Atlantic Richfield Company
(a BP affiliated company)

P.O. Box 1257
San Ramon, CA 94583
Phone: (925) 275-3801
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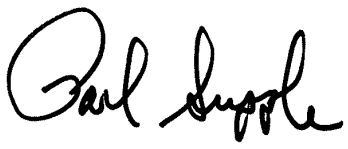
September 2, 2008

Re: Soil and Ground-Water Investigation Work Plan
Atlantic Richfield Company Station #498
286 South Livermore Avenue
Livermore, California
ACEH Case RO0002873

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

Submitted by:



Paul Supple
Environmental Business Manager

Broadbent & Associates, Inc.
1324 Mangrove Ave., Suite 212
Chico, CA 95926
Voice (530) 566-1400
Fax (530) 566-1401

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

September 2, 2008 Project No. 08-02-603

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

Attn.: Mr. Paul Supple

Re: Soil and Ground-Water Investigation Work Plan, Atlantic Richfield Company (a BP affiliated company) Station #498, 286 South Livermore Avenue, Livermore, California. Case No. RO0002873.

Dear Mr. Supple:

Broadbent & Associates, Inc. (BAI) is pleased to submit this Work Plan to conduct a soil and ground-water investigation at Atlantic Richfield Company Station #498 (herein referred to as Station #498) located at 286 South Livermore Avenue, Livermore, California (Property). The Work Plan has been prepared in accordance with the Alameda County Environmental Health (ACEH) letter dated July 7, 2008.

Should you have any questions concerning this Work Plan, please due not hesitate to contact us at (530) 566-1400.

Sincerely,
BROADBENT & ASSOCIATES, INC.

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

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

PROFESSIONAL GEOLOGIST
ROBERT H. MILLER
No. 561
CERTIFIED HYDROGEOLOGIST
EXP. 4-30-10
STATE OF CALIFORNIA

cc: Mr. Paresh Khatri, Alameda County Environmental Health, 1131 Harbor Bay Parkway, Suite 250, Alameda, CA 94502 (Submitted via ACEH ftp Site)
GeoTracker

TABLE OF CONTENTS

LIST OF DRAWINGS

APPENDICES

1.0 Background

Provided herein is a Work Plan to conduct a soil and ground-water investigation at Station #498 located in Livermore, California. The Property is currently an operational gas station located in an area of mixed commercial and residential use. The property consists of a relatively flat asphalt and concrete covered lot. A site vicinity map is provided in Drawing 1.

During product line and dispenser upgrade activities completed in June 2001 Delta Environmental Consultants, Inc. (Delta) collected soil samples beneath the product line and dispenser islands. Total purgeable hydrocarbons as gasoline (TPHg) were detected in two of the four dispenser island samples at 1.8 milligrams per kilogram (mg/Kg) in sample DP-1 and 87 mg/Kg in sample DP-3. Benzene, toluene, ethylbenzene, and total xylenes (BTEX), and methyl tertiary butyl ether (MTBE) were also detected in dispenser island sample DP-3. Only toluene and total xylenes were detected in product line sample PL-2 at relatively low concentrations. Historic soil analytical data are provided in Appendix A. Historic soil sample locations are depicted in Drawing 2. Product line and Dispenser Island Sampling activities are summarized in the Delta September 19, 2001 *Product Line and Dispenser Island Sampling Results* Report.

In January 2005 URS completed a site assessment to fulfill a due diligence audit as part of the sale of the Property. Field activities were conducted to assess whether subsurface soils in the vicinity of the underground storage tanks (USTs) and fuel dispensers had been impacted by petroleum hydrocarbons. The work was not required as part of a regulatory agency directive. Eight soil borings were advanced using a direct push Geoprobe® 6600 drill rig. URS stated in the February 15, 2005 *Site Assessment Report* that the proposed total depth of all borings was 30 feet below land surface (bls); however, due to difficult drilling conditions encountered, the borings were only advanced to depths ranging from 15 to 25 feet bls. Ground water was not encountered in any of the borings. Only MTBE and TBA were detected in four of the soil samples (SB-1-22', SB-1-24', SB-3-25',and SB-8-25') at maximum concentrations of 0.022 mg/kg (SB-8-25') and 0.031 mg/kg (SB-1-22'), respectively. Historic soil analytical data are provided in Appendix A and sample locations are depicted in Drawing 2.

Upon reviewing the case file for Station 498, including the two reports discussed above, the ACEH issued the July 7, 2008 letter stating that the vertical and lateral extent of impacted soil appears undefined and a ground water investigation is required to determine whether ground water has been impacted. Accordingly, this *Soil and Ground-Water Investigation Work Plan* has been prepared.

2.0 Scope of Work

The ACEH July 7, 2008 letter recommended that borings be installed prior to installation of permanent wells for the collection of soil and ground-water samples. Difficult drilling conditions encountered during completion of the 2005 investigation (discussed above) rule out the use of a direct push drilling technique at the site. Alternatively, it is proposed that three borings be installed with a hollow stem auger rig and completed as monitor wells (MW-1 through MW-3) to facilitate collection of soil samples and representative ground-water samples. Proposed well locations are depicted in Drawing 2.

3.0 Project Setup

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

4.0 Soil Investigation

Soil borings will be advanced using a hollow steam auger drilling technique. Soils will be lithologically logged by a qualified geologist using the Unified Soil Classification System (USCS). The expected depth to static ground water at Station 498 is estimated to be approximately 20 to 35 feet bls (based on the range of historic depth to ground water from wells at the former Shell Station located across 3rd Street to the southeast of the Property from the time period 2001 through 2006). However, depth to static ground water at other Atlantic Richfield Company sites in Livermore has historically varied by up to 40 feet. Soil samples will be collected at five foot intervals beginning five feet bls and continuing to just above the capillary fringe using a split-spoon sampler and brass sleeves. A minimum of three soil samples will be submitted for laboratory analysis from each boring. The three soil samples will include: (1) the deepest sample collected just above the capillary fringe, (2) the sample with the highest PID reading, and (3) a sample to be determined in the field. Each sample collected for submittal to a laboratory for analysis will be sealed on both ends with Teflon tape, capped with plastic end caps, labeled, and placed in an ice-filled cooler for preservation. The soil samples will be transported under chain-of-custody protocol to a California State-certified analytical laboratory and analyzed for the following:

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

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

5.0 Ground-Water Investigation

As stated above, depth to static ground water is expected to be 20 to 35 feet bls; however, can vary by up to 40 feet. It is anticipated that the ground-water flow direction will be toward the northwest based on ground-water flow directions measured at the former Shell Station located across 3rd Street. The proposed well design calls for a total well depth of 40 feet, with 20 feet of well screen from total depth to 20 feet bls. The wells will be constructed using four-inch diameter, schedule 40 PVC well casing and factory slotted well screen (0.02 inch slots) with flush threaded water tight connections. The casing will be surrounded by silica sand compatible with 0.02 inch slots in the

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

As there is some uncertainty in depth to first encountered ground water and depth to static ground water, appropriate changes, if necessary, will be made to the total well depth and screen interval based on conditions encountered in the boreholes during drilling activities.

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

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

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

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

6.0 Schedule and Reporting

Once the ACEH has approved this Soil and Ground-Water Investigation Work Plan, Stratus will be directed to execute the work. Upon completion of field work and receipt of a data packet from Stratus summarizing field activities including laboratory analytical reports, BAI will complete a soil and ground-water investigation report for submittal to the ACEH.

7.0 Closure

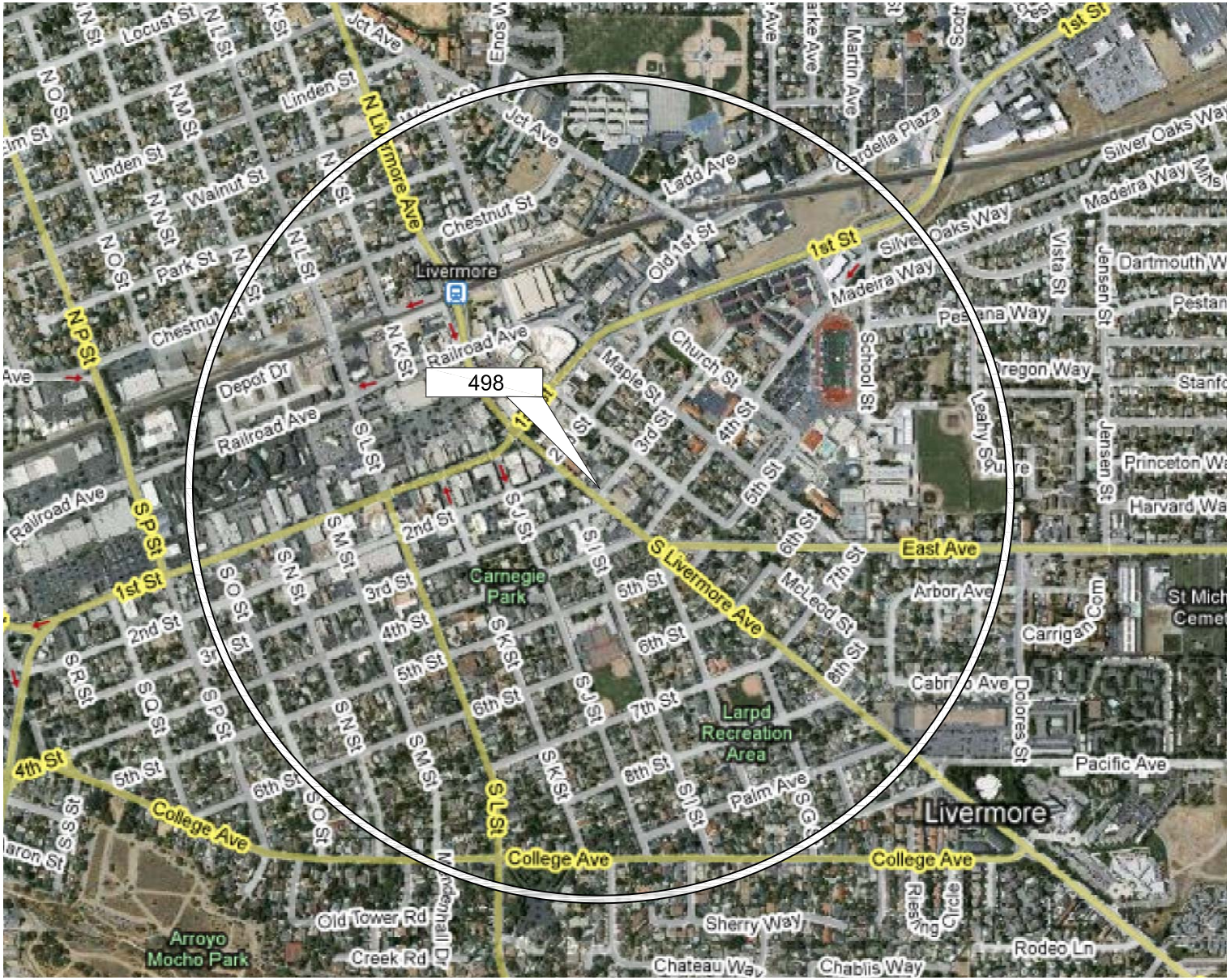
Our services will be performed in accordance with the generally accepted standard of practice at the time work commences. Results and recommendations will be based on review of available documentation and written or verbal correspondence with appropriate regulatory agencies,

laboratory results, observations of Stratus field personnel, and the points investigated. No other warranty, expressed or implied is made.

References:

Delta. September 19, 2001. *Product Line and Dispenser Island Sampling Results ARCO Station No. 498.*

URS. February 15, 2005. *Site Assessment Report ARCO Service Station #0498.*



Half-Mile Radius

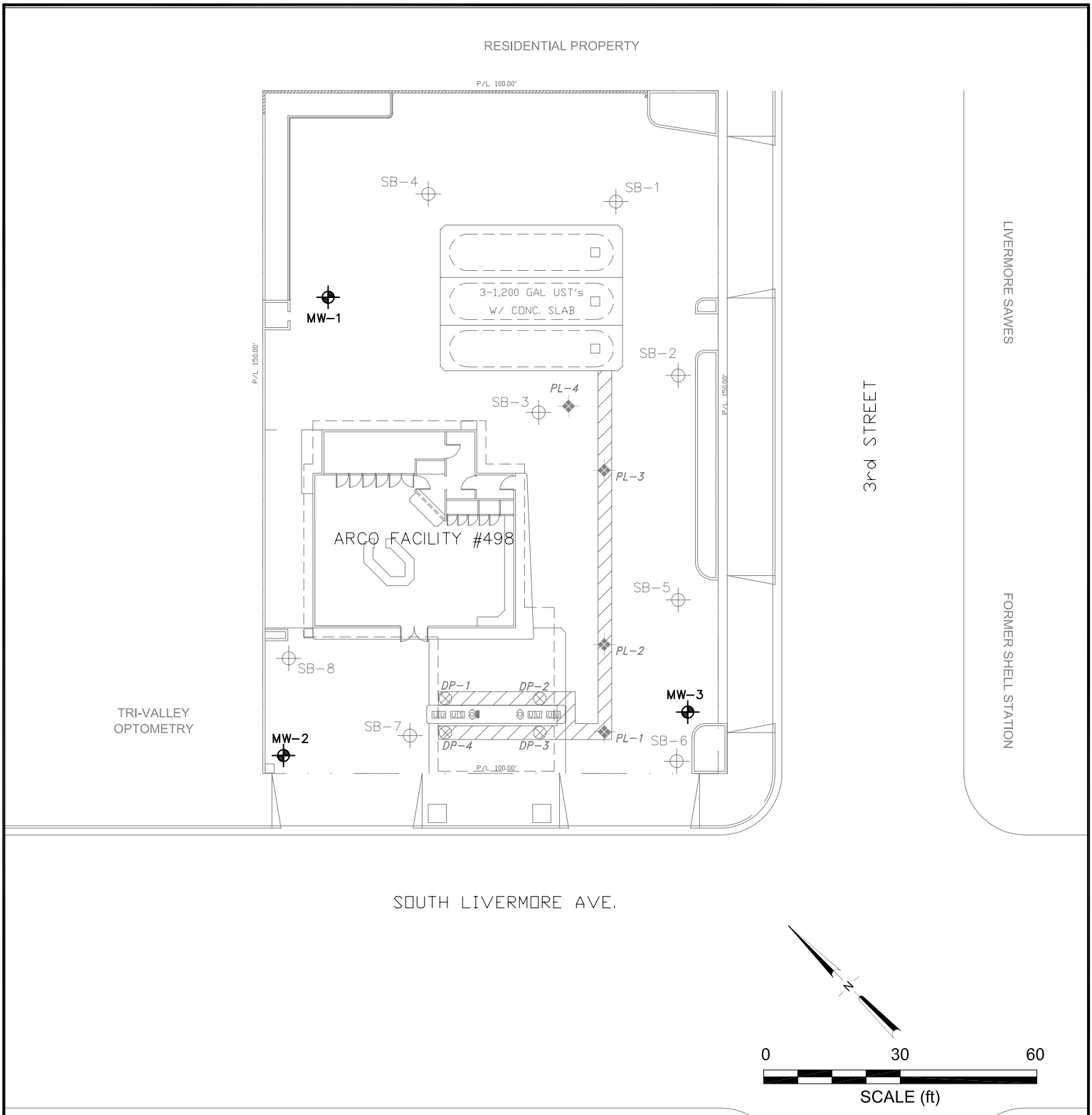
BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212, Chico, California

Project No.: 08-02-603 Date: 9/2/2008

Station #498
268 South Livermore Avenue
Livermore, California

Site Vicinity Map

Drawing
1



LEGEND

- PROPOSED WELL LOCATION
- SOIL BORING (URS 2005)
- FORMER PRODUCT LINE SOIL SAMPLE (DELTA 2001)
- FORMER DISPENSER PUMP SOIL SAMPLE (DELTA 2001)
- PRODUCT LINE EXCAVATION TRENCH

NOTE: SITE MAP ADAPTED FROM WATSON WEST AND DELTA ENVIRONMENTAL FIGURES. SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.

BROADBENT & ASSOCIATES, INC.
ENGINEERING, WATER RESOURCES & ENVIRONMENTAL
1324 Mangrove Ave. Suite 212
Chico, CA

Station #498
286 South Livermore Avenue
Livermore, California

Site Map with Historic
and Proposed Sample Locations

Project No.: 08-02-603 Date: 08/28/08

Drawing
2

Appendix A:

Historic Soil Analytical Data

TABLE 1

SOIL SAMPLE LABORATORY ANALYTICAL RESULTS

ARCO Service Station No. 498
286 South Livermore Avenue
Livermore, California

Sample ID	Date	Depth (ft)	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH as gasoline (mg/kg)	MTBE (mg/kg)	Total Lead (mg/kg)
Dispenser Island Samples									
DP-1	06/01/01	3.0	<0.0050	<0.0050	<0.0050	0.019	1.8	<0.050	23
DP-2	06/01/01	3.5	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	<0.050	3.7
DP-3	06/01/01	3.5	0.11	2.8	1.2	8.9	87	3.7	17
DP-4	06/01/01	3.5	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	<0.050	4.2
Product Line Samples									
PL-1	06/01/01	3.8	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	<0.050	2.3
PL-2	06/01/01	4.5	<0.0050	0.011	<0.0050	0.010	<1.0	<0.050	13
PL-3	06/01/01	5.0	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	<0.050	5.4
PL-4	06/01/01	2.5	<0.0050	<0.0050	<0.0050	<0.0050	<1.0	<0.050	190
Soil Stockpile Results									
SP-1,2,3,4	06/01/01	Composite	<0.0050	<0.0050	<0.0050	0.13	5.6	<0.050	32

TPH = Total purgeable hydrocarbons.
MTBE = Methyl tertiary butyl ether (analyzed by DHS LUFT Methods)
NA = Not Analyzed

Table 1 - Soil Analytical Data
ARCO Service Station #0498
286 South Livermore Avenue, Livermore California

Sample Name	Sample Depth (ft)	Date Sampled	TPH-GRO (mg/kg)	Benzene (mg/kg)	Toluene (mg/kg)	Ethylbenzene (mg/kg)	Xylenes (mg/kg)
SB-1-7'	7.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-1-12'	12.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-1-17'	17.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-1-22'	22.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-1-24'	24.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-2-10'	10.0	01/19/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-2-15'	15.0	01/19/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-2-18.5'	18.5	01/19/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-3-10'	10.0	01/19/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-3-15'	15.0	01/19/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-3-20'	20.0	01/19/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-3-25'	25.0	01/19/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-4-7'	7.0	01/19/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-4-12'	12.0	01/19/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-4-17'	17.0	01/19/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-4-22'	22.0	01/19/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-5-10'	10.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-5-15'	15.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-6-10'	10.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-6-15'	15.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-6-22'	22.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-7-10'	10.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-7-14.5'	14.5	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-7-20'	20.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-8-10'	10.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-8-15'	15.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-8-20'	20.0	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-8-25'	25	01/20/05	ND <1.0	ND <0.005	ND <0.005	ND <0.005	ND <0.005

Notes:
ND = Not Detected at or above the laboratory reporting limit
mg/kg = milligrams per kilogram
TPH-GRO = Total Petroleum Hydrocarbons gasoline range organics
BTEX = Benzene, toluene, ethylbenzene, and xylenes

Table 2 Soil Analytical Data-Oxygenates
ARCO Service Station #0498
286 South Livermore Avenue, Livermore California

Sample Name	Sample Depth (ft)	Date Sampled	Ethanol (mg/kg)	TBA (mg/kg)	MTBE (mg/kg)	DIPE (mg/kg)	ETBE (mg/kg)	TAME (mg/kg)	1,2-DCA (mg/kg)	EDB (mg/kg)
SB-1-7'	7.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-1-12'	12.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-1-17'	17.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-1-22'	22.0	01/20/05	ND <0.1	**0.031**	**0.015**	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-1-24'	24.0	01/20/05	ND <0.1	**0.025**	**0.006**	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-2-10'	10.0	01/19/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-2-15'	15.0	01/19/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-2-18.5'	18.5	01/19/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-3-10'	10.0	01/19/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-3-15'	15.0	01/19/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-3-20'	20.0	01/19/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-3-25'	25.0	01/19/05	ND <0.1	**0.021**	**0.011**	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-4-7'	7.0	01/19/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-4-12'	12.0	01/19/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-4-17'	17.0	01/19/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-4-22'	22.0	01/19/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-5-10'	10.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-5-15'	15.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-6-10'	10.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-6-15'	15.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-6-22'	22.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-7-10'	10.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-7-14.5'	14.5	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-7-20'	20.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-8-10'	10.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-8-15'	15.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-8-20'	20.0	01/20/05	ND <0.1	ND <0.01	ND <0.005	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005
SB-8-25'	25	01/20/05	ND <0.1	**0.012**	**0.022**	ND <0.01	ND <0.005	ND <0.005	ND <0.005	ND <0.005

Notes:

ND = Not Detected at or above the laboratory reporting limit
mg/kg = milligrams per kilogram
TBA = Tert-butyl alcohol
MTBE = Methyl tertiary butyl ether
DIPE = Di-isopropyl ether
ETBE = Ethyl tertiary butyl ether
TAME = Tert-amyl methyl ether
1,2-DCA = 1,2-Dichloroethane
EDB = 1,2-Dibromoethane