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Atlantic Richfield Company

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June 13, 2013

Re: Conceptual Site Model and Case Closure Request
Atlantic Richfield Company Station #2112
1260 Park Street, Alameda, California
ACEH Case #RO0000044

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

Submitted by,



Shannon Couch
Operations Project Manager

Attachment:



CONCEPTUAL SITE MODEL AND CASE CLOSURE REQUEST

Atlantic Richfield Company Station No.2112
1260 Park Street
Alameda, California

Prepared for

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

Prepared by



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June 13, 2013

Project No. 06-88-616

June 13, 2013

Project No. 06-88-616

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

Attn.: Ms. Shannon Couch

Re: Conceptual Site Model and Case Closure Request, Atlantic Richfield Company Station No.2112,
1260 Park Street, Alameda, California; ACEH Case No. RO0000044

Dear Ms. Couch:

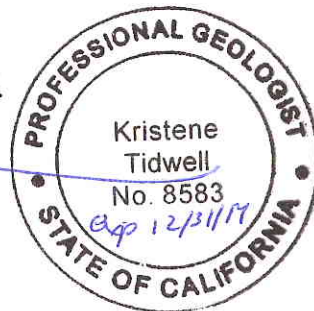
Broadbent & Associates, Inc. (Broadbent) is pleased to submit this *Conceptual Site Model and Case Closure Request* for Atlantic Richfield Company Station No.2112 located at 1260 Park Street, Alameda, California (the "Site"). This document was prepared in order to evaluate this Site for case closure under the recently-approved *Low Threat Underground Storage Tank Case Closure Policy* (Low Threat UST Closure Policy; CSWRCB, 2012). After completion of the CSM and comparing the current Site conditions to the Low Threat UST Closure Policy, case closure is recommended.

Should you have questions or require additional information, please do not hesitate to contact us at (707) 455-7290.

Sincerely,
BROADBENT & ASSOCIATES, INC.



Kristene Tidwell, P.G., C.H.G.
Senior Geologist



Enclosures

cc: Ms. Dilan Roe, Alameda County Environmental Health (submitted via ACEH ftp site)
Mr. Martin Vallejo & Mr. Joel Gutierrez, M & S Mini Mart, Inc., 1260 Park Street, Alameda, CA 94501
Electronic copy uploaded to GeoTracker

CONCEPTUAL SITE MODEL AND CASE CLOSURE REQUEST

Atlantic Richfield Company Station No. 2112

1260 Park Street, Alameda, California

Fuel Leak Case No. R00000044

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CONCEPTUAL SITE MODEL AND CASE CLOSURE REQUEST

Atlantic Richfield Company Station No. 2112

1260 Park Street, Alameda, California

Fuel Leak Case No. RO0000044

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.2112 (herein referred to as Station No.2112), located at 1260 Park Street, Alameda, California (the 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* (Low Threat UST Closure Policy; 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 located at 1260 Park Street, Alameda, California. It is an active ARCO-brand gasoline station (Station No. 2112) with an AM/PM convenience store. Current structures on the Site include four underground storage tanks (USTs), two fuel dispenser islands with a total of four dispensers, and a small building. The majority of the Site is paved with asphalt and concrete. Limited planter islands are present along the perimeter of the Site. A Site location map is included as Drawing 1. A Site Plan depicting current building, UST, and, well locations is presented as Drawing 2.

The Site is bound by Park Street to the northwest, Encinal Avenue to the northeast, and commercial and residential buildings to the south. Across Park Street, to the northwest is a Jack in the Box and a Dimitra’s Sandwiches restaurants. Directly to the north of the Site is Lucky 13 bar with residential apartments on the second floor. Across Encinal Avenue, to the northeast is an Alameda Fire Department Fire Station.

1.2 Site Background

The Site has operated as a gasoline fueling station since the environmental case was open in 1987. The Site is likely to remain a service station for the foreseeable future. A detailed Site history is included in Appendix A. Historic Site data are included in Appendix B.

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 Low Threat UST Closure Policy. 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.

In order to evaluate Site condition against the Low Threat UST Closure Policy, 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 Low Threat UST Closure Policy. Closure Criteria in the Low Threat UST Closure Policy 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
- Additional Criteria

The following sections present the details of the evaluation.

2.1 General Criteria

The general criteria relate to the Site use, presence of free product, 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 of 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 Utilities District Service Area.

The unauthorized release consists only of petroleum

The release at the Site occurred in the area of the former UST farm and near the former waste oil tank. Additionally, all analytical data collected to date has shown no indication of any other contaminant releases other than petroleum (Tables 1 and 2). The Site has been a retail service station prior to 1987 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 and pipelines where the releases occurred have been removed and/or replaced, and the waste oil tank has been removed; thereby, removing the primary sources of releases (Table 1).

Free product has been removed to the extent possible

Free product has not been measured in any Site wells since their installation.

A conceptual site model 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, former product pipelines, and former waste oil tank has been previously overexcavated, where approximately 2,000 cubic yards of impacted soil have been removed. In addition, operation of the soil vapor extraction (SVE) and groundwater extraction and treatment (GWET) system performed between 1993 and 1995 removed approximately 336 pounds of total hydrocarbons (total purgeable petroleum hydrocarbons as gasoline and Benzene) from the Site.

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 gasoline range organics (GRO), benzene, and methyl tert-butyl ether (MTBE). Concentrations of GRO, benzene, and MTBE have not been detected in groundwater samples collected from Site wells during the last three groundwater monitoring and sampling events (Second Quarter 2006, Third Quarter 2010, and First Quarter 2011). One detection of MTBE was observed on July 17, 2006 sample collected from well A-1 at a concentration of 22 µg/L. Since no detections of MTBE have been observed prior to or after the July 17, 2006 sampling event, it is assumed that the single detection was an anomaly. Historical GRO, benzene, and MTBE analytical data are included in Table 2.

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

A nuisance as defined by the water code section 13050 does not exist at this Site.

2.2 Media-Specific Criteria - Groundwater

The Low Threat UST Closure Policy lists four scenarios for groundwater plumes. No concentrations of concern have exceeded the water quality objectives; therefore, the groundwater plumes are fully delineated. For this reason, the Site hydrocarbon plume falls into the first scenario. The Site has not contained free product in any wells since installation. Furthermore, the nearest water supply well and surface water are over 2,000 feet away, as presented in the CSM table (Table 1). The combination of these factors indicates a very low to no threat to possible well water or surface water from the petroleum plume at the Site.

2.3 Media Specific Criteria – Petroleum Vapor Intrusion to Indoor Air

The Site is an active service station, therefore the Low Threat UST Closure Policy considers that petroleum vapors from onsite fueling activities are a far greater risk than those associated with exposure to vapors from historic petroleum releases; therefore, this Site meets this criteria from closure according to the Low Threat UST Closure Policy. Additionally, no offsite plume migration has occurred to non-service station locations, so the exemption applies.

Furthermore, a soil vapor sample conducted on Site indicates an absence of petroleum hydrocarbon contaminants within 3.5 to 6 feet, indicating that vapor intrusion is unlikely to occur on Site. Additionally, there is approximately 8 to 10 feet of non-impacted soil in the vadose zone under the Station Building; therefore, exposure to petroleum releases is not anticipated to occur on Site.

2.4 Media Specific Criteria – Direct Contact and Outdoor Air Exposure

For the direct contact and outdoor air exposure, only relatively current soil data was considered. Three soil borings (B-7, B-8, and B-9) were advanced in locations near the former source areas at the Site in 2009 (Appendix B). Soil samples were collected from two intervals above 10 ft bgs (5 and 8 ft). The soil samples had no detections above the laboratory reporting limits for benzene, ethylbenzene, and MTBE, with the exception of one minor detection of ethylbenzene in sample B-9 at 5 ft bgs at a concentration of 0.31 mg/kg. The minor detection of ethylbenzene (0.31 mg/kg) in sample B-9 was less than the value listed in the Low Threat UST closure Policy (89 mg/kg) for Commercial/Industrial that will have no significant risk of adversely affecting human health. Naphthalene has not been analyzed on Site; however, the overall lack of petroleum compounds in soil strongly indicates no naphthalene is present.

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 Low Threat Closure Policy. Over 20 years of groundwater monitoring history has shown that no/minimal concentrations of petroleum hydrocarbons were detected at the Site. Adequate Site characterization both on- and offsite, 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 REFERENCES

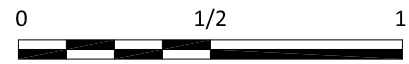
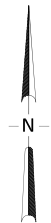
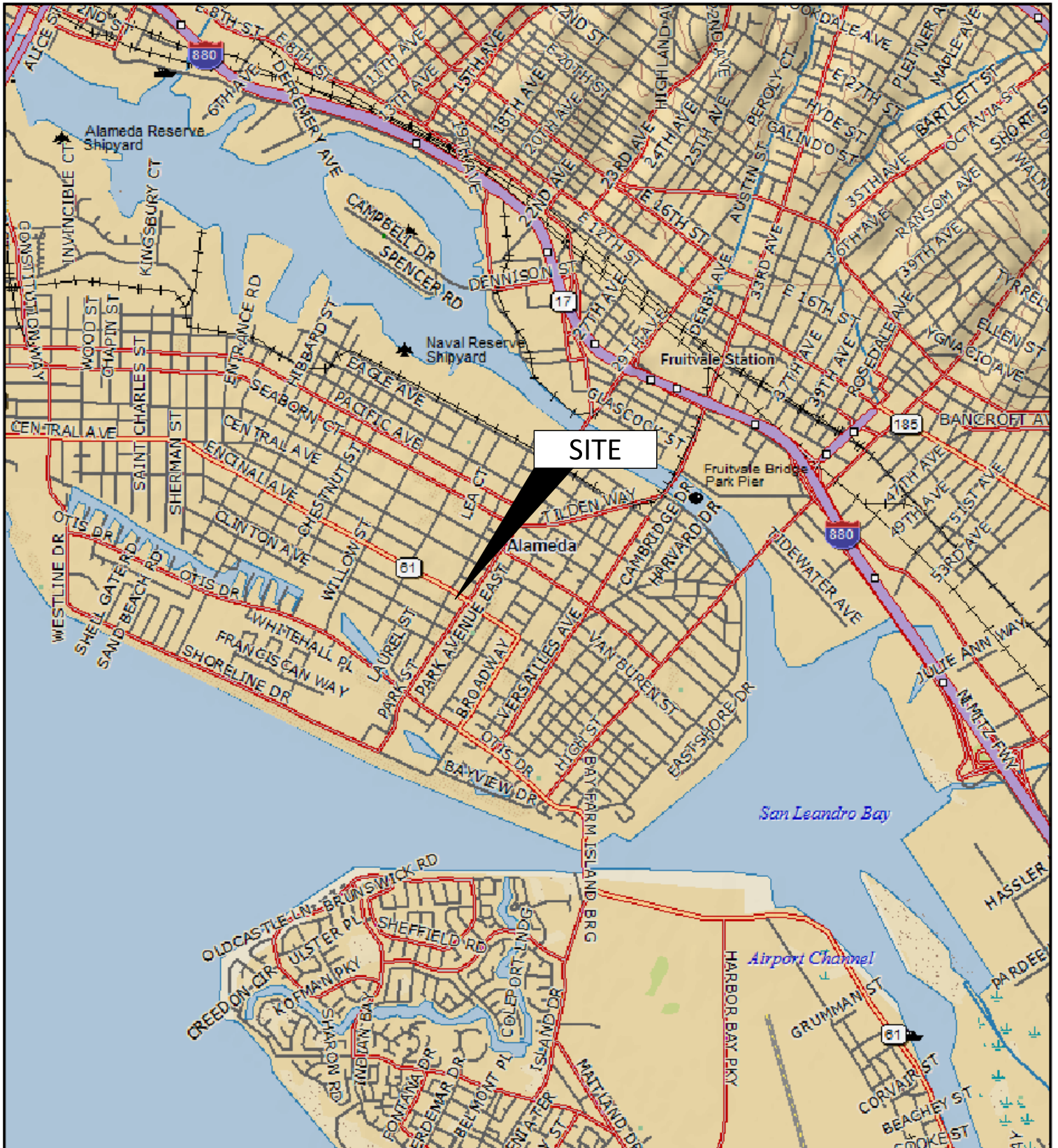
California Regional Water Quality Control Board – San Francisco Bay Region, Revised May 2008,
Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater.

GeoStrategies, Inc., 29 June 1990. Tank Replacement Report, ARCO Service Station #601, 712 Lewelling
Boulevard, San Leandro, California.

RESNA, 3 February 1993, Limited Offsite Subsurface Investigation at ARCO Station 601, 712 Lewelling
Boulevard, San Leandro, California.

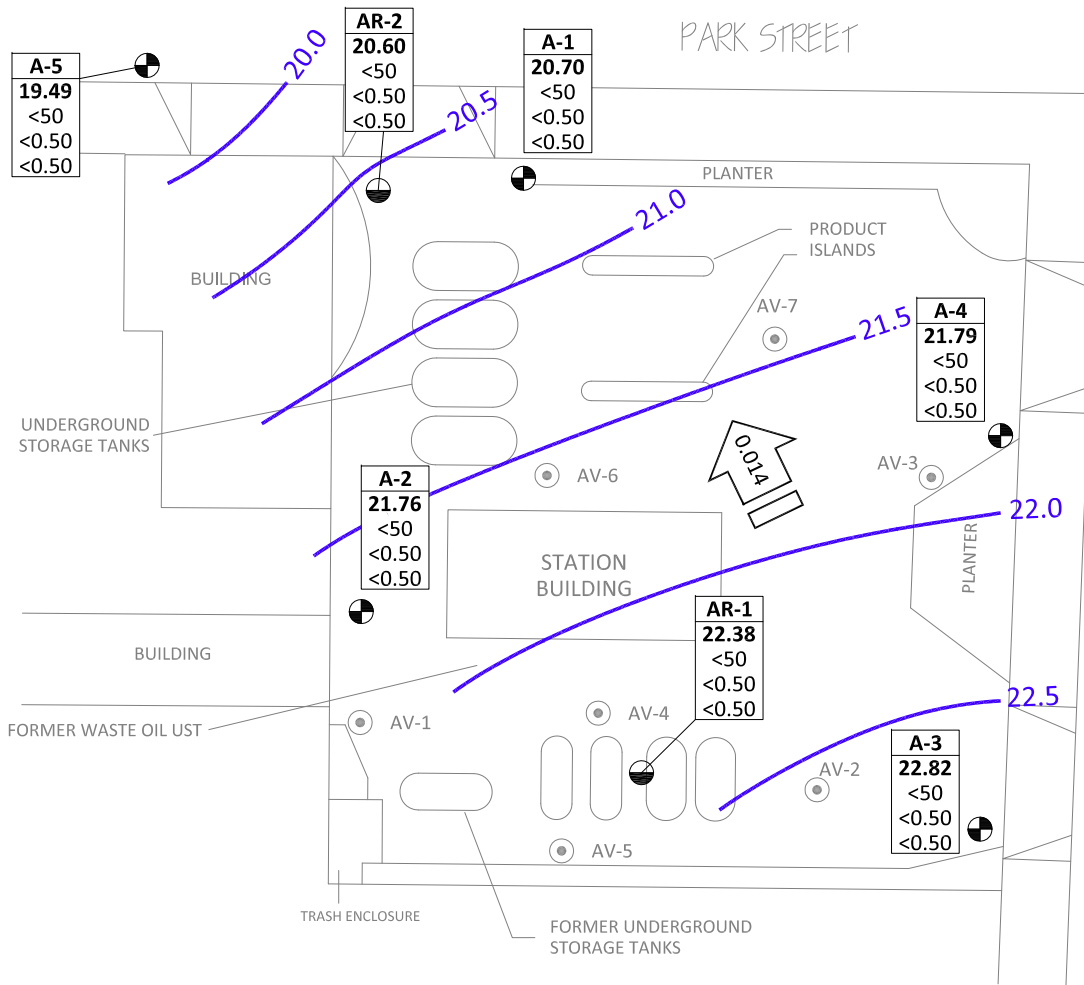
State Water Resources Control Board, 2012. Low-Threat Underground Storage Tank Case Closure Policy,
August 17.

URS, 9 October 2003. Dispenser and Product Line Removal and Upgrade Soil Sampling Report, ARCO
Service Station #0601, 712 Lewelling Boulevard, San Leandro, California.



APPROXIMATE SCALE (mi)

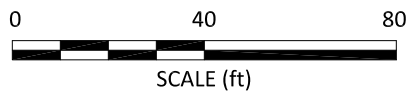
IMAGE SOURCE: USGS



- LEGEND:**
- A-1 MONITORING WELL LOCATION
 - AR-1 GROUNDWATER EXTRACTION WELL LOCATION
 - AV-1 VAPOR EXTRACTION WELL LOCATION
 - 20.50 GROUNDWATER ELEVATION CONTOURS (FT MSL)
 - 0.014 GROUNDWATER FLOW DIRECTION AND GRADIENT (FT/FT)
- | Well | WELL DESIGNATION |
|---------|--------------------------------------|
| ELEV | GROUNDWATER ELEVATION (FT MSL) |
| GRO | GRO, BENZENE AND MTBE |
| Benzene | CONCENTRATIONS IN GROUNDWATER (µg/L) |
| MTBE | CONCENTRATIONS IN GROUNDWATER (µg/L) |
- NM/MS NOT MEASURED/NOT SAMPLED
 - < NOT DETECTED AT OR ABOVE LABORATORY REPORTING LIMITS
 - OT ONE TIME, PER ACEH REQUEST



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



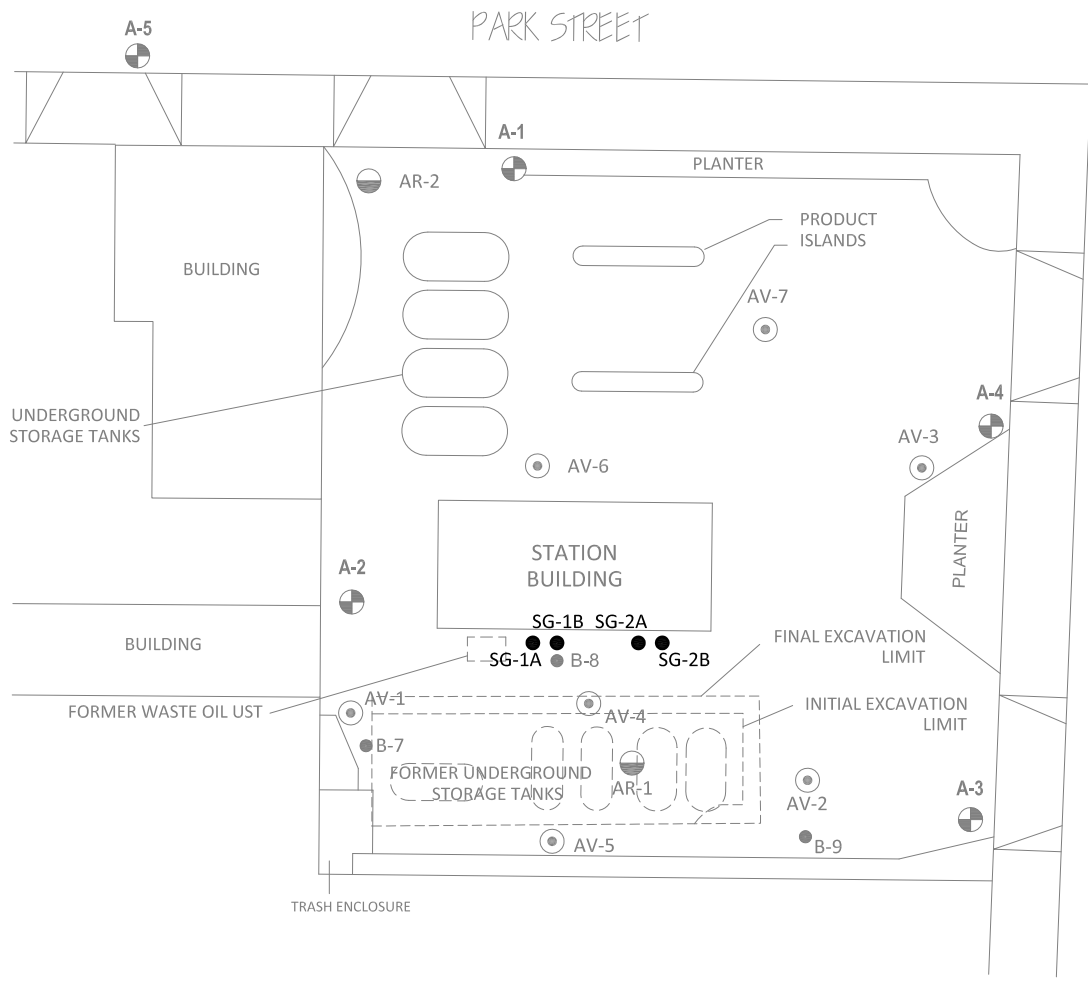
Project No.: 06-88-616 Date: 4/8/2013

Station #2112
1260 Park Street
Alameda, California

Groundwater Elevation
Contours and Analytical
Summary Map
8 February 2011

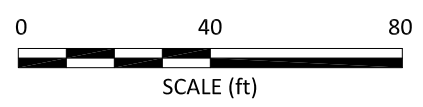
Drawing

2



LEGEND:

- SG-2B SOIL-GAS MONITORING IMPLANT
- ⊕ A-1 MONITORING WELL LOCATION
- ⊖ AR-1 GROUND-WATER EXTRACTION WELL LOCATION
- ⊙ AV-1 VAPOR EXTRACTION WELL LOCATION
- B-9 RECENT BORING LOCATION
- EXCAVATED AREA



BROADBENT
 1370 Ridgewood Dr., Suite 5
 Chico, California 95973
 Project No.: 06-88-616 Date: 5/13/2013

Station #2112
 1260 Park Street
 Alameda, California

Site Map with Monitor Well, Soil Boring, and
 Soil-Gas Monitor Implant Locations

TABLE 1

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 2112
 1260 Park Street
 Alameda, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology	Regional	<p>According to the <i>East Bay Plain Groundwater Basin Beneficial Use Evaluation Report</i> (SFRWQCB, June 1999), the Site is located along the northeastern edge of the Central Sub-Area of the East Bay Plain of the San Francisco Basin. The Central Sub-Area extends beneath San Francisco Bay. The boundaries of the sub-area are based on the Young Bay Mud which has a sharp “edge” in some areas, and in other areas the boundary is less defined. Alameda Island and Bay Farm Island (presently known as Harbor Bay Island) are located along the northeastern edge of the Sub-Area.</p> <p>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 (as defined in the above-referenced document) however, near the San Lorenzo Sub-Area, the direction of flow may not be this simple. According to information presented in the <i>East Bay Plain Groundwater Basin Beneficial Use Evaluation Report</i>, 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 (SFRWQCB, 1999).</p>	None	NA
	Site	<p>Historical monitoring well logs were not available, however, sediments encountered during previous Site investigations generally consists of layers of silty sand, clayey sand, and sand with clay of varying thickness. This lithology is consistent to a total explored depth of 25.5 ft bgs. The lithology of the Site is consistent with the geologic environment</p>	None	NA

TABLE 1

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 2112
1260 Park Street
Alameda, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Geology and Hydrogeology (Continued)	Site (Continued)	of alluvial deposits, and consistent with the regional geologic environment. Historical depth to groundwater in Site wells have ranged from 6.76 to 18.43 ft bgs. Groundwater has historically flown predominately to the west at an average gradient of 0.01 ft/ft. This groundwater flow direction is consistent with regional groundwater flow towards the San Francisco Bay		
Surface Water Bodies		The closest surface water body to the Site in the downgradient direction appears to be an unnamed impounded lagoon surrounded by residential houses approximately 2,600 ft to the west-southwest. The strait between Alameda and Harbor Bay Island into the San Leandro Bay is approximately 3,500 ft to the south-southwest. The Oakland Inner Harbor's Tidal Canal is approximately 4,000 ft to the north-northeast.	None	NA
Nearby Wells		A Sensitive Receptor Survey was carried out in May 2011 to identify the presence of water wells located within a 0.5 mile radius of the Site. Based on a review of well completion reports furnished by the Department of Water Resources, 88 wells were identified within a 0.5 mile radius of the Site. Of the 88 wells, there are 76 environmental monitoring/remediation wells (including those at the Site), 11 irrigation water supply wells, and one cathodic protection well. Six of the irrigation water supply wells are located downgradient of the Site. The closest irrigation water supply well from the Site is 0.25 mile to the northwest.	None	NA
Constituents of Concern	LNAPL	LNAPL has not been reported at the Site.	None	NA
	GRO	GRO have only been detected in wells A-1 and A-2 with the last detection above laboratory reporting limits in well A-1 in November 1994. GRO has not been detected in the remaining wells at the Site, and not at all since 1994.	None	NA

TABLE 1**CONCEPTUAL SITE MODEL**

Atlantic Richfield Company Station 2112
1260 Park Street
Alameda, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Constituents of Concern (continued)	Benzene	Benzene has only been detected in wells A-1, A-2, and A-4 with the last detection above laboratory reporting limits in well A-1 in November 1995. Benzene has not been detected in the remaining wells at the Site, and not at all since 1995.	None	NA
	MTBE	MTBE in groundwater has only been detected in well A-1 at 22 µg/L on July 17, 2006. MTBE has not been detected during other sampling events from this well or any other wells across the Site. It is believed that the one-time MTBE detection is anomalous.	None	NA
Potential Sources	Onsite	The source and mechanism of the original hydrocarbon release is not explicitly known or quantified, but it is believed to be the former underground storage tanks and product delivery system. This assumption is based on location of hydrocarbon impacts and observed field conditions during UST removals, carried out in 1990. The cause of the original release has been repaired, and the USTs, fuel dispensers, and piping have been subsequently replaced and/or upgraded, from the southeastern portion of the Site. During replacement and/or upgrading activities, approximately 2000 cubic yards of hydrocarbon contaminated soil were removed from these source areas and replaced with clean soil. There is no evidence of an ongoing release since the replacement/upgrading and overexcavation activities took place on Site.	None	NA
	Offsite	The Fire Station for the Alameda Fire Department, located across Encinal Avenue and northeast of the Site, is currently a closed LUST case. No additional offsite potential sources have been identified for this Site.	None	NA

TABLE 1

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 2112
1260 Park Street
Alameda, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Nature and Extent of Environmental Impacts	Extent in Soil	<p>Soil appears defined at the Site. GRO in shallow soil (<10 feet bgs) was defined to 26 mg/kg, and benzene and MTBE were not detected at this depth interval during the 2009 soil boring investigation (borings B-7 through B-9; see Appendix A) in soil samples collected near the former UST pits (Broadbent, 2009). The GRO detection of 26 mg/kg is well below its respective ESL, therefore, soil is considered to be delineated laterally. Higher petroleum concentrations were reported in deeper soil (11 and 14 feet bgs), but these concentrations were assumed to represent groundwater and smear-zone conditions rather than remaining concentrations in. Since petroleum compounds in nearby groundwater monitoring wells have not been reported for almost 10 years, the extent of the petroleum present in the smear zone near the former USTs appears small, and will continue to degrade over time. The highest concentrations of petroleum concentrations were detected near the former UST complex and the former waste oil tank pit. Since these higher concentrations were reported, soil in the vicinity has been removed during tank removal and overexcavation activities. Additionally, soil vapor extraction activities removed 334.6 pounds of hydrocarbons.</p> <p>Since source areas have been removed and these concentrations were representative of overall groundwater concentrations at the time of sampling, it is likely that these concentrations have further attenuated over the last 20 years. Based on the data and the observation of current groundwater conditions, soil at the Site appears to be adequately defined.</p>	None	NA

TABLE 1**CONCEPTUAL SITE MODEL**

Atlantic Richfield Company Station 2112
 1260 Park Street
 Alameda, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Nature and Extent of Environmental Impacts (continued)	Extent in Shallow Groundwater	<p>The groundwater monitoring network at the Site includes source area wells (AR-1, A-2, and A-4); one upgradient well (A-3); and downgradient wells (AR-2, A-1, and A-5). Petroleum hydrocarbons have not been detected in groundwater samples since 1995 or since their installation, with the exception of a single MTBE detection in 2006. Since hydrocarbons in groundwater samples have not been detected at the Site, the petroleum hydrocarbon plume is considered defined. Additionally, free product has never been present at the Site.</p> <p>Logs are not available for Site wells, and there is a possibility screens are or have been periodically flooded due to fluctuations in groundwater levels over time. However, due to the overall lack of hydrocarbon concentrations in groundwater, it is unlikely that these potentially flooded screens would significantly change the conceptual model at the Site.</p>	None	NA
	Extent in Deeper Groundwater	<p>Petroleum hydrocarbons have been adequately delineated to concentrations below laboratory reporting limits in wells downgradient of the Site. Because impacts to shallow groundwater have been minimal, there is likely no adverse effect on the groundwater contained in deeper aquifers, given the physical and chemical characteristics of petroleum constituents, the hydrogeological characteristics of the groundwater, and direction of groundwater flow.</p>	None	NA
	Extent in Soil Vapor	<p>Petroleum hydrocarbons have been adequately delineated to concentrations below ESLs in the Site. Soil gas data collected from four soil gas probes (SG-1A, SG-1B, SG-2A, and SG-2B) screened between 3.5 and 6 ft bgs have maximum detection concentrations of petroleum hydrocarbons well below the ESL. Thus, the absence of petroleum hydrocarbon contaminants in soil gas above the ESLs indicates that the vapor intrusion to indoor air pathway does not present a risk for exposure within the Site.</p>	None	NA

TABLE 1

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 2112
1260 Park Street
Alameda, California

CSM Element	CSM Sub-Element	Description	Data Gap	How to Address
Migration Pathways	Potential Conduits	A preferential pathway study has not been performed on Site. However, since petroleum concentrations are currently minimal or no longer present, there is no threat of contaminants travelling offsite via preferential pathways.	None	NA
Potential Receptors	Onsite	No on Site water wells are present at the Site. No other receptors are present on Site. In addition, due to low or non-detect petroleum hydrocarbon concentrations in soil gas, vapor intrusion is not considered to be an indoor air pathway at the Site.	None	NA
	Offsite)	<p>There are no potable water supply wells known to exist within 0.5 miles of the Site. According to well logs provided by the DWR, eleven irrigation supply wells and one cathodic protection well are located within 0.5 miles of the Site. Of the eleven irrigation water supply wells, six are located in the downgradient direction. The closest irrigation water supply well, located approximately 0.25 miles to the northwest, has a protective double casing from the surface down to 135 ft of its total 525 ft depth. Deeper drinking water aquifers, surface waters, or other sensitive receptors are unlikely to be impacted by the past release at the Site.</p> <p>The closest down-gradient surface water body appears to be the unnamed lagoon impoundment located approximately 2,600 ft to the west-southwest. However, due to non-detect to very low petroleum hydrocarbon concentrations currently present at the Site, no offsite receptors are threatened.</p>	None	NA

TABLE 1

CONCEPTUAL SITE MODEL

Atlantic Richfield Company Station 2112
1260 Park Street
Alameda, California

Notes:

bgs = below ground surface

DWR = California Department of Water Resources

ESL = Environmental Screening Limits by SFRWQCB in Screening for Environmental Concerns at Sites with Contaminated Soil and Groundwater

ft = foot

GRO = Gasoline Range Organics

LNAPL = Light-Non Aqueous Phase Liquid

LUST = Leaking Underground Storage Tank

mg/kg = milligrams per kilogram

MTBE = Methyl tert-butyl Ether

NA = Not Applicable

SFRWQCB = California Regional Water Quality Control Board – San Francisco Bay Region

UST = Underground Storage Tank

µg/L = micrograms per liter

All report references are included in Section 3 of the preceding report

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

ARCO Service Station #2112, 1260 Park Street, Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	Footnote
					GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
A-1												
10/7/1991	--	28.39	16.47	11.92	470	48	34	7.5	82	--	--	
2/18/1992	--		17.16	11.23	<30	5.4	0.82	<0.3	<0.3	--	--	
5/22/1992	--		17.14	11.25	38	15	0.92	1.3	0.51	--	--	
8/14/1992	--		16.63	11.76	<50	14	<0.5	1.5	<0.5	--	--	
10/23/1992	--		16.28	12.11	66	22	4.6	2	4.3	--	--	
1/28/1993	--		17.34	11.05	750	120	120	16	96	--	--	
2/24/1993	--		18.43	9.96	--	--	--	--	--	--	--	
4/28/1993	--		17.71	10.68	6,700	1,900	1,700	240	1,300	--	--	
5/28/1993	--		17.18	11.21	--	--	--	--	--	--	--	
6/16/1993	--		16.63	11.76	--	--	--	--	--	--	--	
7/27/1993	--		16.60	11.79	--	--	--	--	--	--	--	
8/24/1993	--		16.44	11.95	1,800	230	88	34	160	--	--	
9/28/1993	--		16.66	11.73	--	--	--	--	--	--	--	
10/22/1993	--		16.67	11.72	2,500	79	<10	<10	160	--	--	
11/16/1993	--		16.56	11.83	--	--	--	--	--	--	--	
12/16/1993	--		16.96	11.43	--	--	--	--	--	--	--	
2/7/1994	--		17.62	10.77	61	24	<0.5	2.1	0.8	--	--	
5/2/1994	--		17.17	11.22	58	17	0.7	2.2	4.2	--	--	
8/5/1994	--		11.40	16.99	<50	5.1	1.4	0.6	2.5	--	--	
11/30/1994	--		9.43	18.96	130	16	8.4	0.6	27	--	--	
2/22/1995	--		10.76	17.63	<50	1.2	<0.50	<0.50	<0.50	--	--	
5/23/1995	--		9.25	19.14	<50	4.9	0.95	0.61	3.9	--	--	
8/9/1995	--		11.33	17.06	<50	2.3	<0.50	<0.50	0.53	<2.5	--	
11/16/1995	--		12.11	16.28	<50	3.3	1.5	<0.50	1.9	--	--	
1/15/1996	--		11.18	17.21	<50	<0.50	<0.50	<0.50	<0.50	--	--	
4/8/1996	--		10.61	17.78	<50	<0.50	<0.50	<0.50	<0.50	--	--	
7/2/1996	--		11.28	17.11	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
10/1/1996	--		11.70	16.69	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
4/8/1997	--		10.98	17.41	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
6/14/1997	--		11.35	17.04	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	

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

ARCO Service Station #2112, 1260 Park Street, Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	Footnote
					GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
A-1 Cont.												
7/17/2006	--	30.81	10.92	19.89	<50	<0.50	<0.50	<0.50	<0.50	22	--	a
9/10/2010	P		10.90	19.91	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	
2/8/2011	P		10.11	20.70	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.39	
A-2												
10/7/1991	--	29.28	12.74	16.54	31	7.4	0.39	<0.3	0.93	--	--	
2/18/1992	--		11.55	17.73	490	120	<1.5	<1.5	17	--	--	
5/22/1992	--		11.71	17.57	100	2.4	<0.3	<0.3	0.89	--	--	
8/14/1992	--		12.54	16.74	110	5	<0.5	<0.5	<0.5	--	--	
10/23/1992	--		12.64	16.64	<50	<0.5	<0.5	<0.5	<0.5	--	--	
1/28/1993	--		10.29	18.99	280	130	<2.5	<2.5	<2.5	--	--	
2/24/1993	--		11.05	18.23	--	--	--	--	--	--	--	
4/28/1993	--		10.91	18.37	210	32	0.89	5.2	2.3	--	--	
5/28/1993	--		11.27	18.01	--	--	--	--	--	--	--	
6/16/1993	--		12.20	17.08	--	--	--	--	--	--	--	
7/27/1993	--		11.27	18.01	--	--	--	--	--	--	--	
8/24/1993	--		12.25	17.03	<50	<0.5	<0.5	<0.5	<0.5	--	--	
9/28/1993	--		12.36	16.92	--	--	--	--	--	--	--	
10/22/1993	--		12.18	17.10	<50	<0.5	<0.5	<0.5	<0.5	--	--	
11/16/1993	--		12.34	16.94	--	--	--	--	--	--	--	
12/16/1993	--		11.74	17.54	--	--	--	--	--	--	--	
2/7/1994	--		10.56	18.72	<50	<0.5	<0.5	<0.5	<0.5	--	--	
5/2/1994	--		11.48	17.80	<50	<0.5	<0.5	<0.5	<0.5	--	--	
8/5/1994	--		12.26	17.02	<50	<0.5	<0.5	<0.5	<0.5	--	--	
11/30/1994	--		10.93	18.35	<50	<0.5	<0.5	<0.5	<0.5	--	--	
2/22/1995	--		10.55	18.73	<50	0.68	1.3	<0.5	0.52	--	--	
5/23/1995	--		11.05	18.23	<50	<0.50	<0.50	<0.50	<0.50	--	--	
8/9/1995	--		11.70	17.58	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
11/16/1995	--		12.64	16.64	<50	<0.50	<0.50	<0.50	<0.50	--	--	
1/15/1996	--		11.17	18.11	<50	<0.50	<0.50	<0.50	<0.50	--	--	
4/8/1996	--		10.45	18.83	<50	<0.50	<0.50	<0.50	<0.50	--	--	

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

ARCO Service Station #2112, 1260 Park Street, Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	Footnote
					GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
A-2 Cont.												
7/2/1996	--	29.28	11.40	17.88	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
10/1/1996	--		12.10	17.18	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
4/8/1997	--		11.05	18.23	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
6/14/1997	--		11.65	17.63	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
7/17/2006	--	31.26	11.00	20.26	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	
9/10/2010	P		10.84	20.42	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	
2/8/2011	P		9.50	21.76	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.15	
A-3												
10/7/1991	--	27.87	10.55	17.32	<30	<0.3	<0.3	<0.3	<0.3	--	--	
2/18/1992	--		9.12	18.75	<30	<0.3	<0.3	<0.3	<0.3	--	--	
5/22/1992	--		9.41	18.46	<30	<0.3	<0.3	<0.3	<0.3	--	--	
8/14/1992	--		10.31	17.56	<50	<0.5	<0.5	<0.5	<0.5	--	--	
10/23/1992	--		10.57	17.30	<50	<0.5	<0.5	<0.5	<0.5	--	--	
1/28/1993	--		7.66	20.21	<50	<0.5	<0.5	<0.5	<0.5	--	--	
2/24/1993	--		8.28	19.59	--	--	--	--	--	--	--	
4/28/1993	--		6.76	21.11	<50	<0.5	<0.5	<0.5	<0.5	--	--	
5/28/1993	--		8.98	18.89	--	--	--	--	--	--	--	
6/16/1993	--		9.69	18.18	--	--	--	--	--	--	--	
7/27/1993	--		9.66	18.21	--	--	--	--	--	--	--	
8/24/1993	--		9.85	18.02	<50	<0.5	<0.5	<0.5	<0.5	--	--	
9/28/1993	--		10.21	17.66	--	--	--	--	--	--	--	
10/22/1993	--		10.05	17.82	<50	<0.5	<0.5	<0.5	<0.5	--	--	
11/16/1993	--		9.42	18.45	--	--	--	--	--	--	--	d
11/16/1993	--		11.20	16.67	--	--	--	--	--	--	--	
11/16/1993	--		9.42	18.45	--	--	--	--	--	--	--	
11/16/1993	--		11.20	16.67	--	--	--	--	--	--	--	d
2/7/1994	--		8.29	19.58	<50	<0.5	<0.5	<0.5	<0.5	--	--	
5/2/1994	--		9.08	18.79	<50	<0.5	<0.5	<0.5	<0.5	--	--	
8/5/1994	--		10.02	17.85	<50	<0.5	<0.5	<0.5	<0.5	--	--	
11/30/1994	--		8.53	19.34	<50	<0.5	<0.5	<0.5	<0.5	--	--	

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

ARCO Service Station #2112, 1260 Park Street, Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	Footnote
					GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
A-3 Cont.												
2/22/1995	--	27.87	7.90	19.97	<50	<0.50	<0.50	<0.50	<0.50	--	--	
5/23/1995	--		8.60	19.27	<50	<0.50	<0.50	<0.50	<0.50	--	--	
8/9/1995	--		9.30	18.57	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
11/16/1995	--		--	--	--	--	--	--	--	--	--	e
1/15/1996	--		8.66	19.21	--	--	--	--	--	--	--	e
4/8/1996	--		7.86	20.01	--	--	--	--	--	--	--	e
7/2/1996	--		9.03	18.84	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
10/1/1996	--		9.88	17.99	--	--	--	--	--	--	--	e
4/8/1997	--		8.55	19.32	--	--	--	--	--	--	--	e
6/14/1997	--		9.43	18.44	--	--	--	--	--	--	--	e
7/17/2006	--	30.20	--	--	--	--	--	--	--	--	--	c
9/10/2010	--		--	--	--	--	--	--	--	--	--	c
2/8/2011	NP		7.38	22.82	<50	<0.50	<0.50	<0.50	<0.50	<0.50	1.05	f
A-4												
10/7/1991	--	28.54	11.40	17.14	<30	0.32	0.69	<0.3	1.1	--	--	
2/18/1992	--		10.52	18.02	<30	<0.3	<0.3	<0.3	<0.3	--	--	
5/22/1992	--		10.45	18.09	<30	<0.3	<0.3	<0.3	<0.3	--	--	
8/14/1992	--		11.22	17.32	<50	<0.5	<0.5	<0.5	<0.5	--	--	
10/23/1992	--		11.44	17.10	<50	<0.5	<0.5	<0.5	<0.5	--	--	
1/28/1993	--		9.12	19.42	<50	<0.5	<0.5	<0.5	<0.5	--	--	
2/24/1993	--		9.91	18.63	--	--	--	--	--	--	--	
4/28/1993	--		8.29	20.25	<50	<0.5	<0.5	<0.5	<0.5	--	--	
5/28/1993	--		9.92	18.62	--	--	--	--	--	--	--	
6/16/1993	--		10.64	17.90	--	--	--	--	--	--	--	
7/27/1993	--		10.81	17.73	--	--	--	--	--	--	--	
8/24/1993	--		10.98	17.56	<50	<0.5	<0.5	<0.5	<0.5	--	--	
9/28/1993	--		11.08	17.46	--	--	--	--	--	--	--	
10/22/1993	--		11.06	17.48	<50	<0.5	<0.5	<0.5	<0.5	--	--	
11/16/1993	--		10.27	18.27	--	--	--	--	--	--	--	
12/16/1993	--		10.64	17.90	--	--	--	--	--	--	--	

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

ARCO Service Station #2112, 1260 Park Street, Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	Footnote
					GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
A-4 Cont.												
2/7/1994	--	28.54	9.42	19.12	<50	<0.5	<0.5	<0.5	<0.5	--	--	
5/2/1994	--		10.33	18.21	<50	<0.5	<0.5	<0.5	<0.5	--	--	
8/5/1994	--		10.94	17.60	<50	<0.5	<0.5	<0.5	<0.5	--	--	
11/30/1994	--		9.89	18.65	<50	<0.5	<0.5	<0.5	<0.5	--	--	
2/22/1995	--		9.44	19.10	<50	<0.50	<0.50	<0.50	<0.50	--	--	
5/23/1995	--		9.80	18.74	<50	<0.50	0.59	<0.50	<0.50	--	--	
8/9/1995	--		10.39	18.15	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
11/16/1995	--		--	--	--	--	--	--	--	--	--	e
1/15/1996	--		10.00	18.54	--	--	--	--	--	--	--	e
4/8/1996	--		9.34	19.20	--	--	--	--	--	--	--	e
7/2/1996	--		10.22	18.32	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
10/1/1996	--		10.85	17.69	--	--	--	--	--	--	--	e
4/8/1997	--		9.88	18.66	--	--	--	--	--	--	--	e
6/14/1997	--		10.43	18.11	--	--	--	--	--	--	--	e
7/17/2006	--	30.73	9.02	21.71	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	a,b
9/10/2010	P		9.96	20.77	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	
2/8/2011	P		8.94	21.79	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.59	
A-5												
6/26/1992	--	27.29	10.77	16.52	<50	<0.5	<0.5	<0.5	<0.5	--	--	
8/14/1992	--		11.04	16.25	<50	<0.5	<0.5	<0.5	<0.5	--	--	
10/23/1992	--		11.12	16.17	<50	<0.5	<0.5	<0.5	<0.5	--	--	
1/28/1993	--		9.94	17.35	<50	<0.5	<0.5	<0.5	<0.5	--	--	
2/24/1993	--		10.63	16.66	--	--	--	--	--	--	--	
4/28/1993	--		10.70	16.59	<50	<0.5	<0.5	<0.5	<0.5	--	--	
5/28/1993	--		10.35	16.94	--	--	--	--	--	--	--	
6/16/1993	--		10.76	16.53	--	--	--	--	--	--	--	
7/27/1993	--		10.78	16.51	--	--	--	--	--	--	--	
8/24/1993	--		10.97	16.32	<50	<0.5	<0.5	<0.5	<0.5	--	--	
9/28/1993	--		10.90	16.39	--	--	--	--	--	--	--	
10/22/1993	--		10.82	16.47	<50	<0.5	<0.5	<0.5	<0.5	--	--	

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

ARCO Service Station #2112, 1260 Park Street, Alameda, CA

Well ID and Date Monitored	P/NP	TOC Elevation (feet)	Depth to Water (feet)	Water Level Elevation (feet)	Concentrations in µg/L						DO (mg/L)	Footnote
					GRO/TPHg	Benzene	Toluene	Ethyl-Benzene	Total Xylenes	MTBE		
A-5 Cont.												
11/16/1993	--	27.29	10.98	16.31	--	--	--	--	--	--	--	
12/16/1993	--		10.70	16.59	--	--	--	--	--	--	--	
2/7/1994	--		9.96	17.33	<50	<0.5	0.9	<0.5	0.7	--	--	
5/2/1994	--		10.59	16.70	<50	<0.5	<0.5	<0.5	<0.5	--	--	
8/5/1994	--		10.91	16.38	<50	<0.5	<0.5	<0.5	<0.5	--	--	
11/30/1994	--		10.69	16.60	<50	<0.5	<0.5	<0.5	<0.5	--	--	
2/22/1995	--		10.71	16.58	<50	<0.50	<0.50	<0.50	<0.50	--	--	
5/23/1995	--		10.75	18.33	<50	<0.50	<0.50	<0.50	<0.50	--	--	
8/9/1995	--		10.78	18.30	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
11/16/1995	--		11.33	15.96	<50	<0.50	<0.50	<0.50	<0.50	--	--	
1/15/1996	--		10.61	16.68	<50	<0.50	<0.50	<0.50	<0.50	--	--	
4/8/1996	--		10.59	16.70	<50	<0.50	<0.50	<0.50	<0.50	--	--	
7/2/1996	--		10.73	16.56	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
10/1/1996	--		10.84	16.45	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
4/8/1997	--		10.68	16.61	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
6/14/1997	--		10.70	16.59	<50	<0.50	<0.50	<0.50	<0.50	<2.5	--	
7/17/2006	--	29.53	10.67	18.86	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	a
9/10/2010	P		10.21	19.32	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	
2/8/2011	P		10.04	19.49	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.55	
AR-1												
9/10/2010	P	31.17	10.24	20.93	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	
2/8/2011	P		8.79	22.38	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.82	
AR-2												
9/10/2010	P	30.19	10.37	19.82	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	
2/8/2011	P		9.59	20.60	<50	<0.50	<0.50	<0.50	<0.50	<0.50	0.93	

Symbols & Abbreviations:

-- = Not analyzed/applicable/measured/available

< = Not detected at or above laboratory reporting limit

ft bgs = Feet below ground surface

BTEX = Benzene, toluene, ethylbenzene and xylenes

DO = Dissolved oxygen

DTW = Depth to water in ft bgs

GRO = Gasoline range organics, range C4-C12

GWE = Groundwater elevation measured in ft

mg/L = Milligrams per liter

MTBE = Methyl tert butyl ether

NP = Not purged before sampling

P = Purged before sampling

TOC = Top of casing measured in ft

TPH-g = Total petroleum hydrocarbons as gasoline, analyzed using EPA Method 8015, Modified

µg/L = Micrograms per liter

SEQ/SEQM = Sequoia Analytical/Sequoia Morgan Hill Laboratories

Footnotes:

a = Hydrocarb. in req. fuel range, but doesn't resemble req. fuel

b = Surrogate recovery above the acceptance limits. Matrix interference suspected

c = Well obstructed

d = Date believed to be erroneous; date likely to be 12/16/1993

e = Well sampled annually

f = NP due to blockage

Notes:

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 #2112, 1260 Park Street, Alameda, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
A-1									
8/9/1995	--	--	<2.5	--	--	--	--	--	
7/2/1996	--	--	<2.5	--	--	--	--	--	
10/1/1996	--	--	<2.5	--	--	--	--	--	
4/8/1997	--	--	<2.5	--	--	--	--	--	
6/14/1997	--	--	<2.5	--	--	--	--	--	
7/17/2006	<300	<20	22	<0.50	<0.50	3.3	0.76	<0.50	
9/10/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/8/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
A-2									
8/9/1995	--	--	<2.5	--	--	--	--	--	
7/2/1996	--	--	<2.5	--	--	--	--	--	
10/1/1996	--	--	<2.5	--	--	--	--	--	
4/8/1997	--	--	<2.5	--	--	--	--	--	
6/14/1997	--	--	<2.5	--	--	--	--	--	
7/17/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	
9/10/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	0.72	<0.50	
2/8/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	0.96	<0.50	
A-3									
8/9/1995	--	--	<2.5	--	--	--	--	--	
7/2/1996	--	--	<2.5	--	--	--	--	--	
2/8/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
A-4									
8/9/1995	--	--	<2.5	--	--	--	--	--	
7/2/1996	--	--	<2.5	--	--	--	--	--	
7/17/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/10/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/8/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
A-5									
8/9/1995	--	--	<2.5	--	--	--	--	--	

Table 3. Summary of Fuel Additives Analytical Data
ARCO Service Station #2112, 1260 Park Street, Alameda, CA

Well ID and Date Monitored	Concentrations in µg/L								Footnote
	Ethanol	TBA	MTBE	DIPE	ETBE	TAME	1,2-DCA	EDB	
A-5 Cont.									
7/2/1996	--	--	<2.5	--	--	--	--	--	
10/1/1996	--	--	<2.5	--	--	--	--	--	
4/8/1997	--	--	<2.5	--	--	--	--	--	
6/14/1997	--	--	<2.5	--	--	--	--	--	
7/17/2006	<300	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
9/10/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/8/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
AR-1									
9/10/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	
2/8/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	1.2	<0.50	
AR-2									
9/10/2010	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
2/8/2011	<300	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	

Symbols & Abbreviations:

< = 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

µg/L = micrograms per liter

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

APPENDIX A

Detailed Site History

Previous Environmental Activities at Site

On May 15, 1987, a 550-gallon capacity waste oil tank was removed from the Site by Crosby & Overton Environmental. Laboratory analytical tests performed on soil samples collected beneath the waste oil tank indicated the presence of Total Petroleum Hydrocarbons (TPH) as Diesel (TPHd) at concentrations up to 430 milligrams per kilogram (mg/kg) and TPH as Motor Oil (TPHmo) at up to 2,400 mg/kg. Approximately 14 cubic yards of petroleum hydrocarbon impacted soil from the underground storage tanks (UST) excavation was reportedly* removed and transported offsite for disposal. Confirmation samples collected following the excavation activities did not contain TPHmo, indicating TPHmo impacted soil had been removed. The UST pit was backfilled with imported clean sand.

On January 22 and 29, 1990, Applied GeoSystems, Inc. performed a subsurface investigation prior to removal and replacement of the existing five gasoline USTs in the southeastern portion of the Site. The USTs removed included one 10,000 gal (T1), two 4,000 gal (T2 and T3), and two 6,000 gal (T4 and T5). Five soil borings (B1-B5) were advanced in the vicinity of the gasoline USTs, and one boring (B6) was advanced in the location of the proposed new UST complex in the northwestern portion of the Site. Total boring depths ranged from 11.5 to 13 feet (ft) below ground surface (bgs) with the exception of boring B1, which was advanced to a total depth of 25 ft bgs. Groundwater was encountered at approximately 12 ft bgs. Petroleum hydrocarbons were reported in samples collected from each boring, with the exception of B6. Maximum detected concentrations include TPH as Gasoline (TPHg) at 21,000 mg/kg, benzene at 210 mg/kg, toluene at 1,100 mg/kg, ethylbenzene at 320 mg/kg, and total xylenes at 2,600 mg/kg. No petroleum hydrocarbons were reported in boring B6, located near the proposed new UST.

Between July 27 and September 30, 1990, gasoline USTs and product piping was removed. During excavation activities, soil samples were collected from the sidewalls and bottoms of each tank complex excavation, the new UST complex location, and within the product line trenches. The existing UST complex was excavated to approximately 13 ft bgs in an area approximately 23 by 77 ft. Soil samples were collected between 6 and 12 ft bgs. Based on the soil analytical results, the excavation was expanded slightly to an area of approximately 27 by 81 ft. Maximum detected concentrations include TPHg at 23,000 mg/kg, benzene at 150 mg/kg, toluene at 490 mg/kg, ethylbenzene at 940 mg/kg, and total xylenes at 2,700 mg/kg in the sample from the southwest sidewall of the excavation at a depth of 12 ft bgs. Product line trenches were generally excavated to 3 ft bgs except in locations of observed contamination. Sample AT-36, northeast of the Station Building, contained concentrations of TPHg at 15,000 mg/kg, benzene at 71 mg/kg, toluene at 710 mg/kg, ethylbenzene at 200 mg/kg, and total xylenes at 1,300 mg/kg. In order to remove the impacted soil, excavation in trenches were extended to a depth of 9.5 ft bgs where contamination was noted. A total of approximately 1,950 cubic yards of soil was removed from the Site during this time and transported to an offsite facility for treatment and/or disposal (GeoStrategies, Inc., 1990).

In September 1991, GeoStrategies, Inc. installed four monitoring wells (A-1 through A-4), one recovery well (AR-1), and three vapor extraction wells (AV-1 through AV-3) at the Site. In January 1992, four additional vapor extraction wells (AV-4 through AV-7) were installed. In June 1992, one downgradient monitoring well (A-5) and one recovery well (AR-2) were additionally installed. These wells were installed to evaluate the vertical and lateral extent of petroleum hydrocarbon contamination at the Site and provide extraction wells for use with interim soil vapor and groundwater remediation systems. Results of these investigations were provided within the *Aquifer Test/Vapor Well Installation Report*

prepared by GeoStrategies, Inc. dated August 27, 1992, and the *Quarterly Monitoring/Well Installation Report* prepared by GeoStrategies, Inc. dated September 25, 1992.

A vapor extraction pilot test was conducted in October 1991. In December 1991, a 4-hr Step followed by a 24-hr constant-rate drawdown aquifer pumping tests were performed. These results were published within the *Aquifer Test/Vapor Well Installation Report* prepared by GeoStrategies, Inc. dated August 27, 1992.

In 1992, Soil Vapor Extraction (SVE) and Groundwater Extraction and Treatment (GWET) systems were installed at the Site. The GWET system consisted of two existing recovery wells (AR-1 and AR-2) and an onsite treatment facility. The GWET system became operational on January 5, 1993. The SVE system consisted of eight vapor extraction wells (AV-1 through AV-7 and A-1) and began SVE system operation on January 7, 1993. In August 1995, both the GWET and SVE systems were shutdown due to low influent concentrations. By that time an estimated total of 334.6 pounds (~54.9 gallons) of Total Purgeable Petroleum Hydrocarbons as Gasoline (TPPHg) had been removed by the SVE system, and 0.81 pounds of TPPH-G had been removed by the GWET system. The systems were decommissioned and removed from the Site in 1997.

On November 20, 1996, a *Case Closure Summary* report was prepared and submitted by Pacific Environmental Group, Inc.. The report stated that "remediation and site assessment are complete." However, Site closure was not approved by the Alameda County Environmental Health (ACEH).

On July 31, 2001, Delta Environmental Consultants, Inc. conducted soil sampling during product line and dispenser removal and upgrade activities. Soil samples were collected beneath the dispensers following their removal (PL-1 through PL-4) and along the product line trenches at depths ranging from 3.6 to 4.8 ft bgs (DP-1 through DP-4). Petroleum hydrocarbon were reported in sample PL-3 (southwest dispenser) at concentrations of 1,400 mg/kg TPHg, 0.32 mg/kg benzene, 15 mg/kg toluene, 15 mg/kg ethylbenzene, and 94 mg/kg total xylenes. At the request of ACEH, UST soil samples were collected on the east side of the current UST pit at approximately three ft bgs (UST-1 and UST-2). Petroleum hydrocarbons were reported in sample UST-1 (close to sample PL-3) at concentrations of 1,400 mg/kg TPHg, 2.4 mg/kg benzene, 31 mg/kg toluene, 17 mg/kg ethylbenzene, and 110 mg/kg total xylenes. Approximately seven cubic yards of soil were excavated in the area of sample PL-3. A confirmation soil sample was collected from the base of the excavation at approximately 9 ft bgs. No soil was excavated immediately adjacent to the locations of the UST samples due to the proximity of the USTs. Approximately 9.8 cubic yards of soil was removed from the Site during product line and dispenser upgrades and transported to an offsite facility for disposal and/or treatment (Delta Environmental Consultants, Inc., 2001).

Groundwater monitoring and sampling of the Site wells began in October 1991. Groundwater monitoring and sampling was discontinued following the Second Quarter 1997. During five consecutive monitoring and sampling events between First Quarter 1996 and Second Quarter 1997, no petroleum hydrocarbon contaminants were detected above the laboratory reporting limits (Pacific Environmental Group, Inc., 1997). As requested by ACEH in their letter dated June 20, 2006 the wells associated with the Site were redeveloped and sampled during the Third Quarter of 2006. Sampling was consistent with results previously reported prior to and following the case closure request, with the exception that monitoring since 2006 has included analysis for fuel oxygenates, methyl tertiary butyl ether (MTBE), ethyl tertiary butyl ether (ETBE), tertiary amyl methyl ether (TAME), di-isopropyl ether (DIPE), tertiary butyl alcohol (TBA), ethanol, and the minor lead-scavenging additives 1,2-dichloroethane (1,2-DCA), and

ethylene dibromide (EDB). Gasoline range organics (GRO), petroleum hydrocarbon constituents, and oxygenates have not been detected in groundwater samples since 1995 in wells A-1, A-2, A-4, and A-5, and since their installation in the remainder wells, with the exception of an MTBE concentration of 22 µg/L in well A-1 (July 17, 2006). Since no detections of MTBE have been observed prior to and after the July 17, 2006 sampling event, it is assumed that the single detection was an anomaly. Fuel additives have not been detected in groundwater samples from wells A-3, A-4, A-5, and AR-2 since sampling for these constituents started. TAME and 1,2-DCA have been observed at maximum detected concentrations of 3.3 and 1.2 µg/L, respectively, in wells A-1, A-2, and AR-1 (Broadbent & Associates Inc. [Broadbent], 2011).

On June 10, 2009, Stratus field personnel observed Resonant Sonic International Drilling advance three soil borings (B-7, B-8, and B-9) on the eastern side of the Station Building around the former UST pits. A total of 12 soil samples were collected from the three borings at depths of 5, 8, 11, and 14 ft bgs, with the deeper two samples (11 and 14 ft bgs) being below the water table. Maximum detected concentrations include GRO at 2,000 mg/kg, benzene at 0.23 mg/kg, toluene at 14 mg/kg, ethylbenzene at 18 mg/kg, and total xylenes at 210 mg/kg (Broadbent, 2009). The maximum detections were from boring B-8 at 11 ft bgs, closest to the back side of the Station Building. Almost no petroleum compounds were detected in the shallower, vadose samples (5 and 8 ft bgs).

On June 15, 2012, Broadbent observed WDC Exploration & Wells installed four soil vapor probes (SG-1A, SG-1B, SG-2A, and SG-2B) between the station building and the former UST location. Soil vapor probes SG-1A and SG-2A were screened between 3.5 and 4 ft bgs, and SG-1B and SG-2B were screened between 5.5 and 6 ft bgs. Soil samples were collected between June 28 and 29, 2012, by Broadbent and analyzed for GRO, benzene, toluene, ethylbenzene, total xylenes (BTEX), MTBE, ETBE, DIPE, TAME, TBA, and ethanol. Maximum detected concentrations include benzene at 2.2 µg/ m³, toluene at 11 µg/ m³, ethylbenzene at 3.1 µg/ m³, TBA at 36 µg/ m³, and ethanol at 16 µg/ m³. The maximum detected concentrations were well below the environmental screening limits (ESLs). No other analyzed constituents were detected. GRO concentrations were not detected above the laboratory reporting limits; however, the laboratory reporting limits for GRO (38 mg/m³) are above the ESLs for residential land use (10 mg/m³) and commercial or industrial land use (29 mg/m³). Since all of the analyzed constituents were reported well below ESLs, it is assumed that the elevated laboratory reporting limits for GRO concentrations are not a risk for exposure (Broadbent, 2012).

Notes:

* = Prior to 1992, majority of historical reports were not available and summaries of these activities were found in preceding reports from the Site histories.

References

- Alameda County Environmental Health, 20 June 2006. *Fuel Leak Case No. RO0000044 ARCO #2112, 1260 Park Street, Alameda, CA 94501.*
- Applied GeoSystems, Inc., 20 February 1990. *Limited Environmental Site Assessment, ARCO Service Station No. 2112, 1260 Park Street, Alameda, California.*
- Broadbent & Associates, Inc., 29 April 2011. *First Quarter 2011 Ground-Water Monitoring Report, Atlantic Richfield Company Station No. 2112, 1260 Park Street, Alameda, California.*
- Broadbent & Associates, Inc., 10 August 2009. *On-Site Soil Investigation Report, Atlantic Richfield Company Station No. 2112, 1260 Park Street, Alameda, California, ACEHS Case No. RO0000044.*
- Broadbent & Associates, Inc., 7 September 2012. *Vapor Intrusion Assessment Report, Atlantic Richfield Company Station # 2112, 1260 Park Street, Alameda County, California, ACEHS Case No. RO0000044.*
- Delta Environmental Consultants, Inc., 20 November 2001. *Product Line and Dispenser Island Sampling Results, ARCO Station No. 2112, 1260 Park Street, Alameda, California.*
- GeoStrategies, Inc., 7 November 1990. *Tank Replacement Observation Report, ARCO Service Station No. 2112, 1260 Park Street, Alameda, California.*
- Pacific Environmental Group, Inc., 20 November 1996. *Case Closure Summary, ARCO Service Station No. 2112, 1260 Park Street at Encinal Avenue, Alameda, California.*
- Pacific Environmental Group, Inc., 26 September 1997. *Quarterly Ground-Water Monitoring Report and Remedial System Performance Evaluation – Second Quarter 1997, ARCO Service Station No. 2112, 1260 Park Street at Encinal Avenue, Alameda, California.*

APPENDIX B

Historic Site Data

TABLE 1
 RESULTS OF LABORATORY ANALYSIS OF SOIL SAMPLES
 ARCO Station 2112
 1260 Park Street
 Alameda, California

Sample Number	TPHg	B	T	E	X
S-6-B1	12	0.16	0.34	0.14	1.3
S-10-B1	1,700	15	72	22	180
S-6-B2	<2.0	<0.050	<0.050	<0.050	<0.050
S-11-B2	570	3.9	13	11	82
S-6-B3	<2.0	0.097	<0.050	<0.050	0.20
S-11-B3	10,000	47	350	120	940
S-6-B4	<2.0	0.063	0.096	<0.050	0.20
S-11-B4	21,000	210	1,100	320	2,600
S-6-B5	3.7	<0.050	0.081	<0.050	0.18
S-11-B5	5,400	8.8	27	66	160
S-5.5-B6	<2.0	<0.050	<0.050	<0.050	<0.050
S-10-B6	<2.0	<0.050	<0.050	<0.050	<0.050

Results in milligrams per kilogram or parts per million

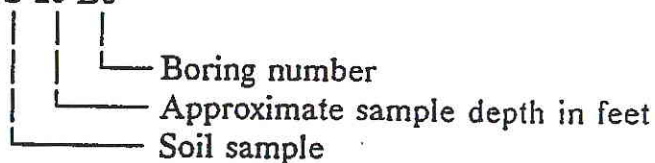
TPHg = Total petroleum hydrocarbons as gasoline

B = benzene E = ethylbenzene T = toluene X = total xylene isomers

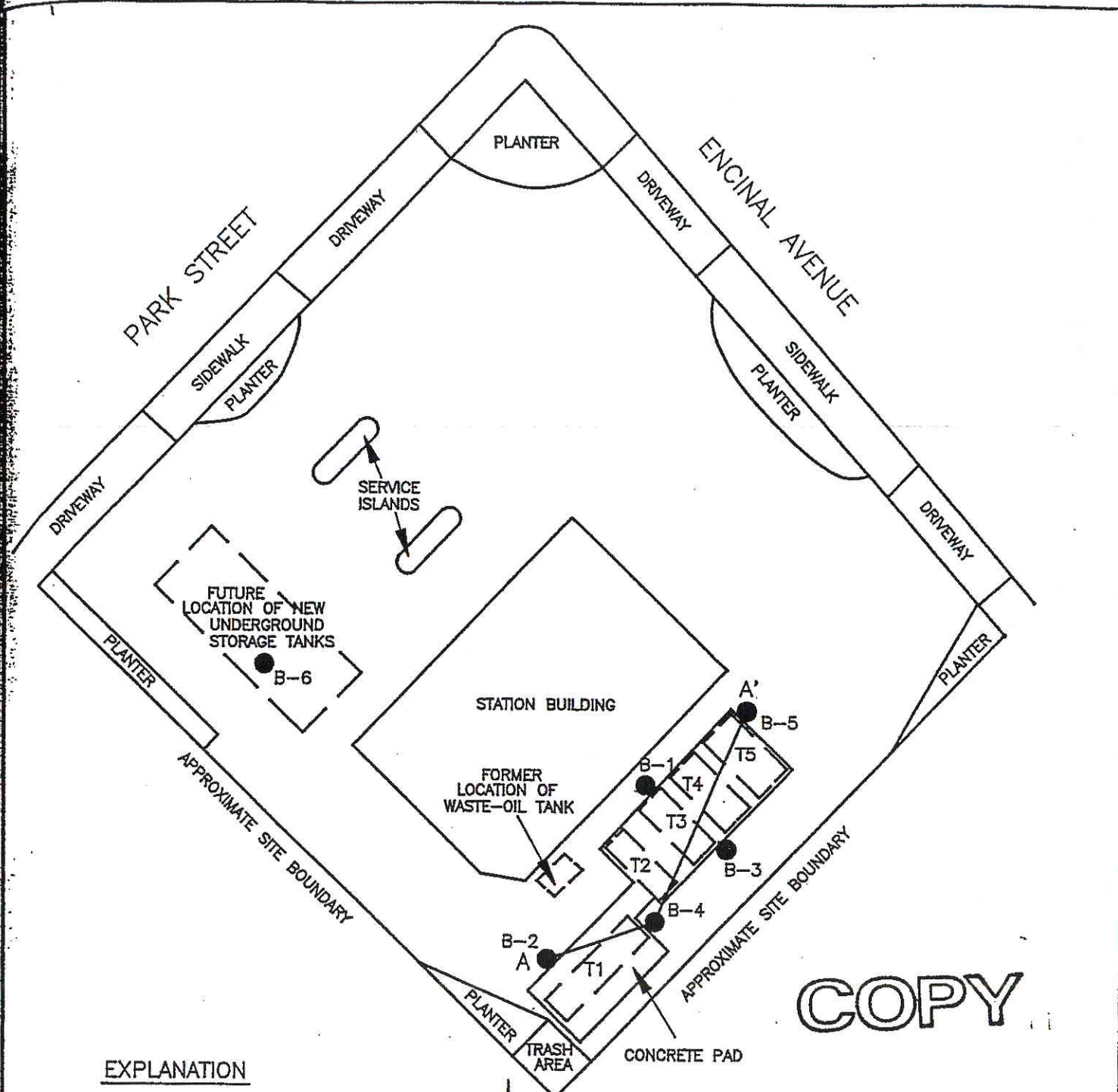
< = indicates less than the reported limit

Sample identification:

S-10-B6



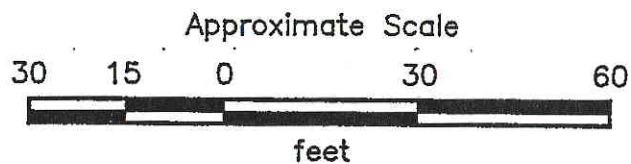
COPY



COPY

EXPLANATION

- B-6 ● = Soil boring
(Applied GeoSystems,
January 23, 1990)
- T5 = Existing underground
storage tanks
- A' = Cross Section



Source: Modified from plan supplied
by ARCO.



GENERALIZED SITE PLAN
ARCO Station 2112
1260 Park Street
Alameda, California

PLATE
2

PROJECT 69048-1

TABLE 1

SOIL ANALYTICAL DATA (EXCAVATIONS)							
SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
AX1-1-6	26-Jul-90	26-Jul-90	14	<0.005	<0.005	<0.005	1
AX1-1-10	10-Aug-90	21-Aug-90	27.	0.12	1.1	0.7	4.4
AX1-2-6	26-Jul-90	26-Jul-90	1700	<0.005	16	4.8	76
AX1-2*-10	10-Aug-90	19-Aug-90	7700.	60.	360.	150.	930.
AX1-3-6	26-Jul-90	26-Jul-90	<1	<0.005	<0.005	<0.005	<0.005
AX1-3-10	09-Aug-90	21-Aug-90	15000.	130.	850.	330.	1900.
AX1-3-12	26-Jul-90	26-Jul-90	23000	150	490	940	2700
AX1-4-6	26-Jul-90	31-Jul-90	<1	<0.005	<0.005	<0.005	<0.005
AX1-4-12	26-Jul-90	26-Jul-90	1.2	<0.005	0.011	0.018	0.062
AX1-5-6	26-Jul-90	26-Jul-90	<1	0.019	<0.005	<0.005	0.032
AX1-6-6	26-Jul-90	26-Jul-90	<1	0.067	0.011	0.042	0.055
AX1-6-10	10-Aug-90	18-Aug-90	1000.	2.0	24.	18.	110.
AX1-7-6	26-Jul-90	27-Jul-90	50	<0.005	<0.005	<0.005	<0.005
AX1-7*-10	10-Aug-90	21-Aug-90	9400.	96.	570.	200.	1200.

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. BTEX data analyzed on July 26, 27 and 31, 1990 by NET are reported in micrograms per kilogram.
 3. The last number of the sample I.D. corresponds to the approximate depth below existing grade that the sample was collected.
 4. For sample locations, see Plate 3.
 5. TPH-G concentration for AX1-8-10' appear to be the more volatile constituents of diesel.

COPY

TABLE 1

SOIL ANALYTICAL DATA (EXCAVATIONS)							
SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
AX1-8-10	27-Jul-90	27-Jul-90	7,300	20	130	98	650
AX1-8*-10	10-Aug-90	18-Aug-90	320.	<0.4	<0.4	3.8	12.
AX1-9-10	27-Jul-90	27-Jul-90	<1	0.014	<0.005	0.020	0.017
AX1-9*-10	10-Aug-90	18-Aug-90	1.6	0.037	0.057	0.01	0.051
AX1-10-10	27-Jul-90	27-Jul-90	2,700	36	51	180	320
AX1-10*-10	10-Aug-90	18-Aug-90	120.	0.56	4.3	2.5	15.
AX1-11-10	27-Jul-90	27-Jul-90	<1	12	6	14	35
AX2-1-6	31-Jul-90	31-Jul-90	<1	<0.005	<0.005	0.007	0.007
AX2-1-12	31-Jul-90	31-Jul-90	2.0	0.024	0.073	0.048	0.110
AX2-2-11	31-Jul-90	31-Jul-90	2.0	0.470	0.180	0.005	0.013
AX2-3-6	31-Jul-90	31-Jul-90	<1	<0.005	<0.005	<0.005	<0.005
AX2-3-11.5	31-Jul-90	31-Jul-90	<1	<0.005	<0.005	<0.005	<0.005
AX2-4-6	31-Jul-90	31-Jul-90	<1	<0.005	<0.005	<0.005	<0.005
AX2-4-11	31-Jul-90	31-Jul-90	<1	<0.005	<0.005	<0.005	<0.005
AX2-5-6	31-Jul-90	31-Jul-90	<1	<0.005	<0.005	<0.005	<0.005
AX2-5-11	31-Jul-90	31-Jul-90	<1	<0.005	<0.005	<0.005	<0.005
AX2-6-11	31-Jul-90	31-Jul-90	<1	0.013	0.011	<0.005	<0.005
AX2-7-11	31-Jul-90	31-Jul-90	<1	<0.005	<0.005	<0.005	<0.005

COPY

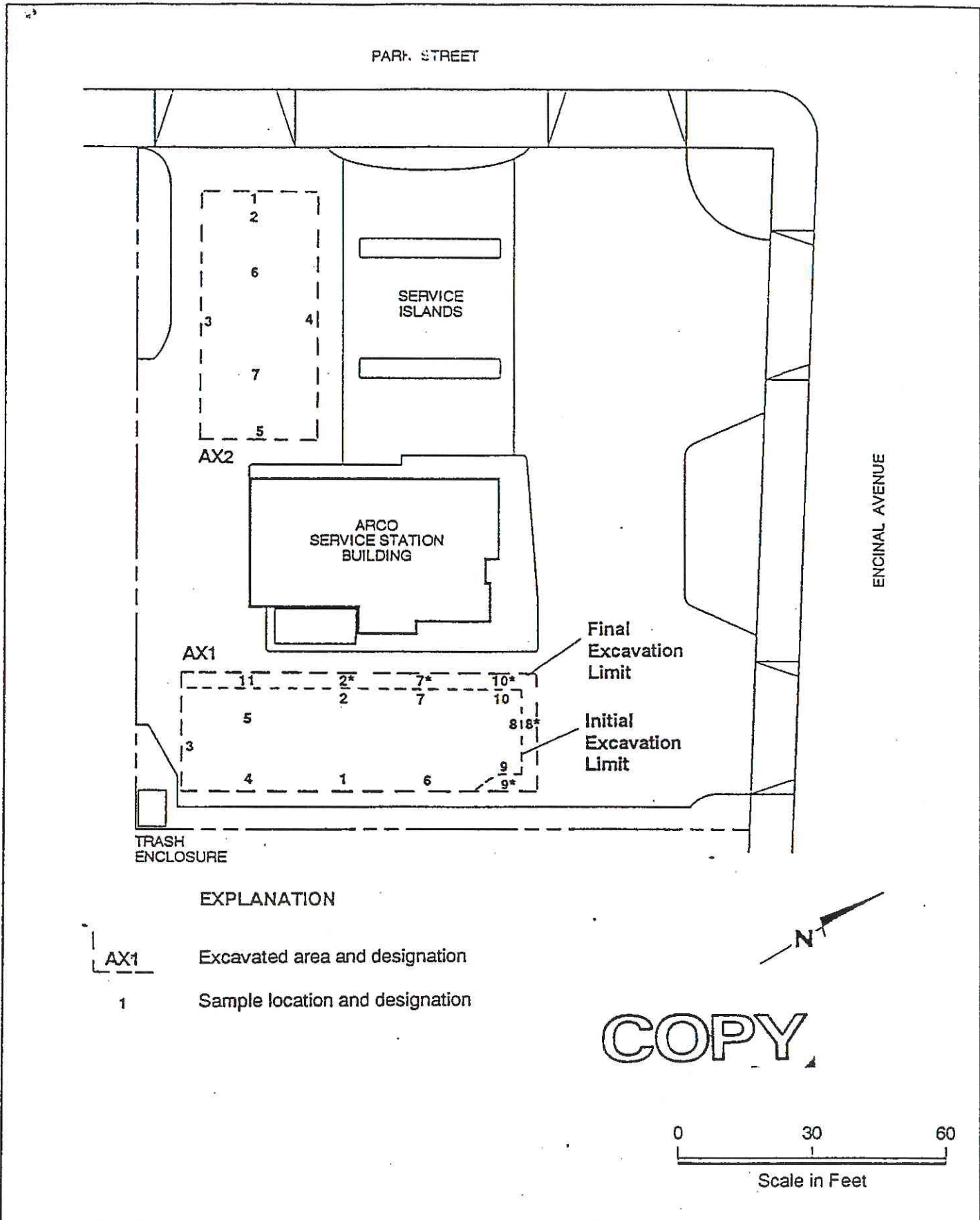
TABLE 2

SOIL ANALYTICAL DATA (TRENCHING)							
SAMPLE I.D.	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
AT-1	17-Aug-90	20-Aug-90	2000.	<0.8	23.	28.	210.
AT-2	17-Aug-90	20-Aug-90	6.7	0.023	0.088	0.11	0.84
AT-3	17-Aug-90	20-Aug-90	<1.	<0.005	<0.005	<0.005	<0.005
AT-4	17-Aug-90	20-Aug-90	5.8	0.034	0.12	0.057	0.52
AT-7-2	08-Aug-90	16-Aug-90	2.0	0.008	0.017	0.008	0.061
AT-8-2.5	08-Aug-90	16-Aug-90	14.	0.11	0.15	0.28	1.6
AT-9-9.5	20-Aug-90	29-Aug-90	<1.	<0.01	<0.01	<0.01	<0.01
AT-10-2.5	15-Aug-90	17-Aug-90	<1	<0.003	<0.003	<0.003	<0.003
AT-10-9.5	20-Aug-90	28-Aug-90	<1.	<0.005	<0.005	0.008	0.014
AT-11-2.5	15-Aug-90	17-Aug-90	<1	<0.003	<0.003	<0.003	<0.003
AT-12-2.5	15-Aug-90	17-Aug-90	<1	<0.003	<0.003	<0.003	<0.003

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. BTEX data analyzed on August 17, 1990 by Superior are reported in micrograms per kilograms.
3. The last number of the Sample I.D. corresponds to the approximate depth below existing grade that the sample was collected.
AT-1 and AT-3 were collected at 3.5 feet below existing grade. AT-2 and AT-4 were collected at 2.5 feet below existing grade.
4. For sample locations, see Plate 4.

COPY



EXPLANATION

- AX1 Excavated area and designation
- 1 Sample location and designation

COPY

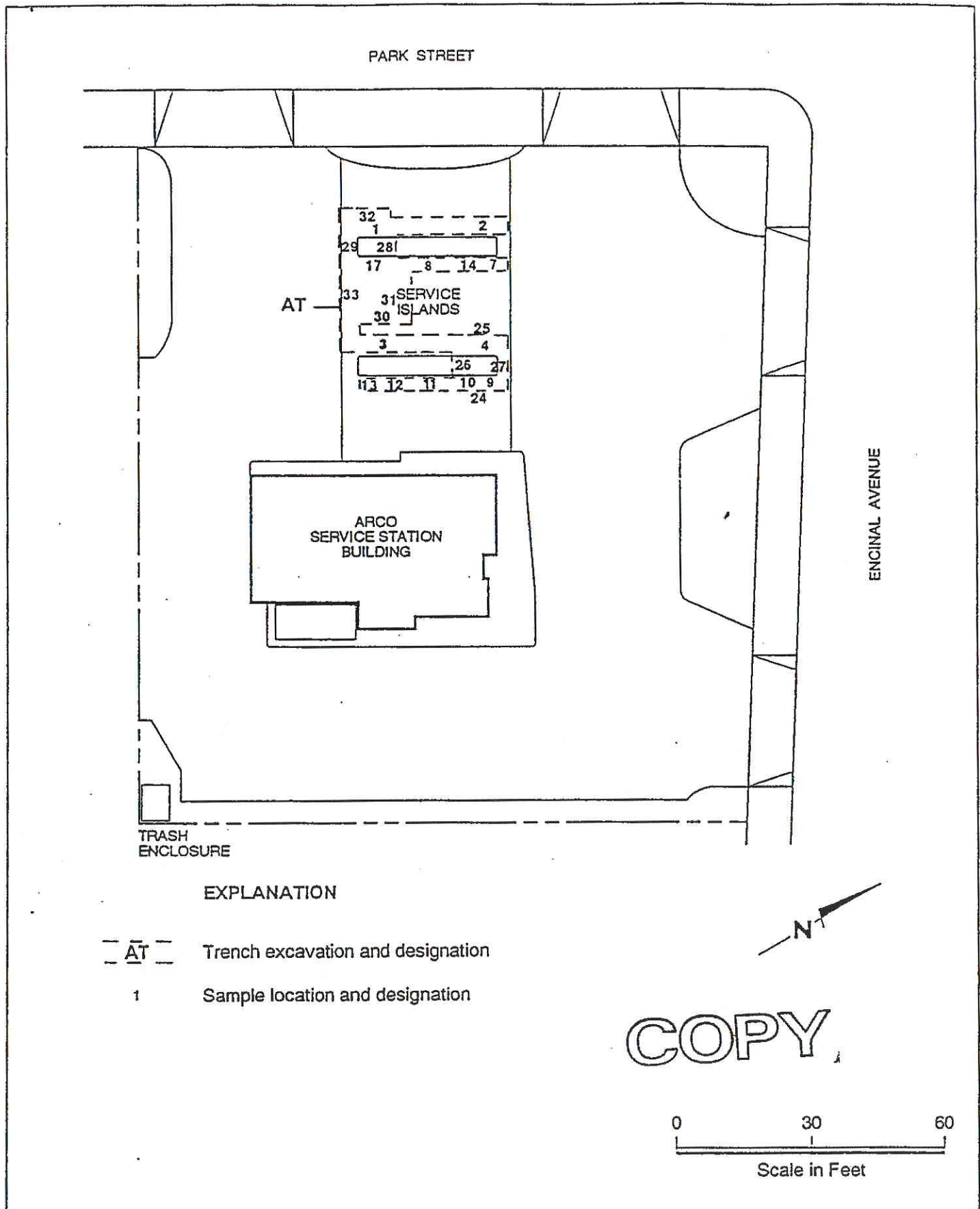


GeoStrategies Inc.

Excavation Soil Sample Map
 ARCO Service Station #2112
 1260 Park Street
 Alameda, California

PLATE

3



GeoStrategies Inc.

Trench Soil Sample Map
 ARCO Service Station #2112
 1260 Park Street
 Alameda, California

PLATE
4

TABLE 1

SOIL ANALYTICAL DATA
(Trench Samples)

SAMPLE NO	DEPTH (FT)	SAMPLE DATE	ANALYSIS DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
AT-34	3.0	25-Oct-90	25-Oct-90	<1.0	<0.003	<0.003	<0.003	<0.003
AT-35	3.0	25-Oct-90	25-Oct-90	<1.0	<0.003	<0.003	<0.003	<0.003
AT-36	3.0	25-Oct-90	25-Oct-90	15000	71	710	200	1300
UT-37	4.0	05-Mar-91	08-Mar-91	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
UT-38	4.0	05-Mar-91	08-Mar-91	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
UT-39	4.0	05-Mar-91	08-Mar-91	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
UT-40	3.5	05-Mar-91	08-Mar-91	<1.0	<0.0050	<0.0050	<0.0050	<0.0050
UT-41	3.5	05-Mar-91	08-Mar-91	<1.0	<0.0050	<0.0050	<0.0050	<0.0050

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

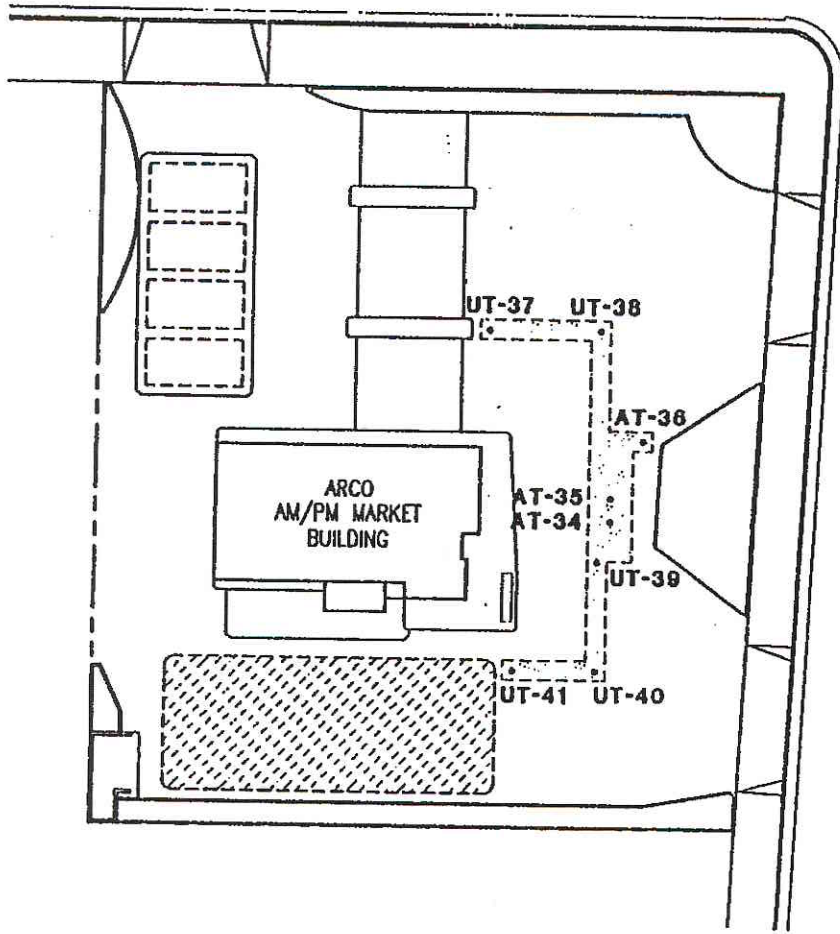
- Notes: 1. BTEX for samples AT-34 through AT-36 were reported in parts per billion (ppb).
2. All data shown as <x are reported as ND (none detected).

COPY

PARK STREET
(STATE HIGHWAY 61)

EXPLANATION

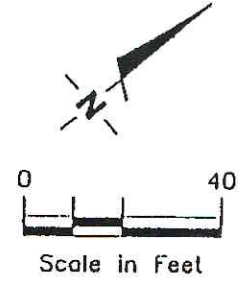
- Trench Samples
- Approximate location of trench
- ▨ Soil Stockpile



ENCINAL AVENUE
(STATE HIGHWAY 61)

COPY

Base Map: ARCO Site Plans dated 3-19-86 and 2-21-90



GeoStrategies Inc.

SOIL SAMPLING MAP
ARCO Service Station #2112
1260 Park Street
Alameda, California

PLATE

3

JOB NUMBER
792001-3

REVIEWED BY
DHP

DATE
3/91

REVISED DATE

TABLE 1

SOIL ANALYSES DATA

SAMPLE NO	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
AV-1-5.5	23-Sep-91	04-Oct-91	<1.0	<0.005	<0.005	<0.005	<0.005
AV-1-11	23-Sep-91	05-Oct-91	2,900	<5.0	12	6.0	34
AV-2-6	24-Sep-91	04-Oct-91	<1.0	<0.005	<0.005	<0.005	<0.005
AV-2-11	24-Sep-91	04-Oct-91	<1.0	<0.005	<0.005	<0.005	<0.005
AV-3-6.5	25-Sep-91	05-Oct-91	<1.0	<0.005	<0.005	<0.005	<0.005
AV-3-11.5	25-Sep-91	05-Oct-91	540	5.3	12	7.6	35
A-1-5	25-Sep-91	04-Oct-91	<1.0	<0.005	<0.005	<0.005	<0.005
A-1-11	25-Sep-91	05-Oct-91	730	6.4	24	11	56
A-2-12	24-Sep-91	04-Oct-91	<1.0	0.038	0.038	0.038	0.038
A-3-11.5	24-Sep-91	04-Oct-91	<1.0	<0.005	<0.005	<0.005	<0.005
A-4-11	25-Sep-91	04-Oct-91	<1.0	<0.005	<0.005	<0.005	<0.005

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

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

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TABLE 2

SOIL ANALYSES DATA

SAMPLE NO	SAMPLE DATE	ANALYZED DATE	TPH-G (PPM)	BENZENE (PPM)	TOLUENE (PPM)	ETHYLBENZENE (PPM)	XYLENES (PPM)
AV-4-10.5	02-Jan-92	06-Jan-92	21,000	190	860	290	1,700
AV-5-10.5	02-Jan-92	06-Jan-92	<1	0.0070	0.018	0.0060	0.031
AV-6-10.5	02-Jan-92	06-Jan-92	<1	<0.0050	<0.0050	<0.0050	<0.0050
AV-7-10.5	02-Jan-92	06-Jan-92	<1	<0.0050	<0.0050	<0.0050	<0.0050

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

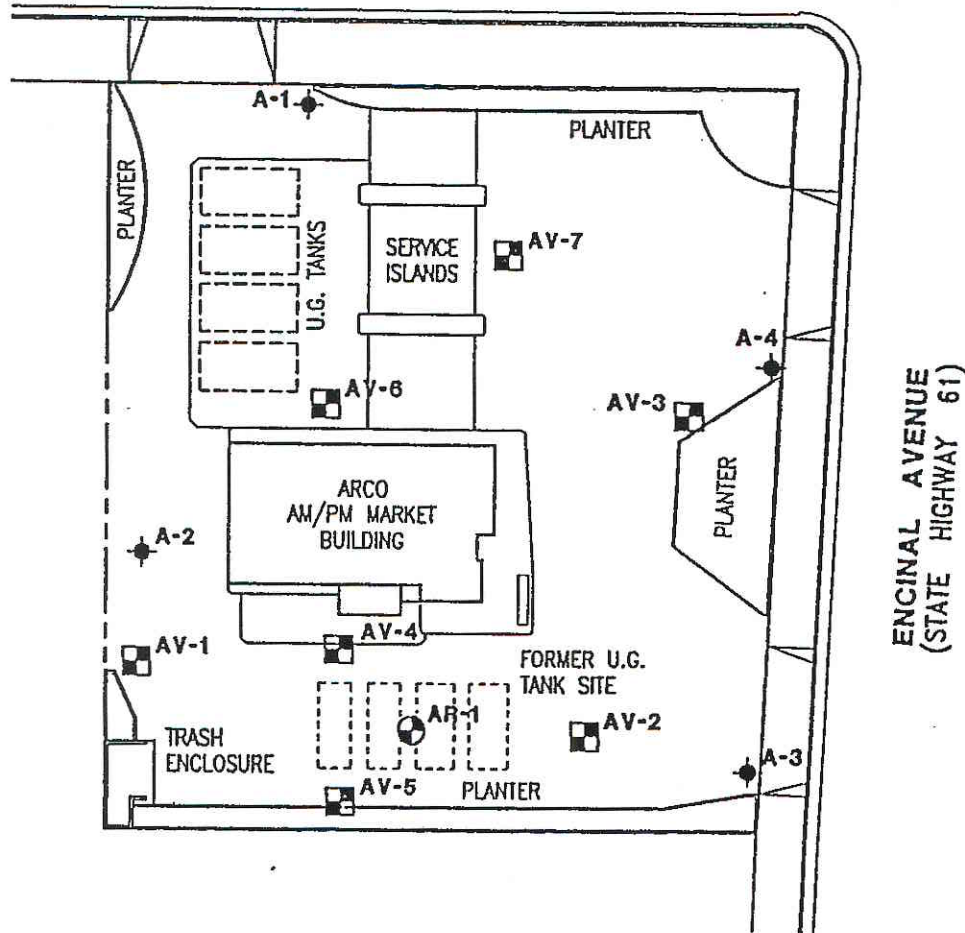
Note: 1. All data shown as <x are reported as ND (not detected).

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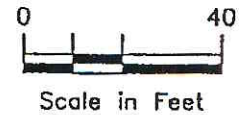
PARK STREET
(STATE HIGHWAY 61)

EXPLANATION

- ⊕ Ground-water monitoring well
- ⊗ Ground-water recovery well
- ⊞ Vapor extraction well



COPY



Base Map: ARCO Site Plans dated 3-19-86 and 2-21-90



GeoStrategies Inc.

SITE PLAN
ARCO Service Station #2112
1260 Park Street
Alameda, California

PLATE

2

JOB NUMBER
792005-5

REVIEWED BY

DATE

REVISED DATE

**Table 2 - Soil Gas Sampling Laboratory Analytical Results
Station #2112, 1260 Park Street, Alameda, California**

Sample ID	Sample Date	GRO (C6-C12) (mg/m ³)	Benzene (µg/m ³)	Toluene (µg/m ³)	Ethyl-benzene (µg/m ³)	Total Xylenes (µg/m ³)	MTBE (µg/m ³)	ETBE (µg/m ³)	DIPE (µg/m ³)	TAME (µg/m ³)	TBA (µg/m ³)	Ethanol (µg/m ³)	IPA (µg/m ³)	Helium (%)	Oxygen + Argon (%)	Carbon Dioxide (%)	Methane (%)
SG-1A	6/29/2012	<38	2.2	<1.9	<2.2	<8.7	<7.2	<8.4	<8.4	<8.4	<6.1	<9.4	140	<0.0100	20.0	2.00	<0.500
SG-1B	6/29/2012	<38	<1.6	3.3	<2.2	<8.7	<7.2	<8.4	<8.4	<8.4	11	<9.4	370	<0.0100	19.1	3.28	<0.500
SG-2A	6/28/2012	<38	1.6	<1.9	3.1	<8.7	<7.2	<8.4	<8.4	<8.4	36	<9.4	<12	0.0324	18.7	3.29	<0.500
SG-2B	6/28/2012	<38	<1.6	<1.9	<2.2	<8.7	<7.2	<8.4	<8.4	<8.4	<6.1	<9.4	<12	0.0668	17.1	5.32	<0.500
Ambient	6/28/2012	<38	1.7	11	2.4	<8.7	<7.2	<8.4	<8.4	<8.4	<6.1	16	<12	<0.0100	22.1	<0.500	<0.500
ESL-Residential		10 mg/m ³	84	63,000	980	21,000	9,400	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a
ESL-Commercial		29 mg/m ³	280	180,000	3,300	58,000	31,000	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a

Notes:

- (1) GRO analysis by EPA TO-3; Benzene through Isopropanol (IPA) analysis by EPA TO-15; He/C₂+Ar/CO₂/CH₄ analysis by ASTM D-1946.
- (2) <X = Not detected above the given laboratory reporting limit (X) in milligrams per cubic meter (mg/m³) or micrograms per cubic meter (µg/m³)
- (3) ESL-Res = Environmental Screening Level for shallow soil gas (residential land use); from California Regional Water Quality Control Board, San Francisco Bay Region (SFBRWQCB), May 2008.
- (4) ESL-Comm = Environmental Screening Level for shallow soil gas (commercial or industrial land use); from SFBRWQCB, May 2008.
- (5) n/a = ESL not available or not applicable.