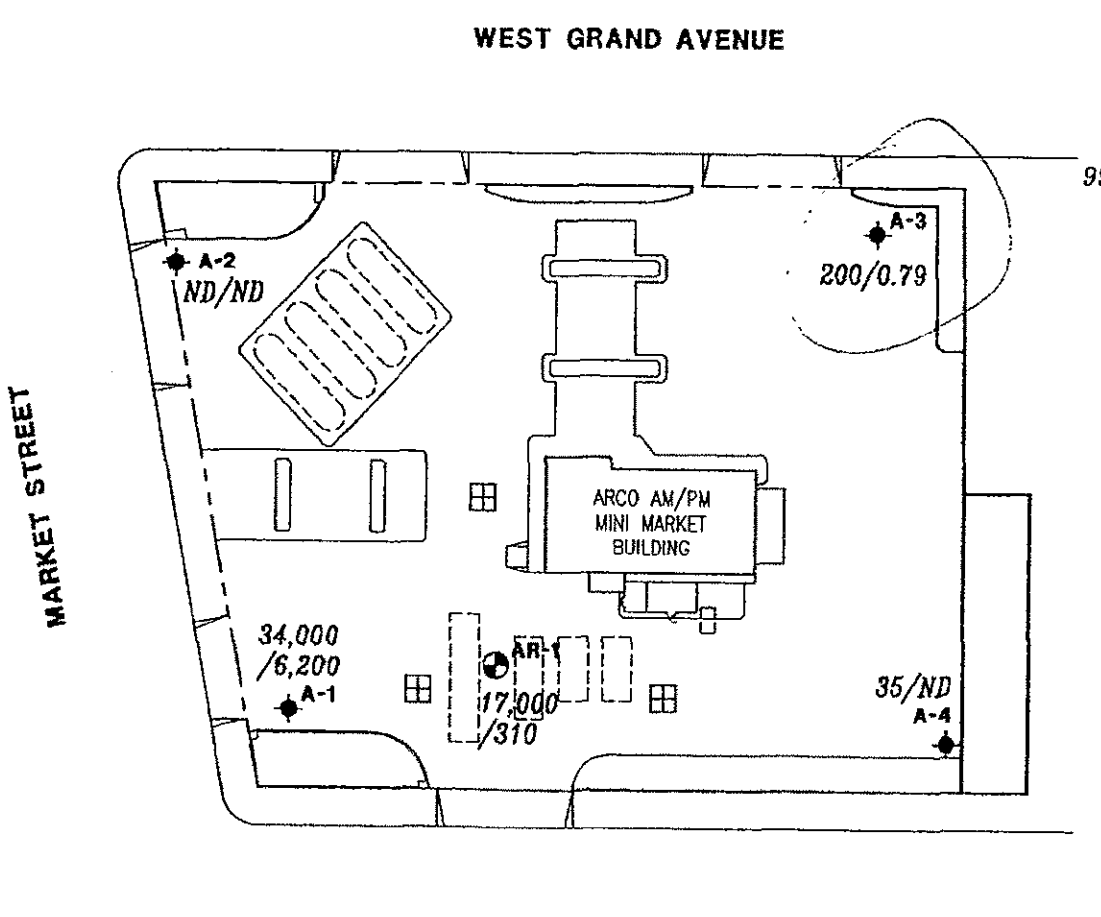
TPH-D = Total Petroleum Fuel Hydrocarbons As High Boiling Point Hydrocarbons (USEPA Method 8015)

BTEX Distinction (USEPA Method 8020)

NA = Not Analyzed

ND = None Detected (for detection limits see laboratory reports in Appendix B)

bgs = Below ground surface



EXPLANATION

- Ground-water monitoring well
- Ground-water recovery well
- Proposed vapor extraction well
- *99/9.9* TPH-G (Total Petroleum Hydrocarbons calculated as Gasoline)/Benzene concentrations in ppb sampled on April 3, 1992
- *ND* Not Detected (See laboratory reports for detection limits)

Base Map: ARCO Site Plan dated 6-17-83 and ARCO Tank & Line Replacement Site Plan dated 4-22-91

GeoStrategies Inc.

TPH-G/BENZENE CONCENTRATION MAP
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE 3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792705-3	RCM	5/92	

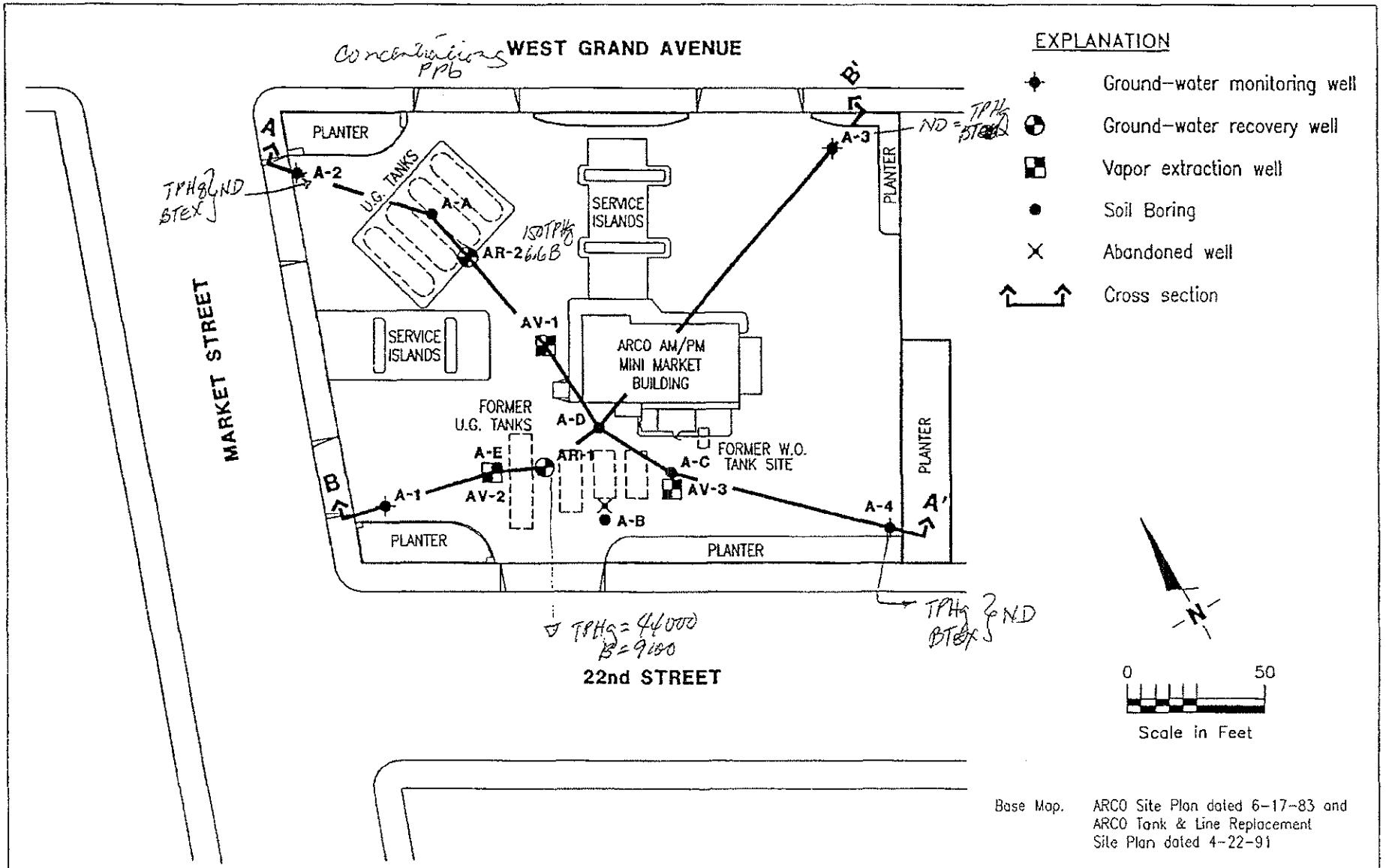
TABLE 1

SOIL ANALYSES DATA

SAMPLE ID	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TPH-D (PPM)
A-1-4.5	16-Mar-92	01-Apr-92	<1.0	0.024	0.014	0.009	0.034	<1.0
A-1-10.0	16-Mar-92	01-Apr-92	2.2	0.13	0.051	0.023	0.71	<1.0
A-2-4.0	16-Mar-92	01-Apr-92	<1.0	<0.0050	0.0050	<0.0050	<0.0050	14
A-2-10.0	16-Mar-92	01-Apr-92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
A-3-10.0	17-Mar-92	01-Apr-92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
A-4-10.0	17-Mar-92	01-Apr-92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<1.0

TPH-G = Total petroleum hydrocarbons calculated as gasoline
TPH-D = Total petroleum hydrocarbons calculated as diesel
PPM = Parts Per Million

NOTES: 1. All data shown as <X are reported as ND (None Detected)
2. The last number of the sample I.D. corresponds to the depth the sample was taken.



GeoStrategies Inc.

SITE PLAN
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE
2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792705-4	[illegible]	8/92	11/92

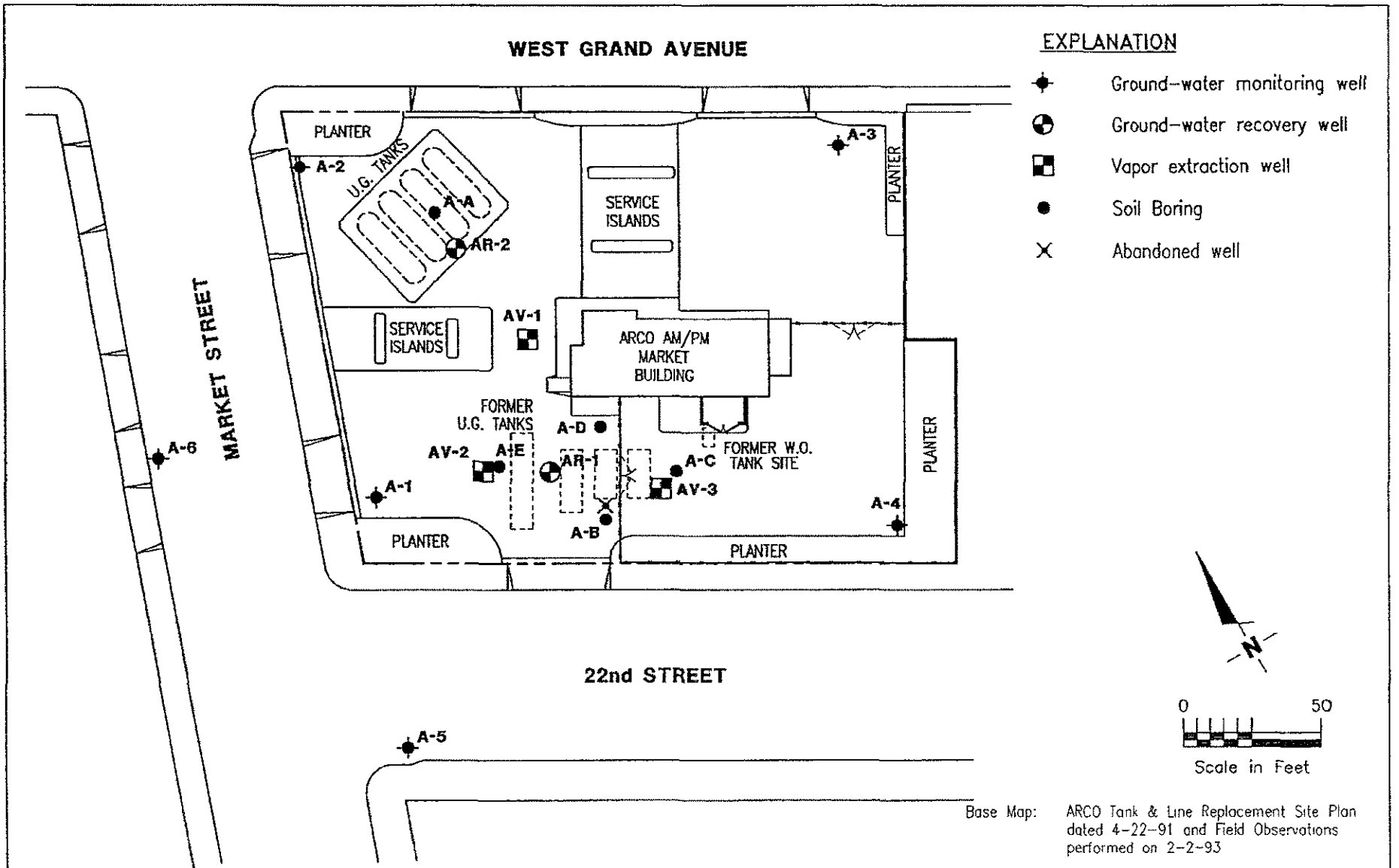
TABLE 1

SOIL ANALYSES DATA

SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)	TPH-D (PPM)
AV-1-6.5	08-Jun-92	11-Jun-92	<1.0	0.15	0.019	0.014	0.062	<1.0
AV-1-12	08-Jun-92	11-Jun-92	12	0.81	1.3	0.27	1.5	<1.0
AV-2.6.5	08-Jun-92	11-Jun-92	1.8	0.31	0.15	0.036	0.21	<1.0
AV-2-11.5	08-Jun-92	11-Jun-92	1500	21	84	27	170	<1.0
AV-3-6.5	08-Jun-92	11-Jun-92	<1.0	0.037	0.0050	0.018	0.028	<1.0
AV-3-11.5	08-Jun-92	11-Jun-92	110	2.4	4.6	1.9	10	<1.0

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
TPH-D = Total Petroleum Hydrocarbons calculated as Diesel
PPM = Parts Per Million

Notes: 1. All data shown as <x are reported as ND (none detected).
2. The last number of the sample I.D. corresponds to the depth the sample was collected.



Base Map: ARCO Tank & Line Replacement Site Plan dated 4-22-91 and Field Observations performed on 2-2-93

GeoStrategies Inc.

SITE PLAN
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7927		4/93	

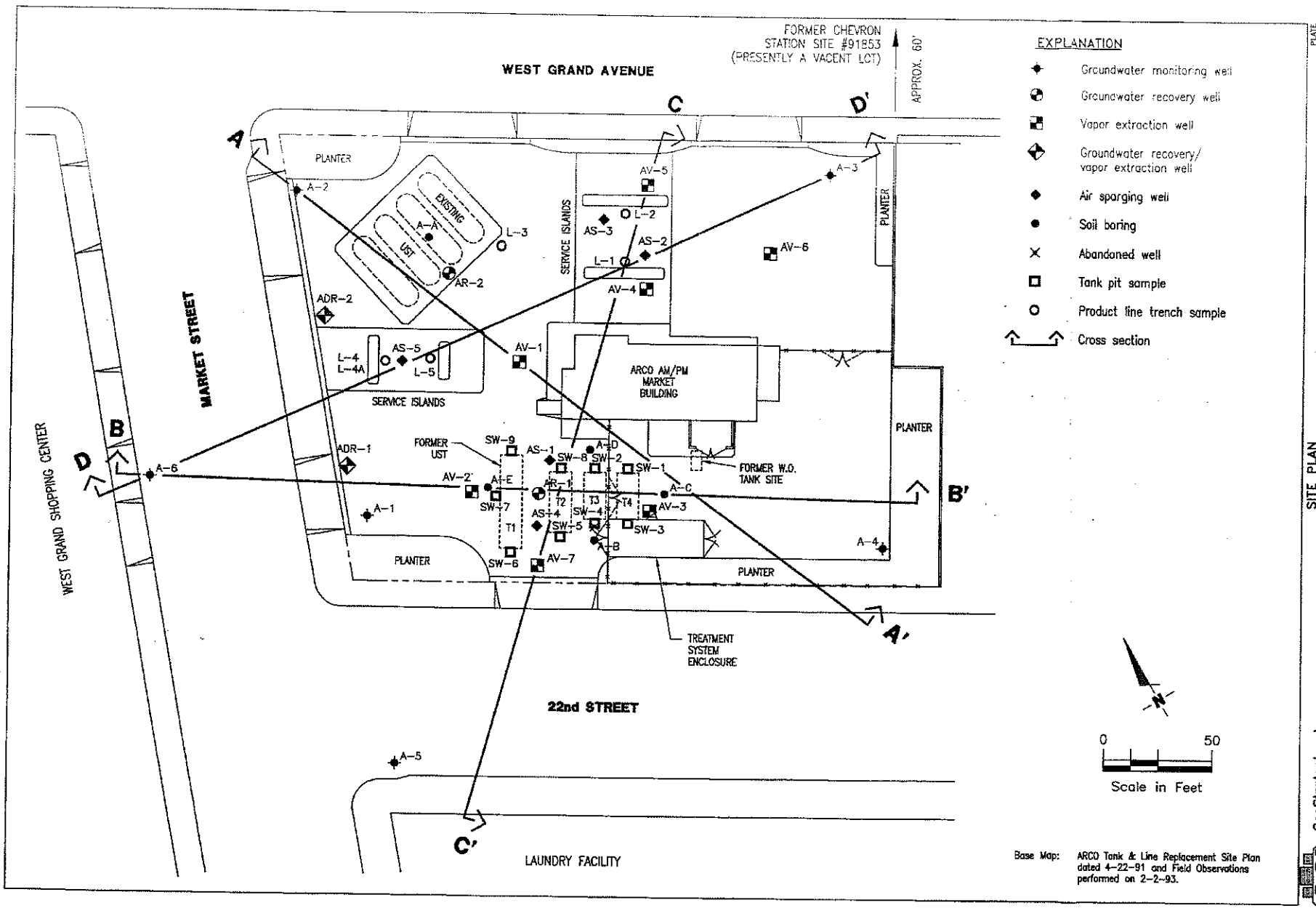
TABLE 1

SOIL ANALYSES DATA

Sample I.D.	Sample Date	Analyzed Date	TPH-G (PPM)	Benzene (PPM)	Toluene (PPM)	Ethylbenzene (PPM)	Xylenes (PPM)
A-5-6.5	04-Feb-93	08-Feb-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
A-5-9.5	04-Feb-93	08-Feb-93	17	0.21	0.076	0.28	0.54
A-6-6.5	04-Feb-93	08-Feb-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
A-6-9.0	04-Feb-93	08-Feb-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPM = Parts Per Million

Notes: 1. All data shown as <x are reported as ND (none detected).
2. The last number of the sample I.D. corresponds to the depth the sample was collected.
3. Halogenated volatile organic analyses performed on samples A-5-6.5 and A-5-.9.5 were reported as ND.



EXPLANATION

- Groundwater monitoring well
- Groundwater recovery well
- Vapor extraction well
- Groundwater recovery/ vapor extraction well
- Air sparging well
- Soil boring
- Abandoned well
- Tank pit sample
- Product line trench sample
- Cross section

Base Map: ARCO Tank & Line Replacement Site Plan dated 4-22-91 and Field Observations performed on 2-2-93.

SITE PLAN
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

GeoStrategies Inc.

PLATE 2

DATE 2/94

REVISED DATE 3/94

JOB NUMBER 792717-15

REVIEWED BY

TABLE 1
SOIL ANALYSES DATA
ARCO Station 2169
Oakland, California

SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZ. (PPM)	XYLENES (PPM)	TPH-D (PPM)
A-A-4.5	14-May-91	22-May-91	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
A-A-9.5	14-May-91	22-May-91	69	1.0	3.8	1.6	7.8	31
A-B-5.5	14-May-91	22-May-91	250	2.1	6.2	4.5	30	31
A-B-10.5	14-May-91	22-May-91	960	16	61	19	110	280
A-C-6.0	14-May-91	22-May-91	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
A-C-11.0	14-May-91	22-May-91	1,900	18	64	44	220	300
A-D-6.0	14-May-91	22-May-91	2.3	0.10	0.019	0.11	0.44	1.6
A-D-9.5	14-May-91	22-May-91	10	0.27	0.21	0.47	1.7	1.6
A-E-6.5	14-May-91	22-May-91	<1.0	0.16	<0.0050	0.0070	<0.0050	<1.0
A-E-10.5	14-May-91	22-May-91	330	3.9	17	6.5	39	130
A-1-4.5	16-Mar-92	01-Apr-92	<1.0	0.024	0.014	0.0090	0.034	<1.0
A-1-10.0	16-Mar-92	01-Apr-92	2.2	0.13	0.051	0.023	0.71	<1.0
A-2-4.0	16-Mar-92	01-Apr-92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	14
A-2-10.0	16-Mar-92	01-Apr-92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
A-3-10.0	17-Mar-92	01-Apr-92	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
A-4-10.0	17-Mar-92	01-Apr-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
AV-1-6.5	08-Jun-92	11-Jun-92	<1.0	0.15	0.019	0.014	0.062	<1.0
AV-1-12.0	08-Jun-92	11-Jun-92	12	0.81	1.3	0.27	1.5	<1.0
AV-2-6.5	08-Jun-92	11-Jun-92	1.8	0.31	0.15	0.036	0.21	<1.0
AV-2-11.5	08-Jun-92	11-Jun-92	1500	21	84	27	170	<1.0
AV-3-6.5	08-Jun-92	11-Jun-92	<1.0	0.037	<0.0050	0.018	0.028	<1.0
AV-3-11.5	08-Jun-92	11-Jun-92	110	2.4	4.6	1.9	10	<1.0
A-5-6.5	04-Feb-93	08-Feb-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA
A-5-9.5	04-Feb-93	08-Feb-93	17	0.21	0.076	0.28	0.54	NA
A-6-6.5	04-Feb-93	08-Feb-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA
A-6-9.0	04-Feb-93	08-Feb-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA
AV-4-5	07-Sep-93	15-Sep-93	<1.0	0.94	<0.0050	<0.0050	0.25	NA
AV-4-10.5	07-Sep-93	16-Sep-93	270	2.2	7.0	4.5	25	NA
AV-4-12.5	07-Sep-93	16-Sep-93	470	1.9	8.7	4.9	27	NA
AV-4-16	07-Sep-93	15-Sep-93	<1.0	0.016	<0.0050	<0.0050	0.014	NA

TABLE 1
SOIL ANALYSES DATA
ARCO Station 2169
Oakland, California

SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZ. (PPM)	XYLENES (PPM)	TPH-D (PPM)
AV-5-5.5	07-Sep-93	15-Sep-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA
AV-5-10.5	07-Sep-93	15-Sep-93	<1.0	0.13	<0.0050	<0.0050	0.0027	NA
AV-5-12.5	07-Sep-93	16-Sep-93	30	0.24	0.058	0.31	0.98	NA
AV-5-15.5	07-Sep-93	15-Sep-93	<100	<0.50	<0.50	<0.50	<0.50	NA
AS-1-6	07-Sep-93	15-Sep-93	<1.0	0.031	<0.0050	<0.0050	0.036	15
AS-1-11	07-Sep-93	16-Sep-93	41	0.18	0.47	0.35	1.9	43*
AS-1-12.5	07-Sep-93	16-Sep-93	160	1.5	4.4	2.6	13	14*
AS-1-15.5	07-Sep-93	16-Sep-93	89	0.77	1.5	0.90	4.8	15*
AS-1-30	07-Sep-93	15-Sep-93	7.5	0.24	0.78	0.22	1.1	2.8*
AS-2-5.5	08-Sep-93	16-Sep-93	<1.0	0.016	0.0060	<0.0050	0.011	NA
AS-2-10	08-Sep-93	16-Sep-93	<1.0	0.010	0.011	<0.0050	0.023	NA
AS-2-13	08-Sep-93	16-Sep-93	1,500	5.7	31	25	130	NA
AS-2-16	08-Sep-93	16-Sep-93	<1.0	0.018	0.031	0.0090	0.048	NA
AS-2-24	08-Sep-93	16-Sep-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA
AS-3-5.5	08-Sep-93	16-Sep-93	<1.0	0.016	<0.0050	<0.0050	<0.0050	NA
AS-3-10.5	08-Sep-93	16-Sep-93	23	0.45	0.73	0.36	2.0	NA
AS-3-30	08-Sep-93	16-Sep-93	<1.0	0.0060	0.013	<0.0050	0.013	NA
AS-4-15.5	07-Dec-93	16-Dec-93	58	0.21	0.10	0.73	3.0	37*
AS-4-24	07-Dec-93	16-Dec-93	<1.0	0.011	0.011	<0.0050	0.019	<1.0
AS-5-5.5	07-Dec-93	16-Dec-93	9.6	0.093	0.022	0.10	0.28	2.3*
AS-5-12	07-Dec-93	16-Dec-93	320	2.0	7.5	5.9	31	230
AS-5-24	07-Dec-93	16-Dec-93	<1.0	0.0087	<0.0050	<0.0050	<0.0050	3.2
AV-6-5.5	06-Dec-93	16-Dec-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	NA
AV-6-12.5	06-Dec-93	16-Dec-93	330	1.1	4.4	5.8	29	NA
AV-6-16	06-Dec-93	16-Dec-93	22	0.13	0.38	0.30	1.6	NA
AV-7-5.5	06-Dec-93	16-Dec-93	<1.0	0.0094	<0.0050	<0.0050	<0.0050	<1.0
AV-7-10.5	06-Dec-93	16-Dec-93	190	1.8	4.8	7.5	17	47
AV-7-15.5	06-Dec-93	16-Dec-93	1.9	0.099	0.019	0.026	0.039	<1.0
ADR-1-5.5	06-Dec-93	15-Dec-93	<1.0	0.16	0.0090	0.026	0.027	<1.0
ADR-1-12	06-Dec-93	17-Dec-93	500	2.4	14	8.0	45	36*

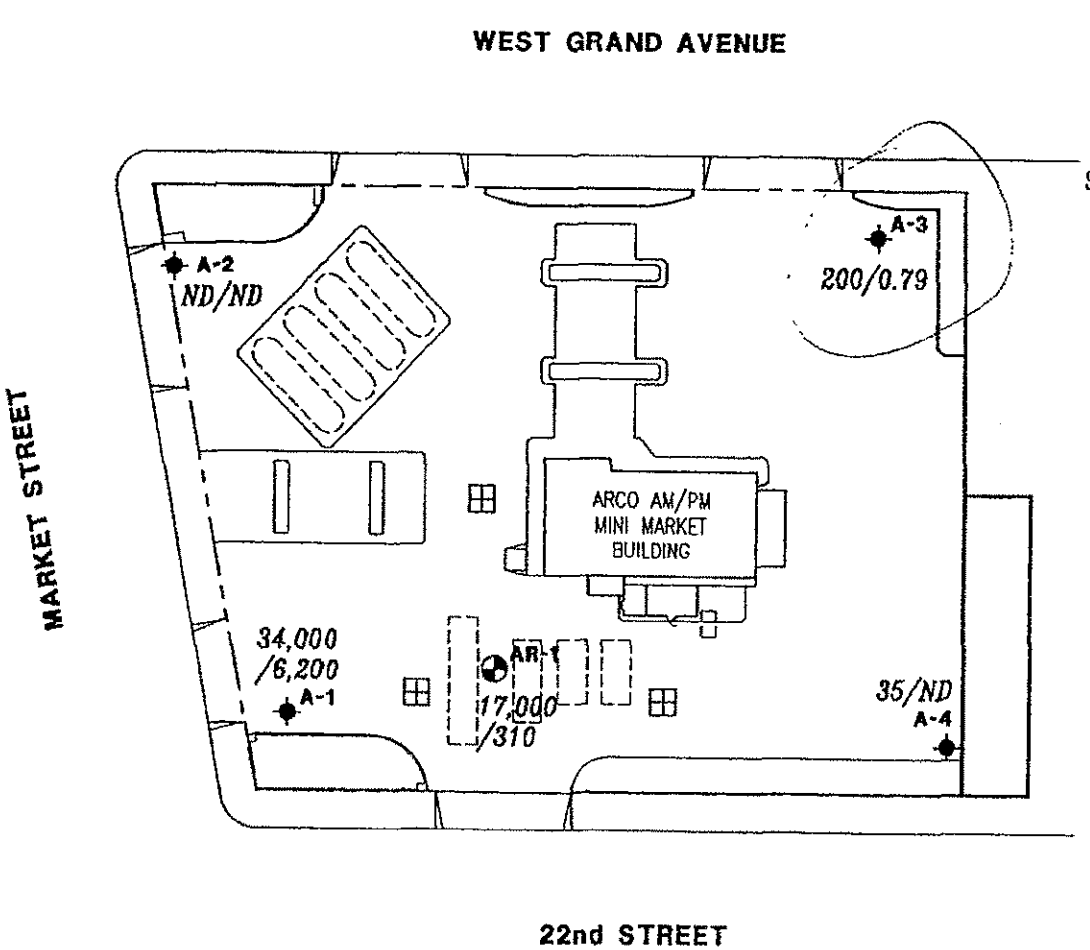
TABLE 1
SOIL ANALYSES DATA
ARCO Station 2169
Oakland, California

SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZ. (PPM)	XYLENES (PPM)	TPH-D (PPM)
ADR-1-23	06-Dec-93	15-Dec-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<1.0
ADR-2-5.5	06-Dec-93	15-Dec-93	<1.0	0.018	<0.0050	<0.0050	<0.0050	9.7*
ADR-2-12	06-Dec-93	17-Dec-93	2,200	11	64	34	180	1,000
ADR-2-15.5	06-Dec-93	16-Dec-93	4.4	0.81	0.055	0.11	0.20	<1.0
ADR-2-27.5	06-Dec-93	16-Dec-93	<1.0	<0.0050	<0.0050	<0.0050	<0.0050	<1.0

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.
TPH-D = Total Petroleum Hydrocarbons calculated as Diesel.
PPM = Parts Per Million.
* = Reported as a non-diesel mix.
Note: All data shown as <x are reported as ND (none detected).

Sample Identification:

ADR-2-17.5
- Depth in feet
- Well ID



EXPLANATION

- Ground-water monitoring well
- Ground-water recovery well
- Proposed vapor extraction well
- *99/9.9* TPH-G (Total Petroleum Hydrocarbons calculated as Gasoline)/Benzene concentrations in ppb sampled on April 3, 1992
- *ND* Not Detected (See laboratory reports for detection limits)

Base Map: ARCO Site Plan dated 6-17-83 and ARCO Tank & Line Replacement Site Plan dated 4-22-91

N

0 50

Scale in Feet

GeoStrategies Inc.

TPH-G/BENZENE CONCENTRATION MAP
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE 3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792705-3	ACM	5/92	

TABLE 3

HISTORICAL GROUND-WATER QUALITY DATABASE

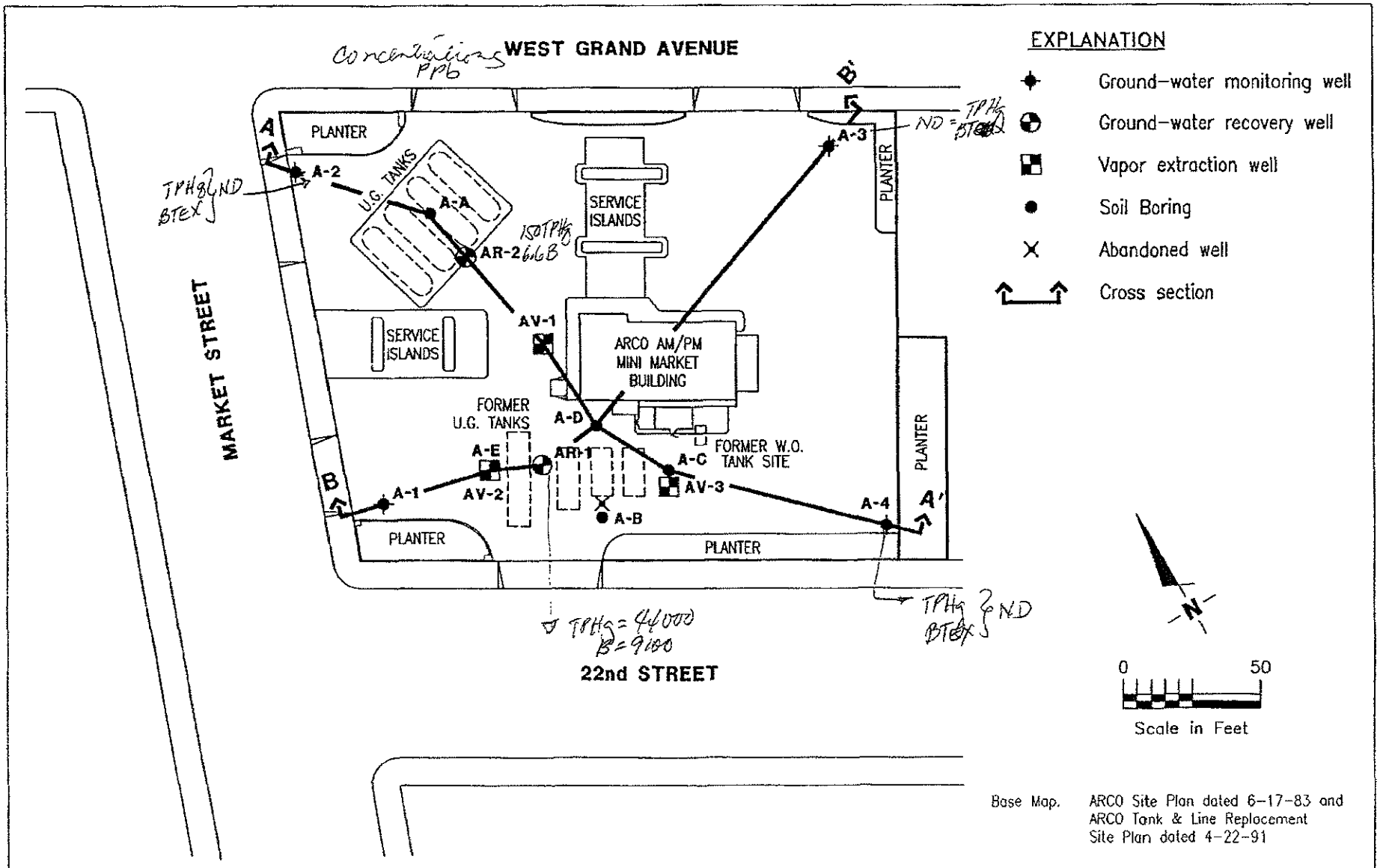
WELL NO.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-DIESEL (PPB)
A-1	03-Apr-92	10-Apr-92	34000	6200	3900	410	3100	6100
A-2	03-Apr-92	10-Apr-92	<30	<0.30	<0.30	<0.30	<0.30	<50
A-3	03-Apr-92	10-Apr-92	200	0.79	0.65	4.4	<0.30	130
A-4	03-Apr-92	10-Apr-92	35	<0.30	<0.30	<0.30	<0.30	85
AR-1	03-Apr-92	10-Apr-92	17000	310	1400	320	3000	12000

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMIM CONTAMINANT LEVELS
Benzene 1. ppb Xylenes 1750. ppb Ethylbenzene 680. ppb

CURRENT DHS ACTION LEVELS
Toluene 100.0 ppb

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPB = Parts Per Billion

Notes: 1. DHS Action levels and MCL's are subject to change pending State of California review.
2. All data shown as <X are reported as ND (none detected).



GeoStrategies Inc.

SITE PLAN
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792705-4	[illegible]	8/92	11/92

TABLE 7

HISTORICAL GROUND-WATER QUALITY DATABASE

WELL NO.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-DIESEL (PPB)
A-1	03-Apr-92	10-Apr-92	34000	6200	3900	410	3100	6100
A-1	17-Jul-92	21-Jul-92	5600	3000	500	<100	<100	N/A
A-2	03-Apr-92	10-Apr-92	<30	<0.30	<0.30	<0.30	<0.30	<50
A-2	17-Jul-92	21-Jul-92	<50	<0.50	<0.50	<0.50	<0.50	N/A
A-3	03-Apr-92	10-Apr-92	200	0.79	0.65	4.4	<0.30	130
A-3	17-Jul-92	21-Jul-92	<50	<0.50	<0.50	1.3	2.3	N/A
A-4	03-Apr-92	10-Apr-92	35	<0.30	<0.30	<0.30	<0.30	85
A-4	17-Jul-92	21-Jul-92	<50	<0.50	<0.50	<0.50	<0.50	N/A
AR-1	03-Apr-92	10-Apr-92	17000	310	1400	320	3000	12000
AR-1	17-Jul-92	21-Jul-92	44000	9100	1800	1800	10000	N/A
AR-2	17-Jul-92	21-Jul-92	150	6.6	24	6.6	39	N/A

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMIM CONTAMINANT LEVELS

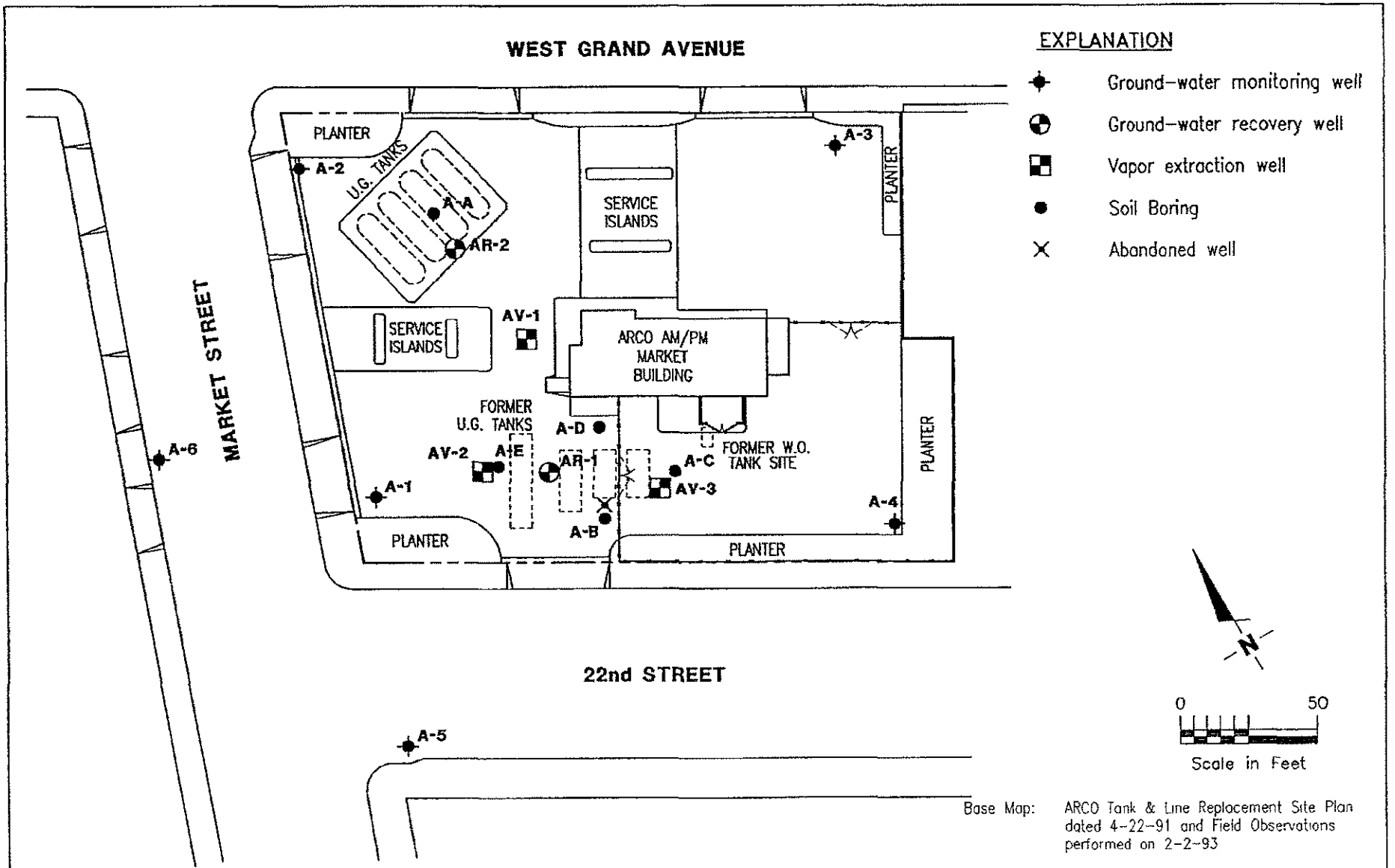
Benzene 1. ppb Xylenes 1750. ppb Ethylbenzene 680. ppb

CURRENT DHS ACTION LEVELS

Toluene 100.0 ppb

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline
PPB = Parts Per Billion
N/A = Not Analyzed

Notes: 1. DHS Action levels and MCL's are subject to change pending State of California review.
2. All data shown as <X are reported as ND (none detected).



Base Map: ARCO Tank & Line Replacement Site Plan dated 4-22-91 and Field Observations performed on 2-2-93

GeoStrategies Inc.

SITE PLAN
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
7927		4/93	

TABLE 2

GROUND-WATER ANALYSES DATA

WELL NO.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	BENZENE (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)	WELL ELEV. (FT)	STATIC WATER ELEV. (FT)	PRODUCT THICKNESS (FT)	DEPTH WATER (FT)
A-1	23-Nov-92	---	---	---	---	---	---	---	14.75	2.92	0.00	11.83
	16-Dec-92	---	---	---	---	---	---	---	14.75	3.72	0.00	11.03
	28-Jan-93	03-Feb-93	3700	780	380	130	460	620*	14.75	5.67	0.00	9.08
A-2	23-Nov-92	---	---	---	---	---	---	---	15.16	2.98	0.00	12.18
	16-Dec-92	---	---	---	---	---	---	---	15.16	3.64	0.00	11.52
	28-Jan-93	03-Feb-93	<50	<0.50	<0.50	<0.50	<0.50	N/A	15.16	5.43	0.00	9.73
A-3	23-Nov-92	---	---	---	---	---	---	---	16.38	2.78	0.00	13.60
	16-Dec-92	---	---	---	---	---	---	---	16.38	4.07	0.00	12.31
	28-Jan-93	03-Feb-93	<50	<0.50	<0.50	<0.50	<0.50	N/A	16.38	6.05	0.00	10.33
A-4	23-Nov-92	---	---	---	---	---	---	---	15.89	3.26	0.00	12.63
	16-Dec-92	---	---	---	---	---	---	---	15.89	4.55	0.00	11.34
	28-Jan-93	03-Feb-93	<50	<0.50	<0.50	<0.50	<0.50	N/A	15.89	6.49	0.00	9.40
A-5	11-Feb-93	17-Feb-93	4900	380	640	140	970	N/A	14.14	4.99	0.00	9.15
A-6	11-Feb-93	18-Feb-93	990	1.8	5.1	17	7.2	N/A	14.17	4.82	0.00	9.35
AR-1	23-Nov-92	---	---	---	---	---	---	---	15.71	2.91	0.00	12.80
	16-Dec-92	---	---	---	---	---	---	---	15.71	4.22	0.00	11.49
	28-Jan-93	03-Feb-93	15000	1200	510	510	2600	5300*	15.71	6.25	0.00	9.46
AR-2	23-Nov-92	---	---	---	---	---	---	---	15.79	---	---	---
	16-Dec-92	---	---	---	---	---	---	---	15.79	3.63	0.00	12.16
	28-Jan-93	03-Feb-93	2000	570	13	<10	380	280*	15.79	5.53	0.00	10.26

792701-8

TABLE 2

GROUND-WATER ANALYSES DATA

Current Regional Water Quality Control Board Maximum Contaminant Levels
Benzene 1.0 ppb Xylenes 1750. ppb Ethylbenzene 680. ppb

Current DHS Action Levels Toluene 100.0 ppb

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.
PPB = Parts Per Billion.
TB = Trip Blank

* Reported as a non-diesel mix.

Notes:
1. All data shown as <x are reported as ND (none detected).
2. Water level elevations referenced to Mean Sea Level (MSL).
3. Well AR-2 could not be located on November 23, 1992.
4. Halogenated volatile organic analyses performed on samples from Wells A-5 and A-6 collected on February 11, 1993 were reported as ND.

TABLE 3

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (ft)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
03-Apr-92	A-1	10.35	14.75	4.40	0.00
20-May-92	A-1	11.66	14.75	3.09	0.00
16-Jun-92	A-1	11.95	14.75	2.80	0.00
17-Jul-92	A-1	12.23	14.75	2.52	0.00
07-Aug-92	A-1	12.16	14.75	2.59	0.00
22-Sep-92	A-1	12.42	14.75	2.33	0.00
13-Oct-92	A-1	12.47	14.75	2.28	0.00
23-Nov-92	A-1	11.83	14.75	2.92	0.00
16-Dec-92	A-1	11.03	14.75	3.72	0.00
28-Jan-93	A-1	9.08	14.75	5.67	0.00
03-Apr-92	A-2	10.97	15.16	4.19	0.00
20-May-92	A-2	12.17	15.16	2.99	0.00
16-Jun-92	A-2	12.43	15.16	2.73	0.00
17-Jul-92	A-2	12.64	15.16	2.52	0.00
07-Aug-92	A-2	12.75	15.16	2.41	0.00
22-Sep-92	A-2	12.88	15.16	2.28	0.00
13-Oct-92	A-2	12.92	15.16	2.24	0.00
23-Nov-92	A-2	12.18	15.16	2.98	0.00
16-Dec-92	A-2	11.52	15.16	3.64	0.00
28-Jan-93	A-2	9.73	15.16	5.43	0.00
03-Apr-92	A-3	11.70	16.38	4.68	0.00
20-May-92	A-3	13.00	16.38	3.38	0.00
16-Jun-92	A-3	13.46	16.38	2.92	0.00
17-Jul-92	A-3	13.45	16.38	2.93	0.00
07-Aug-92	A-3	12.37	16.38	4.01	0.00
22-Sep-92	A-3	13.71	16.38	2.67	0.00
13-Oct-92	A-3	13.76	16.38	2.62	0.00
23-Nov-92	A-3	13.60	16.38	2.78	0.00
16-Dec-92	A-3	12.31	16.38	4.07	0.00
28-Jan-93	A-3	10.33	16.38	6.05	0.00
03-Apr-92	A-4	10.84	15.89	5.05	0.00

TABLE 3

HISTORICAL WATER-LEVEL DATA

MONITORING DATE	WELL NUMBER	DEPTH TO WATER (ft)	WELL ELEVATION (FT)	STATIC WATER ELEVATION (FT)	FLOATING PRODUCT THICKNESS (FT)
20-May-92	A-4	12.13	15.89	3.76	0.00
16-Jun-92	A-4	12.33	15.89	3.56	0.00
17-Jul-92	A-4	12.60	15.89	3.29	0.00
07-Aug-92	A-4	12.56	15.89	3.33	0.00
22-Sep-92	A-4	12.87	15.89	3.02	0.00
13-Oct-92	A-4	12.87	15.89	3.02	0.00
23-Nov-92	A-4	12.63	15.89	3.26	0.00
16-Dec-92	A-4	11.34	15.89	4.55	0.00
28-Jan-93	A-4	9.40	15.89	6.49	0.00
11-Feb-93	A-5	9.15	14.14	4.99	0.00
11-Feb-93	A-6	9.35	14.17	4.82	0.00
03-Apr-92	AR-1	11.07	15.71	4.64	0.00
20-May-92	AR-1	12.37	15.71	3.34	0.00
16-Jun-92	AR-1	12.47	15.71	3.24	0.00
17-Jul-92	AR-1	13.00	15.71	2.71	0.00
07-Aug-92	AR-1	12.87	15.71	2.84	0.00
22-Sep-92	AR-1	12.99	15.71	2.72	0.00
13-Oct-92	AR-1	13.05	15.71	2.66	0.00
23-Nov-92	AR-1	12.80	15.71	2.91	0.00
16-Dec-92	AR-1	11.49	15.71	4.22	0.00
28-Jan-93	AR-1	9.46	15.71	6.25	0.00
17-Jul-92	AR-2	13.14	15.79	2.65	0.00
07-Aug-92	AR-2	13.25	15.79	2.54	0.00
22-Sep-92	AR-2	13.58	15.79	2.21	0.00
13-Oct-92	AR-2	13.65	15.79	2.14	0.00
23-Nov-92	AR-2	Not measured			
16-Dec-92	AR-2	12.16	15.79	3.63	0.00
28-Jan-93	AR-2	10.26	15.79	5.53	0.00

Notes: 1. Static water elevations referenced to Mean Sea Level (MSL).
2. Well elevations and depths-to-water are referenced to the top of the well box.
3. Well AR-2 could not be located on November 23, 1992.

TABLE 4

HISTORICAL GROUND-WATER QUALITY DATABASE

WELL NO.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPB)	TOLUENE (PPB)	ETHYLBENZENE (PPB)	XYLENES (PPB)	TPH-D (PPB)
A-1	03-Apr-92	10-Apr-92	34000	6200	410	3100	6100
A-1	17-Jul-92	21-Jul-92	5600	3000	<100	<100	N/A
A-1	13-Oct-92	19-Oct-92	5600	980	85	910	N/A
A-1	28-Jan-93	03-Feb-93	3700	780	130	460	620*
A-2	03-Apr-92	10-Apr-92	<30	<0.30	<0.30	<0.30	<50
A-2	17-Jul-92	21-Jul-92	<50	<0.50	<0.50	<0.50	N/A
A-2	13-Oct-92	19-Oct-92	<50	0.57	<0.50	<0.50	N/A
A-2	28-Jan-93	03-Feb-93	<50	<0.50	<0.50	<0.50	N/A
A-3	03-Apr-92	10-Apr-92	200	0.79	4.4	<0.30	130
A-3	17-Jul-92	21-Jul-92	<50	<0.50	1.3	2.3	N/A
A-3	13-Oct-92	19-Oct-92	<50	<0.50	<0.50	<0.50	N/A
A-3	28-Jan-93	03-Feb-93	<50	<0.50	<0.50	<0.50	N/A
A-4	03-Apr-92	10-Apr-92	35	<0.30	<0.30	<0.30	85
A-4	17-Jul-92	21-Jul-92	<50	<0.50	<0.50	<0.50	N/A
A-4	13-Oct-92	19-Oct-92	<50	<0.50	<0.50	<0.50	N/A
A-4	28-Jan-93	03-Feb-93	<50	<0.50	<0.50	<0.50	N/A
A-5	11-Feb-93	17-Feb93	4900	380	140	970	N/A
A-6	11-Feb-93	18-Feb-93	990	1.8	17	7.2	N/A
AR-1	03-Apr-92	10-Apr-92	17000	310	320	3000	12000
AR-1	17-Jul-92	21-Jul-92	44000	4300	1800	10000	N/A
AR-1	13-Oct-92	19-Oct-92	32000	310	570	3100	22000*
AR-1	28-Jan-93	03-Feb-93	15000	1200	510	2600	5300*
AR-2	17-Jul-92	21-Jul-92	150	6.6	6.6	39	N/A
AR-2	13-Oct-92	19-Oct-92	<50	2.0	0.51	3.8	58*
AR-2	28-Jan-93	03-Feb-93	2000	570	<10	380	290*

CURRENT REGIONAL WATER QUALITY CONTROL BOARD MAXIMUM CONTAMINANT LEVELS
Benzene 1. ppb Xylenes 1750. ppb Ethylbenzene 680 ppb

CURRENT DHS ACTION LEVELS Toluene 100

TPH-G = Total Petroleum Hydrocarbons calculated as Gasoline.
TPH-D = Total Petroleum Hydrocarbons calculated as Diesel.
PPB = Parts Per Billion.
N/A = Not Analyzed.
* = reported as a non-diesel mix.

792701-8

TABLE 4

HISTORICAL GROUND-WATER QUALITY DATABASE

Notes: 1. All data shown as <x are reported as ND (none detected).

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-1	03-24-95	14.16	8.10	ND	6.06	03-24-95	1,200	230	39	34	66	--	--	160		
A-1	06-05-95	14.16	11.13	ND	3.03	06-05-95	1,500	310	27	36	76	--	--	710		
A-1	08-17-95	14.16	11.71	ND	2.45	08-18-95	1,600	470	35	48	110	120	--	240		
A-1	12-04-95	14.16	12.28	ND	1.88	12-04-95	1,200	240	17	25	56	--	120	--		
A-1	03-01-96	14.16	8.78	ND	5.38	03-13-96	1,300	300	74	29	73	100	--	--		
A-1	05-29-96	14.16	9.85	ND	4.31	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters									
A-1	08-29-96	14.16	11.08	ND	3.08	08-29-96	1,200	320	5.9	25	27	110	--	--		
A-1	11-21-96	14.16	10.54	ND	3.62	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters									
A-1	03-26-97	14.16	10.55	ND	3.61	03-26-97	<50	0.8	<0.5	<0.5	<0.5	64	--	--		
A-1	05-21-97	14.16	11.10	ND	3.06	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
A-1	08-08-97	14.16	11.32	ND	2.84	08-08-97	91	7	<0.5	0.5	3.9	<60	--	--		
A-1	11-18-97	14.16	3.46	ND	10.70	11-18-97	54	<0.5	<0.5	<0.5	0.6	27	--	--		
A-1	02-20-98	14.16	7.10	ND	7.06	02-23-98	590	160	22	15	28	70	--	--		
A-1	05-11-98	14.16	9.87	ND	4.29	05-11-98	280	26	<0.5	0.8	2.3	6	--	--		
A-1	07-30-98	14.16	10.73	ND	3.43	07-30-98	1,000	210	5	<5	38	<30	--	--		
A-1	10-08-98	14.16	11.15	ND	3.01	10-08-98	3,100	740	11	<10	24	<60	--	--		
A-1	02-18-99	14.16	8.00	ND	6.16	02-18-99	510	87	7.1	6.4	13	52	--	--		
A-1	05-26-99	14.16	10.60	ND	3.56	05-26-99	240	26	<0.5	1.2	6.2	34	--	--		
A-1	08-23-99	14.16	11.22	ND	2.94	08-23-99	79	3.9	0.6	<0.5	1.7	38	--	--	0.68	NP
A-1	10-27-99	14.16	11.37	ND	2.79	10-27-99	110	2.2	<0.5	<0.5	<1	25	--	--	0.80	NP
A-1	01-31-00	14.16	9.44	ND	4.72	01-31-00	<50	<0.5	<0.5	<0.5	<1	<3	--	--	1.0	NP
A-2	03-24-95	14.55	8.64	ND	5.91	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-2	06-05-95	14.55	11.72	ND	2.83	06-05-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-2	08-17-95	14.55	12.35	ND	2.20	08-17-95	<50	<0.5	<0.5	<0.5	<0.5	12	--	--		
A-2	12-04-95	14.55	12.74	ND	1.81	12-04-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-2	03-01-96	14.55	9.34	ND	5.21	03-13-96	<50	<0.5	0.6	<0.5	1.3	<9	--	--		

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-2	05-29-96	14.55	10.40	ND	4.15	05-29-96	<50	<0.5	<0.5	<0.5	<0.5	<20	--	--		
A-2	08-29-96	14.55	11.50	ND	3.05	08-29-96	<50	<0.5	<0.5	<0.5	<0.5	<39	--	--		
A-2	11-21-96	14.55	11.06	ND	3.49	11-21-96	<50	<0.5	<0.5	<0.5	<0.5	<30	--	--		
A-2	03-26-97	14.55	11.12	ND	3.43	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<20	--	--		
A-2	05-21-97	14.55	11.58	ND	2.97	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
A-2	08-08-97	14.55	11.82	ND	2.73	08-08-97	<50	<0.5	<0.5	<0.5	<0.5	<20	--	--		
A-2	11-18-97	14.55	3.33	ND	11.22	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters									
A-2	02-20-98	14.55	7.68	ND	6.87	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	17	--	--		
A-2	05-11-98	14.55	10.45	ND	4.10	05-11-98	Not sampled									
A-2	07-30-98	14.55	11.23	ND	3.32	07-30-98	Not sampled: well sampled semi-annually, during the first and second quarters									
A-2	10-08-98	14.55	11.62	ND	2.93	10-08-98	Not sampled: well sampled semi-annually, during the first and second quarters									
A-2	02-18-99	14.55	8.62	ND	5.93	02-18-99	93	<0.5	<0.5	<0.5	<1	26	--	--		
A-2	05-26-99	14.55	11.16	ND	3.39	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-2	08-23-99	14.55	11.69	ND	2.86	08-23-99	Not sampled: well sampled semi-annually, during the first and second quarters								0.59	
A-2	10-27-99	14.55	11.88	ND	2.67	10-27-99	Not sampled: well sampled semi-annually, during the first and second quarters								0.59	
A-2	01-31-00	14.55	10.17	ND	4.38	01-31-00	<50	<0.5	<0.5	<0.5	<1	<3	--	--	1.0	NP
A-3	03-24-95	15.75	8.83	ND	6.92	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-3	06-05-95	15.75	12.44	ND	3.31	06-05-95	Not sampled: well sampled annually									
A-3	08-17-95	15.75	13.04	ND	2.71	08-17-95	Not sampled: well sampled annually									
A-3	12-04-95	15.75	13.57	ND	2.18	12-04-95	Not sampled: well sampled annually									
A-3	03-01-96	15.75	9.90	ND	5.85	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	05-29-96	15.75	11.08	ND	4.67	05-29-96	Not sampled: well sampled annually									
A-3	08-29-96	15.75	12.38	ND	3.37	08-29-96	Not sampled: well sampled annually									
A-3	11-21-96	15.75	11.86	ND	3.89	11-21-96	Not sampled: well sampled annually									
A-3	03-26-97	15.75	11.81	ND	3.94	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	05-21-97	15.75	12.35	ND	3.40	05-21-97	Not sampled: well sampled annually									

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-3	08-08-97	15.75	12.62	ND	3.13	08-08-97	Not sampled: well sampled annually									
A-3	11-18-97	15.75	3.75	ND	12.00	11-18-97	Not sampled: well sampled annually									
A-3	02-20-98	15.75	8.06	ND	7.69	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	05-11-98	15.75	11.19	ND	4.56	05-11-98	Not sampled: well sampled annually									
A-3	07-30-98	15.75	12.05	ND	3.70	07-30-98	Not sampled: well sampled annually									
A-3	10-08-98	15.75	12.43	ND	3.32	10-08-98	Not sampled: well sampled annually									
A-3	02-18-99	15.75	9.05	ND	6.70	02-18-99	Not sampled: well sampled annually									
A-3	05-26-99	15.75	11.93	ND	3.82	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-3	08-23-99	15.75	12.57	ND	3.18	08-23-99	Not sampled: well sampled annually								0.88	
A-3	10-27-99	15.75	12.65	ND	3.10	10-27-99	Not sampled: well sampled annually									
A-3	01-31-00	15.75	9.55	ND	6.20	01-31-00	<50	<0.5	<0.5	<0.5	<1	9	--	--	1.0	NP
A-4	03-24-95	15.25	7.20	ND	8.05	03-24-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-4	06-05-95	15.25	11.70	ND	3.55	06-05-95	Not sampled: well sampled annually									
A-4	08-17-95	15.25	12.28	ND	2.97	08-17-95	Not sampled: well sampled annually									
A-4	12-04-95	15.25	12.63	ND	2.62	12-04-95	Not sampled: well sampled annually									
A-4	03-01-96	15.25	8.55	ND	6.70	03-13-96	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	05-29-96	15.25	10.32	ND	4.93	05-29-96	Not sampled: well sampled annually									
A-4	08-29-96	15.25	11.55	ND	3.70	08-29-96	Not sampled: well sampled annually									
A-4	11-21-96	15.25	10.83	ND	4.42	11-21-96	Not sampled: well sampled annually									
A-4	03-26-97	15.25	10.97	ND	4.28	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	05-21-97	15.25	11.51	ND	3.74	05-21-97	Not sampled: well sampled annually									
A-4	08-08-97	15.25	11.73	ND	3.52	08-08-97	Not sampled: well sampled annually									
A-4	11-18-97	15.25	4.37	ND	10.88	11-18-97	Not sampled: well sampled annually									
A-4	02-20-98	15.25	6.25	ND	9.00	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	05-11-98	15.25	10.33	ND	4.92	05-11-98	Not sampled: well sampled annually									
A-4	07-30-98	15.25	11.25	ND	4.00	07-30-98	Not sampled: well sampled annually									

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-4	10-08-98	15.25	11.62	ND	3.63	10-08-98	Not sampled: well sampled annually									
A-4	02-18-99	15.25	7.12	ND	8.13	02-18-99	Not sampled: well sampled annually									
A-4	05-26-99	15.25	11.12	ND	4.13	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
A-4	08-23-99	15.25	11.62	ND	3.63	08-23-99	Not sampled: well sampled annually								0.54	
A-4	10-27-99	15.25	11.74	ND	3.51	10-27-99	Not sampled: well sampled annually									
A-4	01-31-00	15.25	9.45	ND	5.80	01-31-00	<50	<0.5	<0.5	<0.5	<1	4	--	--	1.0	NP
A-5	03-24-95	13.51	7.40	ND	6.11	03-24-95	3,300	200	310	130	460	--	--	--		
A-5	06-05-95	13.51	10.43	ND	3.08	06-05-95	57,000	2,700	4,600	1,500	6,800	--	--	--		
A-5	08-17-95	13.51	11.15	ND	2.36	08-18-95	34,000	1,600	2,700	1,100	5,100	<28	--	--		
A-5	12-04-95	13.51	11.42	ND	2.09	12-04-95	61	<0.5	<0.5	<0.5	<0.5	--	--	--		
A-5	03-01-96	13.51	8.11	ND	5.40	03-13-96	11,000	860	960	380	1,600	<100	--	--		
A-5	05-29-96	13.51	9.30	ND	4.21	05-29-96	19,000	1,600	1,900	880	3,300	<100	--	--		
A-5	08-29-96	13.51	10.60	ND	2.91	08-29-96	7,700	490	450	260	990	<30	--	--		
A-5	11-21-96	13.51	10.05	ND	3.46	11-21-96	8,000	450	550	340	1,100	<30	--	--		
A-5	03-26-97	13.51	9.87	ND	3.64	03-26-97	3,100	190	140	130	340	<30	--	--		
A-5	05-21-97	13.51	10.25	ND	3.26	05-21-97	16,000	1,500	900	700	2,700	<120	--	--		
A-5	08-08-97	13.51	10.42	ND	3.09	08-08-97	9,000	690	240	440	1,300	<30	--	--		
A-5	11-18-97	13.51	Not surveyed: well inaccessible													
A-5	02-20-98	13.51	Not surveyed: well inaccessible													
A-5	05-11-98	13.51	Not surveyed: well inaccessible													
A-5	07-30-98	13.51	Not surveyed: well inaccessible													
A-5	10-08-98	13.51	Not surveyed: well inaccessible													
A-5	02-18-99	13.51	7.63	ND	5.88	02-18-99	<50	0.8	<0.5	<0.5	1.5	<10	--	--		
A-5	05-26-99	13.51	9.85	ND	3.66	05-26-99	1,700	240	41	110	330	<12	--	--		
A-5	08-23-99	13.51	10.60	ND	2.91	08-23-99	560	65	3	30	52	<6	--	--	0.73	NP
A-5	10-27-99	13.51	10.72	ND	2.79	10-27-99	480	93	1.0	16	19	<3	--	--	0.65	NP

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
A-5	01-31-00	13.51	9.37	ND	4.14	01-31-00	Not sampled: well was inaccessible									
A-6	03-24-95	13.51	7.89	ND	5.62	03-24-95	120	<0.5	<1	<0.5	<1.5	--	--	--		
A-6	06-05-95	13.51	10.06	ND	3.45	06-05-95	160	<0.5	<0.6	<0.5	<0.5	--	--	--		
A-6	08-17-95	13.51	11.10	ND	2.41	08-18-95	530	<0.5	<0.5	<2.4	<4.2	6	--	--		
A-6	12-04-95	13.51	11.52	ND	1.99	12-04-95	28,000	1,600	1,800	880	3,600	--	--	--		
A-6	03-01-96	13.51	8.21	ND	5.30	03-13-96	1,400	<3	<15	<7	<10	<20	--	--		
A-6	05-29-96	13.51	9.25	ND	4.26	05-29-96	410	<2	<2	<2	<2	3	--	--		
A-6	08-29-96	13.51	10.52	ND	2.99	08-29-96	80	<0.5	<0.5	<0.5	<0.5	6	--	--		
A-6	11-21-96	13.51	10.54	ND	2.97	11-21-96	62	<0.5	<0.5	<0.5	<0.5	12	--	--		
A-6	03-26-97	13.51	9.93	ND	3.58	03-26-97	110	<0.5	0.8	1	1.4	15	--	--		
A-6	05-21-97	13.51	10.54	ND	2.97	05-21-97	600	0.6	0.6	<2	2.7	<3	--	--		
A-6	08-08-97	13.51	10.77	ND	2.74	08-08-97	850	<0.5	<0.5	6.1	<0.5	<4	--	--		
A-6	11-18-97	13.51	3.41	ND	10.10	11-18-97	690	<1	<1	3	2	7	--	--		
A-6	02-20-98	13.51	6.73	ND	6.78	02-20-98	60	<0.5	0.6	1.3	0.5	4	--	--		
A-6	05-11-98	13.51	9.26	ND	4.25	05-11-98	140	<0.5	0.7	0.6	<0.5	6	--	--		
A-6	07-30-98	13.51	10.12	ND	3.39	07-30-98	910	<2	<2	3	7	34	--	--		
A-6	10-08-98	13.51	10.53	ND	2.98	10-08-98	1,300	<2	4	3	4	21	--	--		
A-6	02-18-99	13.51	7.50	ND	6.01	02-18-99	150	<0.5	<0.5	1.4	1.7	35	--	--		
A-6	05-26-99	13.51	10.00	ND	3.51	05-26-99	100	<0.5	<0.5	<0.5	<0.5	17	--	--		
A-6	08-23-99	13.51	10.70	ND	2.81	08-23-99	98	0.6	<0.5	1.1	4.3	13	--	--	2.42	NP
A-6	10-27-99	13.51	11.00	ND	2.51	10-27-99	<50	<0.5	<0.5	<0.5	<1	7	--	--	13.23	NP
A-6	01-31-00	13.51	9.31	ND	4.20	01-31-00	<50	<0.5	<0.5	<0.5	<1	9	--	--	1.0	NP
AR-1	03-24-95	15.61	7.25	ND	8.36	03-24-95	270	14	0.6	2.5	2.1	--	--	130		
AR-1	06-05-95	15.61	11.37	ND	4.24	06-05-95	190	10	<0.5	0.8	0.5	--	--	580		
AR-1	08-17-95	15.61	12.40	ND	3.21	08-17-95	960	110	12	4.5	150	14	--	<50		

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
AR-1	12-04-95	15.61	12.90	ND	2.71	12-04-95	<50	1.5	<0.5	<0.5	0.8	--	--	--		
AR-1	03-01-96	15.61	8.19	ND	7.42	03-13-96	150	3.8	0.5	1.4	1.3	<3	--	--		
AR-1	05-29-96	15.61	10.41	ND	5.20	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	08-29-96	15.61	12.12	ND	3.49	08-29-96	<50	<0.5	<0.5	<0.5	0.8	<3	--	--		
AR-1	11-21-96	15.61	11.52	ND	4.09	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	03-26-97	15.61	11.33	ND	4.28	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-1	05-21-97	15.61	12.02	ND	3.59	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	08-08-97	15.61	12.31	ND	3.30	08-08-97	<50	0.7	<0.5	1	<0.5	<3	--	--		
AR-1	11-18-97	15.61	3.97	ND	11.64	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-1	02-20-98	15.61	6.42	ND	9.19	02-23-98	<200	<2	<2	<2	<2	160	--	--		
AR-1	05-11-98	15.61	10.93	ND	4.68	05-11-98	<50	<0.5	<0.5	<0.5	<0.5	4	--	--		
AR-1	07-30-98	15.61	11.82	ND	3.79	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	6	--	--		
AR-1	10-08-98	15.61	12.24	ND	3.37	10-08-98	<50	<0.5	<0.5	<0.5	<0.5	6	--	--		
AR-1	02-18-99	15.61	7.75	ND	7.86	02-18-99	<50	<0.5	<0.5	<0.5	<1.0	<10	--	--		
AR-1	05-26-99	15.61	11.62	ND	3.99	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-1	08-23-99	15.61	9.32	ND	6.29	08-23-99	Not sampled: well sampled semi-annually, during the first and second quarters									
AR-1	10-27-99	15.61	12.14	ND	3.47	10-27-99	Not sampled: well sampled semi-annually, during the first and second quarters									
AR-1	01-31-00	15.61	Not surveyed: well inaccessible													
AR-2	03-24-95	15.28	9.13	ND	6.15	03-24-95	<50	6.2	<0.5	<0.5	0.6	--	--	<50		
AR-2	06-05-95	15.28	12.09	ND	3.19	06-05-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	<50		
AR-2	08-17-95	15.28	12.78	ND	2.50	08-18-95	<50	<0.5	<0.5	<0.5	<0.5	4	--	<50		
AR-2	12-04-95	15.28	11.44	ND	3.84	12-13-95	<50	<0.5	<0.5	<0.5	<0.5	--	--	--		
AR-2	03-01-96	15.28	9.83	ND	5.45	03-13-96	190	26	2.6	3.3	13	200	--	--		
AR-2	05-29-96	15.28	10.97	ND	4.31	05-29-96	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-2	08-29-96	15.28	12.20	ND	3.08	08-29-96	<50	<0.5	<0.5	<0.5	<0.5	95	--	--		
AR-2	11-21-96	15.28	11.57	ND	3.71	11-21-96	Not sampled: well sampled semi-annually, during the first and third quarters									

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
AR-2	03-26-97	15.28	11.60	ND	3.68	03-26-97	<50	<0.5	<0.5	<0.5	<0.5	9	--	--		
AR-2	05-21-97	15.28	12.12	ND	3.16	05-21-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-2	08-08-97	15.28	12.35	ND	2.93	08-08-97	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	11-18-97	15.28	3.48	ND	11.80	11-18-97	Not sampled: well sampled semi-annually, during the first and third quarters									
AR-2	02-20-98	15.28	8.00	ND	7.28	02-20-98	<50	<0.5	<0.5	<0.5	<0.5	43	--	--		
AR-2	05-11-98	15.28	10.97	ND	4.31	05-11-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	07-30-98	15.28	11.76	ND	3.52	07-30-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	10-08-98	15.28	12.17	ND	3.11	10-08-98	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	02-18-99	15.28	9.17	ND	6.11	02-18-99	<50	<0.5	<0.5	<0.5	<1.0	<10	--	--		
AR-2	05-26-99	15.28	11.72	ND	3.56	05-26-99	<50	<0.5	<0.5	<0.5	<0.5	<3	--	--		
AR-2	08-23-99	15.28	12.31	ND	2.97	08-23-99	Not sampled: well sampled semi-annually, during the first and second quarters								0.61	
AR-2	10-27-99	15.28	12.42	ND	2.86	10-27-99	Not sampled: well sampled semi-annually, during the first and second quarters									
AR-2	01-31-00	15.28	10.31	ND	4.97	01-31-00	Not sampled									
ADR-1	03-24-95	13.95	8.04	0.01	** 5.92	03-24-95	Not sampled: well contained floating product									
ADR-1	06-05-95	13.95	11.02	ND	2.93	06-05-95	23,000	310	420	300	1,900	--	--	13,000		
ADR-1	08-17-95	13.95	11.86	ND	2.09	08-18-95	4,400	150	120	95	620	120	--	4,500		
ADR-1	12-04-95	13.95	10.05	ND	3.90	12-13-95	8,800	100	130	120	990	--	--	--		
ADR-1	03-01-96	13.95	8.76	ND	5.19	03-13-96	89,000	370	1,000	840	8,100	<500	--	--		
ADR-1	05-29-96	13.95	9.74	ND	4.21	05-30-96	27,000	230	380	370	2,700	<100	--	--		
ADR-1	08-29-96	13.95	10.77	ND	3.18	08-29-96	5,300	190	58	76	470	85	--	--		
ADR-1	11-21-96	13.95	10.49	ND	3.46	11-21-96	1,900	82	21	32	270	110	--	--		
ADR-1	03-26-97	13.95	10.37	ND	3.58	03-26-97	1,300	260	6	39	27	95	--	--		
ADR-1	05-21-97	13.95	10.90	ND	3.05	05-21-97	2,100	300	18	37	200	79	--	--		
ADR-1	08-08-97	13.95	11.12	ND	2.83	08-08-97	3,900	620	49	110	470	<200	--	--		
ADR-1	11-18-97	13.95	3.47	ND	10.48	11-18-97	18,000	900	140	360	2,700	<60	--	--		
ADR-1	02-20-98	13.95	Not surveyed: well inaccessible													

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
1995 - Present***

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
ADR-1	05-11-98	13.95	Not surveyed: well inaccessible													
ADR-1	07-30-98	13.95	Not surveyed: well inaccessible													
ADR-1	10-08-98	13.95	Not surveyed: well inaccessible													
ADR-1	02-18-99	13.95	7.80	ND	6.15	02-18-99	200	4.4	<0.5	1.3	1.3	43	--	--		
ADR-1	05-26-99	13.95	10.40	ND	3.55	05-26-99	160	10	<0.5	1.7	1.8	43	--	--		
ADR-1	08-23-99	13.95	10.70	ND	3.25	08-23-99	7,400	310	16	210	970	18	--	--	0.37	NP
ADR-1	10-27-99	13.95	10.82	ND	3.13	10-27-99	5,000	210	6.3	180	490	5	--	--	0.73	NP
ADR-1	01-31-00	13.95	9.21	ND	4.74	01-31-00	290	3.6	<0.5	1.1	<1	26	--	--	1.0	NP
ADR-2	03-24-95	14.64	8.41	>3.00	NR[1]	03-24-95	Not sampled: well contained floating product									
ADR-2	06-05-95	14.64	11.45	>3.00	NR[1]	06-05-95	Not sampled: well contained floating product									
ADR-2	08-17-95	14.64	12.10	0.03	** 2.56	08-17-95	Not sampled: well contained floating product									
ADR-2	12-04-95	14.64	10.93	0.03	** 3.73	12-13-95	Not sampled: well contained floating product									
ADR-2	03-01-96	14.64	8.74	ND	5.90	03-13-96	29,000	1,100	1,200	710	3,800	<500	--	--		
ADR-2	05-29-96	14.64	10.43	ND	4.21	05-29-96	33,000	510	500	470	2,300	120	--	--		
ADR-2	08-29-96	14.64	11.64	ND	3.00	08-29-96	8,000	230	180	150	730	53	--	--		
ADR-2	11-21-96	14.64	11.23	ND	3.41	11-21-96	15,000	630	440	390	2,100	75	--	--		
ADR-2	03-26-97	14.64	11.13	ND	3.51	03-26-97	6,100	320	23	180	400	32	--	--		
ADR-2	05-21-97	14.64	11.64	ND	3.00	05-21-97	6,100	380	22	210	320	<30	--	--		
ADR-2	08-08-97	14.64	11.85	ND	2.79	08-08-97	8,400	380	35	230	910	<30	--	--		
ADR-2	11-18-97	14.64	3.33	ND	11.31	11-18-97	11,000	230	29	300	1,200	<60	--	--		
ADR-2	02-20-98	14.64	7.67	ND	6.97	02-20-98	4,700	320	30	130	360	20	--	--		
ADR-2	05-11-98	14.64	10.47	ND	4.17	05-11-98	Not sampled									
ADR-2	07-30-98	14.64	Not surveyed: well inaccessible													
ADR-2	10-08-98	14.64	11.67	ND	2.97	10-08-98	Not sampled									
ADR-2	02-18-99	14.64	Not surveyed: well inaccessible													
ADR-2	05-26-99	14.64	11.02	ND	3.62	05-26-99	5,900	670	5	340	104	16	--	--		

Table 1
Historical Groundwater Elevation and Analytical Data
Petroleum Hydrocarbons and Their Constituents
*1995 - Present****

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Well Number	Date Gauged	TOC Elevation (ft-MSL)	Depth to Water (feet)	FP Thickness (feet)	Groundwater Elevation (ft-MSL)	Date Sampled	TPH Gasoline (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE 8021B* (µg/L)	MTBE 8260 (µg/L)	TPH Diesel (µg/L)	Dissolved Oxygen (mg/L)	Purged/ Not Purged (P/NP)
ADR-2	08-23-99	14.64	9.82	ND	4.82	08-23-99	9,100	570	12	410	1,000	28	--	--	0.50	NP
ADR-2	10-27-99	14.64	9.85	Sheen	4.79	10-27-99	Not sampled: sheen present								0.65	NP
ADR-2	01-31-00	14.64	10.15	ND	4.49	01-31-00	7,700	280	3.4	370	390	23	--	--	2.0	NP

TOC: top of casing
ft-MSL: elevation in feet, relative to mean sea level
TPH: total petroleum hydrocarbons, California DHS LUFT Method
BTEX: benzene, toluene, ethylbenzene, total xylenes by EPA method 8021B. (EPA method 8020 prior to 10/27/99).
MTBE: Methyl tert-butyl ether
µg/L: micrograms per liter
mg/L: milligrams per liter
ND: none detected
NR: not reported; data not available or not measurable
--: not analyzed or not applicable
<: denotes concentration not present at or above laboratory detection limit stated to the right.
[1]: well contained more than 3 feet of floating product; exact product thickness and groundwater elevation could not be measured
*: EPA method 8020 prior to 10/27/99
**: [corrected elevation (Z')] = Z + (h * 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water
***: For previous historical groundwater elevation data please refer to *Fourth Quarter 1995 Groundwater Monitoring Program Results and Remediation System Performance Evaluation Report, ARCO Service Station 2169, 889 West Grand Avenue, Oakland, California, (EMCON, March 4, 1996).*

Table 2
Groundwater Flow Direction and Gradient

ARCO Service Station 2169
889 West Grand Avenue, Oakland, California

Date Measured	Average Flow Direction	Average Hydraulic Gradient
03-24-95	Northwest	0.009
06-05-95	Northwest	0.002
08-17-95	West	0.001
12-04-95	North-Northwest	0.002
03-01-96	Northwest	0.003
05-29-96	Northwest	0.002
08-29-96	West	0.002
11-21-96	West-Northwest	0.002
03-26-97	Northwest	0.002
05-21-97	North-Northwest	0.002
08-08-97	North-Northwest	0.002
11-18-97	North-Northwest	0.003
02-20-98	North	0.013
05-11-98	North	0.03
07-30-98	North	0.002
10-08-98	North-Northwest	0.002
02-18-99	Northwest	0.008
05-26-99	North-Northwest	0.003
08-23-99	Variable	Variable
10-27-99	Variable	Variable
01-31-00	**West-Northwest**	**0.006**

Table 1
Groundwater Monitoring Data
Third Quarter 1994
Summary Report

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Date: 01-27-95
Project Number: 0805-129.01

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient foot/foot	Water Sample Field Date	TPHG ppb	Benzene ppb	Toluene ppb	Ethylbenzene ppb	Total Xylenes ppb	TPHD ppb
A-1	08-10-94	14.16	10.28	3.88	ND	WNW	0.007	08-10-94	27000	3700	1100	540	3000	^3000
A-2	08-10-94	14.55	11.56	2.99	ND	WNW	0.007	08-10-94	690	47	25	3.9	86	Not analyzed
A-3	08-10-94	15.75	11.12	4.63	ND	WNW	0.007	08-10-94	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-4	08-10-94	15.25	11.75	3.50	ND	WNW	0.007	08-10-94	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-5	08-10-94	13.51	10.76	2.75	ND	WNW	0.007	08-10-94	11000	730	930	310	1300	Not analyzed
A-6	08-10-94	13.51	10.77	2.74	ND	WNW	0.007	08-10-94	300	<0.6	<2.5	<0.8	<1	Not analyzed
AR-1	08-10-94	15.61	11.09	4.52	ND	WNW	0.007	08-10-94	6100	120	66	65	530	^2900
AR-2	08-10-94	15.28	12.48	2.80	ND	WNW	0.007	08-10-94	200	5	1.7	2.7	38	^55
ADR-1	08-10-94	13.95	10.36	3.59	ND	WNW	0.007	08-10-94	150000	5400	15000	3600	24000	^^^4800
ADR-2	08-10-94	14.64	9.81	** 4.90	0.10	WNW	0.007	08-10-94	Not sampled: well contained floating product					

TOC = Top of casing
TPHG = Total petroleum hydrocarbons as gasoline
TPHD = Total petroleum hydrocarbons as diesel
ft-MSL = Elevation in feet, relative to mean sea level
MWN = Groundwater flow direction and gradient apply to the entire monitoring well network
ppb = Parts per billion or micrograms per liter (µg/l)
ND = None detected
WNW = West-northwest
^ = Sample contains a lower boiling point hydrocarbon quantitated as diesel; chromatogram does not match the typical diesel fingerprint
^^^ = Sample contains a mixture of diesel and a lower boiling point hydrocarbon quantitated as diesel; chromatogram does not match the typical diesel fingerprint
** [Corrected elevation (Z')] = Z + (h * 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water

esj/h:\2169\2169mdb.xls\Table 1:dcl
0805-129.01

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Date: 01-27-95
Project Number: 0805-129.01

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
A-1	04-03-92	14.75	10.35	4.40	ND	NR	NR
A-1	05-20-92	14.75	11.66	3.09	ND	NR	NR
A-1	06-16-92	14.75	11.95	2.80	ND	NR	NR
A-1	07-17-92	14.75	12.23	2.52	ND	NR	NR
A-1	08-07-92	14.75	12.16	2.59	ND	NR	NR
A-1	09-22-92	14.75	12.42	2.33	ND	NR	NR
A-1	10-13-92	14.75	12.47	2.28	ND	NR	NR
A-1	11-23-92	14.75	11.83	2.92	ND	NR	NR
A-1	12-16-92	14.75	11.03	3.72	ND	NR	NR
A-1	01-28-93	14.75	9.08	5.67	ND	NR	NR
A-1	02-22-93	14.75	9.46	5.29	ND	NR	NR
A-1	03-25-93	14.75	10.02	4.73	ND	NR	NR
A-1	04-15-93	14.75	10.50	4.25	ND	NR	NR
A-1	05-22-93	14.75	11.33	3.42	ND	NR	NR
A-1	06-16-93	14.75	11.51	3.24	ND	NR	NR
A-1	07-27-93	14.75	11.91	2.84	ND	NR	NR
A-1	08-26-93	14.75	12.11	2.64	ND	NR	NR
A-1	09-27-93	14.75	12.21	2.54	ND	NR	NR
A-1	10-08-93	14.75	12.21	2.54	ND	NR	NR
A-1	02-09-94	14.16	10.09	4.07	ND	NR	NR
A-1	05-04-94	14.16	10.68	3.48	ND	NW	0.004
A-1	08-10-94	14.16	10.28	3.88	ND	WNW	0.007

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Date: 01-27-95
Project Number: 0805-129.01

Well Designation	Water Level Field Date	TOC Elevation ft-MSL	Depth to Water feet	Groundwater Elevation ft-MSL	Floating Product Thickness feet	Groundwater Flow Direction MWN	Hydraulic Gradient foot/foot
A-2	04-03-92	15.16	10.97	4.19	ND	NR	NR
A-2	05-20-92	15.16	12.17	2.99	ND	NR	NR
A-2	06-16-92	15.16	12.43	2.73	ND	NR	NR
A-2	07-17-92	15.16	12.64	2.52	ND	NR	NR
A-2	08-07-92	15.16	12.75	2.41	ND	NR	NR
A-2	09-22-92	15.16	12.88	2.28	ND	NR	NR
A-2	10-13-92	15.16	12.92	2.24	ND	NR	NR
A-2	11-23-92	15.16	12.18	2.98	ND	NR	NR
A-2	12-16-92	15.16	11.52	3.64	ND	NR	NR
A-2	01-28-93	15.16	9.73	5.43	ND	NR	NR
A-2	02-22-93	15.16	9.28	5.88	ND	NR	NR
A-2	03-25-93	15.16	10.57	4.59	ND	NR	NR
A-2	04-15-93	15.16	11.20	3.96	ND	NR	NR
A-2	05-22-93	15.16	11.91	3.25	ND	NR	NR
A-2	06-16-93	15.16	12.04	3.12	ND	NR	NR
A-2	07-27-93	15.16	12.41	2.75	ND	NR	NR
A-2	08-25-93	15.16	12.54	2.62	ND	NR	NR
A-2	09-27-93	15.16	12.66	2.50	ND	NR	NR
A-2	10-08-93	15.16	12.65	2.51	ND	NR	NR
A-2	02-09-94	14.55	10.67	3.88	ND	NR	NR
A-2	05-04-94	14.55	11.25	3.30	ND	NW	0.004
A-2	08-10-94	14.55	11.56	2.99	ND	WNW	0.007

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Date: 01-27-95
Project Number: 0805-129.01

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
A-3	04-03-92	16.38	11.70	4.68	ND	NR	NR
A-3	05-20-92	16.38	13.00	3.38	ND	NR	NR
A-3	06-16-92	16.38	13.46	2.92	ND	NR	NR
A-3	07-17-92	16.38	13.45	2.93	ND	NR	NR
A-3	08-07-92	16.38	12.37	4.01	ND	NR	NR
A-3	09-22-92	16.38	13.71	2.67	ND	NR	NR
A-3	10-13-92	16.38	13.76	2.62	ND	NR	NR
A-3	11-23-92	16.38	13.60	2.78	ND	NR	NR
A-3	12-16-92	16.38	12.31	4.07	ND	NR	NR
A-3	01-28-93	16.38	10.33	6.05	ND	NR	NR
A-3	02-22-93	16.38	10.44	5.94	ND	NR	NR
A-3	03-25-93	16.38	11.27	5.11	ND	NR	NR
A-3	04-15-93	16.38	11.98	4.40	ND	NR	NR
A-3	05-22-93	16.38	12.70	3.68	ND	NR	NR
A-3	06-16-93	16.38	12.84	3.54	ND	NR	NR
A-3	07-27-93	16.38	13.22	3.16	ND	NR	NR
A-3	08-25-93	16.38	13.35	3.03	ND	NR	NR
A-3	09-27-93	16.38	13.50	2.88	ND	NR	NR
A-3	10-08-93	16.38	13.48	2.90	ND	NR	NR
A-3	02-09-94	15.75	11.32	4.43	ND	NR	NR
A-3	05-04-94	15.75	11.99	3.76	ND	NW	0.004
A-3	08-10-94	15.75	11.12	4.63	ND	WNW	0.007

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Date: 01-27-95
Project Number: 0805-129.01

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
A-4	04-03-92	15.89	10.84	5.05	ND	NR	NR
A-4	05-20-92	15.89	12.13	3.76	ND	NR	NR
A-4	06-16-92	15.89	12.33	3.56	ND	NR	NR
A-4	07-17-92	15.89	12.60	3.29	ND	NR	NR
A-4	08-07-92	15.89	12.56	3.33	ND	NR	NR
A-4	09-22-92	15.89	12.87	3.02	ND	NR	NR
A-4	10-13-92	15.89	12.87	3.02	ND	NR	NR
A-4	11-23-92	15.89	12.63	3.26	ND	NR	NR
A-4	12-16-92	15.89	11.34	4.55	ND	NR	NR
A-4	01-28-93	15.89	9.40	6.49	ND	NR	NR
A-4	02-22-93	15.89	9.35	6.54	ND	NR	NR
A-4	03-25-93	15.89	10.32	5.57	ND	NR	NR
A-4	04-15-93	15.89	11.15	4.74	ND	NR	NR
A-4	05-22-93	15.89	11.84	4.05	ND	NR	NR
A-4	06-16-93	15.89	12.01	3.88	ND	NR	NR
A-4	07-27-93	15.89	12.33	3.56	ND	NR	NR
A-4	08-25-93	15.89	12.48	3.41	ND	NR	NR
A-4	09-27-93	15.89	12.60	3.29	ND	NR	NR
A-4	10-08-93	15.89	12.57	3.32	ND	NR	NR
A-4	02-09-94	15.25	10.01	5.24	ND	NR	NR
A-4	05-04-94	15.25	11.08	4.17	ND	NW	0.004
A-4	08-10-94	15.25	11.75	3.50	ND	WNW	0.007

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Date: 01-27-95
Project Number: 0805-129.01

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
A-5	02-11-93	14.14	9.15	4.99	ND	NR	NR
A-5	03-25-93	14.14	9.33	4.81	ND	NR	NR
A-5	04-15-93	14.14	10.11	4.03	ND	NR	NR
A-5	05-22-93	14.14	10.71	3.43	ND	NR	NR
A-5	06-16-93	14.14	10.84	3.30	ND	NR	NR
A-5	07-27-93	14.14	11.22	2.92	ND	NR	NR
A-5	08-26-93	14.14	11.44	2.70	ND	NR	NR
A-5	09-27-93	14.14	11.51	2.63	ND	NR	NR
A-5	10-08-93	14.14	11.68	2.46	ND	NR	NR
A-5	02-09-94	13.51	9.44	4.07	ND	NR	NR
A-5	05-04-94	13.51	10.00	3.51	ND	NW	0.004
A-5	08-10-94	13.51	10.76	2.75	ND	WNW	0.007
A-6	02-11-93	14.17	9.35	4.82	ND	NR	NR
A-6	03-25-93	14.17	Not surveyed: well was inaccessible				
A-6	04-16-93	14.17	9.36	4.81	ND	NR	NR
A-6	05-22-93	14.17	10.86	3.31	ND	NR	NR
A-6	06-16-93	14.17	10.98	3.19	ND	NR	NR
A-6	07-27-93	14.17	Not surveyed: well was inaccessible				
A-6	08-25-93	14.17	Not surveyed: well was inaccessible				
A-6	09-27-93	14.17	11.65	2.52	ND	NR	NR
A-6	10-08-93	14.17	11.80	2.37	ND	NR	NR
A-6	02-09-94	13.51	9.48	4.03	ND	NR	NR
A-6	05-04-94	13.51	10.07	3.44	ND	NW	0.004
A-6	08-10-94	13.51	10.77	2.74	ND	WNW	0.007

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Date: 01-27-95
Project Number: 0805-129.01

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
AR-1	04-03-92	15.71	11.07	4.64	ND	NR	NR
AR-1	05-20-92	15.71	12.37	3.34	ND	NR	NR
AR-1	06-16-92	15.71	12.47	3.24	ND	NR	NR
AR-1	07-17-92	15.71	13.00	2.71	ND	NR	NR
AR-1	08-07-92	15.71	12.87	2.84	ND	NR	NR
AR-1	09-22-92	15.71	12.99	2.72	ND	NR	NR
AR-1	10-13-92	15.71	13.05	2.66	ND	NR	NR
AR-1	11-23-92	15.71	12.80	2.91	ND	NR	NR
AR-1	12-16-92	15.71	11.49	4.22	ND	NR	NR
AR-1	01-28-93	15.71	9.46	6.25	ND	NR	NR
AR-1	02-22-93	15.71	10.05	5.66	ND	NR	NR
AR-1	03-25-93	15.71	10.75	4.96	ND	NR	NR
AR-1	04-15-93	15.71	11.26	4.45	ND	NR	NR
AR-1	05-22-93	15.71	12.07	3.64	ND	NR	NR
AR-1	06-16-93	15.71	12.21	3.50	ND	NR	NR
AR-1	07-27-93	15.71	12.60	3.11	ND	NR	NR
AR-1	08-25-93	15.71	12.78	2.93	ND	NR	NR
AR-1	09-27-93	15.71	12.89	2.82	ND	NR	NR
AR-1	10-08-93	15.71	12.84	2.87	ND	NR	NR
AR-1	02-09-94	15.61	11.08	4.53	ND	NR	NR
AR-1	05-04-94	15.61	11.83	3.78	ND	NW	0.004
AR-1	08-10-94	15.61	11.09	4.52	ND	WNW	0.007

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Date: 01-27-95
Project Number: 0805-129.01

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
AR-2	07-17-92	15.79	13.14	2.65	ND	NR	NR
AR-2	08-07-92	15.79	13.25	2.54	ND	NR	NR
AR-2	09-22-92	15.79	13.58	2.21	ND	NR	NR
AR-2	10-13-92	15.79	13.65	2.14	ND	NR	NR
AR-2	11-23-92	15.79	Not surveyed: could not located well				
AR-2	12-16-92	15.79	12.16	3.63	ND	NR	NR
AR-2	01-28-93	15.79	10.26	5.53	ND	NR	NR
AR-2	02-22-93	15.79	10.52	5.27	ND	NR	NR
AR-2	03-25-93	15.79	11.18	4.61	ND	NR	NR
AR-2	04-15-93	15.79	11.81	3.98	ND	NR	NR
AR-2	05-22-93	15.79	12.46	3.33	ND	NR	NR
AR-2	06-16-93	15.79	12.53	3.26	ND	NR	NR
AR-2	07-27-93	15.79	12.77	3.02	ND	NR	NR
AR-2	08-26-93	15.79	13.23	2.56	ND	NR	NR
AR-2	09-27-93	15.79	13.16	2.63	ND	NR	NR
AR-2	10-08-93	15.79	13.32	2.47	ND	NR	NR
AR-2	02-09-94	15.28	11.33	3.95	ND	NR	NR
AR-2	05-04-94	15.28	11.88	3.40	ND	NW	0.004
AR-2	08-10-94	15.28	12.48	2.80	ND	WNW	0.007

Table 2
Historical Groundwater Elevation Data
Summary Report

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Date: 01-27-95
Project Number: 0805-129.01

Well Designation	Water Level Field Date	TOC Elevation	Depth to Water	Groundwater Elevation	Floating Product Thickness	Groundwater Flow Direction	Hydraulic Gradient
		ft-MSL	feet	ft-MSL	feet	MWN	foot/foot
ADR-1	02-09-94	13.95	9.90	4.05	ND	NR	NR
ADR-1	05-04-94	13.95	10.50	3.45	ND	NW	0.004
ADR-1	08-10-94	13.95	10.36	3.59	ND	WNW	0.007
ADR-2	02-09-94	14.64	10.73	3.91	ND	NR	NR
ADR-2	05-04-94	14.64	11.31	3.33	ND	NW	0.004
ADR-2	08-10-94	14.64	9.81	** 4.90	0.10	WNW	0.007

TOC = Top of casing
ft-MSL = Elevation in feet, relative to mean sea level
MWN = Groundwater flow direction and gradient apply to the entire monitoring well network
ND = None detected
NR = Not reported; data not available or not measurable
NW = Northwest
WNW = West-northwest
** [Corrected elevation (Z')] = Z + (h * 0.73) where: Z = measured elevation, h = floating product thickness, 0.73 = density ratio of oil to water

Table 3
Historical Groundwater Analytical Data
Summary Report

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Date: 01-27-95
Project Number: 0805-129.01

Well Desig-nation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHD
		ppb	ppb	ppb	ppb	ppb	ppb
A-1	04-03-92	34000	6200	3900	410	3100	6100
A-1	07-17-92	5600	3000	500	<100	<100	Not analyzed
A-1	10-13-92	5600	980	590	85	910	Not analyzed
A-1	01-28-93	3700	780	360	130	460	^620
A-1	04-15-93	210	34	11	7.1	20	^420
A-1	08-26-93	2000	370	35	50	220	^1500
A-1	10-08-93	2600	430	65	64	99	^1200
A-1	02-09-94	3000	560	150	66	190	^650
A-1	05-04-94	1300	250	61	27	110	^2100
A-1	08-10-94	27000	3700	1100	540	3000	^3000
A-2	04-03-92	<30	<0.3	<0.3	<0.3	<0.3	<50
A-2	07-17-92	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-2	10-13-92	<50	0.57	<0.5	<0.5	<0.5	Not analyzed
A-2	01-28-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-2	04-15-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-2	08-25-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-2	10-08-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-2	02-09-94	^^260	<0.6	<0.5	<0.5	<0.5	Not analyzed
A-2	05-04-94	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-2	08-10-94	690	47	25	3.9	86	Not analyzed
A-3	04-03-92	200	0.79	0.65	4.4	<0.3	130
A-3	07-17-92	<50	<0.5	<0.5	1.3	2.3	Not analyzed
A-3	10-13-92	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-3	01-28-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-3	04-15-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-3	08-25-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-3	10-08-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-3	02-09-94	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-3	05-04-94	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-3	08-10-94	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed

Table 3
Historical Groundwater Analytical Data
Summary Report

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Date: 01-27-95
Project Number: 0805-129.01

Well Designation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHD
		ppb	ppb	ppb	ppb	ppb	ppb
A-4	04-03-92	35	<0.3	<0.3	<0.3	<0.3	85
A-4	07-17-92	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-4	10-13-92	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-4	01-28-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-4	04-15-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-4	08-25-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-4	10-08-93	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-4	02-09-94	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-4	05-04-94	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-4	08-10-94	<50	<0.5	<0.5	<0.5	<0.5	Not analyzed
A-5	02-11-93	4900	380	640	140	970	Not analyzed
A-5	04-15-93	27000	3100	4000	1100	4600	Not analyzed
A-5	08-26-93	13000	1100	1400	480	1800	Not analyzed
A-5	10-08-93	6800	490	620	280	980	Not analyzed
A-5	02-09-94	2200	190	130	130	310	Not analyzed
A-5	05-09-94	13000	1000	1500	490	2000	Not analyzed
A-5	08-10-94	11000	730	930	310	1300	Not analyzed
A-6	02-11-93	990	1.8	5.1	17	7.2	Not analyzed
A-6	04-16-93	390	1.3	1.6	1.7	7.7	Not analyzed
A-6	08-25-93	Not sampled: well was inaccessible					
A-6	10-08-93	220	0.73	<0.5	0.82	0.65	Not analyzed
A-6	02-09-94	640	<2.9	<3.7	<2.4	<8.2	Not analyzed
A-6	05-04-94	260	<0.5	<1.5	<1.5	<0.5	Not analyzed
A-6	08-10-94	300	<0.6	<2.5	<0.8	<1	Not analyzed

Table 3
Historical Groundwater Analytical Data
Summary Report

ARCO Service Station 2169
889 West Grand Avenue, Oakland, CA

Date: 01-27-95
Project Number: 0805-129.01

Well Designation	Water Sample Field Date	TPHG	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPHD
		ppb	ppb	ppb	ppb	ppb	ppb
AR-1	04-03-92	17000	310	1400	320	3000	12000
AR-1	07-17-92	44000	4300	1800	1800	10000	Not analyzed
AR-1	10-13-92	32000	310	730	570	3100	^22000
AR-1	01-28-93	15000	1200	510	510	2600	^5300
AR-1	04-15-93	17000	1800	360	520	1600	^5400
AR-1	08-25-93	2900	260	54	80	160	^2800
AR-1	10-08-93	3500	200	85	120	290	^4100
AR-1	02-09-94	26000	2900	450	920	3000	^4200
AR-1	05-04-94	36000	3400	360	1400	3700	^7200
AR-1	08-10-94	6100	120	66	65	530	^2900
AR-2	07-17-92	150	6.6	24	6.6	39	Not analyzed
AR-2	10-13-92	<50	2	0.86	0.51	3.8	^58
AR-2	01-28-93	2000	570	13	<10	380	^290
AR-2	04-15-93	85	15	<0.5	<0.5	2.4	<50
AR-2	08-26-93	<50	<0.5	<0.5	<0.5	<0.5	<50
AR-2	10-08-93	<50	<0.5	<0.5	<0.5	<0.5	<50
AR-2	02-09-94	^^82	<0.5	<0.5	<0.5	<0.5	<50
AR-2	05-04-94	<50	<0.5	<0.5	<0.5	<0.5	<50
AR-2	08-10-94	200	5	1.7	2.7	38	^55
ADR-1	02-09-94	3000	380	140	59	240	^110
ADR-1	05-04-94	2100	490	93	68	140	^60
ADR-1	08-10-94	150000	5400	15000	3600	24000	^^^4800
ADR-2	02-09-94	83000	6300	6100	2000	11000	12000
ADR-2	05-04-94	36000	4600	2600	930	4500	^4200
ADR-2	08-10-94	Not sampled: well contained floating product					

TPHG = Total petroleum hydrocarbons as gasoline
TPHD = Total petroleum hydrocarbons as diesel
ppb = Parts per billion or micrograms per liter (µg/l)
^ = Sample contains a lower boiling point hydrocarbon quantitated as diesel; chromatogram does not match the typical diesel fingerprint
^^ = Sample contains a single non-fuel component eluting in the gasoline range, and quantified as gasoline
^^^ = Sample contains a mixture of diesel and a lower boiling point hydrocarbon quantitated as diesel; chromatogram does not match the typical diesel fingerprint

APPENDIX C

Historical Soil Boring / Monitoring Well Logs and Geologic Cross-Sections

MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 15% FINES	GM		SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC		CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 15% FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL		ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

LL	- Liquid Limit (%)
PI	- Plastic Index (%)
PID	- Volatile Vapors in ppm
MA	- Particle Size Analysis
2.5 YR 6/2	- Soil Color according to Munsell Soil Color Charts (1975 Edition)
5 GY 5/2	- GSA Rock Color Chart

☒	- No Soil Sample Recoverd
■	- "Undisturbed" Sample
⊠	- Bulk or Classification Sample
▽	- First Encountered Ground Water Level
▼	- Piezometric Ground Water Level
Penetration	- Sample drive hammer weight - 140 pounds falling 30 inches. Blows required to drive sampler 1 foot are indicated on the logs

GeoStrategies Inc.

Unified Soil Classification - ASTM D 2488-85 and Key to Test Data

Field location of boring:	Project No.: 792702	Date: 05/14/91	Boring No:
(See Plate 2)	Client: ARCO Products Company		A-A
	Location: 889 West Grand Avenue		
	City: Oakland, California		Sheet 1 of 2
	Logged by: TDL	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inches	Top of Box Elevation:	Datum:	

	Water Level	Time	Date
	13.5'	9:30	05/14/91

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				
				1				PAVEMENT SECTION - 1.0 ft.
				2				CLAY (CL) - very dark gray (10YR 3/1), stiff, damp, medium plasticity; 90% fines; moderately silty; 10% fine sand.
				3				
	400	S&H	A-A-	4				
4	400	push	4.5	5				COLOR CHANGE to brown (10YR 4/3) at 4.0 ft.
	500			6				
				7				
				8				
			A-A-	9				SILT (ML) - yellowish brown (10YR 5/4), medium stiff,
1350	11	S&H	9.5	10				damp, low plasticity; 90% fines; moderately clayey; 10% fine sand; mottles.
				11				
				12				
				13				
			A-A-	14		▽		COLOR CHANGE to light yellowish brown (10YR 6/4), at
25	16	S&H	14.5	15				13.5 ft, saturated, increase fine sand to 25%.
				16				
				17				
				18				hard at 18.0 ft.
				19				

Remarks:

* Converted to equivalent Standard Penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO

A-A

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792702	DHP	5/91		

Field location of boring:	Project No.: 792702	Date: 05/14/91	Boring No:
(See Plate 2)	Client: ARCO Products Company		A-A
	Location: 889 West Grand Avenue		Sheet 2
	City: Oakland, California		of 2
	Logged by: T.D.L.	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inches	Top of Box Elevation:	Datum:	

	Water Level			
	Time			
	Date			

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
2	29	S&H	A-A-19.5	20				SAND with GRAVEL (SP) - brown (10YR 5/3), loose, saturated; 70% medium to coarse sand; 15% gravel; 15% fine sand.
				21				Bottom of Boring at 20.0 ft.
				22				05/14/91
				23				
				24				
				25				
				26				
				27				
				28				
				29				
				30				
				31				
				32				
				33				
				34				
				35				
				36				
				37				
				38				
				39				

Remarks:

GeoStrategies Inc.

Log of Boring

BORING NO.

A-A

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792702	DHP	5/91		

Field location of boring: (See Plate 2)	Project No.: 792702	Date: 05/14/91	Boring No.: A-B
	Client: ARCO Products Company		
	Location: 889 West Grand Avenue		
	City: Oakland, California		Sheet 1 of 1
	Logged by: T.D.L.	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inches	Top of Box Elevation:		Datum:
	Water Level: 13.5'		
	Time: 11:20		
	Date: 05/14/91		

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				
				1				PAVEMENT SECTION - 1.0 ft.
				2				CLAY (CL) - very dark gray (10YR 3/1), very stiff, damp, medium plasticity; 85% fines; moderately silty; 15% fine sand.
				3				
				4				
	400	S&H	A-B-5.5	5				COLOR CHANGE to grayish brown (10YR 5/2), at 4.5 ft; increase to fine sand to 25%.
1050	400	push		6				
	500			7				
				8				
				9				
			A-B-10.5	10				SAND (SP) - gray (5Y 5/1), medium dense, moist; 95% fine sand; 5% silt.
853	9	S&H		11				
				12				
				13				
			A-B-14.5	14		▽		saturated, mottles
980	8	S&H		15				
				16				Bottom of Boring at 15.0 ft. 05/14/91
				17				
				18				
				19				

Remarks:

* Converted to equivalent Standard Penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. A-B

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792702	DHP	5/91		

Field location of boring: (See Plate 2)	Project No.: 792702	Date: 05/14/91	Boring No: A-C
	Client: ARCO Products Company		
	Location: 889 West Grand Avenue		
	City: Oakland, California		Sheet 1 of 1
	Logged by: T.D.L.	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inches	Top of Box Elevation:		Datum:

Water Level	13.5		
Time	12:40		
Date	05/14/91		

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				
				1				PAVEMENT SECTION - 1.0 ft.
				2				FILL - SAND (SP) - brownish yellow (10YR 6/6), medium dense, damp; 100% sand.
				3				
				4				CLAY (CL) - very dark gray (10YR 3/1), very stiff, damp, medium plasticity; 90% fines; slightly silty; 10% fine sand.
				5				
	400	S&H	A-C-					
12	400	push	6.0	6				COLOR CHANGE to very dark gray (10YR 3/1) at 5.0 ft; increase fine sand to 25%
	500			7				
				8				
				9				
				10				
			A-C-					COLOR CHANGE to dark gray (10YR 4/1) at 10.0 ft, wet.
1118	6	S&H	11.0	11				
				12				
				13				
						▽		SILT with SAND (ML) - brown (10Y 5/3), medium stiff, saturated; 80% silt; 20% fine sand.
			A-C-	14				
1066	6	S&H	14.5	15				SAND (SP) - very dark grayish brown (10YR 3/2), loose, saturated, medium dense; 100% medium to fine sand.
				16				
				17				Bottom of Boring at 15.0 ft. 05/14/91
				18				
				19				

Remarks:

* Converted to equivalent Standard Penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. A-C

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792702	DHP	5/91		

Field location of boring:

(See Plate 2)

Project No.:	792702	Date: 05/14/91	Boring No: A-D
Client:	ARCO Products Company		
Location:	889 West Grand Avenue		
City:	Oakland, California		Sheet 1 of 1
Logged by: T.D.L.		Driller: Bayland	

Casing Installation date:

Drilling method: Hollow Stem Auger

Hole diameter: 8-inches

Top of Box Elevation: Datum:

Water Level	13.5'							
Time	13:50							
Date	05/14/91							

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				
				1				PAVEMENT SECTION - 1.0 ft.
				2				FILL - SAND (SP) - brownish yellow (10YR 6/6), medium dense, damp; 100% fine sand.
				3				
				4				
				5				CLAY with SAND (CL) - very dark gray (10YR 5/1), very stiff, damp, medium plasticity; 70% fine; moderately silty; 30% fine sand.
	400	S&H	A-D-	6				
1142	500	push	6.0					COLOR CHANGE to brown (10YR 5/3) at 6.5 ft.
	500			7				
				8				
			A-D-	9				SILTY SAND (SM) - olive gray (5Y 5/2), medium dense, damp; 60% fine sand; 40% fines; slighty clayey.
625	6	S&H	9.5	10				
				11				COLOR CHANGE to yellowish brown (10YR 5/4) at 9.5 ft.
				12				
				13				
			A-D-	14		▽		SAND (SP) gray (5Y 5/1), loose, saturated; 95% fine sand; 5% silt; mottles.
957	6	S&H	14.5	15				
				16				Bottom of Boring at 15.0 ft. 05/14/91
				17				
				18				
				19				

Remarks:

*Converted to equivalent Standard Penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. A-D

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792702	DHP	5/91		

Field location of boring:	Project No.: 792702	Date: 05/14/91	Boring No:
(See Plate 2)	Client: ARCO Products Company		A-E
	Location: 889 West Grand Avenue		Sheet 1
	City: Oakland, California		of 1
	Logged by: T.D.L	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inches	Top of Box Elevation:	Datum:	
	Water Level: 13.5'		
	Time: 15:40		
	Date: 05/14/91		

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				0				
				1				PAVEMENT SECTION - 1.0 ft.
				2				FILL - SAND (SP) - brownish yellow (10YR 6/6), medium dense, damp; 100% fine sand.
				3				
				4				CLAY with SAND (CL) - very dark gray (10YR 5/1), very stiff, damp, medium plasticity; 70% fines; moderately silty; 30% fine sand.
				5				
	500	S&H	A-E-	6				SILT with SAND (ML) - olive gray (5Y 5/2), stiff, damp,
106	500	push	6.5	7				non-plastic; 65% fines; moderately clayey; 35% fine sand.
	600			8				
				9				
			A-E-	10				COLOR CHANGE to brown (10YR 5/3) at 9.5 ft, mottles.
810	5	S&H	10.5	11				
				12				
				13				
			A-E-	14		▽		SILTY SAND (SM) - olive (5Y 5/3), medium dense,
53	7	S&H	14.5	15				saturated; 60% fine sand; 40% fines; slightly clayey. SAND (SP) - olive gray (5Y 5/2), medium dense, saturated; 100% fine sand.
				16				
				17				Bottom of Boring at 15.0 ft. 05/14/91
				18				
				19				

Remarks:

* Converted to equivalent Standard Penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. A-E

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792702	DHP	5/91		

MAJOR DIVISIONS					TYPICAL NAMES
COARSE-GRAINED SOILS MORE THAN HALF IS COARSER THAN NO. 200 SIEVE	GRAVELS MORE THAN HALF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE SIZE	CLEAN GRAVELS WITH LITTLE OR NO FINES	GW		WELL GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
			GP		POORLY GRADED GRAVELS WITH OR WITHOUT SAND, LITTLE OR NO FINES
		GRAVELS WITH OVER 15% FINES	GM		SILTY GRAVELS, SILTY GRAVELS WITH SAND
			GC		CLAYEY GRAVELS, CLAYEY GRAVELS WITH SAND
	SANDS MORE THAN HALF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE SIZE	CLEAN SANDS WITH LITTLE OR NO FINES	SW		WELL GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
			SP		POORLY GRADED SANDS WITH OR WITHOUT GRAVEL, LITTLE OR NO FINES
		SANDS WITH OVER 15% FINES	SM		SILTY SANDS WITH OR WITHOUT GRAVEL
			SC		CLAYEY SANDS WITH OR WITHOUT GRAVEL
FINE-GRAINED SOILS MORE THAN HALF IS FINER THAN NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT 50% OR LESS		ML		INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTS WITH SANDS AND GRAVELS
			CL		INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY CLAYS WITH SANDS AND GRAVELS, LEAN CLAYS
			OL		ORGANIC SILTS OR CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT GREATER THAN 50%		MH		INORGANIC SILTS, MICACEOUS OR DIATOMACIOUS, FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH		INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH		ORGANIC SILTS OR CLAYS OF MEDIUM TO HIGH PLASTICITY
HIGHLY ORGANIC SOILS			PT		PEAT AND OTHER HIGHLY ORGANIC SOILS

LL	- Liquid Limit (%)
PI	- Plastic Index (%)
PID	- Volatile Vapors in ppm
MA	- Particle Size Analysis
2.5 YR 6/2	- Soil Color according to Munsell Soil Color Charts (1975 Edition)
5 GY 5/2	- GSA Rock Color Chart

☒	- No Soil Sample Recovered
■	- "Undisturbed" Sample
⊠	- Bulk or Classification Sample
▽	- First Encountered Ground Water Level
▼	- Piezometric Ground Water Level
Penetration	- Sample drive hammer weight - 140 pounds falling 30 inches. Blows required to drive sampler 1 foot are indicated on the logs

GeoStrategies Inc.

Unified Soil Classification - ASTM D 2488-85
and Key to Test Data

Field location of boring:

(See Plate 2)

Project No.: 792705	Date: 3/16/92	Boring No. A-1	
Client: ARCO Products Company SS#2169			
Location: 889 W. Grand Avenue			
City: Oakland		Sheet 1 of 2	
Logged by: RCM	Driller: Bayland		

Casing installation data:

Drilling method: Hollow Stem Auger

Hole diameter: 8" converted to 10"

Top of Box Elevation: 14.75' Datum: MSL

Water Level	13.5'	10.8'			
Time	9:40	11:10			
Date	3/16/92	3/16/92			

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				1				PAVEMENT SECTION - 0.75 feet.
				2				
				3				
	250	S&H	A-1-	4				CLAY (CL) - olive (5Y 5/4); medium stiff; damp; 90% clay; 10% silt; trace fine sand.
54.0	250		4.5					
	350			5				
				6				
				7				
				8				
		S&H		9				Very stiff, trace organic matter at 10.0 feet.
			A-1-					
82	17		10.0	10				
		S&H		11	▼			CLAYEY SAND (SC) - light olive brown, (2.5Y S/Y); medium dense; moist; 60% find sand; 40% clay; trace fine gravel.
			A-1-					
74	11		12.5	12				
				13				
		S&H		14	▽			Saturated at 13.5 feet.
			A-1-					
12.4	12		15.0	15				SAND WITH CLAY (SP-SC) - dark greenish grey (5GY 4/1); medium dense; saturated; 90% fine to medium sand; 10% clay; trace fine gravel.
				16				
				17				
				18				
		S&H		19				CLAYEY SAND (SC) - light olive brown (2.5Y 5/4) medium dense; saturated; 60% fine to coarse sand, 30% clay; 10% fine to medium angular gravel.
			A-1-					
5.5	25		20.0	20				

Remarks:

*Converted to equivalent Standard Penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO

A-1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

Field location of boring:

(See Plate 2)

Project No.:	792705	Date: 3/16/92	Boring No.: A-1
Client:	ARCO Products Company SS#2169		
Location:	889 W. Grand Avenue		
City:	Oakland		Sheet 2 of 2
Logged by:	RCM	Driller: Bayland	

Casing installation data:

Drilling method: Hollow Stem Auger

Hole diameter: 8", converted to 10"

Top of Box Elevation: Datum:

Water Level				
Time				
Date				

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				21				
				22				
				23				
		S&H		24				SAND (SW) - dark yellowish brown (10 YR 4/4) loose; saturated; 95% fine to coarse sand; 5% fines; trace fine gravel.
			A-1-					
0	9		25.0	25				CLAY (CL) - dark greenish gray (5G 4/1); stiff; moist; 95% clay; 5% sand, trace fine gravel.
				26				
				27				
				28				
		S&H		29				SANDY SILT (ML) - olive gray (5Y 4/2) stiff; moist; 70% fines; 20% sand; 10% fine gravel.
2.5			A-1-					
	11		30.0	30				
				31				Bottom of boring 30.0 feet. 3/16/92
				32				
				33				
				34				
				35				
				36				
				37				
				38				
				39				
				40				

Remarks:

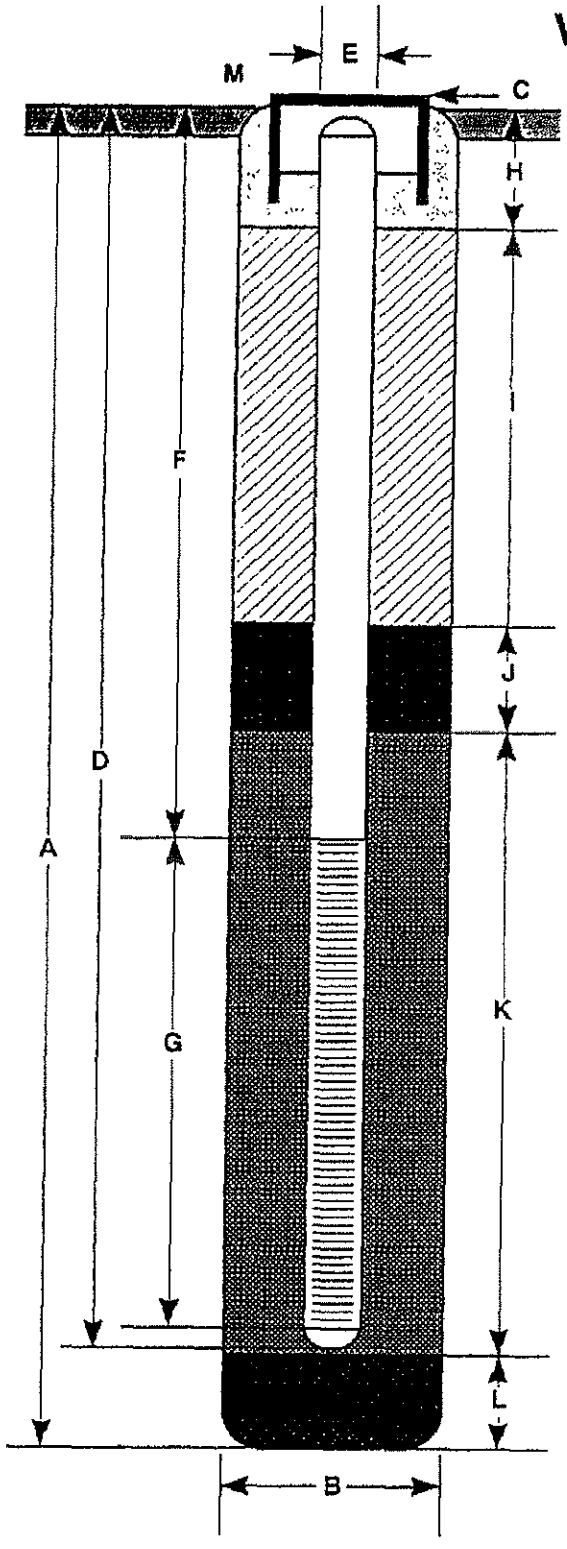
GeoStrategies Inc.

Log of Boring

BORING NO. A-1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 30.0 ft.

B Diameter of Boring 10 in.
Drilling Method Hollow Stem Auger

C Top of Box Elevation 14.75 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 25.0 ft.
Material Schedule 40 PVC

E Casing Diameter 3 in.

F Depth to Top Perforations 9.0 ft.

G Perforated Length 16.0 ft.
Perforated Interval from 9.0 to 25.0 ft.
Perforation Type Machine Slotted
Perforation Size 0.020 in.

H Surface Seal from 0 to 1.0 ft.
Seal Material Concrete

I Backfill from 1.0 to 7.0 ft.
Backfill Material Neat Cement

J Seal from 7.0 to 8.0 ft.
Seal Material Bentonite

K Gravel Pack from 8.0 to 25.0 ft.
Pack Material Lonestar #2/12 Graded Sand

L Bottom Seal 5.0 ft.
Seal Material Bentonite

M Waterproof vault box with locking cap and lock.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO
A-1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

Field location of boring.

(See Plate 2)

Project No.: 792705	Date: 3/16/92	Boring No.: A-2	
Client: ARCO Products Company SS#2169			
Location: 889 W. Grand Avenue			
City: Oakland		Sheet 1 of 2	
Logged by: RCM	Driller: Bayland		

Drilling method: Hollow Stem Auger

Hole diameter: 8", converted to 10"

Casing installation data:

Top of Box Elevation: 15.16' Datum: MSL

Water Level	18.5'	11.5'		
Time	14:20	15:01		
Date	3/16/92	3/16/92		

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				1				PAVEMENT SECTION - 0.75 feet.
				2				CLAY (CL) - very dark gray (10 YR 3/1); medium stiff; damp; 85% clay; 15% sand; trace brick fragments (fill).
				3				
			A-2-					
0	200	S&H	4.0	4				
	200			5				
	200							
				6				
				7				
				8				
		S&H		9				COLOR CHANGE TO greenish gray (5GY 5/1); increase fine to coarse sand to 35%; stiff at 8.5 feet.
			A-2-					
2.2	11		10.0	10				
				11				
				12		▼		COLOR CHANGE TO yellowish brown (10 YR 5/8) greenish gray (5GY 5/1) medium stiff; discoloration in rootholes at 12.0 feet.
		S&H						
			A-2-	13				
3.9	9		13.5					
		S&H		14				
			A-2-					
1.5	7		15.0	15				COLOR CHANGE TO olive yellow (2.5 Y 6/6) at 14.5 feet.
				16				
				17				
				18				
		S&H		19		▽		SAND (SW) - olive brown (2.5 Y 4/4) medium dense; saturated; 95% fine to coarse sand; 5% fine.
			A-2-					
3.1	17		20.0	20				

Remarks: *Converted to equivalent standard penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. A-2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

Field location of boring: (See Plate 2)	Project No.: 792705	Date: 3/16/92	Boring No.: A-2
	Client: ARCO Products Company SS#2169		
	Location: 889 W. Grand Avenue		
	City: Oakland		Sheet 2 of 2
	Logged by: RCM	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data.		
Hole diameter: 8", converted to 10"	Top of Box Elevation:	Datum:	
	Water Level		
	Time		
	Date		

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				21				
				22				
				23				Increase fine subangular gravel to 20% at 23.5 feet.
		S&H		24				
			A-2-					
0.4	19		25.0	25				CLAY (CL) - greenish gray (5G 5/1) stiff; damp; 80% clay; 20% fine sand interbedded laminae.
		SPT						
				26				
0	15							
				27				
				28				
				29				Bottom of boring 26.5 feet. 3/16/92
				30				
				31				
				32				
				33				
				34				
				35				
				36				
				37				
				38				
				39				
				40				

Remarks:

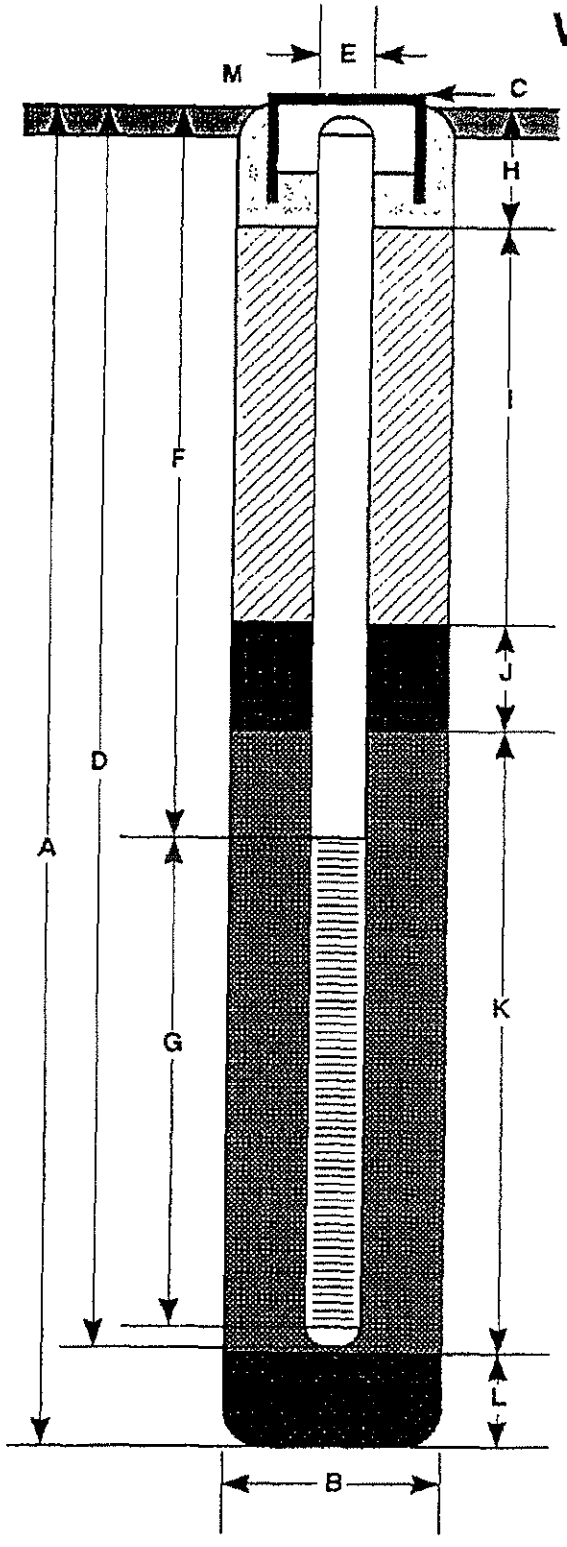
GeoStrategies Inc.

Log of Boring

BORING NO. A-2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 26.5 ft.

B Diameter of Boring 10 in.
Drilling Method Hollow Stem Auger

C Top of Box Elevation 15.16 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 25.0 ft.
Material Schedule 40 PVC

E Casing Diameter 3 in.

F Depth to Top Perforations 10.0 ft.

G Perforated Length 15.0 ft.
Perforated Interval from 10.0 to 25.0 ft.
Perforation Type Machine Slotted
Perforation Size 0.020 in.

H Surface Seal from ____ to 1.0 ft.
Seal Material Concrete

I Backfill from 1.0 to 8.0 ft.
Backfill Material Neat Cement

J Seal from 8.0 to 9.0 ft.
Seal Material Bentonite

K Gravel Pack from 9.0 to 25.0 ft.
Pack Material Lonestar #2/12 Graded Sand

L Bottom Seal 1.5 ft.
Seal Material Bentonite

M Waterproof vault box with locking cap and lock.

Note: Depths measured from initial ground surface.

GSI GeoStrategies Inc.

Well Construction Detail

WELL NO
A-2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

Field location of boring: (See Plate 2)	Project No.: 792705	Date: 3/17/92	Boring No.: A-3
	Client: ARCO Products Company SS#2169		
	Location: 889 W. Grand Avenue		
	City: Oakland		Sheet 1 of 2
	Logged by: RCM	Driller: Bayland	
	Casing installation data:		
Drilling method: Hollow Stem Auger			
Hole diameter: 8", converted to 10"	Top of Box Elevation: 16.38'		Datum: MSL

Water Level	12.0'	
Time	9:15	
Date	3/17/92	

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
								PAVEMENT SECTION - 0.75 feet
				1				
				2				CLAY (CL) - very dark gray (10 YR 3/1) medium stiff;
				3				damp; 80% clay; 15% silt; 5% fine sand; trace brick fragments (Fill).
	150	S&H	A-3-	4				
0	250		4.5					Trace fine gravel; organic matter at 4.5 feet.
	250			5				
				6				
				7				
				8				
		S&H						
			A-3-	9				COLOR CHANGE TO light olive brown (2.5 Y 5/4) with
0	19		10.0					greenish gray (5 GY 6/1) discoloration; increase fine
				10				sand to 25%; very stiff at 8.5 feet.
				11				
				12		▽		*Saturated; medium stiff at 12.0 feet.*
		SPT						
				13				
0	4							
		S&H		14				CLAYEY SAND (SC) - brown (10 YR 5/3) - saturated;
			A-3-					loose; 60% fine sand; 30% clay; 10% silt.
0	9		15.0	15				
				16				
				17				
				18				CLAY (CL) - light olive brown (2.5 Y 5/4) very stiff; moist; 80% clay; 20% fine sand.
		S&H		19				GRAVEL with SAND (GW) - light olive brown (2.5 Y 5/4); medium dense; saturated; 65% fine to medium;
			A-3-					sub-rounded to sub-angular gravel; 30% fine to coarse
0	28		20.0	20				sand; 5% fines.

Remarks:

*Converted to equivalent standard penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. A-3

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

Field location of boring: (See Plate 2)	Project No.: 792705	Date: 3/17/92	Boring No.: A-3
	Client: ARCO Products Company SS#2169		
	Location: 889 W. Grand Avenue		Sheet 2 of 2
	City: Oakland		
	Logged by: RCM	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8", converted to 10"	Top of Box Elevation:	Datum:	

								Water Level				
								Time				
								Date				
PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description				
				21								
				22								
				23								
		S&H		24				CLAY (CL) - greenish gray (5GY 5/1) very stiff; moist;				
			A-3-					90% clay, 10% fine sand.				
0	30		25.0	25								
		SPT						SAND (SP) - olive (5 Y 4/3) dense; saturated; 100% fine				
				26				sand; trace fines.				
	43											
				27								
				28								
		S&H		29				COLOR CHANGE TO dark greenish gray (5G 4/1) at 28.5				
			A3-					feet.				
0	36		30.0	30				CLAY (CL) dark greenish gray (5G 4/1) moist; hard; 75%				
								clay, 25% silt; trace fine to coarse sand.				
				31								
				32								
				33				Bottom of boring 30.0 feet.				
								3/17/92				
				34								
				35								
				36								
				37								
				38								
				39								
				40								

Remarks:

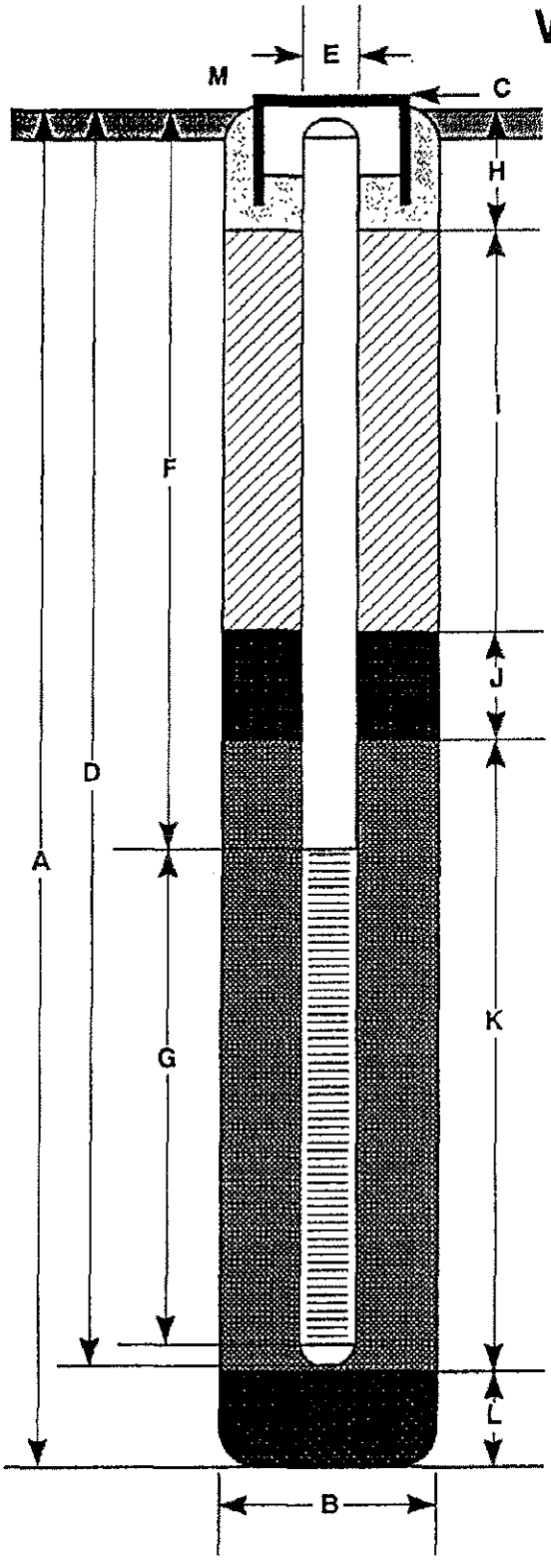
GeoStrategies Inc.

Log of Boring

BORING NO. A-3

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 30.0 ft.

B Diameter of Boring 10 in.
Drilling Method Hollow Stem Auger

C Top of Box Elevation 16.38 ft.
[S] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 29.5 ft.
Material Schedule 40 PVC

E Casing Diameter 3 in.

F Depth to Top Perforations 9.0 ft.

G Perforated Length 20.5 ft.
Perforated Interval from 9.0 to 29.5 ft.
Perforation Type Machine Slotted
Perforation Size 0.020 in.

H Surface Seal from 0 to 1.0 ft.
Seal Material Concrete

I Backfill from 1.0 to 7.0 ft.
Backfill Material Neat Cement

J Seal from 1.0 to 7.0 ft.
Seal Material Bentonite

K Gravel Pack from 8 to 29.5 ft.
Pack Material Lonestar #2/12 Graded Sand

L Bottom Seal 0.5 ft.
Seal Material Bentonite

M Waterproof vault box with locking cap and lock

Note: Depths measured from initial ground surface.

GSI GeoStrategies Inc.

Well Construction Detail

WELL NO. A-3

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705	JPV	3/92		

Field location of boring:	Project No.: 792705	Date: 3/17/92	Boring No:
(See Plate 2)	Client: ARCO Products Company SS#2169		A-4
	Location: 889 W. Grand Avenue		
	City: Oakland		Sheet 1
	Logged by: RCM	Driller: Bayland	of 2
	Casing installation data:		
Drilling method: Hollow Stem Auger			
Hole diameter: 8", converted to 10"	Top of Box Elevation: 15.89'		Datum: MSL

	Water Level	13.5'			
	Time	13:55			
	Date	3/17/92			

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				1				PAVEMENT SECTION - 0.75 feet.
				2				CLAY (CL) - very dark gray (10 YR 3/1) stiff; damp; 80% clay, 20% silt, trace fine sand; trace brick fragments.
				3				
	200	S&H		4				
	200		A-4-	5				
0	250		5.0					
				6				
				7				
				8				
		S&H		9				COLOR CHANGE TO light olive brown (2.5 Y 5/4), very stiff at 8.5 feet.
			A-4-					
0	23		10.0	10				
				11				SAND (SW) - yellowish brown (10 YR 5/4) medium dense; moist' 80% fine to coarse sand; 20% sub-rounded to sub-angular fine gravel.
				12				
				13				
						▽		CLAYEY SAND (SC) - light olive brown; (2.5 Y 5/4) medium dense; saturated; 70% fine sand; 30% clay.
		S&H		14				
			A-4-					
0	10		15.0	15				
				16				
				17				
				18				SAND (SW) - dark yellowish brown (10 YR 4/6) medium dense; saturated; 95% fine to coarse sand; 5% fines; trace fine gravel
		S&H		19				
			A-4-					CLAY (CL) - greenish gray (5GY 5/1) stiff; moist; 90% clay; 10% fine sand.
0	15		20.0	20				

Remarks:

*Converted to equivalent Standard Penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. A-4

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

Field location of boring: (See Plate 2)	Project No.: 792705	Date: 3/17/92	Boring No: A-4
	Client: ARCO Products Company SS#2169		
	Location: 889 W. Grand Avenue		
	City: Oakland		Sheet 2 of 2
	Logged by: RCM	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8", converted to 10"	Top of Box Elevation:	Datum:	

	Water Level			
	Time			
	Date			

PID (ppm)	Blows/ft. - or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				21				
				22				
				23				
		S&H		24				SILT (ML) - olive (5Y 5/3); stiff; moist; 70% silt; 20% fine sand; 10% clay.
			A-4-					
0	26		25.0	25				
				26				SAND (SP) - greenish gray (5G 5/1) dense; saturated; 95% fine sand; 5% fines.
				27				
				28				
		S&H		29				
			A-4-					SILT (ML) - dark greenish gray (5G 4/1) stiff; damp; 80% silt; 20% clay; trace fine sand; rootholes.
0	13		30.0	30				
				31				
				32				
				33				Bottom of boring 30.0 feet 3/17/92
				34				
				35				
				36				
				37				
				38				
				39				
				40				

Remarks:

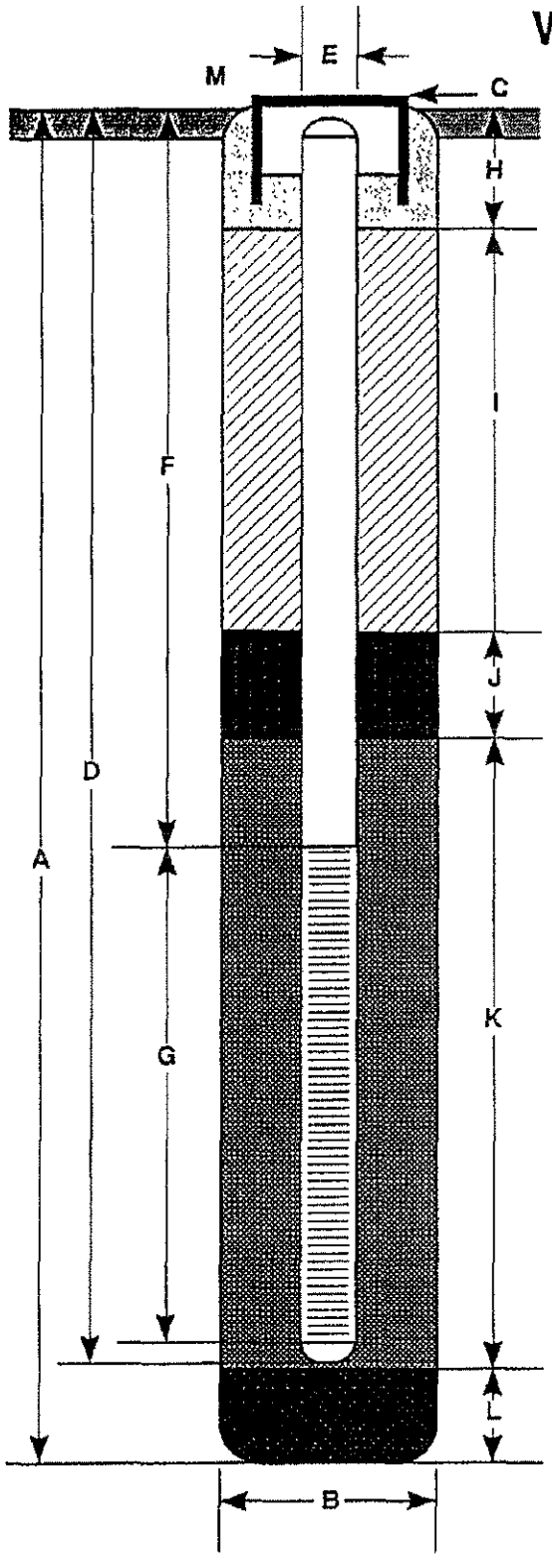
GeoStrategies Inc.

Log of Boring

BORING NO. A-4

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 30.0 ft.

B Diameter of Boring 10 in.
Drilling Method Hollow Stem Auger

C Top of Box Elevation 15.89 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 28.0 ft.
Material Schedule 40 PVC

E Casing Diameter 3 in.

F Depth to Top Perforations 8.0 ft.

G Perforated Length 20.0 ft.
Perforated Interval from 8.0 to 28.0 ft.
Perforation Type Machine Slotted
Perforation Size 0.020 in.

H *Surface Seal from* 0 to 1.0 ft.
Seal Material Concrete

I Backfill from 1.0 to 6.0 ft.
Backfill Material Neat Cement

J Seal from 6.0 to 7.0 ft.
Seal Material Bentonite

K Gravel Pack from 7.0 to 28.0 ft.
Pack Material Lonestar #2/12 Graded Sand

L Bottom Seal 2.0 ft.
Seal Material Bentonite

M Waterproof vault box with locking cap and lock.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO. A-4

JOB NUMBER	REVIEWED BY/RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

Field location of boring: (See Plate 2)	Project No.: 792705	Date: 3/25/92	Boring No.: AR-1
	Client: ARCO Products Company SS #2169		
	Location: 889 W. Grand Avenue		Sheet 1
	City: Oakland		of 2
	Logged by: RCM	Driller: Bayland	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8", converted to 12"	Top of Box Elevation: 15.71'		Datum: MSL

	Water Level	Time	Date
	10.0'	9:50	3/25/92

PID (ppm)	Blows/ft* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
								STOCKPILED SOIL - 0.5 ft.
				1				
				2				
				3				
				4				
				5				GRAVELLY CLAY (CL) - dark gray (5Y 4/1) stiff; moist; 60% clay, 25% fine gravel; 15% sand (fill).
		S&H	AR-1-					
1.5			6.0	6				
	8			7				
				8				
				9				
				10		▽		GRAVEL (GW) - greenish gray (5 G 5/1) medium dense; saturated; 95% fine to coarse gravel; 5% sand (fill).
		S&H		11				
	11			12				
				13				
				14				
				15				SAND (SP) - greenish gray (5GY 5/1) medium dense; saturated; 95% fine sand; 5% fines.
		S&H						
			AR-1-	16				
131.3	14		16.5					
				17				GRAVELLY CLAY (CL) brown (10 YR 5/3) stiff; saturated; 55% clay; 30% fine to medium gravel; 15% fine to coarse sand; minor black (10YR 3/1) mottling and bluish gray (5B 5/1) discoloration.
				18				
				19				
				20				

Remarks:

*Converted to equivalent standard penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. AR-1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

Field location of boring:

(See Plate 2)

Project No.: 792705	Date: 3/25/92	Boring No: AR-1	
Client: ARCO Products Company SS#2169			
Location: 889 W. Grand Avenue			
City: Oakland		Sheet 2 of 2	
Logged by: RCM	Driller: Bayland		

Casing installation data:

Drilling method: Hollow Stem Auger

Hole diameter: 8", convertedto 12"

Top of Box Elevation: Datum:

Water Level				
Time				
Date				

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
		S&H		21				SAND with GRAVEL (SW) - dark greenish gray (5GY 4/1) medium dense; saturated; 85% fine to coarse sand; 15% fine to medium gravel.
			AR-1-					
197.2	29		21.5	22				
				23				SAND with CLAY (SW - SC) - dark greenish gray (5GY 4/1) medium dense; saturated ; 80% fine to coarse sand; 10% clay; 10% fine to medium gravel.
				24				
				25				
		S&H		26				SAND (SW) - dark greenish gray (5BG 4/1) very dense saturated; 95% fine to coarse sand; 5% fine gravel.
			AR-1-					
19.9	79		26.5	27				SAND (SP) olive (5Y 4/4) very dense; saturated; 95% fine sand; 5% silt.
				28				
		S&H		29				
			AR-1-					SILTY CLAY (CL/ML) dark greenish gray (5GY 4/1) very stiff; damp; 70% clay; 30% silt; trace organic matter; rootholes.
2.5	19		30	31				
				32				Bottom of boring 30.0 feet.
				33				3/25/92
				34				
				35				
				36				
				37				
				38				
				39				
				40				

Remarks:

GeoStrategies Inc.

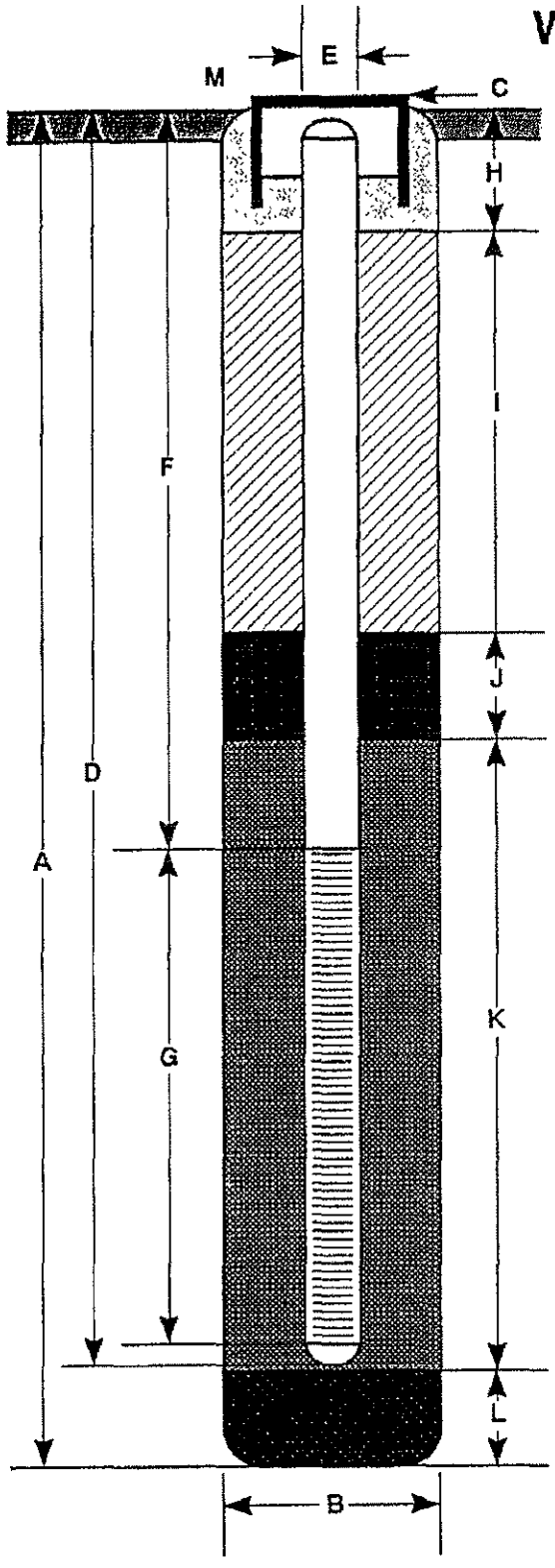
Log of Boring

BORING NO.

AR-1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		3/92		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 30 ft.

B Diameter of Boring 12 in.
Drilling Method Hollow Stem Auger

C Top of Box Elevation 15.71 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 28 ft.
Material Sch. 40 PVC & Carbon Steel

E Casing Diameter 6 in.

F Depth to Top Perforations 8 ft.

G Perforated Length 20 ft.
Perforated Interval from 8 to 28 ft.
Perforation Type Continuous wrap
Perforation Size 0.020 in.

H Surface Seal from 0 to 1 ft.
Seal Material Concrete

I Backfill from 1 to 6 ft.
Backfill Material Neat Cement

J Seal from 6 to 7 ft.
Seal Material Bentonite

K Gravel Pack from 7 to 28 ft.
Pack Material Lonestar #2/12 Graded Sand

L Bottom Seal 2 ft.
Seal Material Bentonite

M Waterproof vault box with waterproof locking cap and lock.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO.
AR-1

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705	JFV	3/92		

Field location of boring:

(See Plate 2)

Project No.:	792705	Date: 6/8/92	Boring No: AR-2
Client:	ARCO Products Company SS #2169		
Location:	889 W. Grand Avenue		
City:	Oakland		Sheet 1 of 2
Logged by:	RCM	Driller: W. Hazmat	

Casing installation data:

Drilling method: Hollow Stem Auger

Hole diameter: 10 - inches

Top of Box Elevation: Datum:

Water Level	15.0'			
Time	9:14			
Date	6/8/92			

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				1				Conductor casing to 10.5 feet.
				2				FILL - pea gravel to 15 feet.
				3				
				4				
				5				
				6				
				7				
				8				
				9				
				10				
				11				
				12				
				13				
				14				
				15		▽		SANDY SILT (ML) - yellowish brown (10 YR 5/4); very stiff; moist; 70% silt; 30% fine to coarse sand; trace gravel; greenish gray (5 GY 5/1) discoloration in rootholes.
		S&H						
			AR-2	16				
0	31		16.5					
				17				
				18				
				19				
				20				

Remarks: * Converted to equivalent standard penetration blows/ft.

GSI GeoStrategies Inc.

Log of Boring

BORING NO. AR-2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		6/92		

Field location of boring: (See Plate 2)	Project No.: 792705	Date: 6/8/92	Boring No: AR-2
	Client: ARCO Products Co. SS #2169		
	Location: 889 W. Grand Avenue		
	City: Oakland, California		Sheet 2 of 2
	Logged by: RCM	Driller: W. Hazmat	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 10 - inches	Top of Box Elevation:	Datum:	

	Water Level			
	Time			
	Date			

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
		S&H	AR-2					
			21.0	21				SAND with GRAVEL (SW) - brown (10 YR 4/3); dense; saturated; 60% fine to coarse sand; 40% angular to sub-rounded, fine to medium gravel.
0	40							
				22				
				23				
				24				
				25				
		S&H						
			AR-2	26				CLAYEY SAND (SC) - dark greenish gray (5 GY 4/1); dense; saturated; 80% fine to medium sand; 20% clay.
0	35		26.5					SAND (SP) - dark greenish gray (5 GY 4/1); dense; saturated; 100% fine sand.
				27				
				28				
				29				
		S&H	AR-2					
			30.0	30				SILT with SAND (ML) - dark greenish gray (5 GY 4/1); hard; damp; 80% silt; 20% fine to coarse sand.
0	32							
				31				
				32				Bottom of boring at 30.5 feet. 6/8/92.
				33				
				34				
				35				
				36				
				37				
				38				
				39				
				40				

Remarks:

GeoStrategies Inc.

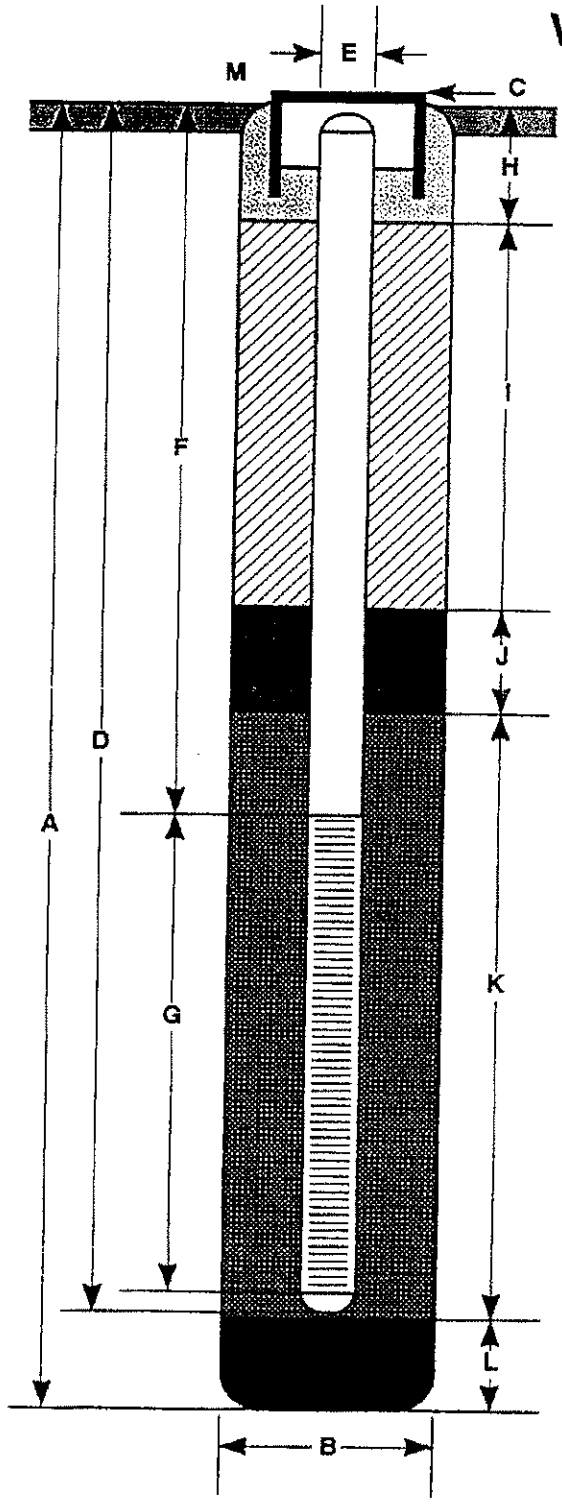
Log of Boring

BORING NO

AR-2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		6/92		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 30.5 ft.

B Diameter of Boring 10 in.
Drilling Method Hollow Stem Auger

C Top of Box Elevation _____ ft.
☐ Referenced to Mean Sea Level
☐ Referenced to Project Datum

D Casing Length 28.5 ft.
Material Sch. 40 PVC & Carbon Steel

E Casing Diameter 4 in.

F Depth to Top Perforations 8.5 ft.

G Perforated Length 20.0 ft.
Perforated Interval from 8.5 to 28.5 ft.
Perforation Type Continuous Wrap
Perforation Size 0.020 in.

H Surface Seal from 0 to 1.0 ft.
Seal Material Concrete

I Backfill from 1.0 to 6.5 ft.
Backfill Material Neat Cement

J Seal from 6.5 to 7.5 ft.
Seal Material Bentonite

K Gravel Pack from 7.5 to 28.5 ft.
Pack Material Lonestar #2/12 Graded Sand

L Bottom Seal 2 ft.
Seal Material Native Material

M Waterproof vault box with waterproof locking cap and lock.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO.
AR-2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705-4		6/92		

Field location of boring:

(See Plate 2)

Project No.:	792705	Date: 6/8/92	Boring No.: AV-1
Client:	ARCO Products Co. SS #2169		
Location:	889 W. Grand Avenue		
City:	Oakland, California		Sheet 1 of 1
Logged by:	RCM	Driller: W. Hazmat	

Drilling method: Hollow Stem Auger

Hole diameter: 8-inches

Casing installation data:

Top of Box Elevation: Datum:

Water Level	12.0'						
Time	14:35						
Date	6/8/92						

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				1				PAVEMENT SECTION - 1.0 feet.
				2				CLAY (CL) - black (10 YR 2/1); medium stiff; damp; 90 % clay; 10% fine sand.
				3				
				4				
				5				
		S&H		6				COLOR CHANGE to dark grayish brown (2.5 Y 4/2); very stiff; iron oxide staining in rootholes at 5.0 feet.
444	22		AV-1 6.5	7				
				8				
				9				
				10				
		S&H		11				Minor greenish gray (5 GY 5/1) discoloration; moist at 11.5 feet.
2146	21		AV-1 11.5	12		▽		Saturated at 12.0 feet.
		S&H		13				
1062	22			14				CLAYEY SAND (SC) - light yellowish brown (2.5 Y 6/4); dense; saturated, 75% fine to medium sand, 25% clay; greenish gray (5 GY 5/1) discoloration in rootholes.
		S&H	AV-1 14.0	15				
1875	29			16				Bottom of boring at 14.5 feet. 6/8/92.
				17				
				18				
				19				
				20				

Remarks: * Converted to equivalent standard penetration blows/ft.

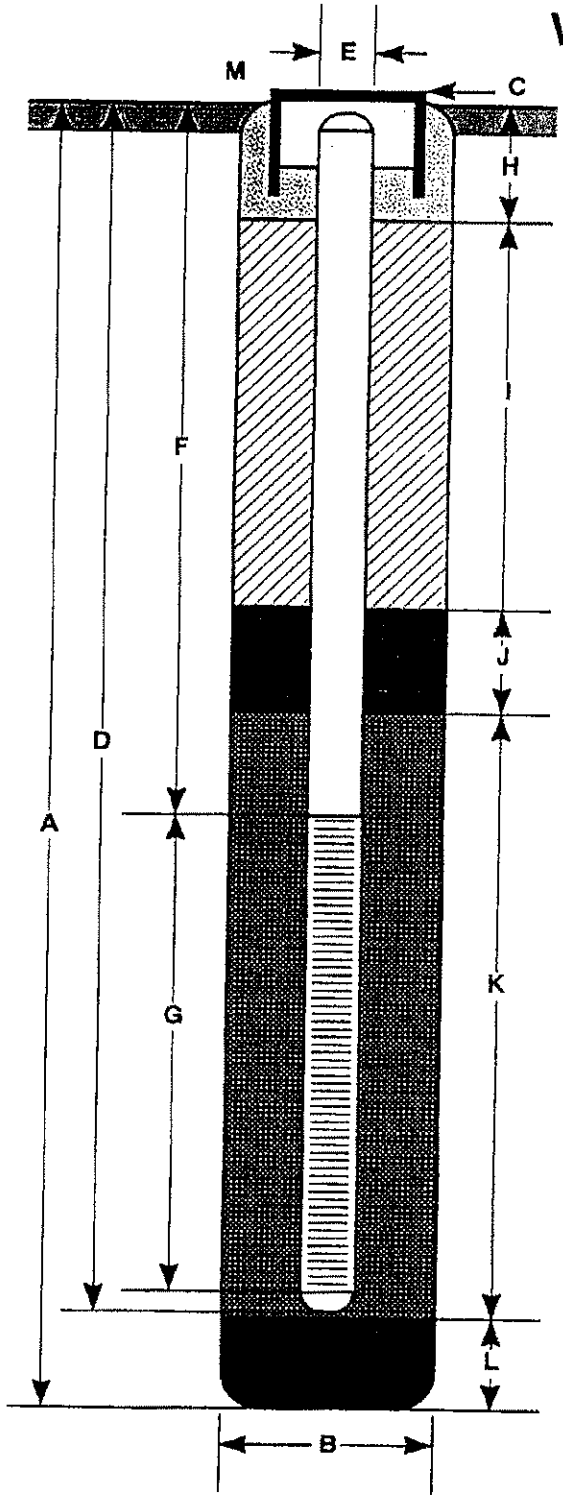
GeoStrategies Inc.

Log of Boring

BORING NO. AV-1

JOB NUMBER	REVIEWED BY PG/CEG	DATE	REVISED DATE	REVISED DATE
792705		6/92		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 14.5 ft.

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

C Top of Box Elevation _____ ft.
☐ Referenced to Mean Sea Level
☐ Referenced to Project Datum

D Casing Length 14 ft.
Material Schedule 40 PVC

E Casing Diameter 2 in.

F Depth to Top Perforations 5 ft.

G Perforated Length 9 ft.
Perforated Interval from 5 to 14 ft.
Perforation Type Factory Slotted
Perforation Size 0.020 in.

H Surface Seal from 0 to 1.0 ft.
Seal Material Concrete

I Backfill from 1.0 to 4.0 ft.
Backfill Material Neat Cement

J Seal from 4.0 to 4.5 ft.
Seal Material Bentonite

K Gravel Pack from 4.5 to 14.0 ft.
Pack Material Lonestar #2/12 Graded Sand

L Bottom Seal 0.5 ft.
Seal Material Bentonite

M Waterproof vault box with waterproof locking cap and lock.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO.
AV-1

JOB NUMBER	REVIEWED BY PG/CEG	DATE	REVISED DATE	REVISED DATE
792705-4		6/92		

Field location of boring:

(See Plate 2)

Project No.:	792705	Date: 6/8/92	Boring No. AV-2
Client:	ARCO Products Co. SS #2169		
Location:	889 W. Grand Avenue		
City:	Oakland, California		Sheet 1 of 1
Logged by:	RCM	Driller: W. Hazmat	

Drilling method: Hollow Stem Auger

Hole diameter: 8-inches

Casing installation data:

Top of Box Elevation: Datum:

Water Level	12.0'			
Time	15:40			
Date	6/8/92			

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				1				PAVEMENT SECTION - 1.0 feet.
				2				CLAY (CL) - very dark gray (10 YR 3/1); medium stiff; damp; 90 % clay; 5% fine sand; brick fragments.
				3				
				4				
				5				
		S&H		6				COLOR CHANGE to pale olive (5 Y 6/3); trace fine gravel at 5.0 feet.
			AV-2					
114	33		6.5	7				
				8				
				9				
				10				
		S&H		11				
			AV-2					
896	24		11.5	12		▽		SAND with GRAVEL (SW) - yellowish brown (10 YR 5/4); medium dense, saturated; 80% fine to medium sand; 20% fine gravel.
		S&H						
702	18			13				SANDY SILT (ML) - brown (10 YR 5/3); very stiff; saturated; 70% silt; 30% fine sand.
		S&H	AV-2					
			14.0	14				
655	31			15				
				16				Bottom of boring at 14.5 feet. 6/8/92.
				17				
				18				
				19				
				20				

Remarks: * Converted to equivalent standard penetration blows/ft.

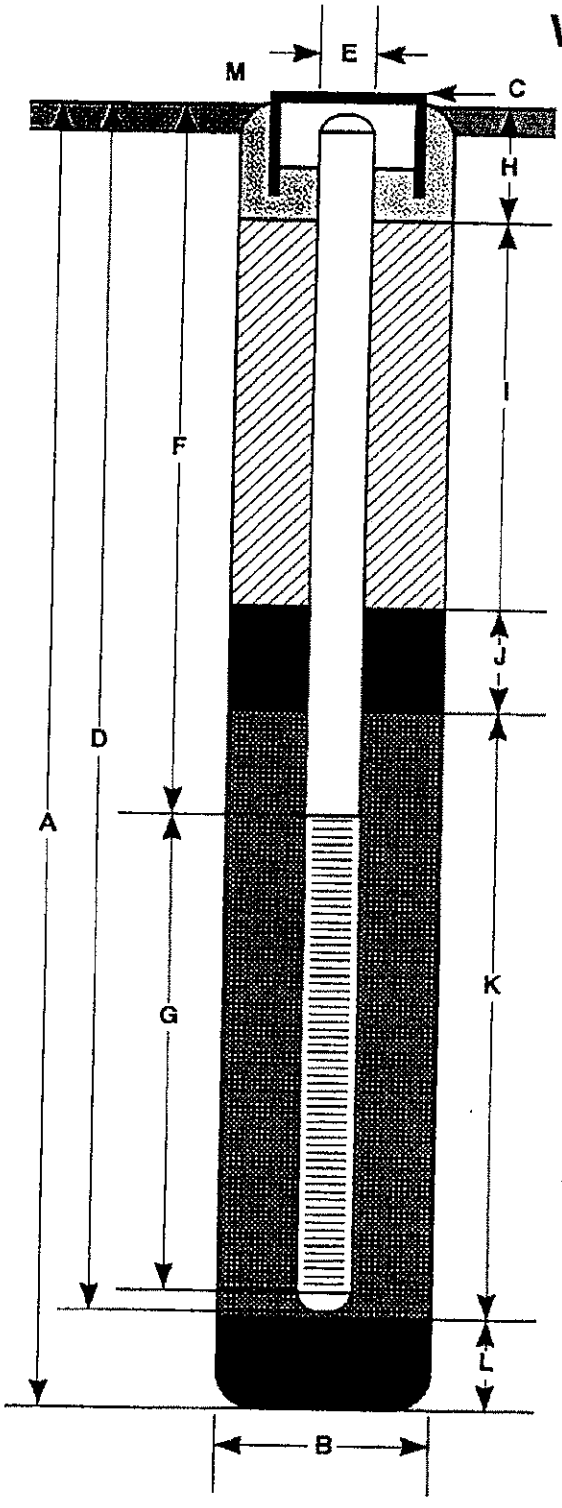
GeoStrategies Inc.

Log of Boring

BORING NO. AV-2

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		6/92		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 14.5 ft.

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

C Top of Box Elevation _____ ft.
☐ Referenced to Mean Sea Level
☐ Referenced to Project Datum

D Casing Length 14 ft.
Material Schedule 40 PVC

E Casing Diameter 2 in.

F Depth to Top Perforations 5 ft.

G Perforated Length 9 ft.
Perforated Interv[redacted]
Perforation Type Factory Slotted
Perforation Size 0.020 in.

H Surface Seal from 0 to 1.0 ft.
Seal Material Concrete

I Backfill from 1.0 to 4.0 ft.
Backfill Material Neat Cement

J Seal from 4.0 to 4.5 ft.
Seal Material Bentonite

K Gravel Pack from 4.5 to 14.0 ft.
Pack Material Lonestar #2/12 Graded Sand

L Bottom Seal 0.5 ft.
Seal Material Bentonite

M Waterproof vault box with waterproof locking cap and lock.

Note: Depths measured from initial ground surface.

GSI GeoStrategies Inc.

Well Construction Detail

WELL NO. [redacted]

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705-4		6/92		

Field location of boring:

(See Plate 2)

Project No.: 792705	Date: 6/8/92	Boring No: AV-3	
Client: ARCO Products Co. SS #2169			
Location: 889 W. Grand Avenue			
City: Oakland, California		Sheet 1 of 1	
Logged by: RCM	Driller: W. Hazmat		

Casing installation data:

Drilling method: Hollow Stem Auger

Hole diameter: 8-inches

Top of Box Elevation: Datum:

Water Level	12.0'			
Time	14:30			
Date	6/8/92			

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				1				PAVEMENT SECTION - 1.0 feet.
				2				CLAY (CL) - very dark gray (10 YR 3/1); medium stiff; damp; 95 % clay; 5% fine sand.
				3				
				4				
				5				
		S&H		6				COLOR CHANGE to light olive brown (2.5 Y 5/4); minor white nodules at 5.0 feet.
			AV-3					
186	12		6.5	7				
				8				
				9				
				10				
		S&H		11				Minor greenish gray (5 GY 5/1) discoloration; moist at 11.5 feet.
			AV-3					
765	18		11.5	12		▽		SILTY SAND (SM) - greenish gray (5 GY 5/1); medium dense, saturated; 65% fine to coarse sand; 35% silt.
		S&H		13				
435	20							SANDY SILT (ML) - yellowish brown (10 YR 5/4); very stiff; saturated; 70% silt; 30% fine sand.
		S&H	AV-3	14				
			14.0					
275	19			15				
				16				Bottom of boring at 14.5 feet. 6/8/92.
				17				
				18				
				19				
				20				

Remarks: * Converted to equivalent standard penetration blows/ft.

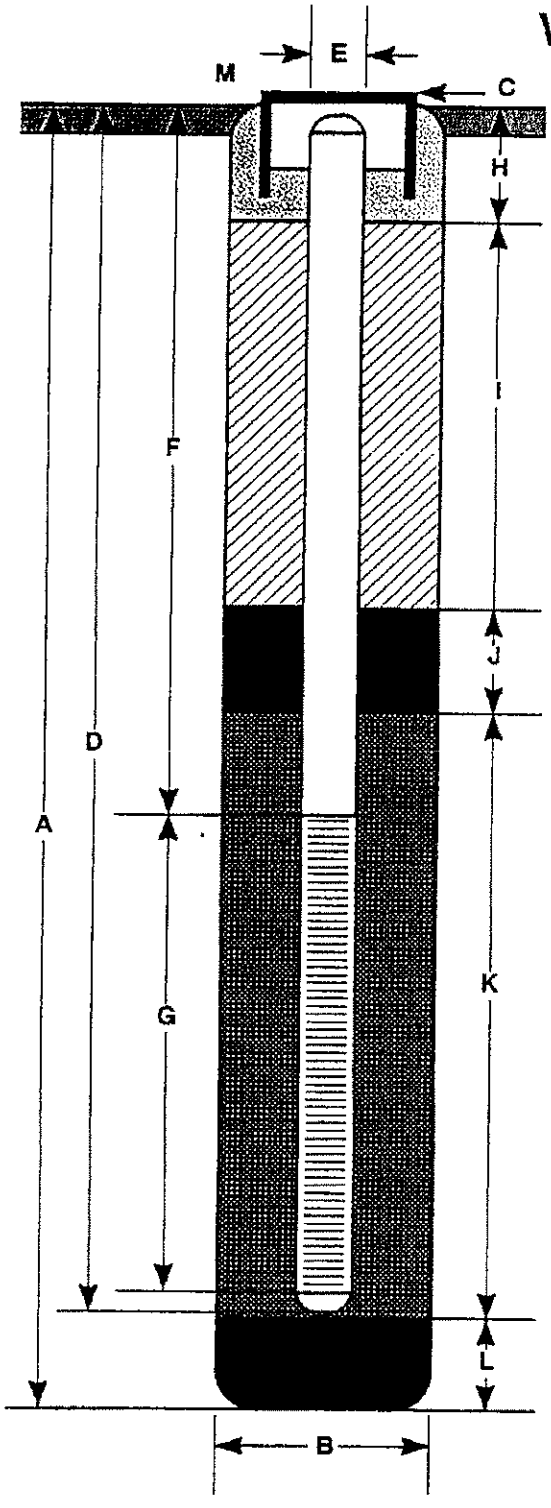
GSI GeoStrategies Inc.

Log of Boring

BORING NO. AV-3

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705		6/92		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring: 14.5 ft.

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

C Top of Box Elevation: ____ ft.
☐ Referenced to Mean Sea Level
☐ Referenced to Project Datum

D Casing Length: 14 ft.
Material: Schedule 40 PVC

E Casing Diameter: 2 in.

F Depth to Top Perforations: 5.0 ft.

G Perforated Length: 9.0 ft.
Perforated Interval from 5 to 14 ft.
Perforation Type: Factory Slotted
Perforation Size: 0.020 in.

H Surface Seal from 0 to 1.0 ft.
Seal Material: Concrete

I Backfill from 1.0 to 4.0 ft.
Backfill Material: Neat Cement

J Seal from 4.0 to 4.5 ft.
Seal Material: Bentonite

K Gravel Pack from 4.5 to 14.0 ft.
Pack Material: Lonestar #2/12 Graded Sand

L Bottom Seal: 0.5 ft.
Seal Material: Bentonite

M Waterproof vault box with waterproof locking cap and lock.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO.
AV-3

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792705-4		6/92		

Field location of boring: (See Plate 2)	Project No.: 792708	Date: 02/04/93	Boring No: A-5
	Client: ARCO Products Company SS#2169		
	Location: 889 W. Grand Avenue		
	City: Oakland		Sheet 1 of 2
	Logged by: RCM	Driller: Great Sierra	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inch	Top of Box Elevation: 14.14		Datum: MSL

Water Level	10.0'	10.5'
Time	13:50	16:30
Date	2/4/93	2/4/93

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				1				PAVEMENT SECTION - 1.0 ft
				2				CLAY (CL) - very dark gray (10YR 3/1); medium stiff, sand, medium plasticity; 65% clay, 25% silt, 10% fine sand.
				3				
				4				
				5				SANDY SILT (ML) - olive (5Y 4/3); very stiff; moist; 55% silt, 45% fine to medium sand.
		S&H						
			A-5	6				
13	21		6.5					
				7				
				8				SILTY SAND (SM) - greenish gray (5GY 5/1); medium dense; very moist; 80% fine to medium sand, 20% silt.
		S&H						
			A-5	9				
154	15		9.5					
				10		▽		Saturated; increase fine gravel to 5%; light yellowish brown (2.5Y 6/4) mottling; fe-oxide staining at 10.0 ft.
		S&H				▼		
			A-5	11				
618	14		11.5					
				12				
				13				
				14				
				15				
		S&H						
			A-5	16				Increase silt to 60%; dense at 15.0 ft.
251	31		16.5					
				17				
				18				
				19				
				20				

Remarks: * Converted to equivalent standard penetration blows/ft.

GeoStrategies Inc.

Log of Boring

BORING NO. A-5

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792708		2/93		

Field location of boring: (See Plate 2)	Project No.: 792708	Date: 02/04/93	Boring No: A-5
	Client: ARCO Products Company SS#2169		
	Location: 889 W. Grand Avenue		
	City: Oakland		Sheet 2 of 2
	Logged by: RCM	Driller: Great Sierra	
Drilling method: Hollow Stem Auger	Casing installation data:		
Hole diameter: 8-inch	Top of Box Elevation:		Datum:

	Water Level			
	Time			
	Date			

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
		S&H						SAND (SP) - dark greenish gray (5GY 5/1); medium dense; saturated; 95% medium sand, 5% fines.
			A-5	21				
27	26		21.5					
				22				
				23				
				24				
				25				Grading to fine sand at 25.0 ft.
		S&H						
			A-5	26				
31	12		26.5					
				27				
				28				
		S&H		29				
			A-5					
106	11		30.0	30				
				31				Bottom of boring at 30.0 ft. 2/4/93
				32				
				33				
				34				
				35				
				36				
				37				
				38				
				39				
				40				

Remarks:

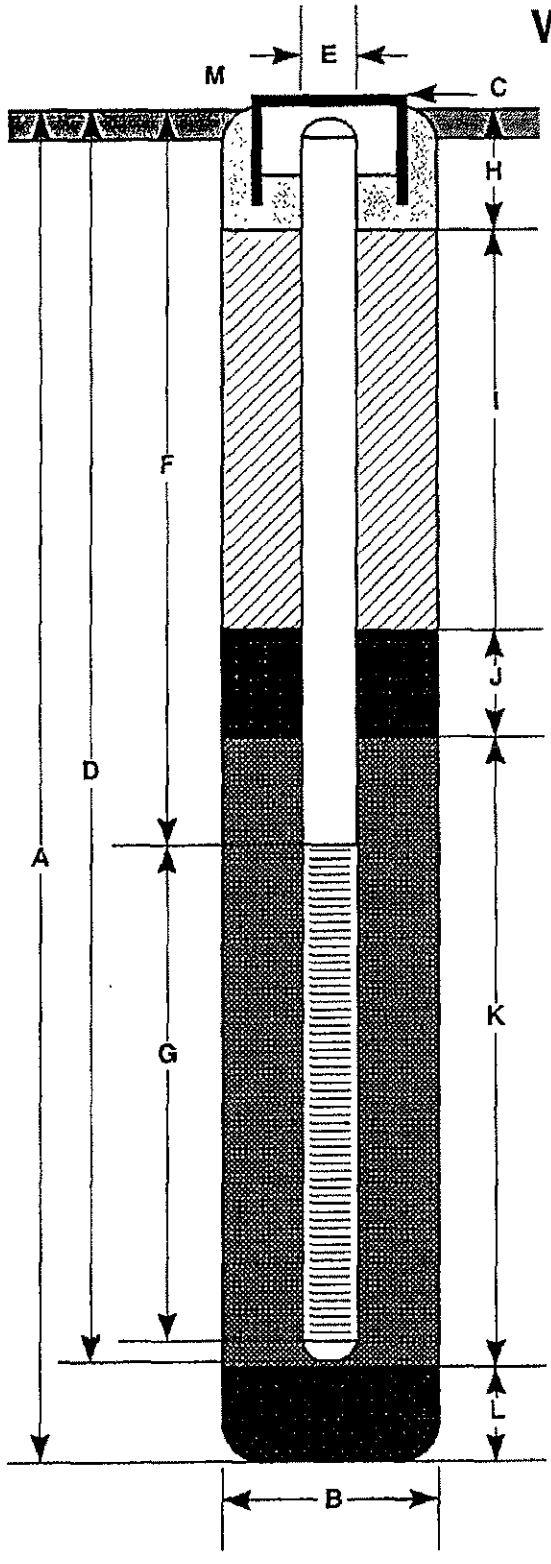
GeoStrategies Inc.

Log of Boring

BORING NO. A-5

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792708		2/93		

WELL CONSTRUCTION DETAIL



A Total Depth of Boring 30.0 ft.

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

C Top of Box Elevation 14.14 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 30.0 ft.
Material Schedule 40 PVC

E Casing Diameter 2 in.

F Depth to Top Perforations 8.0 ft.

G Perforated Length 22.0 ft.
Perforated Interval from 8.0 to 30.0 ft.
Perforation Type Machine Slotted
Perforation Size 0.020 in.

H Surface Seal from 0 to 1.0 ft.
Seal Material Concrete

I Backfill from 1.0 to 6.0 ft.
Backfill Material Neat Cement

J Seal from 6.0 to 7.0 ft.
Seal Material Bentonite

K Gravel Pack from 7.0 to 30.0 ft.
Pack Material Lonestar #2/12 Graded Sand

L Bottom Seal ft.
Seal Material

M Traffic-rated underground vault box with locking cap and lock.

Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO.
A-5

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792708		2/93		

Field location of boring:

(See Plate 2)

Project No.:	792708	Date: 02/04/93	Boring No: A-6
Client:	ARCO Products Company		
Location:	889 W. Grand Avenue		
City:	Oakland		Sheet 1 of 2
Logged by:	RCM	Driller: Great Sierra	

Casing installation data:

Drilling method: Hollow Stem Auger

Hole diameter: 8-inch

Top of Box Elevation: 14.17 Datum: MSL

Water Level	9.2'	9.5'					
Time	10:30	13:00					
Date	2/4/93	2/4/93					

PID (ppm)	Blows/ft.* or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
				1				PAVEMENT SECTION 1.5 FT.
				2				CLAY (CL) - very dark gray (10YR 3/1); medium stiff, damp, medium plasticity; 70% clay, 25% silt, 5% fine sand.
				3				
				4				
				5				
		S&H		6				Color change to dark greenish gray (5GY 4/1); very stiff; increase in silt to 40%, fine sand to 10%; caliche nodules.
			A-6					
29	21		6.5	7				
				8				
		S&H						
31			A-6 9.0	9		▽		SAND (SP) - dark greenish gray (5GY 4/1); medium dense, saturated (at 9.2 ft.); 95% fine to medium sand, 5% fines.
61	21		A-6 9.5	10		▼		
		S&H						
			A-6	11				
341	17		11.5	12				SILTY CLAY (ML/CL) - greenish gray (5GY 5/1); very stiff, moist, medium plasticity; 60% clay, 35% silt, 5% fine sand; olive (5Y 4/4) mottling.
				13				
				14				
				15				
		S&H						Increase in sand to 25%; organic matter in rootholes.
			A-6	16				
85	13		16.5	17				
				18				
				19				
				20				

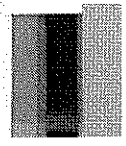
Remarks: * Converted to equivalent standard penetration blows/ft.

GeoStrategies Inc.

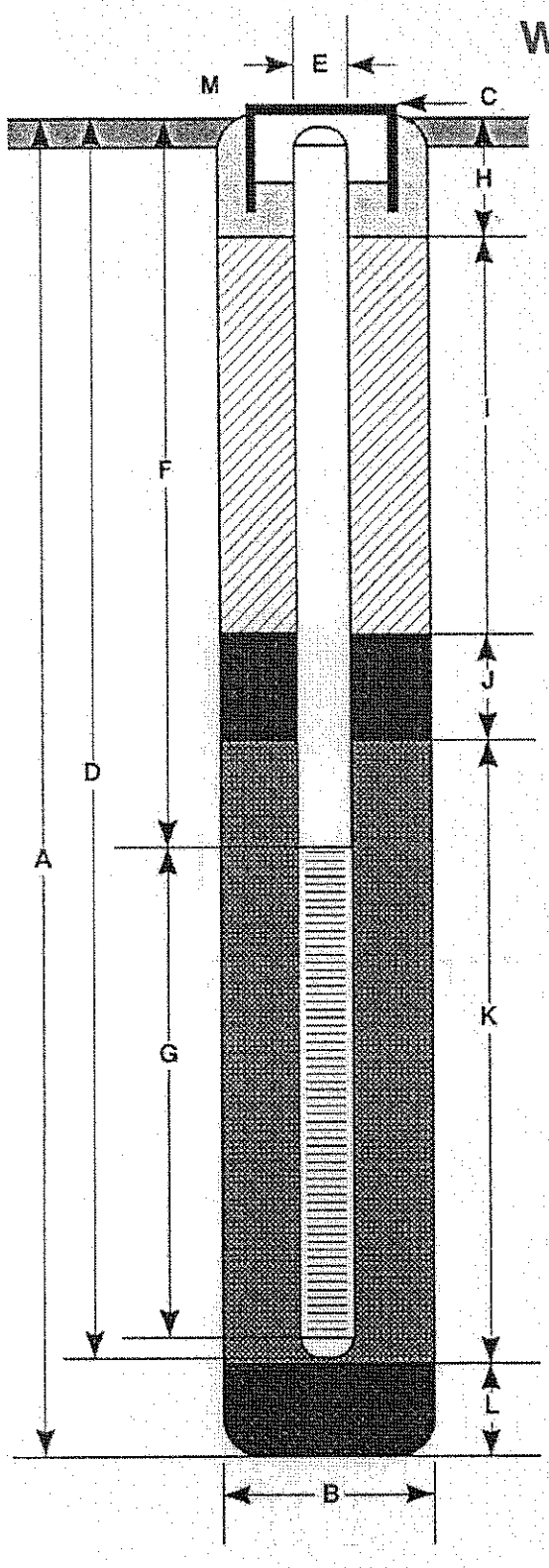
Log of Boring

BORING NO. A-6

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792708		2/93		



WELL CONSTRUCTION DETAIL



A Total Depth of Boring 30.0 ft.

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

C Top of Box Elevation 14.17 ft.
[X] Referenced to Mean Sea Level
[ ] Referenced to Project Datum

D Casing Length 28.5 ft.
Material Schedule 40 PVC

E Casing Diameter 2 in.

F Depth to Top Perforations 8.0 ft.

G Perforated Length 20.5 ft.
Perforated Interval from 8.0 to 28.5
Perforation Type Machine Slotted
Perforation Size 0.020 in.

H Surface Seal from 0 to 1.0 ft.
Seal Material Concrete

I Backfill from 1.0 to 6.0 ft.
Backfill Material Neat Cement

J Seal from 6.0 to 7.0 ft.
Seal Material Bentonite

K Gravel Pack from 7.0 to 28.5 ft.
Pack Material Lonestar #2/12 Graded Sand

L Bottom Seal 1.5 ft.
Seal Material Bentonite

M Traffic-rated underground vault box with locking cap and lock.

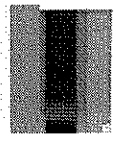
Note: Depths measured from initial ground surface.

GeoStrategies Inc.

Well Construction Detail

WELL NO. A-6

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792708		2/93		



Field location of boring: (See Plate 2)	Project No.: 792708	Date: 2/4/93	Boring No: A-6
	Client: ARCO Products Company SS# 2169		
	Location: 889 W. Grand Avenue		
	City: Oakland		Sheet 2 of 2
	Logged by: RCM	Driller: Great Sierra	
	Casing installation data:		
Drilling method: Hollow Stem Auger			
Hole diameter: 8-inch	Top of Box Elevation:		Datum:
	Water Level		
	Time		
	Date		

PID (ppm)	Blows/ft. or Pressure (psi)	Type of Sample	Sample Number	Depth (ft.)	Sample	Well Detail	Soil Group Symbol (USCS)	Description
		S&H						
			A-6	21				SAND (SW) - dark yellowish brown (10YR 4/4); dense, saturated; 90% fine to coarse sand, 10% fine gravel.
38	37		21.5					
				22				
				23				
				24				
				25				Increase in fines to 15%; fine gravel to 25%.
		S&H						
			A-6	26				SAND (SP) - very dark gray (2.5Y 3/1); medium dense, saturated; 100% fine sand, trace fines.
3	24		26.5					
				27				
				28				
								SAND (SW) - brown (10YR 4/3) - medium dense, saturated; 90% fine to coarse sand, 10% fine gravel.
		S&H		29				
			A-6					
0	18		30.0	30				CLAY (CL) - greenish gray (5G 5/1); stiff, moist, medium plasticity; 60% clay, 30% silt, 10% fine sand.
				31				
				32				Bottom of boring at 30.0 ft. 2/4/93
				33				
				34				
				35				
				36				
				37				
				38				
				39				
				40				

Remarks:

GeoStrategies Inc.

Log of Boring

BORING NO. A-6

JOB NUMBER	REVIEWED BY RG/CEG	DATE	REVISED DATE	REVISED DATE
792708	JW	2/93		

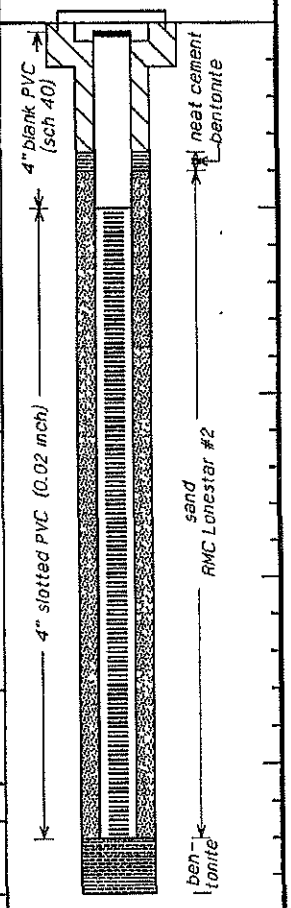
GeoStrategies, Inc.
6747 Sierra Court - Suite G Dublin, Ca. 95468

Log of Boring ADR-1

PROJECT: *ARCO Station 2169*	LOCATION: *889 West Grand Avenue, Oakland, CA.*
GSI PROJECT NO.: *7927.17*	SURFACE ELEVATION: *ft. MSL*
DATE STARTED: *12/06/93*	WL (ft. bgs): *12.5* DATE: *12/06/93* TIME: *2:00pm*
DATE FINISHED: *12/06/93*	WL (ft. bgs): *12.5* DATE: *12/06/93* TIME: *2:30pm*
DRILLING METHOD: *10 in. Hollow Stem Auger*	TOTAL DEPTH: *23.5 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *BS*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
					DRILLING THROUGH AN EXISTING WELL BOX.
					Bottom of a well box at 2.5 feet.
				CL	SILTY CLAY (CL) - olive, hard, damp, 90% fines, 10% fine grained sand, medium plasticity.
5	9	29	ADR-1-5.5		
10	10	36	ADR-1-10.5		Increasing sand.
	51	32	ADR-1-12	SC	CLAYEY SAND (SC) - light olive brown, dense, moist, 70% fine grained sand, 30% fines. Becoming saturated at 12.5 feet.
15	3	24	ADR-1-15.5		With fine gravel.
				SW	SAND WITH GRAVEL (SW) - gray, dense, saturated, 85% fine to coarse grained sand, 15% fine gravel.
20	0	34	ADR-1-20.5	SP	SAND (SP) - gray, dense, saturated, 100% fine grained sand.
				CL	
	0	29	ADR-1-23		CLAY (CL) - bluish gray, hard, moist, 90% fines, 10% fine sand, medium plasticity.
					Becoming damp at 2 feet.
25					Bottom of boring at 23.5 feet. 12/06/93
30					
35					(* = converted to equivalent standard penetration blows/ft.)

WELL DIAGRAM



JOB NUMBER: *7927.17*

GeoStrategies, Inc.
6747 Sierra Court - Suite G Dublin, Ca. 95468

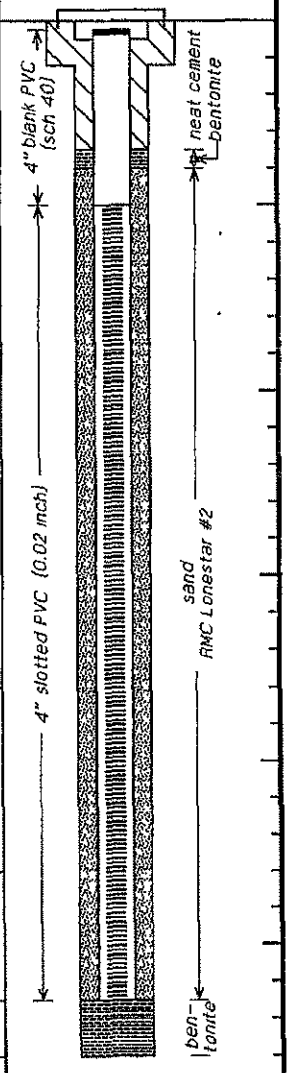
Log of Boring ADR-2

PROJECT: *ARCO Station 2169*	LOCATION: *889 West Grand Avenue, Oakland, CA.*
GSI PROJECT NO.: *7927.17*	SURFACE ELEVATION: *ft. MSL*
DATE STARTED: *12/06/93*	WL (ft. bgs): *18* DATE: *12/06/93* TIME: *3:00pm*
DATE FINISHED: *12/06/93*	WL (ft. bgs): *12.7* DATE: *12/07/93* TIME: *5:00pm*
DRILLING METHOD: *10 in. Hollow Stem Auger*	TOTAL DEPTH: *28 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *BS*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
					DRILLING THROUGH AN EXISTING WELL BOX.
					Bottom of a well box at 2.5 feet.
				CL	SANDY CLAY (CL) - gray, very stiff, damp, 70% fines, 30% fine grained sand, low plasticity.
5	47	38	ADR-2-5.5	CL	SILTY CLAY WITH SAND (CL) - brown mottled gray, hard, damp, 85% fines, 15% fine grained sand, medium plasticity.
10	25	21	ADR-2-10.5		Color change to olive brown, increasing sand, becoming moist, very stiff.
	51	21	ADR-2-12		
15	9	23	ADR-2-15.5		Becoming very moist. No water in hole after waiting 10 minutes.
				SW	GRAVELLY SAND WITH CLAY (SW) - olive brown, very dense, saturated, 60% fine to coarse grained sand, 30% fine gravel, 10% fines.
20	0	50 /5"	ADR-2-20.5		
				SP	SAND (SP) - brownish gray, dense, saturated, 100% fine grained sand.
25	0	34	ADR-2-25		
	0	61	ADR-2-27.5	CL	SILTY CLAY (CL) - bluish gray, hard, damp to moist, 90% fines, 10% fine grained sand, medium plasticity.
					Bottom of boring at 28 feet. 12/06/93
30					
35					

(* = converted to equivalent standard penetration blows/ft.)

WELL DIAGRAM



JOB NUMBER: *7927.17*

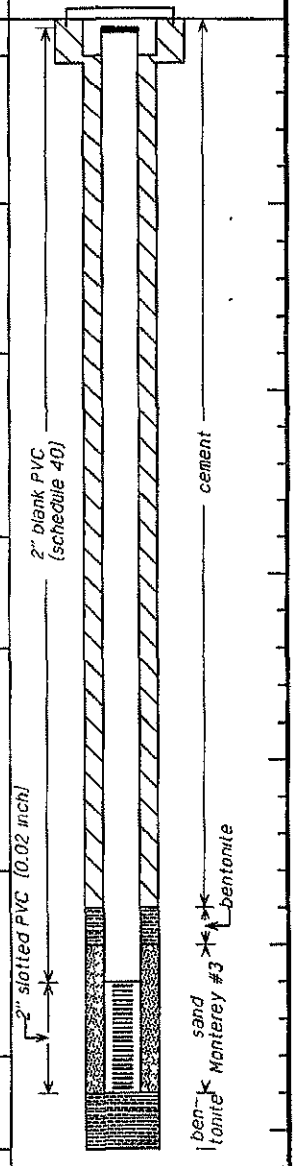
GeoStrategies, Inc.
6747 Sierra Court - Suite G Dublin, Ca. 95468

Log of Boring AS-3

PROJECT: *ARCO Station 2169*	LOCATION: *889 West Grand Avenue Oakland, CA.*
GSI PROJECT NO.: *7927.11*	SURFACE ELEVATION: *ft. MSL*
DATE STARTED: *9/8/93*	WL (ft. bgs): *12.5* DATE: *9/8/93* TIME: *10:30*
DATE FINISHED: *9/8/93*	WL (ft. bgs): *12.0* DATE: *9/8/93* TIME: *12:00*
DRILLING METHOD: *8 in. Hollow Stem Auger*	TOTAL DEPTH: *30.5 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *BS*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
						PV	PAVEMENT SECTION - 7" baserock, 5" asphalt.
						CL	SILTY CLAY WITH SAND (CL) - brownish black (5YR 2/1), stiff, damp, medium plasticity, 80% fines, 20% fine grained sand.
5	151	29	AS-3-5.5			SC	CLAYEY SAND (SC) - dark greenish gray (5GY 4/1), dense, damp, 60% fine grained sand, 40% fines. Color change to moderate yellowish brown (10YR 5/4) at 6 feet.
10	902	28	AS-3-10.5			ML	CLAYEY SILT WITH SAND (ML) - light olive brwon (5Y 5/6), very stiff, damp, 70% fines, 30% fine grained sand, low to medium plasticity.
	886	31	AS-3-12.5				Increasing sand, saturated at 12.5 feet.
15	4	11				SC	CLAYEY SAND (SC) - light brown (5YR 5/6) with grayish green (10GY 5/2) mottling, medium dense, saturated, 70% fine grained sand, 30% fines.
20	0	57	AS-3-20.5			SW	GRAVELLY SAND (SW) - dark yellowish brown (10YR 4/2), very dense, saturated, 60% fine to coarse grained sand, 35% gravel, 5% fines.
25	0		AS-3-26.0			SP	SAND (SP) - grayish olive (10Y 4/2), very dense, saturated, 100% fine to medium grained sand.
30	0	30	AS-3-30			CL	CLAY (CL) - medium bluish gray (5G 5/1), hard, damp, 90% fines, 10% fine grained sand, medium to high plasticity.
							Bottom of boring at 30.5 feet 9/8/93
35							(* = converted to equivalent standard penetrations blows/ft.)

WELL DIAGRAM



JOB NUMBER: *7927.11*

GeoStrategies, Inc.
6747 Sierra Court - Suite G Dublin, Ca. 95468

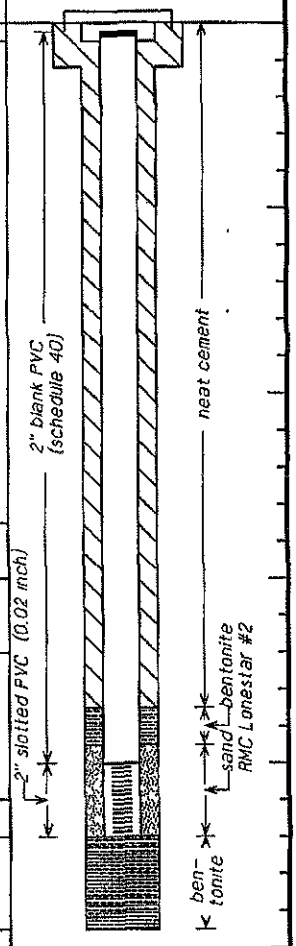
Log of Boring AS-4

PROJECT: *ARCO Station 2169*	LOCATION: *889 West Grand Avenue, Oakland, CA.*
GSI PROJECT NO.: *7927.17*	SURFACE ELEVATION: *ft. MSL*
DATE STARTED: *12/07/93*	WL (ft. bgs): *12.8* DATE: *12/07/93* TIME: *3:00pm*
DATE FINISHED: *12/07/93*	WL (ft. bgs): *13* DATE: *12/07/93* TIME: *7:05pm*
DRILLING METHOD: *8 in. Hollow Stem Auger*	TOTAL DEPTH: *24.5 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *BS*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
0						PV	PAVEMENT SECTION - 3" asphalt over baserock.
						GP	GRAVEL (GP) - gray, very dense, damp, 100% gravel (BACKFILL).
5							
10							
	30	14	AS-4-13.5			SC	CLAYEY SAND (SC) - gray, medium dense, wet, 85% fine grained sand, 15% fines.
15	28	38	AS-4-15.5			CL	GRAVELLY CLAY WITH SAND (CL) - brown mottled gray, hard, moist, 50% clay, 30% gravel, 20% fine to coarse grained sand, low plasticity.
						SW	GRAVELLY SAND (SW) - dark olive gray, very dense, saturated, 60% fine to coarse grained sand, 30% gravel, 10% fines.
20	0	62	AS-4-20.5			SP	SAND (SP) - gray, very dense, saturated, 95% fine grained sand, 5% fines.
						CL	SILTY CLAY (CL) - dark bluish gray, hard, damp, 90% fines, 10% fine grained sand, medium plasticity.
	7	50	AS-4-24				Increasing sand.
25							Bottom of boring at 24.5 feet. 12/07/93
30							
35							

(* = converted to equivalent standard penetration blows/ft.)

WELL DIAGRAM



JOB NUMBER: *7927.17*

GeoStrategies, Inc.
6747 Sierra Court - Suite G Dublin, Ca. 95468

Log of Boring AS-5

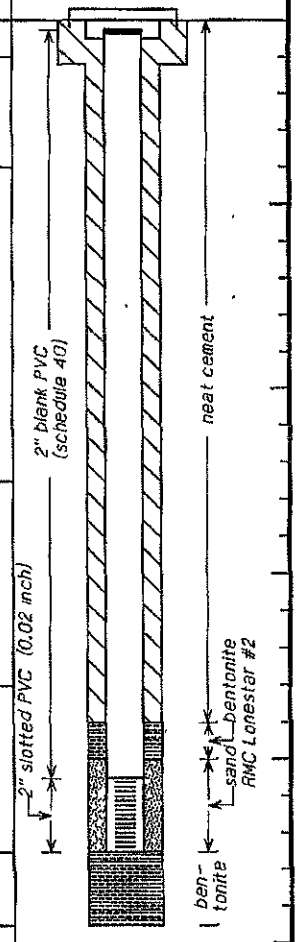
PROJECT: *ARCO Station 2169*	LOCATION: *889 West Grand Avenue, Oakland, CA.*
GSI PROJECT NO.: *7927.17*	SURFACE ELEVATION: *ft. MSL*
DATE STARTED: *12/07/93*	WL (ft. bgs): *13* DATE: *12/07/93* TIME: *11:00am*
DATE FINISHED: *12/07/93*	WL (ft. bgs): *12.8* DATE: *12/07/93* TIME: *7:10pm*
DRILLING METHOD: *8 in. Hollow Stem Auger*	TOTAL DEPTH: *24.5 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *BS*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
				PV	PAVEMENT SECTION - 4" asphalt over baserock.
				CL	SILTY CLAY (CL) - dark brown, damp, 80% fines, 15% fine grained sand, 5% gravel, medium plasticity.
5	29	NM	AS-5-5.5	CL	SANDY CLAY (CL) - gray, damp, 70% fines, 30% fine grained sand, low plasticity.
10	128	NM	AS-5-10.5		Color change to olive brown, some fine gravel, some organic matter, with root holes.
	152	NM	AS-5-12		Increasing sand, becoming moist.
				SC	CLAYEY SAND (SC) - olive brown, saturated, 60% fines, 40% fine grained sand.
15	16	NM	AS-5-15.5		
				SW	GRAVELLY SAND WITH CLAY (SW) - gray, saturated, 60% fine to coarse grained sand, 30% gravel, 10% fines.
20	NM	NM			
				CL	CLAY WITH SAND (CL) - bluish gray, moist, 80% fines, 20% fine grained sand, medium plasticity.
	0	NM	AS-5-24		
25					Bottom of boring at 24.5 feet. 12/07/93
30					
35					

(* = converted to equivalent standard penetration blows/ft.)

NM = not measured

WELL DIAGRAM



JOB NUMBER: *7927.17*

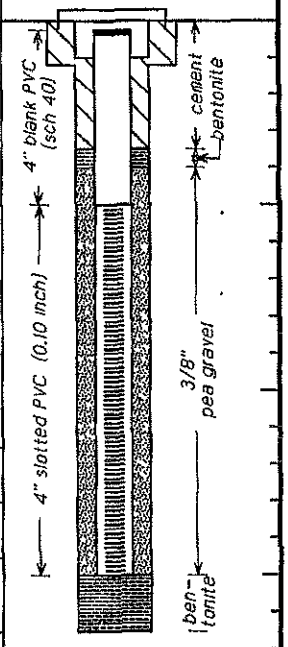
GeoStrategies, Inc.
6747 Sierra Court – Suite G Dublin, Ca. 95468

Log of Boring AV-4

PROJECT: *ARCO Station 2169*	LOCATION: *889 West Grand Avenue, Oakland, CA.*
GSI PROJECT NO. : *7927.11*	SURFACE ELEVATION: *ft. MSL*
DATE STARTED: *9/7/93*	WL (ft. bgs): DATE: TIME:
DATE FINISHED: *9/7/93*	WL (ft. bgs): *13.5* DATE: *9/7/93* TIME:
DRILLING METHOD: *10 in. Hollow Stem Auger*	TOTAL DEPTH: *16.5 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *BS*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SOIL CLASS	GEOLOGIC DESCRIPTION
				PV	PAVEMENT SECTION – 7" concrete, 5" sand.
				CL	SILTY CLAY (CL) – brownish black (5YR 2/1), very stiff, damp, 95% fines, 5% fine grained sand, medium plasticity; fragments of brick and concrete observed (FILL).
5	64	28	AV-4-5	CL	SILTY CLAY (CL) – yellowish brown (10YR 5/4), very stiff, damp, 60% fines, 40% fine grained sand, low plasticity, with organic matter.
10	97	16	AV-4-10.5	SC	CLAYEY SAND (SC) – yellowish brown (10YR 5/4), medium dense, damp, 60% fine grained sand, 40% fines.
	147	25	AV-4-12.5	ML	CLAYEY SILT WITH SAND (ML) – light olive brown (5Y 5/6), very stiff, damp, 70% fines, 30% fine grained sand, low plasticity.
				SC	CLAYEY SAND (SC) – brown (10YR 5/3), medium dense, very moist, 60% fine grained sand, 40% fines.
15	70	22	AV-4-16	CL	SANDY CLAY (CL) – light brown (5YR 5/6), very stiff, moist, 70% fines, 30% fine grained sand, plasticity.
					Bottom of boring at 16.5 feet. 9/7/93
20					
25					
30					
35					

WELL DIAGRAM



(* = converted to equivalent standard penetration blows/ft.)

JOB NUMBER: *7927.11*

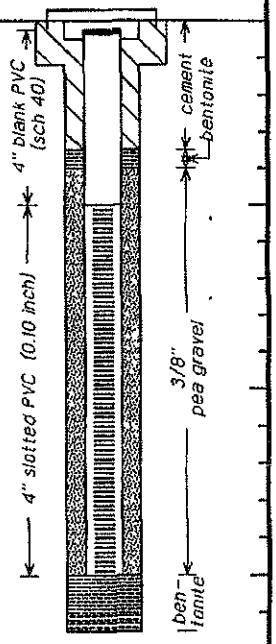
GeoStrategies, Inc.
6747 Sierra Court - Suite G Dublin, Ca. 95468

Log of Boring AV-5

PROJECT: *ARCO Station 2169*	LOCATION: *889 West Grand Avenue, Oakland, CA.*
GSI PROJECT NO. : *7927.11*	SURFACE ELEVATION: *ft. MSL*
DATE STARTED: *9/7/93*	WL (ft. bgs): DATE: TIME:
DATE FINISHED: *9/7/93*	WL (ft. bgs): *13.5* DATE: *9/7/93* TIME: *16:10*
DRILLING METHOD: *10 in. Hollow Stem Auger*	TOTAL DEPTH: *16.5 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *BS*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
						PV	PAVEMENT SECTION - 7" concrete, 5" sand.
						SP	SAND (SP) - brownish black (5YR 2/1), medium dense, damp, brick and concrete fragments observed (FILL).
						CL	SILTY CLAY (CL)- brownish black (5YR 2/1), very stiff, damp, 95% fines, 5% fine grained sand, medium plasticity, fragments of brick and concrete observed (FILL).
5	10	28	AV-5-5			CL	SANDY CLAY (CL) - grayish olive (10Y 4/2), very stiff, damp, 85% fines, 15% fine grained sand, low to medium plasticity.
						ML	CLAYEY SILT WITH SAND (ML) - light olive brown (5Y 5/6) with greenish gray (5G 6/1) mottling, very stiff, damp, 60% silt, 35% clay, 15% fine grained sand.
10	55	15	AV-5-10.5				
	88	18	AV-5-12.5				Increasing sand, becoming moist at 12.5 feet.
						SC	CLAYEY SAND (SC) - light olive brown (5Y 5/6), dense, very moist, 60% fine grained sand, 40% fines.
15	19	22	AV-5-15.5			CL	SANDY CLAY (CL) - light brown (5YR 5/6) with grayish green (10GY 5/2) mottling, very stiff, moist, 70% fines, 30% fine grained sand, low plasticity.
						SW	GRAVELLY SAND WITH CLAY (SW) - light olive brown (5YR 5/6) mottled brown (5YR 5/6), medium dense, saturated, 75% fine to medium grained sand, 15% fine gravel, 10% fines.
20							Bottom of boring at 16.5 feet. 9/7/93
25							
30							
35							

WELL DIAGRAM



(* = converted to equivalent standard penetration blows/ft.)

JOB NUMBER: *7927.11*

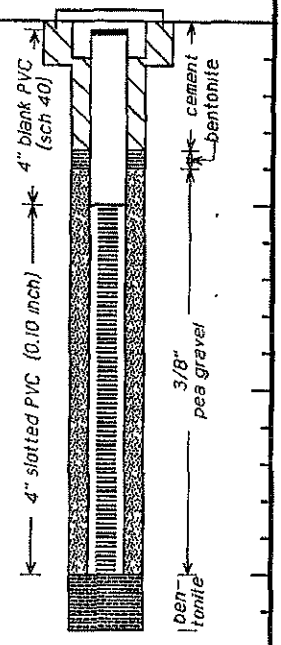
GeoStrategies, Inc.
6747 Sierra Court - Suite G Dublin, Ca. 95468

Log of Boring AV-6

PROJECT: *ARCO Station 2169*	LOCATION: *889 West Grand Avenue, Oakland, CA.*
GSI PROJECT NO.: *7927.17*	SURFACE ELEVATION: *ft. MSL*
DATE STARTED: *12/06/93*	WL (ft. bgs): *14.0* DATE: *12/06/93* TIME: *10:30am*
DATE FINISHED: *12/06/93*	WL (ft. bgs): *14.2* DATE: *12/07/93* TIME: *7:00pm*
DRILLING METHOD: *10 in. Hollow Stem Auger*	TOTAL DEPTH: *16.5 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *BS*

DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
						PV	PAVEMENT SECTION - 3" asphalt over baserock.
						CL	SILTY CLAY WITH SAND (CL) - dark brown, hard, damp, 80% fines, 20% fine grained sand, medium plasticity.
5	0	42	AV-6-5.5			CL	SANDY CLAY (CL) - olive brown, hard, damp, 60% fines, 40% fine to coarse grained sand, low plasticity.
10	17	49	AV-6-10.5				Color change to olive brown mottled gray, increasing sand, becoming moist.
	117	38	AV-6-12.5			SP	SILTY SAND (SM) - olive gray, dense, saturated, 85% fine to medium grained sand, 15% fines.
15	17	34	AV-6-16			CL	SANDY CLAY (CL) - light brown mottled olive, hard, moist, 70% fines, 30% fine grained sand, medium plasticity.
							Bottom of boring at 16.5 feet. 12/06/93
20							
25							
30							
35							

WELL DIAGRAM



(* = converted to equivalent standard penetration blows/ft.)

JOB NUMBER: *7927.17*

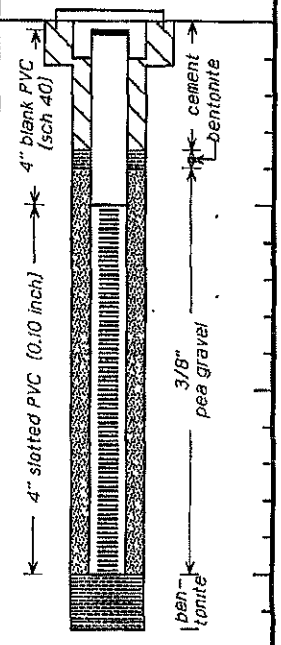
GeoStrategies, Inc.
6747 Sierra Court - Suite G Dublin, Ca. 95468

Log of Boring AV-7

PROJECT: *ARCO Station 2169*	LOCATION: *889 West Grand Avenue, Oakland, CA.*
GSI PROJECT NO. : *7927.17*	SURFACE ELEVATION: *ft. MSL*
DATE STARTED: *12/06/93*	WL (ft. bgs): *12.8* DATE: *12/06/93* TIME: *11:30am*
DATE FINISHED: *12/06/93*	WL (ft. bgs): *12.0* DATE: *12/07/93* TIME: *7:00pm*
DRILLING METHOD: *10 in. Hollow Stem Auger*	TOTAL DEPTH: *16.5 Feet*
DRILLING COMPANY: *Exploration Geoservices*	GEOLOGIST: *BS*

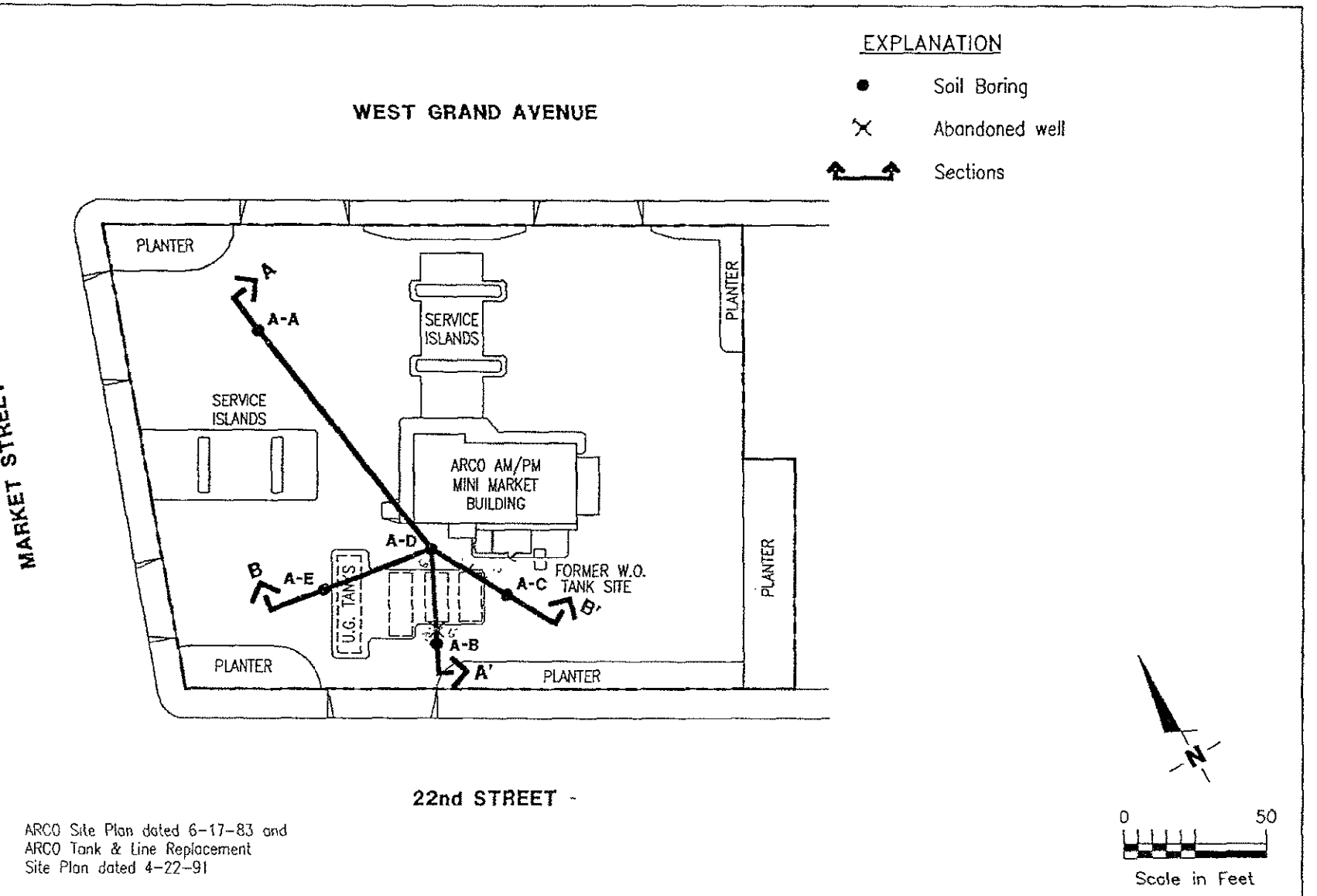
DEPTH feet	PID (ppm)	BLOWS/FT. *	SAMPLE NUMBER	SAMPLE INT.	GRAPHIC LOG	SOIL CLASS	GEOLOGIC DESCRIPTION
						PV	PAVEMENT SECTION - 4" asphalt over baserock
						CL	SILTY CLAY WITH SAND (CL) - dark brown, damp, very stiff, 80% fines, 20% fine grained sand, medium plasticity, pieces of brick observed (FILL).
5	35	34	AV-7-5.5			CL	SILTY CLAY (CL) - greenish gray, hard, damp, 90% fines, 10% fine grained sand, medium plasticity.
						ML	SANDY SILT WITH CLAY (ML) - olive gray, hard, damp, 60% fines, 40% fine to medium grained sand, low plasticity.
						CL	GRAVELLY CLAY WITH SAND (CL) - brown mottled gray, hard, damp, 60% fines, 30% fine gravel, 10% fine sand, low plasticity.
10	157	39	AV-7-10.5			SC	CLAYEY SAND (SC) - gray mottled brown, dense, moist, 70% fine sand, 30% fines.
	129	31	AV-7-12				Becoming saturated at 12.8 feet.
						GC	CLAYEY GRAVEL WITH SAND (GC) - brown mottled gray, dense, moist, 50% gravel, 30% fines, 20% sand.
15	61	34	AV-7-15.5				Bottom of boring at 16.5 feet. 12/06/93
20							
25							
30							
35							

WELL DIAGRAM



(* = converted to equivalent standard penetration blows/ft.)

JOB NUMBER: *7927.17*



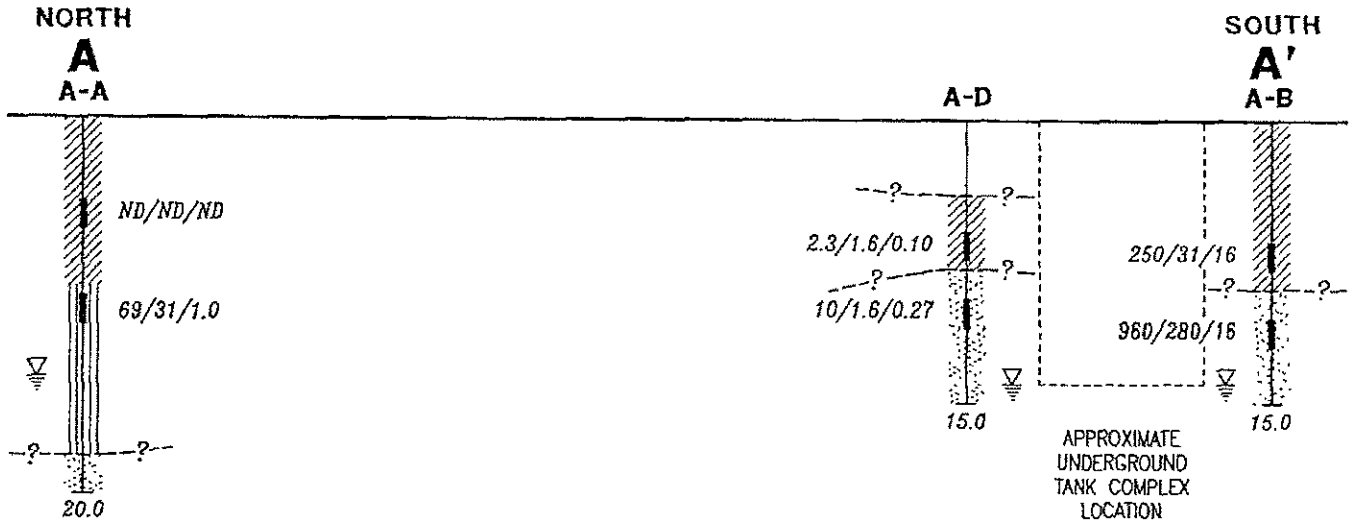
Base Map: ARCO Site Plan dated 6-17-83 and ARCO Tank & Line Replacement Site Plan dated 4-22-91

GeoStrategies Inc.

SITE PLAN
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

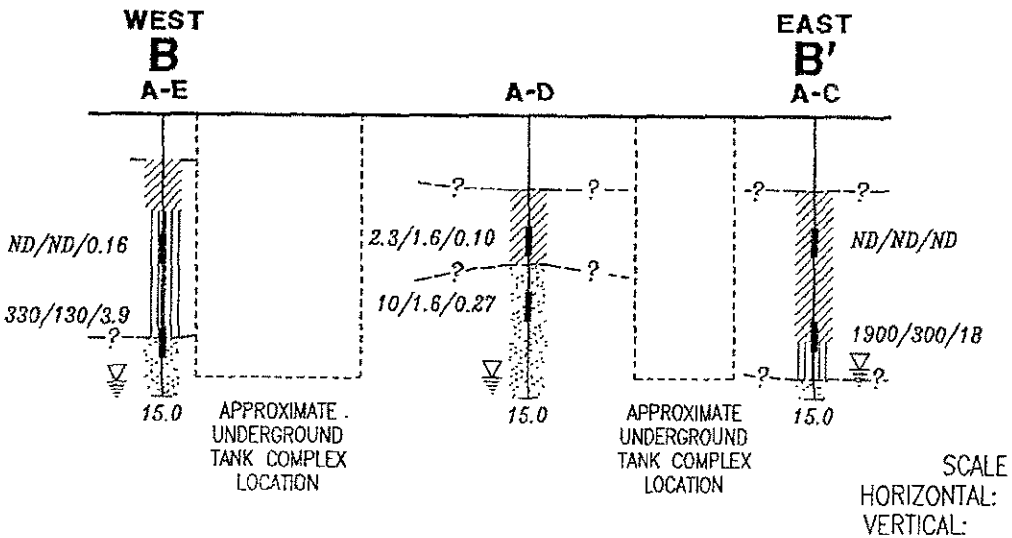
PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792702-1	DHP	7/91	



EXPLANATION

- Sands (DW, SP, SM, SL)
- Silts (ML)
- Clays (CL)
- Fill
- Sample interval
- First encountered groundwater (May 14, 1991)
- A/B/C TPH–Gasoline/TPH–Diesel/Benzene concentrations in ppm



SCALE
HORIZONTAL: 1"=20'
VERTICAL: 1"=10'

NOTES

1. See Boring Logs (Appendix B)
2. General stratigraphic relationships are displayed. Additional horizontal and vertical variations may exist.
3. 15.0 = Depth of Boring

GeoStrategies Inc.

CROSS SECTIONS
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

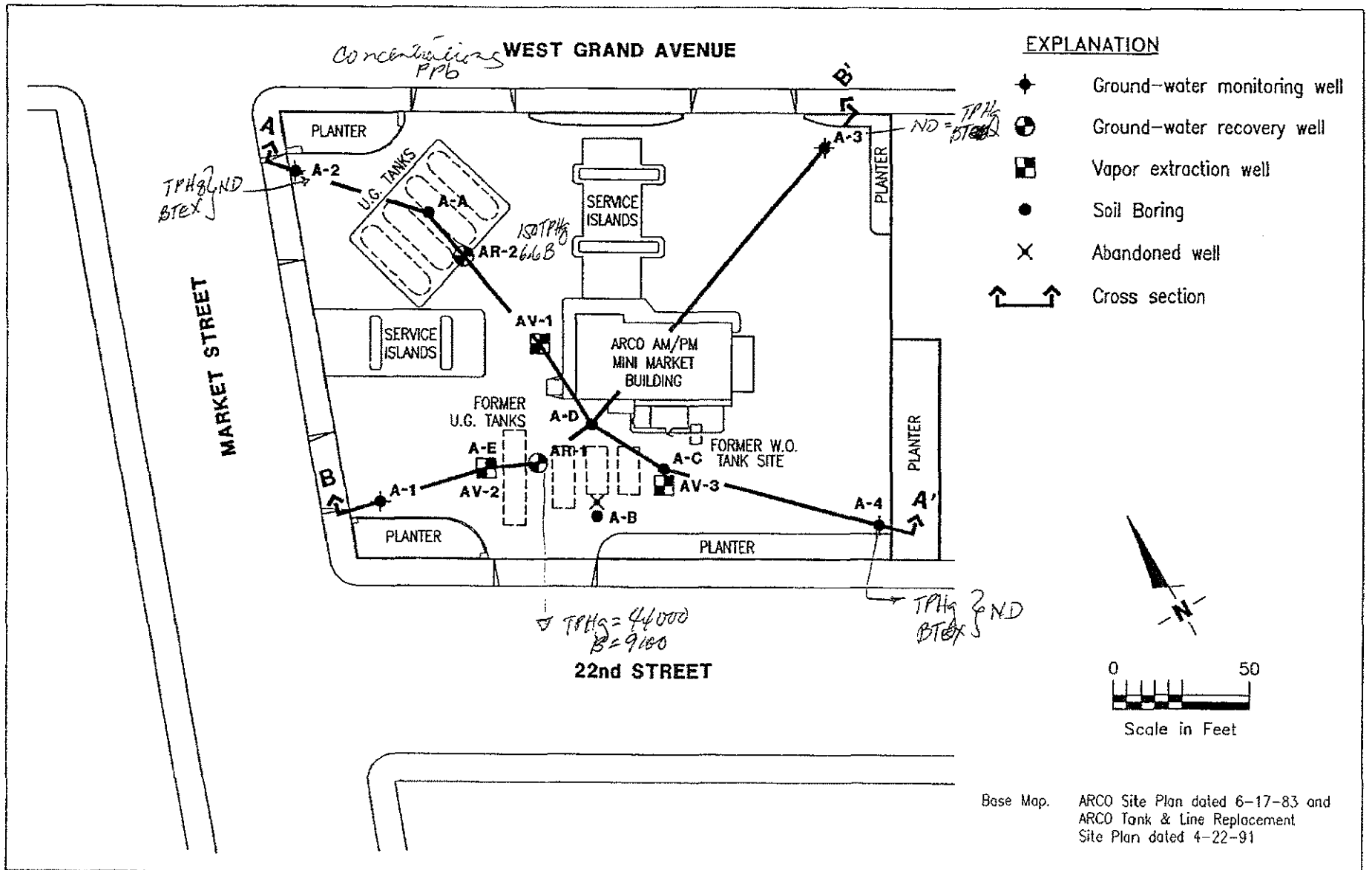
PLATE
3

JOB NUMBER
792702-1

REVIEWED BY
DHP

DATE
7/91

REVISED DATE

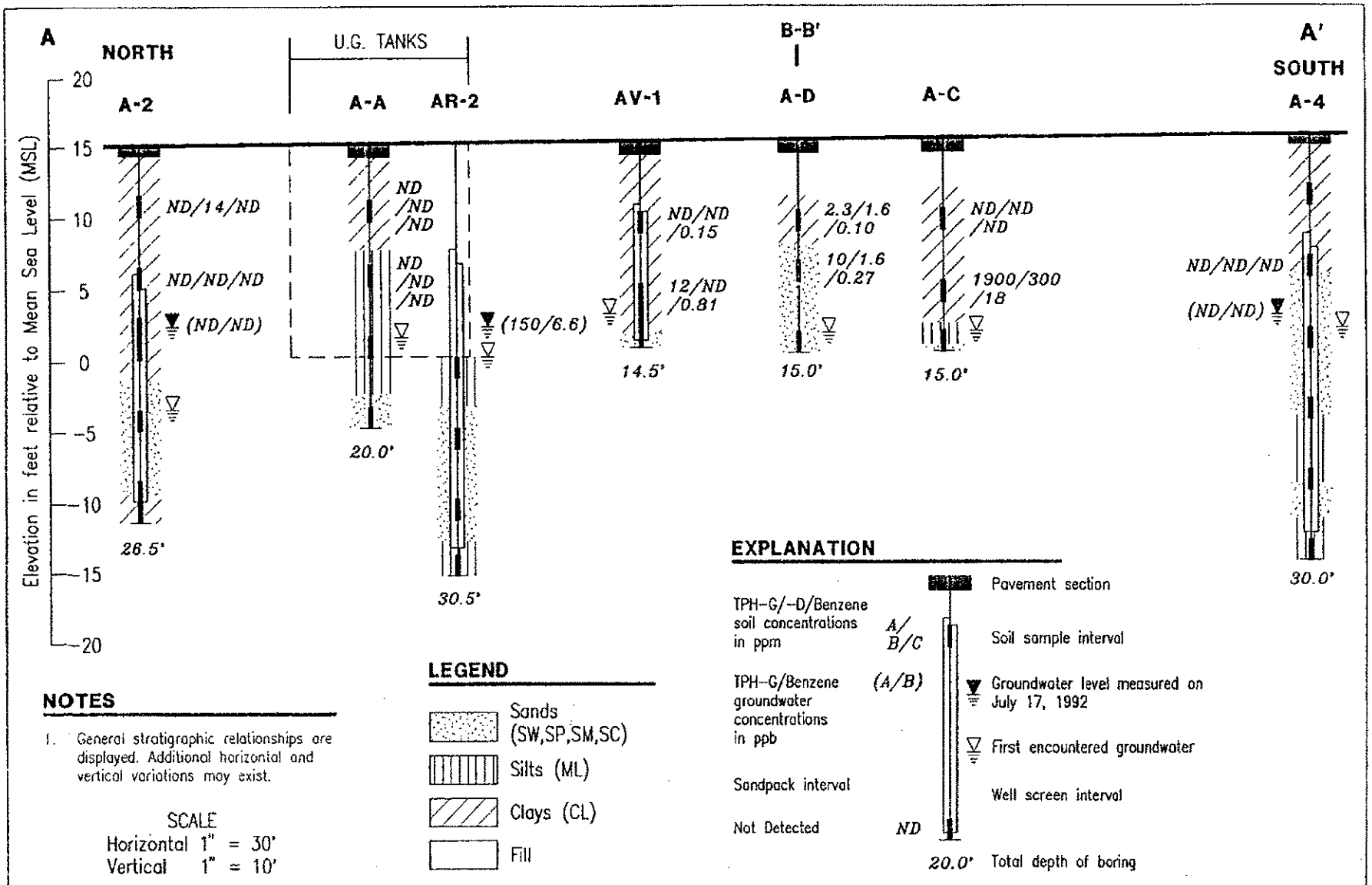


GeoStrategies Inc.

SITE PLAN
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE 2

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792705-4	Nam	8/92	11/92

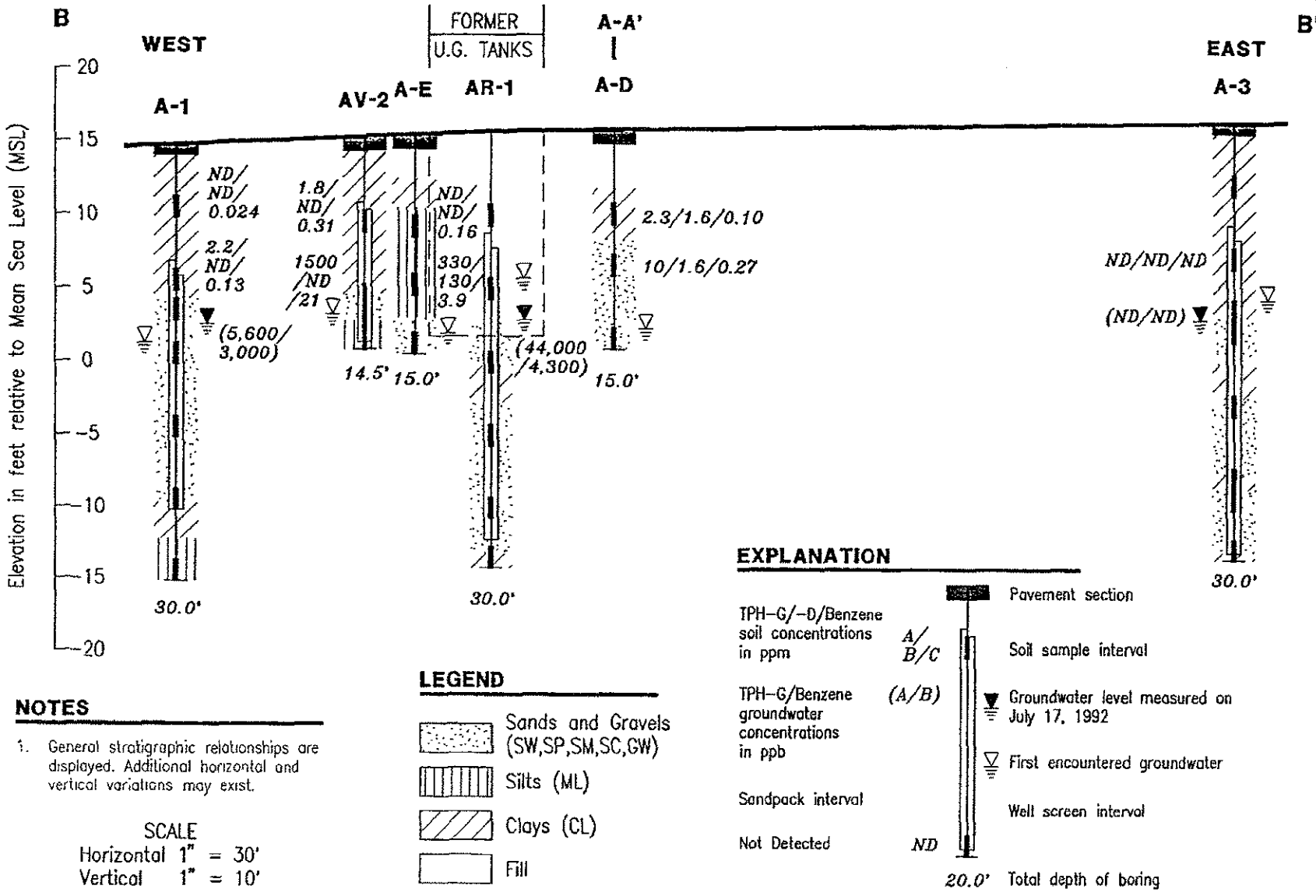


GeoStrategies Inc.

CROSS SECTION A–A'
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE
3

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792705-4		8/92	11/92

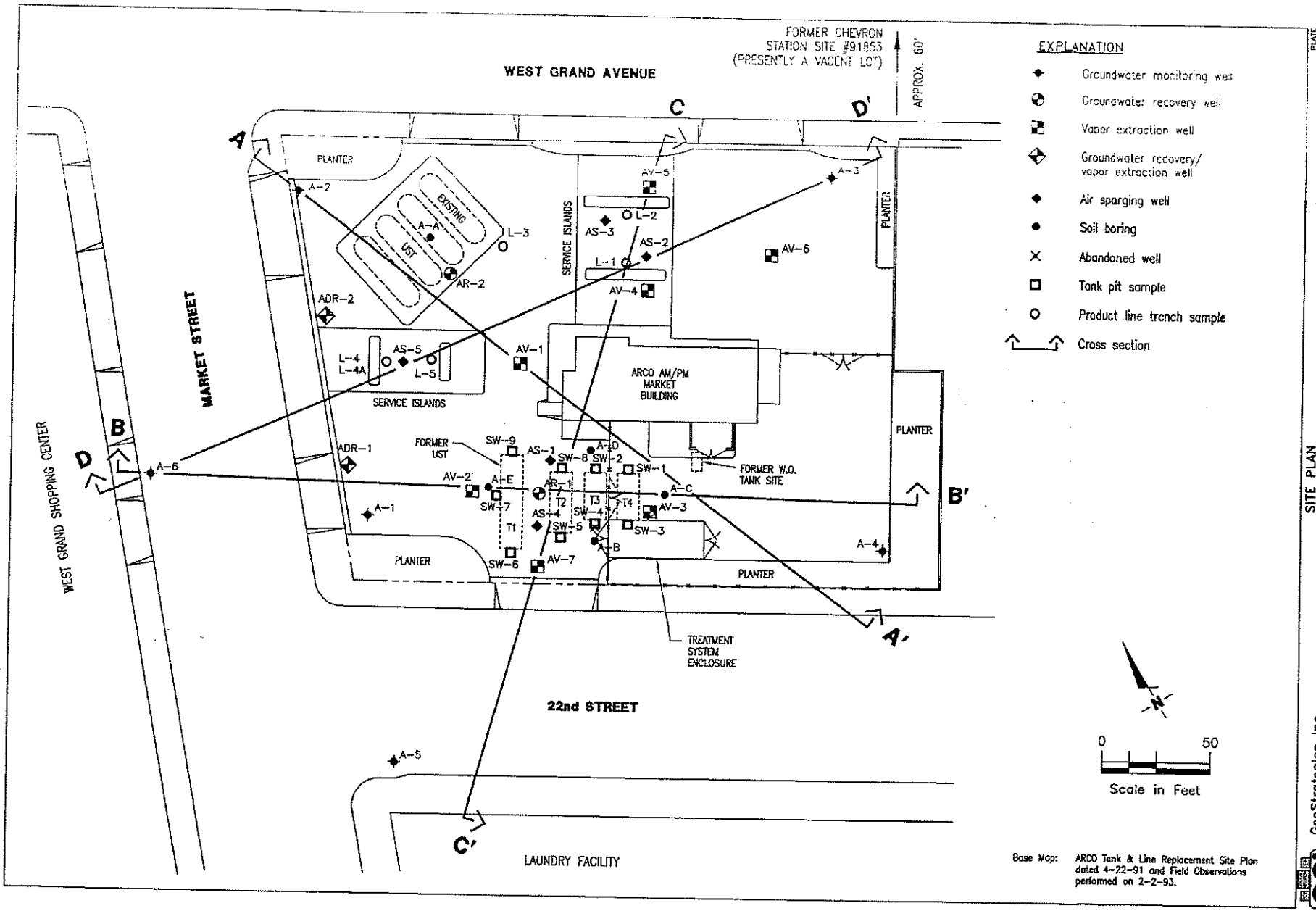


GeoStrategies Inc.

CROSS SECTION B-B'
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

PLATE
4

JOB NUMBER	REVIEWED BY	DATE	REVISED DATE
792705-4	RCM	8/92	



Base Map: ARCO Tank & Line Replacement Site Plan dated 4-22-91 and Field Observations performed on 2-2-93.

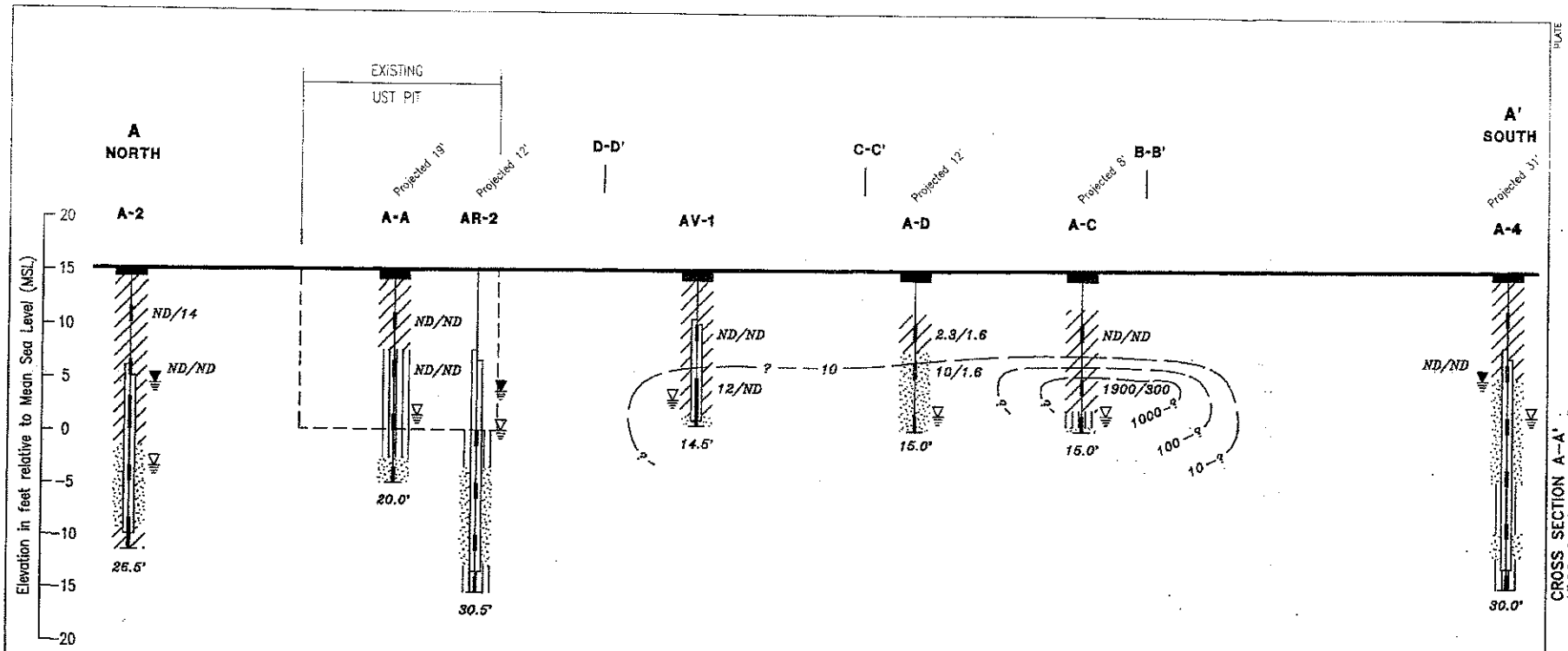
PLATE 2

SITE PLAN
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

DATE 2/94
REVISED DATE 3/94

GeoStrategies Inc.

JOB NUMBER 792717-15
REVIEWED BY



NOTES

1. General stratigraphic relationships are displayed. Additional horizontal and vertical variations may exist.

SCALE
Horizontal 1" = 20'
Vertical 1" = 10'

LEGEND

- Sands (SW, SP, SM, SC)
- Silts (ML)
- Clays (CL)
- Fill
- 10 — Line of equal concentration of TPH-G in soil in ppm

EXPLANATION

- TPH-G/-D soil concentrations in ppm — A/B
- Not Detected — ND
- Sandpack interval
- Pavement section
- Soil sample interval
- Groundwater level measured on February 9, 1994
- First encountered groundwater
- Well screen interval
- 20.0' Total depth of boring

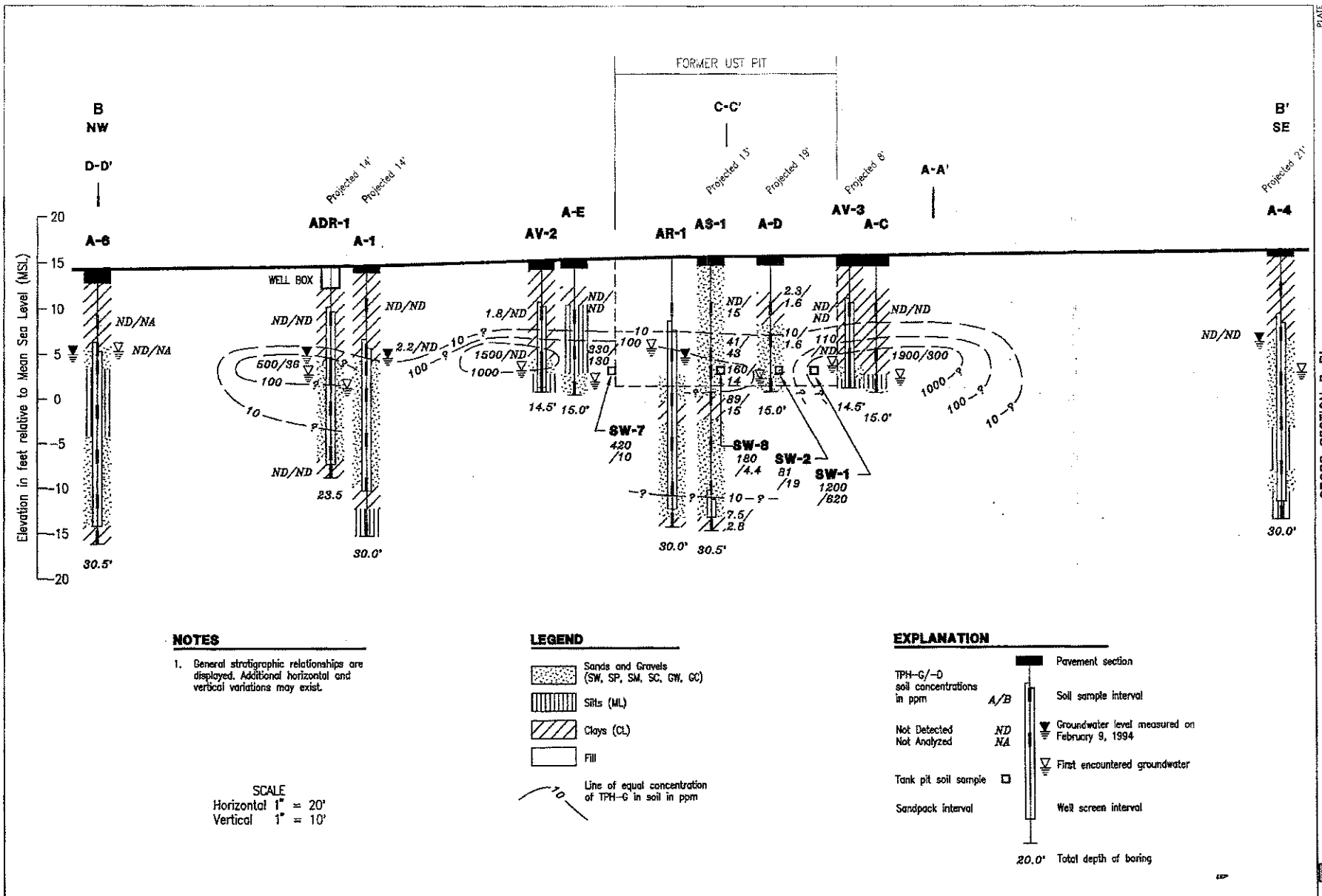
PLATE 7

CROSS SECTION A-A'
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

DATE 2/94
REVISED DATE 3/94

GeoStrategies Inc.

JOB NUMBER 792717-15
REVIEWED BY



NOTES

1. General stratigraphic relationships are displayed. Additional horizontal and vertical variations may exist.

SCALE
Horizontal 1" = 20'
Vertical 1" = 10'

LEGEND

- Sands and Gravels (SW, SP, SM, SC, GW, GC)
- Silts (ML)
- Clays (CL)
- Fill
- 10 — Line of equal concentration of TPH-G in soil in ppm

EXPLANATION

- TPH-G/-D soil concentrations in ppm — A/B
- Not Detected — ND
- Not Analyzed — NA
- Tank pit soil sample
- Sandpack interval
- Pavement section
- Soil sample interval
- Groundwater level measured on February 9, 1994
- First encountered groundwater
- Well screen interval
- 20.0' Total depth of boring

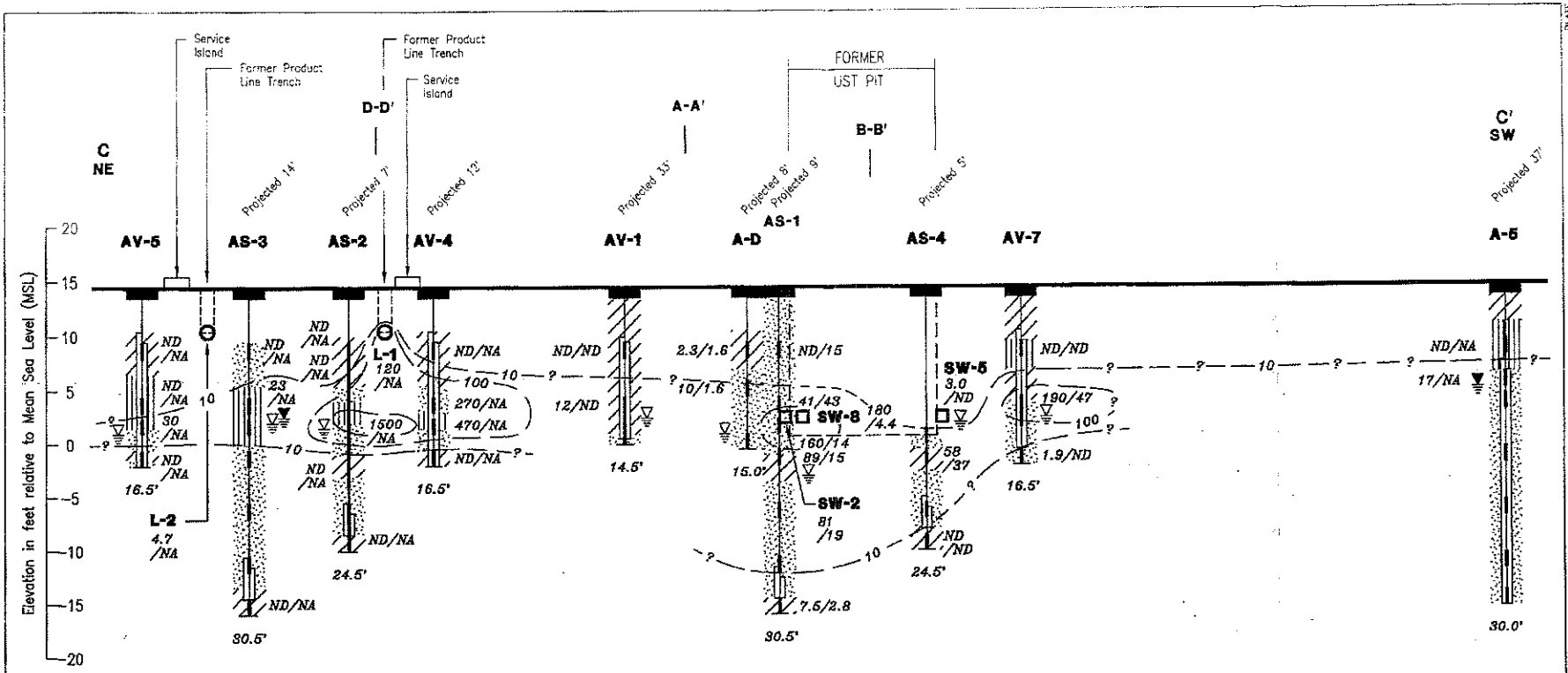
PLATE 8

CROSS SECTION B-B'
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

DATE 2/94
REVISED DATE 3/94

GeoStrategies Inc.

JOB NUMBER 792717-15
REVIEWED BY



CROSS SECTION C-C'
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

GeoStrategies Inc.

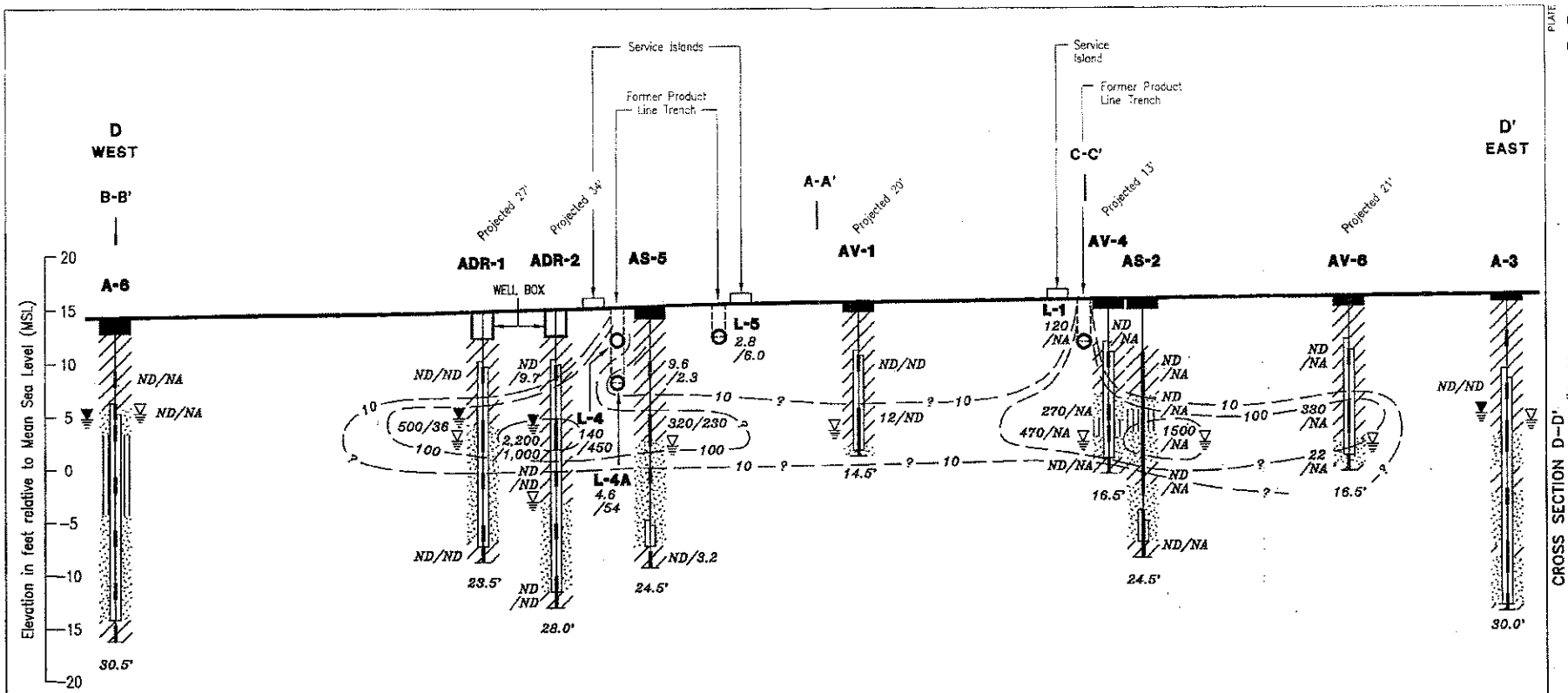
PLATE 9

DATE 2/94

REVISED DATE 3/94

JOB NUMBER 792717-15

REVIEWED BY



NOTES

1. General stratigraphic relationships are displayed. Additional horizontal and vertical variations may exist.

SCALE
Horizontal 1" = 20'
Vertical 1" = 10'

LEGEND

- Sands and Gravels (SW, SP, SM, SC, GW, GC)
- Silts (ML)
- Clays (CL)
- Fill
- 10 — Line of equal concentration of TPH-G in soil in ppm

EXPLANATION

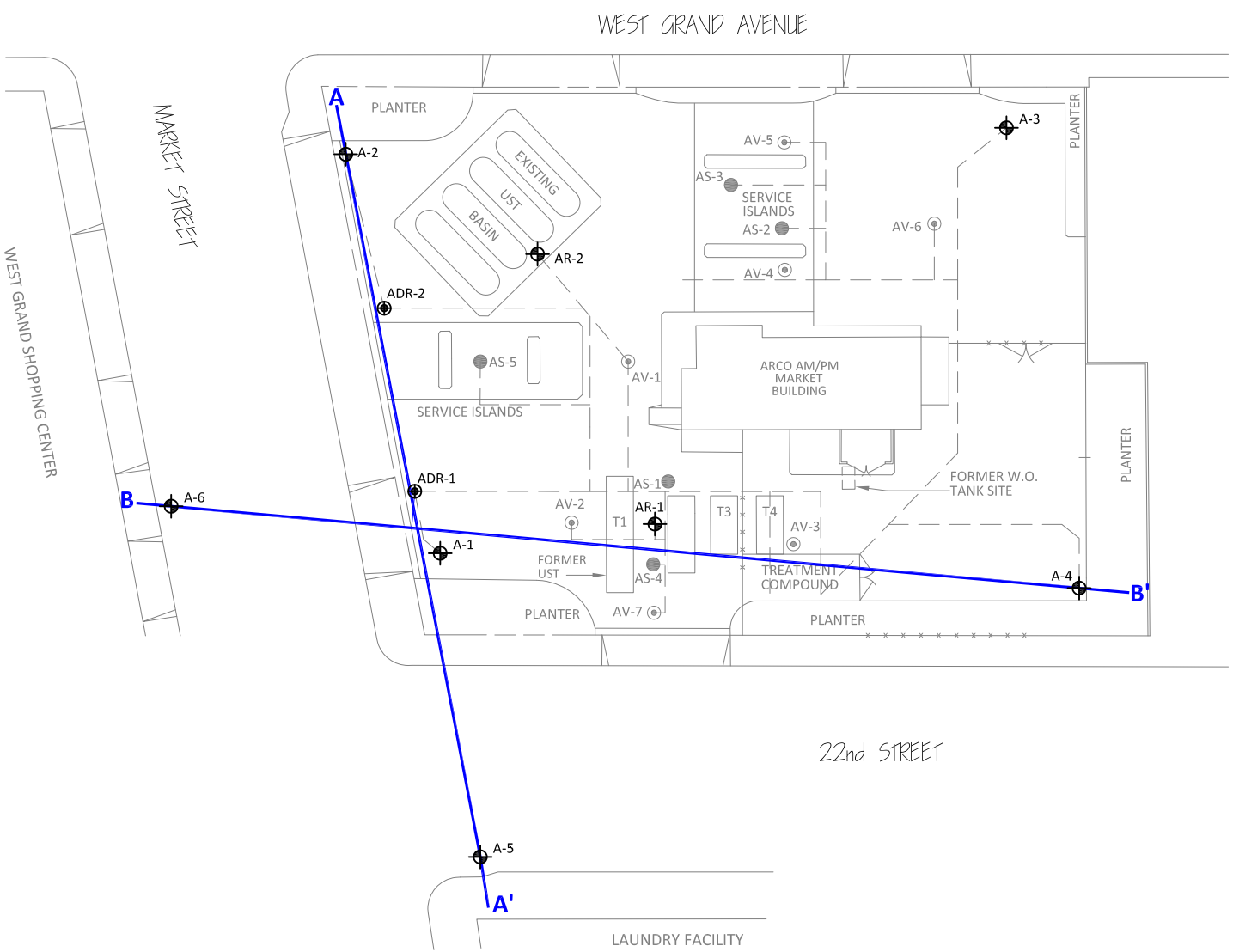
- TPH-G/-D soil concentrations in ppm — A/B
- Not Detected / Not Analyzed — ND / NA
- Product line trench soil sample
- Sandpack interval
- Pavement section
- Soil sample interval
- Groundwater level measured on February 9, 1994
- First encountered groundwater
- Well screen interval
- 20.0' Total depth of boring

PLATE 10

CROSS SECTION D-D'
ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

GeoStrategies Inc.

JOB NUMBER 79271-15
REVIEWED BY
DATE 2/94
REVISED DATE 3/94



LEGEND

- Monitoring Well Location
- Vapor Extraction Well Location
- Groundwater Monitoring/Vapor Extraction Well Location
- Air Sparge Well Location
- Remediation Piping
- Cross Section Locations

NOTE: SITE MAP ADAPTED FROM IT CORPORATION FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

N

0 60 120

SCALE (ft)

BROADBENT

1370 Ridgewood Dr., Suite 5
Chico, California 95973

Project No.: 06-88-621 Date: 3/6/2014

ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

Cross Section Locations Map

Drawing

C-1

A

A'

A-2 ADR-2 ADR-1 A-1 A-5

0' 10' 20' 30'

Feet bgs

8/8/13 8/8/13 8/8/13 8/8/13 8/8/13

TD = 26.5' TD = 28.0' TD = 23.5' TD = 30.0' TD = 30.0'

Asphalt/Backfill

Sands (SW, SP,SM, SC)

Silts and Clays (ML, CL)

Groundwater Elevation

8/8/13 Date of Groundwater Elevation Data

Boring ID

Extent of Boring

Extent of Well Screen

TD = Total Depth (feet)

0 20 40

HORIZONTAL SCALE (ft)
VERTICAL EXAGGERATION 4:1

Drawing C-2

Geologic Cross Section A - A'

ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973

Project No.: 06-88-621 Date: 3/6/2014

B

B'

A-6

ADR-1

A-1

AR-1*

A-4

0'

10'

20'

30'

8/8/13

8/8/13

8/8/13

TD = 23.5'

TD = 30.0'

TD = 30.0'

TD = 30.0'

TD = 30.0'

Asphalt/Backfill

Sands (SW, SP,SM, SC)

Silts and Clays (ML, CL)

Gravel

Groundwater Elevation

8/8/13 Date of Groundwater Elevation Data

Boring ID

Extent of Boring

Extent of Well Screen

TD = Total Depth (feet)

Note: The Break Line Represents 89' Length.

0 20 40

HORIZONTAL SCALE (ft)
VERTICAL EXAGGERATION 4:1

Drawing C-3

Geologic Cross Section B-B'

ARCO Service Station #2169
889 West Grand Avenue
Oakland, California

BROADBENT
1370 Ridgewood Dr., Suite 5
Chico, California 95973

Project No.: 06-88-621 Date: 3/6/2014

APPENDIX D

Remediation System Data

Table 3
Soil Vapor Extraction System
Operational Uptime Information (1998 - present)
Arco Service Station No. 2169
889 West Grand Avenue, Oakland, California

Date	Meter (hrs.)	Operation (hrs.)	Period Operation				Cumulative Operation			
			Total (days)	Uptime (days)	Downtime (days)	Uptime (%)	Total (days)	Uptime (days)	Downtime (days)	Uptime (%)
04/01/98[1]	7365.55	6909.60					1399	287.9	1111.1	21%
04/15/98	7365.55	6909.60								
06/22/98	7365.78	6909.83	68	0.0	68.0	0%	1467	287.9	1179.1	20%
08/20/98	7365.78	6909.83	59	0.0	59.0	0%	1526	287.9	1238.1	19%
10/07/98	7366.69	6910.74	48	0.0	48.0	0%	1574	287.9	1286.1	18%
10/08/98	7392.07	6936.12	1	1	0	100%	1575	289.0	1286.0	18%
10/30/98	7752.82	7296.87	22	15.0	7.0	68%	1597	304.0	1293.0	19%
11/18/98	7755.18	7299.23	19	0.1	18.9	1%	1616	304.1	1311.9	19%
11/25/98	7869.69	7413.74	7	4.8	2.2	68%	1623	308.9	1314.1	19%
12/08/98	8182.76	7726.81	13	13.0	0.0	100%	1636	322.0	1314.0	20%
02/05/99	8183.26	7727.31	59	0.0	59.0	0%	1695	322.0	1373.0	19%
03/19/99	8183.56	7727.61	42	0.0	42.0	0%	1737	322.0	1415.0	19%
04/27/99	8183.56	7727.61	39	0.0	39.0	0%	1776	322.0	1454.0	18%
06/21/99	8183.88	7727.93	55	0.0	55.0	0%	1831	322.0	1509.0	18%
06/24/99	8260.48	7804.53	3	3	0	106%	1834	325.2	1508.8	18%
08/19/99	8260.48	7804.53	56	0	56	0%	1890	325.2	1564.8	17%
08/25/99	8360.47	7904.52	6	4	2	69%	1896	329.4	1566.6	17%
09/08/99	8695.25	8239.3	14	14	0	100%	1910	343.3	1566.7	18%
09/09/99	8706.53	8250.58	1	0	1	47%	1911	343.8	1567.2	18%
09/21/99	8994.92	8538.97	12	12	0	100%	1923	355.8	1567.2	19%
10/05/99	9331.19	8875.24	14	14	0	100%	1937	369.8	1567.2	19%
10/19/99	9667.61	9211.66	14	14	0	100%	1951	383.8	1567.2	20%
11/03/99	10026.92	9570.97	15	15	0	100%	1966	398.8	1567.2	20%
11/17/99	10364.01	9908.06	14	14	0	100%	1980	412.8	1567.2	21%
12/01/99	10699.82	10243.87	14	14	0	100%	1994	426.8	1567.2	21%
12/16/99	11059.81	10603.86	15	15	0	100%	2009	441.8	1567.2	22%
01/05/00	11060.05	10604.1	20	0	20	0%	2029	441.8	1587.2	22%

[1] Operational data through 04/01/98 from First Quarter 1998 Quarterly Monitoring Report

Table 4
Soil Vapor Extraction System
Flow Rates and Analytical Results of Air Samples (1998 - present)

Arco Service Station No. 2169
889 West Grand Avenue, Oakland, California

Date	Sample Location	Vacuum (in. H20)	Velocity (fpm)	Flowrate[1] (scfm)	Analyses (ppmv)					
					TPHG	Benzene	Toulene	Ethylbenzene	Xylene	MTBE
10/08/98	Influent	21.2	750	35	190	<0.1	<0.1	<0.1	0.2	
	Effluent[2]		3600	274.2	<5	<0.1	<0.1	<0.1	<0.2	
11/18/98	Influent	21	900	42	83	<0.1	0.4	0.4	0.9	
	Effluent		3300	253.4	<5	<0.1	<0.1	<0.1	<0.2	
12/08/98	Influent	25	1100	51	12	<0.1	0.3	<0.1	0.2	<0.8
	Effluent		3100	238.0	6	<0.1	0.3	<0.1	0.2	<0.8
06/21/99	Influent	40	1000	44	20	0.1	0.1	<0.1	<0.2	<0.8
	Effluent		2500	192.0	<5	<0.1	<0.1	<0.1	<0.2	<0.8
08/19/99	Influent	39.2	800	35	180	6.9	0.9	0.15	0.32	5.5
	Effluent		2800	215.0	<2.4	0.05	<0.013	<0.012	0.03	0.13
09/08/99	Influent	50.2	1500	65	71	0.2	0.2	0.2	0.9	1.1
	Effluent		2300	176.6	<5	<0.1	<0.1	<0.1	<0.2	<0.8
10/05/99	Influent	59	1700	71	42	0.3	<0.1	<0.1	0.3	<0.8
	Effluent		2300	176.6	<5	<0.1	0.1	<0.1	<0.2	<0.8
11/03/99	Influent	50	1700	73	240	<0.1	0.2	0.2	3.9	1.3
	Effluent		2200	168.9	<5	<0.1	<0.1	<0.1	<0.2	<0.8
12/01/99	Influent	50.1	1000	43	180	0.2	0.1	<0.1	2.3	<0.8
	Effluent		1250	96.0	<5	<0.1	0.2	<0.1	<0.2	<0.8

[1] Influent Flow Rate, cfm = (Velocity, fpm)(Influent Pipe Area, sq. ft.)(406.8 in.H20 - Vacuum, in.H20) / (406.8 in.H20)
where Influent Pipe Diameter = 3"
Effluent Flow Rate, cfm = (Velocity, fpm)(Effluent Pipe Area, sq.ft.)[(460° R + 77° F)/(460° R + Vapor Temp F)]
where Effluent (after blower) Pipe Diameter = 4"

[2] Dilution air only

JUN 24 2002

Table 5
Soil Vapor Extraction System
Extraction Rates, Emission Rates, Destruction Efficiency, and Mass Removed
(1998 - present)

Arco Service Station No. 2169
889 West Grand Avenue, Oakland, California

Date End	Extraction Rate from Wellfield[1]		Emission Rate to Atmosphere[2]		Destruction Efficiency[3]		Period Removal[4]		Cumulative Removal	
	TPHG (lbs/day)	Benzene (lbs/day)	TPHG (lbs/day)	Benzene (lbs/day)	TPHG (%)	Benzene (%)	TPHG (lbs)	Benzene (lbs)	TPHG (lbs)	Benzene (lbs)
04/01/98[5]									8582.1	0
10/08/98	2.4351	0.0	<0.5037	<0.0079	Waived		39.5329	0	8621.6	0
11/18/98	1.2772	0.0	<0.4655	<0.0073	Waived		22.7538	0	8644.4	0
12/08/98	0.2233	0.0	0.5248	<0.0068	Waived		0.0104	0	8644.4	0
06/21/99	0.3251	0.0013	<0.3527	<0.0055	Waived		1.0376	0.0041	8645.4	0.0041
08/19/99	2.3459	0.0702	<0.1896	<0.0031	Waived		42.4964	1.2723	8687.9	1.2763
09/08/99	1.6830	0.0037	<0.3245	<0.0051	Waived		21.0150	0.0462	8708.9	1.3226
10/05/99	1.1005	0.0061	<0.3245	<0.0051	Waived		30.8459	0.1721	8739.8	1.4946
11/03/99	6.4514	0.0021	<0.3104	<0.0048	Waived		187.1967	0.0609	8927.0	1.5555
12/01/99	2.8454	0.0025	<0.1763	<0.0028	Waived		82.5210	0.0716	9009.5	1.6272

[1] Extraction Rate, lbs/day = (Influent Flow, cfm)(Influent conc., ppmv)(g/mole)(60 min/hr)(24 hr/day)(28.3 L/cf) / (10^6)(24.45 moles/L)(453.6 g/lb)
where TPHG = 100 g/mole and Benzene = 78 1 g/mole; Influent conc. = 0, if reported as non-detect

[2] Emission Rate, lbs/day = (Effluent Flow, cfm)(Effluent conc., ppmv)(g/mole)(60 min/hr)(24 hr/day)(28.3 L/cf) / (10^6)(24.45 moles/L)(453.6 g/lb)
where TPHG = 100 g/mole and Benzene = 78.1 g/mole; Effluent conc. = Method Reporting Limit, if reported as non-detect

[3] Destruction Efficiency, % = (Extraction Rate - Emission Rate)(100) / (Extraction Rate); "Waived" = if TPHG emissions <1.0 lbs/day and Benzene emissions <0.02 lbs/day

[4] Period Removal, lbs = (Extraction Rate)(Uptime)

[5] Operational data through 4/1/98 from First Quarter 1998 Quarterly Monitoring Report