

Atlantic Richfield Company

Shannon Couch

Remediation Management Project Manager

RECEIVED

By Alameda County Environmental Health at 9:08 am, Jan 14, 2013

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January 8, 2013

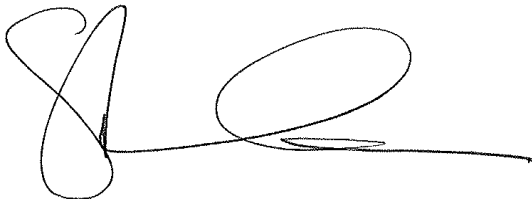
Mr. Jerry Wickham
Alameda County Environmental Health Department
1131 Harbor Bay Parkway, Suite 250
Alameda, CA 94502-6577

**Re: Sensitive Receptor Survey
ARCO Station No. 0498
286 S. Livermore Avenue
Livermore, California 94550
Alameda County Environmental Health Case No. RO0002873**

Dear Mr. Wickham,

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.

Regards,



Shannon Couch
Remediation Management Project Manager
Atlantic Richfield Company, a BP-affiliated company

Enclosure: Sensitive Receptor Survey

cc: Mr. Matthew Herrick, Broadbent & Associates, Inc. (electronic copy uploaded to ENFOS)



January 8, 2013

Ms. Shannon Couch
Atlantic Richfield Company
P.O. Box 1257
San Ramon, CA 94583

RE: SENSITIVE RECEPTOR SURVEY

ARCO Station No. 0498
286 S. Livermore Avenue
Livermore, California 94550
ACEH Case No. RO0002873

Dear Ms. Couch:

On behalf of Atlantic Richfield Company (ARC), Closure Solutions, Inc. (Closure Solutions) has prepared this *Sensitive Receptor Survey* (Survey) for the ARCO Station No. 0498, located at 286 S. Livermore Avenue, Livermore, California (Site). Closure Solutions performed the Survey to identify the presence of water wells within a ½-mile radius of the Site. The site setting, information on groundwater depth, groundwater flow direction, survey methods, and survey results are presented below.

1.0 SITE SETTING

The Site is currently an active ARCO station located on the northern corner of S. Livermore Avenue and 3rd Street in Livermore, California. The Site is located in a predominantly mixed commercial and residential area. Current Site facilities include two dispensers, three gasoline underground storage tanks, and a station building.

2.0 GROUNDWATER DEPTH AND FLOW DIRECTION

Groundwater monitoring and sampling associated with the environmental case has been conducted at the Site since 2008. Based on information contained in the *Third Quarter 2012 Semi-Annual Groundwater Monitoring Report* (dated July 30, 2012, depth to groundwater beneath the Site ranges from approximately 27 to 50 feet below ground surface and the predominant groundwater flow direction is to the northwest.

3.0 WELL SURVEY METHODS

To obtain information on the type and location of wells within a ½-mile radius of the Site, Closure Solutions requested a signed authorization form from the County of Alameda Environmental Health Services to access confidential well information. The signed authorization was then provided to the Department of Water Resources (DWR) for access to all available well completion reports for wells installed in the vicinity of the Site. The DWR furnished 440 well completion reports for wells installed in the Site vicinity. These wells were located in Sections 8, 9, 16, and 17 in Township 03S, Range 02E, Mount Diablo Meridian.

To assemble the survey information, Closure Solutions grouped the reports into the following categories:

- Reports that referenced well locations by current street addresses that could be verified using online resources (Google Earth or equivalent);
- Reports that referenced well locations by distance from a current street, intersection, or other known location such as a creek or park;
- Reports that referenced well locations by distance from a corner of a map Section;
- Reports that referenced well locations by outdated street addresses, route numbers, or street names/intersections that were changed/no longer existed;
- Reports that were illegible; and
- Reports for wells that had been destroyed.

Well locations referenced by current street addresses or by distances from a known location or street intersection were verified on a map to obtain distance from the Site. If the well location was within ½ mile of the Site, the well location was plotted on the map. Wells located outside the ½ mile radius were not plotted.

In cases where well completion reports contained street names or route numbers that no longer exist, either available Township, Range, and Section information was used to plot locations, or additional research was conducted to obtain information on historical street and route names. In a few cases, well locations could not be verified using the referenced locations or addresses provided, or the report was illegible. These wells were not included on the well survey map.

4.0 WELL SURVEY RESULTS

Based on Closure Solutions' review of information provided by the DWR, a total of seven wells were identified within a ½-mile radius of the Site. None of the seven wells identified appear to be located within a 1,000-foot radius of the Site. The closest well to the Site appears to be a municipal well located approximately 1,350 feet northeast, cross-gradient to the groundwater flow direction. The closest down-gradient well appears to be an irrigation well located approximately 2,050 feet north-northwest of the Site.

According to the DWR well logs, two of the seven wells were identified in a Spring Valley Water Company (SVWC) report dated 1912. Closure Solutions contacted the California Water Service Company (CWS) in Livermore, California, the water purveyor to the City of Livermore, to attempt to obtain additional information about the two SVWC wells. The CWS was unaware of the disposition of the SVWC wells. Both wells appear to be located greater than 1,000 feet from the Site. Based on the age of the two SVWC wells (greater than 100 years) and development of the area, it is likely that the wells no longer exist.

With the exception of the two SVWC wells, the approximate locations of wells identified within a ½-mile radius of the Site are presented on Figure 1. Well information including map ID, DWR log number, approximate distance of the well from the Site, well type, installation date, screen interval, and the total depth of the well is summarized in Table 1. Please note that for the purposes of this well survey, cathodic protection wells and wells associated with environmental cases are not included in the results.

5.0 SURFACE WATER

The nearest surface water body appears to be Arroyo Mocho, approximately 3,300 feet south (up-gradient/cross-gradient) of the Site.

6.0 SENSITIVE LAND USES

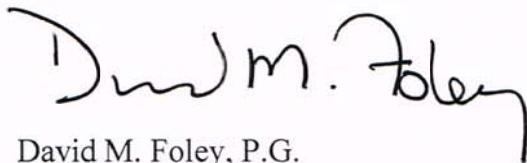
Closure Solutions reviewed satellite images (Google Earth or equivalent) to identify any sensitive land uses such as schools, day care facilities, hospitals or elder care facilities within 500-feet of the Site. Storyland Pre-School and Child Care was identified approximately 475 feet southeast (up-gradient to the groundwater flow direction) of the Site as shown on Figure 1.

7.0 LIMITATIONS

This report is based on Site conditions, data, and other information available as of the date of the report, and the conclusions and recommendations herein are only applicable to the time frame in which the report was prepared. Background information used to prepare this report including, but not limited to, previous field measurements, analytical results, Site plans and other data have been furnished to Closure Solutions by ARC and their previous consultants. Closure Solutions has relied on this information as furnished, and is neither responsible for nor has confirmed the accuracy of this information.

If you have any questions or comments regarding this report, please contact David Foley at (916) 760-7236, or by e-mail at dfoley@closureolutions.com.

Sincerely,
Closure Solutions, Inc.



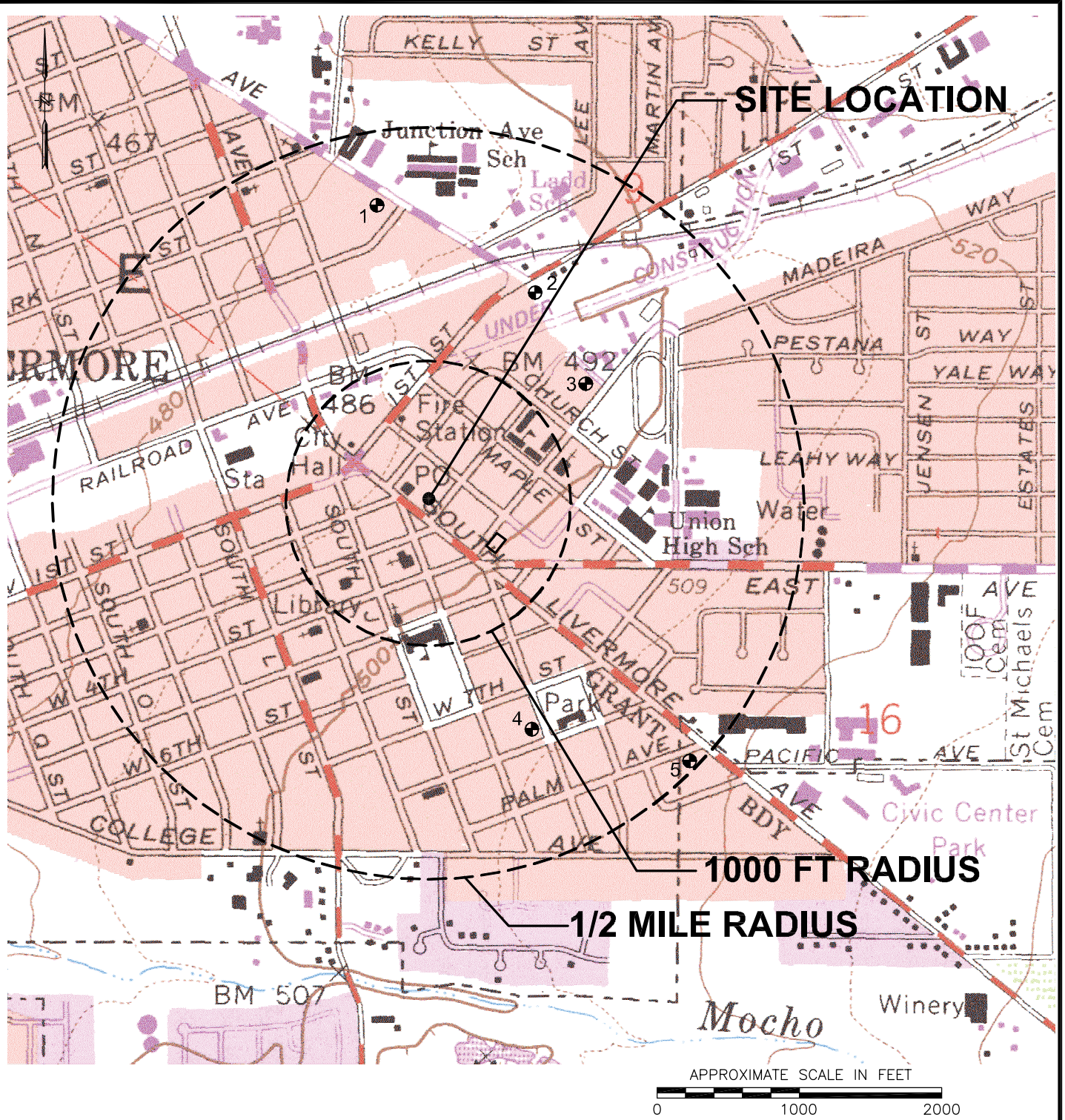
David M. Foley, P.G.
Senior Geologist



Attachments:

Figure 1 Well Survey Map

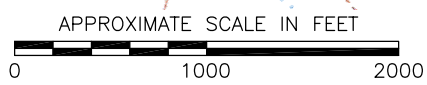
Table 1 Wells Located Within a ½-Mile Radius of the Site



SITE LOCATION

1000 FT RADIUS

1/2 MILE RADIUS



LEGEND:

- APPROXIMATE WATER SUPPLY WELL LOCATION
- APPROXIMATE LOCATION OF STORYLAND PRE-SCHOOL AND CHILD CARE

**FIGURE 1
WELL SURVEY MAP**

ARCO STATION #0498
286 S. LIVERMORE AVENUE
LIVERMORE, CALIFORNIA



4600 Northgate Boulevard • Suite 230
Sacramento • California • 95834
Phone: (800) 988-7880

20130107.14180031 D:\Client Drawings\Closure\ARCO\0498\ARCO_0498 WELL SURVEY.dwg

REFERENCE:
USGS 7.5 MIN QUAD MAP TITLED: LIVERMORE, CALIFORNIA DATED: 1961 REVISED 1980

Table 1 - Wells Located Within a 1/2-Mile Radius of the Site

ARCO Station No. 0498
 486 S. Livermore Avenue
 Livermore, California

Map ID No.	DWR Log No.	Approximate Distance from Site	Well Type	Installation Date	Screen Interval	Total Depth
1	429543	2,050 ft NNW	irr	Mar-91	49-89 ft bgs	95 ft bgs
2	50879	1,600 ft NNE	mun	Jan-60	136-496 ft bgs	529 ft bgs
3	24084	1,350 ft NE	mun	May-56	192-492 ft bgs	515 ft bgs
4	24950	1,700 ft SSE	mun	Feb-58	intervals from 288-523 ft bgs	584 ft bgs
5	01-464L	2,550 ft SE	unk	Jul-44	intervals from 140-287 ft bgs	410 ft bgs
	01-1712	>1,000 ft SW	unk	>100 years	unk	77 ft bgs
	01-2141	likely >1,000 ft NNW	unk	>100 years	unk	212 ft bgs

Abbreviations:

ft = feet
 N = North
 S = South
 E = East
 W = West
 dom = domestic well
 irr = irrigation well
 mun = municipal well
 pub = public well
 unk = unknown
 bgs = below ground surface