James P. Kiernan, P.E.
Project Manager

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December 21, 2017

RECEIVED
By Alameda County Environmental Health 10:59 am, Jan 12, 2018

Alameda County Department of Environmental Health
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Re: Unocal No. 5781 (351640)
Semi-Annual Status Report and Low-Threat Closure Review – Fourth Quarter 2017
3535 Pierson Street, Oakland, California
Fuel Leak Case No.: RO0000253
GeoTracker Global ID #T0600101467

I have read and acknowledge the content, recommendations and/or conclusions contained in the attached document or report submitted on my behalf to ACDEH's FTP server and the SWRCB's GeoTracker website.

The information in this report is accurate to the best of my knowledge. This report was prepared by Arcadis, upon whose assistance and advice I have relied.

Sincerely,

James P. Kiernan, P.E.
Project Manager

Attachment: Semi-Annual Status Report and Low-Threat Closure Review – Fourth Quarter 2017 by Arcadis

Arcadis U.S., Inc.
100 Montgomery Street
Suite 300
San Francisco
CA 94104
Tel 415-374-2744
Fax 415-374-2745
www.arcadis-us.com

ENVIRONMENT

Mr. Keith Nowell
Alameda County Health Care Services Agency
Department of Environmental Health (ACDEH)
1131 Harbor Bay Parkway, Suite 250
Alameda, California 94502-6577

Subject:
Semi-Annual Status Report and Low Threat Closure Review, Fourth Quarter 2017

Date:
December 21, 2017

Contact:
Carl Edwards

Phone:
415.432.6945

Email:
Carl.Edwards@arcadis.com

Our ref:
GMR35135.1640

Dear Mr. Nowell,

On behalf of Chevron Environmental Management Company's (CEMC's) affiliate, Union Oil Company of California (Union Oil), Arcadis has prepared the attached *Semi-Annual Status Report and Low Threat Closure Review, Fourth Quarter 2017* for the following facility:

76 Station No.	**Case No.**	**Location**
Unocal #5781	RO0000253	3535 Pierson Street Oakland, CA

If you have any questions, please do not hesitate to contact me.

Sincerely,

Arcadis U.S., Inc.

Carl Edwards
Project Manager

Copies:
Geotracker Database
Mr. James Kiernan, CEMC (electronic)
Dr. Delong Liu, United Brothers Enterprise Inc. (2501 North Main Street, Walnut Creek, CA 94597)
Mr. Ed Ralston, Phillips 66 (electronic)

Semi-Annual Status Report and Low Threat Closure Review
Fourth Quarter 2017
December 21, 2017

Facility No:	Unocal #5781	Address:	3535 Pierson Street, Oakland, CA

Arcadis Contact Person / Phone No.:	Carl Edwards / 415.432.6945
Arcadis Project No.:	GMR35135.1640
Primary Agency/Regulatory ID No.:	Alameda County LOP (ACDEH) Case # RO0000253: Keith Nowell / San Francisco Bay RWQCB (Region 2) – Case # 01-1592

WORK CONDUCTED THIS QUARTER [Fourth Quarter 2017]:

1. Switched to a second and fourth quarter semi-annual groundwater monitoring and sampling schedule.
2. Conducted groundwater monitoring activities on November 10, 2017.
3. Prepared the *Semi-Annual Status Report and Low Threat Closure Review, Fourth Quarter 2017*.

WORK PROPOSED NEXT PERIOD [First and Second Quarter 2018]:

1. If required, conduct semi-annual groundwater monitoring activities in second quarter 2018.
2. If required, prepare the *Semi-Annual Status Report, Second Quarter 2018*.

Current Phase of Project:	Monitoring/closure review	
Frequency of Monitoring / Sampling:	Semi-Annual	
Are Phase Separate Hydrocarbons (PSH) Present On-site:	No	
Cumulative PSH Recovered to Date:	None	(gallons)
Approximate Depth to Groundwater:	13.31 to 16.08	(feet below top of casing)
Approximate Groundwater Elevation:	139.30 to 140.17	(feet above mean sea level)

Groundwater Flow Direction	North-Northeast	
Groundwater Gradient	0.026	(feet per foot)
Current Remediation Techniques:	None	
Permits for Discharge:	N/A	
Summary of Unusual Activity:	N/A	
Agency Directive Requirements:	None	

DISCUSSION

Gettler-Ryan, Inc. (G-R) conducted groundwater monitoring and sampling activities on November 10, 2017. Field data sheets and general procedures are included as Attachment A. Seven (7) monitoring wells (MW-A and MW-4 through MW-9) were gauged, purged, and sampled by G-R representatives.

Groundwater samples were submitted to BC Laboratories, Inc. of Bakersfield, California (BC Labs) under standard chain-of-custody protocols. Gauging and analytical data obtained by G-R for this event are summarized in Table 1. Historical gauging and analytical data for the site are summarized in Table 2, and included as Attachment B. The site location map and site plan are presented as Figures 1 and 2, respectively; the groundwater elevation contour map for the site on November 10, 2017 is presented as Figure 3. Isoconcentration maps for total petroleum hydrocarbons as gasoline (TPH-g) and total petroleum hydrocarbons as diesel (TPH-d) are presented on Figures 4 and 5, respectively. Concentration maps for benzene, methyl tertiary butyl ether (MTBE), and tertiary butyl alcohol (TBA) are presented on Figures 6 through 8, respectively. A historical groundwater flow direction rose diagram is presented on Figure 9. A copy of the laboratory analytical report and chain-of-custody documentation is included as Attachment C.

The estimated groundwater flow direction was to the north-northeast with a calculated gradient of 0.026 (feet/foot). This flow direction is consistent with previous monitoring events where the flow direction is often in a northeasterly direction. Residual dissolved petroleum hydrocarbons are primarily limited to on-site monitoring well MW-5, and overall are declining. Analytical results indicated that TPH-d (68 micrograms per liter [µg/L] following silica gel cleanup), TPH-g (5,400 µg/L), ethylbenzene (14 µg/L), total xylenes (56 µg/L), and MTBE (3.7 µg/L) were detected in the groundwater sample collected from MW-5.

Only TPH-d (51 µg/L in MW-A) and low concentrations of MTBE (MW-4 [1.1 µg/L], MW-8 [2.2 µg/L], and MW-9 [0.54 µg/L]) were detected in the remaining site wells. The detected concentrations were generally within the historical ranges in the wells. No other constituents of concern (COCs) were detected above laboratory reporting limits in any of the wells during this sampling event.

LOW THREAT CLOSURE POLICY REVIEW

ACDEH directed Arcadis to evaluate the site against the State Water Resources Control Board (SWRCB) Low Threat Closure Policy (LTCP; SWRCB 2012a) during phone correspondence on October 3, 2017, Follow-up correspondence confirming this review is included as Attachment D. The review is presented below.

GENERAL CRITERIA

Criterion A - The unauthorized release is located within the service area of a public water system.

Drinking water is supplied to the area by the East Bay Municipal Utility District (EBMUD; AECOM 2015b).

Criterion B - The unauthorized release consists only of petroleum.

The first identified soil impacts occurred as a result of a release from the first-generation 280-gallon waste-oil underground storage tank (UST; Delta 2008). Additional soil and groundwater impacts occurred as a result of unauthorized release(s) of petroleum from the first-generation gasoline USTs (Delta 2008). Only trace concentrations of select volatile organic compounds (VOCs) were detected in a few of the historical soil samples. No other non-hydrocarbon releases have been documented at the site.

Criterion C - The unauthorized ("primary") release from the UST system has been stopped.

The first-generation waste-oil and gasoline USTs were removed and replaced in 1989 (Delta 2008).

Criterion D - Free product has been removed to the maximum extent practicable.

Site monitoring wells have been gauged for free product since December 1990. The only observation of free product occurred in the fourth quarter 2012. Approximately 0.39 feet of free product was detected in MW-5 in October 2012. Follow-up free product monitoring events were conducted in November and December 2012, and none was detected. No free product has since been observed in any site monitoring wells.

Criterion E - A conceptual site model that addresses the nature, extent, and mobility of the release has been developed.

The most recent CSM for the site was submitted by AECOM on December 16, 2015 (AECOM 2015b).

Criterion F - Secondary source has been removed to the extent practicable.

Secondary source removal was achieved by over-excavation in February 1990, following removal of the first-generation gasoline and waste-oil USTs in December 1989. A visual inspection of the gasoline USTs following removal indicated no holes or cracks were present (Delta 2010). TPH-g and benzene were detected in a few of the soil samples collected from the floor and sidewalls of the gasoline UST pit; however, the concentrations were low and did not warrant further excavation. TPH-g detections ranged from 3.5 to 46 milligrams per kilogram (mg/kg) and the benzene detections were 0.1 and 0.65 mg/kg (Delta 2010).

An approximate 1.25-square-inch hole was observed during removal of the first-generation waste-oil UST (Delta 2010). Elevated concentrations of TPH-d (8,300 mg/kg) and total oil and grease (TOG; 48,000 mg/kg) were detected in a soil sample (WO1[1989]) collected beneath the waste-oil UST at approximately 6 feet below ground surface (bgs; Figure 10; Delta 2010). The waste-oil UST pit was subsequently over-excavated both laterally and deeper (16 feet bgs) and significantly lower concentrations of TPH-d (74 mg/kg) and TOG (910 mg/kg) were detected in a sample (WO1[16]) collected from the floor of the excavation. The lateral extent of excavation was limited by the presence of subsurface sewer and gas lines to the south and west, and the station building to the north (Delta 2010). Soil sampling locations and the approximate excavation extents are shown on Figure 10.

During removal of the second-generation waste-oil UST in 2008, one soil sample (WO1[2008]) was collected from the base of the excavation (9 feet bgs) along with three sidewall samples at 6.5 or 7 feet bgs (WO2 through WO4; Figure 10; Delta 2010). The samples did not contain detectable concentrations of petroleum hydrocarbons (including TPH-d and TOG), VOCs, semi-VOCs, or polychlorinated biphenyls (PCBs).

Based on the above information and the general declining concentrations in groundwater, secondary source material has been removed to the extent practicable.

Criterion G - Soil and groundwater has been tested for MTBE and results reported in accordance with Health and Safety Code section 25296.15.

Soil samples were collected and tested for MTBE beginning in 2003. Post-2003 soil assessment activities have included soil sampling during the 2008 waste oil UST removal, the installation of monitoring wells MW-4 through MW-9, and the advancement of soil borings SWC-2, SWD-2, SB-6 through SB-8 and SB-10 through SB-19 (Delta 2010; AECOM 2015a; Arcadis 2017). Groundwater samples collected between

February 2002 and December 2017 have also been analyzed for MTBE (Arcadis 2017). Soil and groundwater analytical results were routinely summarized in reports and uploaded to the SWRCB's GeoTracker website.

Criterion H - Nuisance as defined by Water Code section 13050 does not exist at the site.

Nuisance does not exist at the site. Site conditions and the treatment and disposal of site wastes are not injurious to health, indecent or offensive to the senses, do not obstruct free use of property or interfere with the comfortable enjoyment of life or property. Site conditions and the treatment and disposal of site wastes do not affect an entire community or neighborhood or any considerable number of persons. Site impacts are restricted to the subsurface and are present in a limited area that does not adversely affect the community at large.

Media-Specific Criteria

The following sections outline the LTCP media-specific criteria at the site.

The LTCP states that "the contaminant plume that exceeds [water quality objectives] WQOs must be stable or decreasing in areal extent, and meet all of the additional characteristics of one of the five classes of sites." The following section summarizes the plume stability and additional groundwater-specific criteria.

Plume Stability

According to the SWRCB *Technical Justification for Groundwater Media-Specific Criteria* (SWRCB 2012b), plume stability can be demonstrated in one of two ways: 1) "routinely observed non-detect values for groundwater parameters in down-gradient wells" or 2) "stable or decreasing concentration levels in down-gradient wells." Based on historical groundwater flow, downgradient wells include MW-A, MW-4, MW-5, MW-8 and MW-9. Petroleum hydrocarbons generally have not been detected in groundwater samples collected from MW-A, MW-4, MW-8 and MW-9, with the exception of periodic low concentrations of MTBE.

Groundwater samples collected from monitoring well MW-5 have routinely contained TPH-g and TPH-d at concentrations above the San Francisco Bay Regional Water Quality Control Board Tier 1 Environmental Screening Levels (ESLs) of 100 µg/L. The current remaining concentrations are significantly below the historical maximums. In order to evaluate stable or decreasing TPH-g and TPH-d trends at the site, Arcadis performed linear regression analyses using available historical groundwater analytical data. Groundwater analytical data are available from MW-5 since 2010 when it was installed. Since remediation activities consisted of excavations prior to 2010, the monitoring data represents natural attenuation conditions at the site and were considered for the linear regression analysis.

Linear regression analyses using natural log normalized concentration data were conducted to evaluate trend direction and to estimate attenuation rates for the locations with significant decreasing concentration trends (USEPA 2002). The p-value of the correlation provides a measure of the significance of the slope, or the correlation between the x and y variables. Correlations were accepted as significant at the 90 percent confidence level, indicated by a p-value of 0.10 or less. The trend direction was defined as decreasing if the slope of the trend line was negative, and increasing if the slope of the trend line was positive. The R^2 value is a measure of how well the linear regression fits the site data; R^2 values closer to zero indicate weak model fits, while R^2 values closer to 1 indicate stronger model fits. Results with R^2 values less than 0.1, indicating substantial variability in the data, were defined as having no apparent trend. Where non-detect results were included in linear regression analyses, the reporting limit was substituted. The linear regression analyses were conducted in Microsoft® Excel following USEPA (2002, 2009) guidance.

Results of the linear regression analysis are summarized in Attachment E. Statistically significant decreasing trends were observed for TPH-g and TPH-d in monitoring well MW-5, indicating the hydrocarbon plume is decreasing in aerial extent.

Additional Groundwater-Specific Criteria

As described in the LTCP, a site can meet the groundwater media-specific criteria through one of five main classes. Site conditions meet the characteristics of groundwater-specific criteria for ***Class 1*** as described in detail below:

Class 1, Criterion A: The contaminant plume that exceeds water quality objectives is less than 100 feet in length.

For the determination of the classification of groundwater impacts, the length of the plume exceeding WQOs for each COC was estimated from the most recent isoconcentration maps. Plume lengths were calculated from the suspected source area (most upgradient source) to the further downgradient edge of the plume exceeding their respective WQO.

- The TPH-g and TPH-d plume exceeding 100 µg/L is limited to the area of on-site well MW-5 and is less than 100 feet in length (Figures 4 and 5).

Class 1, Criterion B: There is no free-product.

As discussed above, free product has not been observed in site monitoring wells with the exception of one event in October 2012.

Class 1, Criterion C: The nearest existing water supply well or surface water body is greater than 250 feet from the defined plume boundary.

AECOM's CSM indicated the closest surface water bodies are Damon Slough, located 775 feet south of the site, and Lion Creek, located 525 feet southeast of the site (AECOM 2015b).

A file search of both the California Department of Water Resources (DWR) well database in 2013 and the Alameda County Public Works Agency (ACPWA) database in February 2014 identified four irrigation wells located 2,200 feet northeast of the site as the nearest existing water supply wells (AECOM 2015b). No other wells (domestic or municipal) were identified within a 1-mile radius of the site.

Petroleum Vapor Intrusion to Indoor Air

As described in the LTCP, satisfaction of the media-specific criteria for petroleum vapor intrusion to indoor air is not required at active commercial petroleum fueling facilities where there are no site-specific characteristics that would pose an unacceptable health risk. The site is an active fueling facility with no unacceptable risk characteristics, and is therefore subject to the stated exemption to the media-specific criteria for petroleum vapor intrusion to indoor air.

Direct Contact and Outdoor Air Exposure

As described in the LTCP, sites will meet the Media-Specific Criteria for direct contact with contaminated soil or inhalation of contaminants volatized to outdoor air if one of the following three criteria are met:

1. The maximum concentrations of COCs in soil are less than or equal to the criteria listed in Table 1 of the LTCP.

2. A site-specific risk assessment shows that COCs present in soil will not adversely affect human health.

3. Exposure to COCs is mitigated through engineering or institutional controls.

This site meets the first criteria listed above for commercial/industrial land use as summarized below:

Comparison of maximum concentrations of benzene, ethylbenzene, and naphthalene in remaining soil against the

No Significant Risk Values

Chemical	Commercial/Industrial				Utility Worker	
	0 to 5 feet bgs mg/kg		Volatilization to outdoor air (5 to 10 feet bgs) mg/kg		0 to 10 feet bgs mg/kg	
	LTCP Table 1	Site Maximum	LTCP Table 1	Site Maximum	LTCP Table 1	Site Maximum
Benzene	8.2	<0.010	12	2.3	14	2.3
Ethylbenzene	89	<0.010	134	7.3	314	7.3
Naphthalene	45	<0.005	45	<0.005	219	<0.005
PAHs	0.68	ND	NA	NA	4.5	ND

Notes:

NA = not applicable

mg/kg = milligrams per kilogram

PAH = polycyclic aromatic hydrocarbons

ND = not detected; reporting limits vary

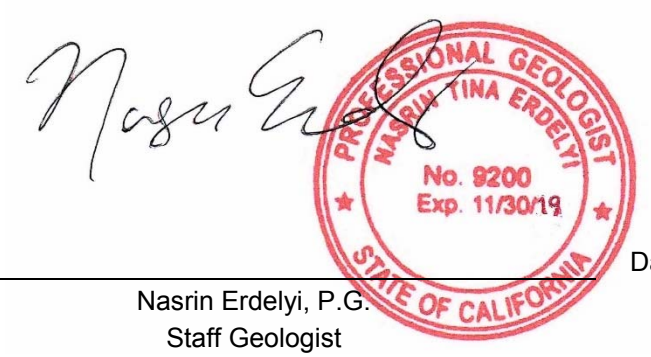
As shown in the table above, a review of historical soil data collected from 0 to 10 feet bgs shows site soil conditions meet the media-specific criteria for direct contact with contaminated soil or inhalation of contaminants volatized to outdoor air under a commercial/industrial land use scenario. The concentrations also meet the criteria under the more conservative residential land use scenario. Soil sample and boring locations are shown on Figure 10.

CONCLUSIONS AND RECOMMENDATIONS

Based on the site conditions and available historical data and reports, the site meets the low-threat closure criteria. Arcadis respectfully requests that the ACDEH grant low-threat closure because site conditions meet the general and media-specific criteria, and therefore, the site poses a low threat to human health, safety, and the environment, and satisfies the case closure requirements of Health and Safety Code Section 25296.10. Analytical data presented support a conclusion that residual concentrations of COCs in soil and groundwater at the site are not expected to pose a significant threat to human health or the environment.

LIMITATIONS

This report was prepared in accordance with the scope of work outlined in Arcadis' contract and with generally accepted professional engineering and environmental consulting practices existing at the time this report was prepared and applicable to the location of the site. It was prepared for the exclusive use of Chevron Environmental Management Company's affiliate, Union Oil Company of California ("Union Oil"), for the express purpose stated above. Any re-use of this report for a different purpose or by others not identified above shall be at the user's sole risk without liability to Arcadis. To the extent that this report is based on information provided to Arcadis by third parties, Arcadis may have made efforts to verify this third party information, but Arcadis cannot guarantee the completeness or accuracy of this information. The opinions expressed and data collected are based on the conditions of the site existing at the time of the field investigation. No other warranties, expressed or implied are made by Arcadis.



Date: December 21, 2017

Nasrin Erdelyi, P.G.
Staff Geologist

Date: December 21, 2017

Carl Edwards
Project Manager

ATTACHMENTS:

Table 1	Current Groundwater Gauging and Analytical Results
Table 2	Historical Groundwater Gauging and Analytical Results, Fourth Quarter 1990 to Current
Figure 1	Site Location Map
Figure 2	Site Plan
Figure 3	Groundwater Elevation Contour Map, November 10, 2017
Figure 4	TPH-g Isoconcentration Map, November 10, 2017
Figure 5	TPH-d Concentration Map, November 10, 2017
Figure 6	Benzene Concentration Map, November 10, 2017
Figure 7	MTBE Concentration Map, November 10, 2017
Figure 8	TBA Concentration Map, November 10, 2017
Figure 9	Groundwater Flow Direction Rose Diagram
Figure 10	Site Plan Showing Boring Locations
Attachment A	Field Data Sheets and General Procedures
Attachment B	Historical Groundwater Analytical Data
Attachment C	Laboratory Report and Chain-of-Custody Documentation
Attachment D	Arcadis Correspondence
Attachment E	Linear Regressions

REFERENCES:

AECOM. 2015a. Site Assessment Report, Unocal No. 5781 (351640), 3535 Pierson Street, Oakland, California. July 13.

AECOM. 2015b. Site Conceptual Model, Unocal No. 5781 (351640), 3535 Pierson Street, Oakland California. December 16.

Delta Consultants, Inc. (Delta). 2008. Site Conceptual Model, 76 Service Station No. 5781, 3535 Pierson Street, Oakland, California. November 20.

Delta. 2010. Assessment Report, Site Conceptual Model Update, and Additional Assessment Workplan, 76 Station No. 5781, 3535 Pierson Street, Oakland, CA. July 30.

State Water Resources Control Board (SWRCB). 2012a. *Low-Threat Underground Storage Tank Case Closure Policy*. *Adopted May 1, 2012, Effective August 17*, 2012. (http://www.swrcb.ca.gov/ust/lt_cls_plcy.shtml)

SWRCB. 2012b. *Technical Justification for Groundwater Media Specific Criteria*. April 24.

United States Environmental Protection Agency (USEPA). 2002. Calculation and Use of First-Order Rate Constants for Monitored Natural Attenuation Studies. EPA/540/S-02/500.

USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Office of Resource Conservation and Recovery. Unified Guidance. EPA 530-R-09-007.

TABLES

Table 1. Current Groundwater Gauging and Analytical Results
Union Oil Company of California
Unocal No. 5781 (351640)
3535 Pierson Street, Oakland, California

Well ID	Sample Date	TOC (ft amsl)	DTW (ft bTOC)	GW Elev (ft amsl)	TPH-d (µg/L)	TPH-d (w/SGC) (µg/L)	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	EDB (µg/L)	EDC (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	Comment
MW-A	11/10/2017	154.79	15.19	139.60	**51**	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	A52
MW-4	11/10/2017	153.48	13.31	140.17	<50	--	<50	<0.50	<0.50	<0.50	<1.0	**1.1**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
MW-5	11/10/2017	153.66	14.18	139.48	**620**	**68**	**5,400**	<0.50	<0.50	**14**	**56**	**3.7**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	Z1, A52
MW-6	11/10/2017	154.62	15.13	139.49	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
MW-7	11/10/2017	155.38	16.08	139.30	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
MW-8	11/10/2017	153.71	13.75	139.96	<50	--	<50	<0.50	<0.50	<0.50	<1.0	**2.2**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
MW-9	11/10/2017	153.37	13.65	139.72	<50	--	<50	<0.50	<0.50	<0.50	<1.0	**0.54**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
QA	11/10/2017	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	

Notes:

MW = Groundwater monitoring well
TOC = Top of casing
ft amsl = Feet above mean sea level
DTW = Depth to groundwater
ft bTOC = Feet below top of casing
-- = Not sampled/not measured
ft = Feet
Samples analyzed by EPA Method 8260B:
GW Elev = Groundwater elevation
µg/L = Micrograms per liter
Bold = Value exceeds laboratory reporting limits
<0.50 = Not detected at or above the laboratory detection limit

TPH-g = Total petroleum hydrocarbons, gasoline range by LUFT GC/MS according to Environmental Protection Agency (EPA) Method 8015
TPH-d = Total petroleum hydrocarbons, diesel range by LUFT GC/MS according to EPA Method 8015B
TPH-d (w/SGC) = Total petroleum hydrocarbons, diesel with Silica Gel Cleanup, by LUFT method
Benzene, toluene, ethylbenzene and total xylenes (collectively BTEX)
MTBE = Methyl tert-butyl ether
TBA = Tert-butanol or tertiary butyl alcohol
EDB = 1,2-Dibromoethane
EDC = 1,2-Dichloroethane
DIPE = Di-isopropyl ether
ETBE = Ethyl tert-butyl ether
TAME = Tert-amyl methyl ether
A52 = Chromatogram not typical of diesel
Z1 = 10uL of antifoamer solution added to the sample VOA.
Data QA/QC by: IC 11.24.2017

Table 2. Historical Groundwater Gauging and Analytical Results
Fourth Quarter 1990 to Current
Union Oil Company of California
Unocal No. 5781 (351640)
3535 Pierson Street, Oakland, California

Well ID	Sample Date	TOC (ft amsl)	DTW (ft bTOC)	PSH thickness (ft)	PSH recovered (gal)	GW Elev (ft amsl)	TPH-d (µg/L)	TPH-d (w/SGC) (µg/L)	TPH-g (µg/L)	Benzene (µg/L)	Toluene (µg/L)	Ethyl-benzene (µg/L)	Total Xylenes (µg/L)	MTBE (µg/L)	TBA (µg/L)	EDB (µg/L)	EDC (µg/L)	DIPE (µg/L)	ETBE (µg/L)	TAME (µg/L)	Ethanol (µg/L)	Comments
MW-A	12/18/1990	--	--	--	--	--	73	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	
	5/3/1991	--	--	--	--	--	ND	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	
	8/7/1991	--	--	--	--	--	ND	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	
	11/8/1991	--	--	--	--	--	ND	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	
	2/6/1992	151.80	19.88	0	0	131.92	ND	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	
	8/4/1992	151.80	18.95	0	0	132.85	ND	--	ND	ND	ND	ND	0.51	--	--	--	--	--	--	--	--	
	2/10/1993	151.80	17.71	0	0	134.09	ND	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	
	2/10/1994	151.80	15.25	0	0	136.55	ND	--	ND	ND	0.52	ND	0.92	--	--	--	--	--	--	--	--	
	2/9/1995	151.80	15.68	0	0	136.12	ND	--	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	--	
	2/6/1996	151.80	12.52	0	0	139.28	120	--	ND	ND	ND	ND	2.1	--	--	--	--	--	--	--	--	
	2/5/1997	151.80	13.01	0	0	138.79	61	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	
	2/2/1998	151.80	11.91	0	0	139.89	ND	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	
	2/22/1999	151.80	11.24	0	0	140.56	ND	--	ND	ND	ND	ND	ND	ND	--	--	--	--	--	--	--	
	2/26/2000	151.80	12.16	0	0	139.64	ND	--	ND	ND	1.01	ND	ND	ND	--	--	--	--	--	--	--	
	3/7/2001	151.80	11.91	0	0	139.89	131	--	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
	2/22/2002	151.80	14.08	0	0	137.72	<50	--	<50	<0.50	<0.50	<0.50	<0.50	<0.50	--	--	--	--	--	--	--	
	2/22/2003	151.80	14.41	0	0	137.39	93	--	<50	<0.50	<0.50	<0.50	<0.50	<2.0	<100	<2.0	<0.50	<2.0	<2.0	<2.0	<500	
	2/3/2004	151.80	14.32	0	0	137.48	60	--	<50	<0.50	<0.50	<0.50	<0.50	<2.0	<5.0	<0.50	<0.50	<0.50	<0.50	<0.50	<50	
	2/18/2005	151.80	14.21	0	0	137.59	<50	--	<50	<0.50	<0.50	<0.50	<0.50	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/29/2006	151.80	12.72	0	0	139.08	<200	--	<50	<0.30	<0.30	<0.30	<0.60	0.54	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/28/2007	151.80	13.98	0	0	137.82	92	--	<50	<0.30	<0.30	<0.30	<0.60	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/22/2008	151.80	12.68	0	0	139.12	<50	--	<50	<0.30	<0.30	<0.30	<0.60	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/27/2009	151.80	14.35	0	0	137.45	53	--	<50	<0.30	<0.30	<0.30	<0.60	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/23/2010	151.80	19.55	0	0	132.25	<58	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
	6/16/2010	154.79	17.85	0	0	136.94	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	9/29/2010	154.79	15.50	0	0	139.29	<1200	--	<50	<0.50	<0.50	<0.50	<1.0	0.63	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	12/21/2010	154.79	14.43	0	0	140.36	<50	--	<50	<0.50	<0.50	<0.50	<1.0	0.65	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/10/2011	154.79	17.70	0	0	137.09	<50	--	<50	<0.50	<0.50	<0.50	<1.0	0.56	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	06/07/2011	154.79	13.92	0	0	140.87	<40	--	<50	<0.50	<0.50	<0.50	<1.0	0.57	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	08/18/2011	154.79	18.83	0	0	135.96	<40	--	<50	<0.50	<0.50	<0.50	<1.0	0.61	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/04/2011	154.79	14.67	0	0	140.12	<40	--	<50	<0.50	<0.50	<0.50	<1.0	0.72	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	01/24/2012	154.79	16.75	0	0	138.04	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	04/06/2012	154.79	17.14	0	0	137.65	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	07/02/2012	154.79	14.79	0	0	140.00	<40	--	<50	<0.50	<0.50	<0.50	<1.0	0.56	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/4/2012	154.79	17.52	0	0	137.27	<50	--	<50	<0.50	<0.50	<0.50	<1.0	0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/23/2013	154.79	15.08	0	0	139.71	<50	--	<50	<0.50	<0.50	<0.50	<1.0	0.55	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/22/2013	154.79	15.60	0	0	139.19	<50	--	<50	<0.50	<0.50	<0.50	<1.0	0.59	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/31/2013	154.79	16.42	0	0	138.37	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/17/2013	154.79	16.57	0	0	138.22	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/24/2014	154.79	17.33	0	0	137.46	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/17/2014	154.79	16.65	0	0	138.14	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/18/2014	154.79	18.02	0	0	136.77	--	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/21/2014	154.79	18.41	0	0	136.38	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/20/2015	154.79	17.95	0	0	136.84	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	pre-purge
	1/20/2015	154.79	--	--	--	--	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	post-purge
	6/3/2015	154.79	18.70	0	0	136.09	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	9/7/2015	154.79	18.18	0	0	136.61	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	12/22/2015	154.79	18.50	0	0	136.29	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/15/2016	154.79	18.27	0	0	136.52	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	6/22/2016	154.79	15.48	0	0	139.31	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/25/2016	154.79	17.30	0	0	137.49	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/23/2016	154.79	18.09	0	0	136.70	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	**47**	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/10/2017	154.79	15.98	0	0	138.81	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/1/2017	154.79	13.41	0	0	141.38	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	S1

Table 2. Historical Groundwater Gauging and Analytical Results
Fourth Quarter 1990 to Current
Union Oil Company of California
Unocal No. 5781 (351640)
3535 Pierson Street, Oakland, California

	Sample	TOC	DTW	PSH thickness	PSH recovered	GW Elev	TPH-d	TPH-d (w/SGC)	TPH-g	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	EDB	EDC	DIPE	ETBE	TAME	Ethanol	Comments
	11/10/2017	154.79	15.19	0	0	139.60	**51**	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	A52
MW-4	6/16/2010	153.48	11.13	0	0	142.35	<50	--	58	<0.50	9.7	1.3	16	5.4	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	9/29/2010	153.48	12.62	0	0	140.86	<50	--	<50	<0.50	<0.50	<0.50	<1.0	7.3	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	12/21/2010	153.48	11.17	0	0	142.31	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/10/2011	153.48	10.57	0	0	142.91	<50	--	<50	<0.50	<0.50	<0.50	<1.0	2.2	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	06/07/2011	153.48	10.94	0	0	142.54	<40	--	<50	<0.50	<0.50	<0.50	<1.0	1.6	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	08/18/2011	153.48	12.07	0	0	141.41	<40	--	<50	<0.50	<0.50	<0.50	<1.0	4	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/04/2011	153.48	12.70	0	0	140.78	<40	--	<50	<0.50	<0.50	<0.50	<1.0	3.8	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	01/24/2012	153.48	12.40	0	0	141.08	<40	--	<50	<0.50	<0.50	<0.50	<1.0	1.5	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	04/06/2012	153.48	11.10	0	0	142.38	<40	--	390	<0.50	3.8	11	150	2.2	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	07/02/2012	153.48	12.14	0	0	141.34	<40	--	<50	<0.50	<0.50	<0.50	<1.0	2.4	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/4/2012	153.48	13.43	0	0	140.05	<50	--	<50	<0.50	<0.50	<0.50	<1.0	1.3	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/23/2013	153.48	11.64	0	0	141.84	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/22/2013	153.48	12.22	0	0	141.26	<50	--	<50	<0.50	<0.50	<0.50	<1.0	2.5	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/31/2013	153.48	13.24	0	0	140.24	<50	--	<50	<0.50	<0.50	<0.50	<1.0	0.95	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/17/2013	153.48	13.85	0	0	139.63	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/24/2014	153.48	13.06	0	0	140.42	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/17/2014	153.48	11.96	0	0	141.52	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/18/2014	153.48	12.90	0	0	140.58	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/21/2014	153.48	13.68	0	0	139.80	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/20/2015	153.48	11.98	0	0	141.50	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	pre-purge
	1/20/2015	153.48	--	--	--	--	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	post-purge
	6/3/2015	153.48	12.42	0	0	141.06	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	9/7/2015	153.48	13.18	0	0	140.30	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	12/22/2015	153.48	12.38	0	0	141.10	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/15/2016	153.48	10.71	0	0	142.77	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	6/22/2016	153.48	12.05	0	0	141.43	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/25/2016	153.48	13.08	0	0	140.40	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/23/2016	153.48	12.43	0	0	141.05	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/10/2017	153.48	9.80	0	0	143.68	<50	--	<50	<0.50	<0.50	<0.50	<1.0	**0.93**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/1/2017	153.48	12.33	0	0	141.15	<50	--	<50	<0.50	<0.50	<0.50	<1.0	**1.7**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	S1
	11/10/2017	153.48	13.31	0	0	140.17	<50	--	<50	<0.50	<0.50	<0.50	<1.0	**1.1**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
MW-5	6/16/2010	153.66	11.95	0	0	141.71	3,000	--	29,000	580	6,800	850	7,200	<50	<1000	<50	<50	<50	<50	<50	<25000	
	9/29/2010	153.66	13.67	0	0	139.99	64,000	--	29,000	220	4,100	2,500	23,000	52	<1000	<50	<50	<50	<50	<50	<25000	
	12/21/2010	153.66	11.17	0	0	142.49	11,000	--	50,000	81	4,800	2,200	22,000	<50	<1000	<50	<50	<50	<50	<50	<25000	
	3/10/2011	153.66	11.35	0	0	142.31	4,900	--	48,000	69	3,600	1,700	20,000	<50	<1000	<50	<50	<50	<50	<50	<25000	
	06/07/2011	153.66	11.45	0	0	142.21	3,700	--	40,000	32	2,300	1,500	16,000	24	150	<0.50	<0.50	<0.50	<0.50	<0.50	330	
	08/18/2011	153.66	12.30	0	0	141.36	5,400	--	30,000	29	1,000	980	7,200	56	44	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/04/2011	153.66	13.72	0	0	139.94	20,000	--	42,000	21	2,400	2,400	20,000	42	<250	<12	<12	<12	<12	<12	<6,200	
	01/24/2012	153.66	12.20	0	0	141.46	46,000	--	71,000	<25	1,100	1,400	10,000	<25	<500	<25	<25	<25	<25	<25	<12,000	
	04/06/2012	153.66	11.88	0	0	141.78	21,000	--	58,000	9.9	880	660	9,800	12	<120	<6.2	<6.2	<6.2	<6.2	<6.2	<3,100	
	07/02/2012	153.66	12.75	0	0	140.91	30,000	--	53,000	89	590	1,000	12,000	26	<500	<25	<25	<25	<25	<25	<12,000	
	10/4/2012	153.66	16.03	0.39	0	137.34			No Sample Collected - Free Product in Well													
	1/23/2013	153.66	12.02	0	0	141.64	22,000	--	54,000	<25	160	1,100	13,000	<25	<500	<25	<25	<25	<25	<25	<12,000	
	4/22/2013	153.66	12.37	0	0	141.29	7,600	--	39,000	0.7	65	330	4,500	2.9	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/31/2013	153.66	15.62	0	0	138.04	11,000	--	35,000	1	59	470	3,500	9.8	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/17/2013	153.66	16.41	0	0	137.25	<50	--	86,000	<10	66	770	9,300	<10	<200	<10	<10	<10	<10	<10	<5,000	
	2/24/2014	153.66	15.27	0	0	138.39	1,700	--	3,900	<0.50	4.5	240	1,800	1.7	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/17/2014	153.66	12.02	0	0	141.64	960	--	27,000	<0.50	2.5	160	1,100	1.4	310	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/18/2014	153.66	15.28	0	0	138.38	2,100	--	6,600	<0.50	0.97	84	330	3.6	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/21/2014	153.66	17.03	0	0	136.63	3,000	--	27,000	<0.50	40	370	2,900	7.7	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/20/2015	153.66	12.24	0	0	141.42	880	--	9,100	<0.50	0.65	85	400	2.2	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	pre-purge
	1/20/2015	153.66	--	--	--	--	1,800	--	10,000	<0.50	0.54	85	370	2.0	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	post-purge

Table 2. Historical Groundwater Gauging and Analytical Results
Fourth Quarter 1990 to Current
Union Oil Company of California
Unocal No. 5781 (351640)
3535 Pierson Street, Oakland, California

	Sample	TOC	DTW	PSH thickness	PSH recovered	GW Elev	TPH-d	TPH-d (w/SGC)	TPH-g	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	EDB	EDC	DIPE	ETBE	TAME	Ethanol	Comments
	6/3/2015	153.66	14.70	0	0	138.96	760	--	5,100	<0.50	<0.50	39	120	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	9/7/2015	153.66	16.63	0	0	137.03	3,800	--	4,100	<5.0	<5.0	130	540	<5.0	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<2,500	
	12/22/2015	153.66	11.82	0	0	141.84	1,700	--	5,600	16	63	53	320	<5.0	<100	<5.0	<5.0	<5.0	<5.0	<5.0	<2,500	
	3/15/2016	153.66	11.54	0	0	142.12	1,300	--	2,200	2.8	1	13	9.4	0.7	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	6/22/2016	153.66	12.35	0	0	141.31		--	**1,600**	**0.55**	<0.50	**8.6**	**2.3**	**3.3**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/25/2016	153.66	15.18	0	0	138.48	**880**	--	**2,600**	<0.50	**0.66**	**6.6**	**14**	**4.4**	**180**	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/23/2016	153.66	12.31	0	0	141.35	**4,300**	--	**10,000**	<0.50	**0.99**	**89**	**260**	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/10/2017	153.66	10.93	0	0	142.73	**690**	--	**2,100**	<0.50	<0.50	**9.1**	**12**	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/1/2017	153.66	12.73	0	0	140.93	**450**	**310**	**1,600**	<0.50	**0.70**	**8.6**	**19**	**1.9**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/10/2017	153.66	14.18	0	0	139.48	**620**	**68**	**5,400**	<0.50	<0.50	**14**	**56**	**3.7**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	Z1, A52
MW-6	12/21/2010	154.62	12.10	0	0	142.52	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/10/2011	154.62	11.36	0	0	143.26	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	06/07/2011	154.62	11.33	0	0	143.29	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	08/18/2011	154.62	13.00	0	0	141.62	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/04/2011	154.62	14.02	0	0	140.60	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	01/24/2012	154.62	11.94	0	0	142.68	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	04/06/2012	154.62	11.39	0	0	143.23	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	07/02/2012	154.62	11.49	0	0	143.13	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/4/2012	154.62	16.09	0	0	138.53	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/23/2013	154.62	11.41	0	0	143.21	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/22/2013	154.62	11.43	0	0	143.19	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/31/2013	154.62	15.71	0	0	138.91	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/17/2013	154.62	16.83	0	0	137.79	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/24/2014	154.62	15.22	0	0	139.40	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/17/2014	154.62	11.43	0	0	143.19	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/18/2014	154.62	14.96	0	0	139.66	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/21/2014	154.62	16.70	0	0	137.92	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/20/2015	154.62	11.61	0	0	143.01	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	pre-purge
	1/20/2015	154.62	--	--	--	--	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	post-purge
	6/3/2015	154.62	11.76	0	0	142.86	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	9/7/2015	154.62	16.08	0	0	138.54	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	12/22/2015	154.62	15.55	0	0	139.07	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/15/2016	154.62	11.33	0	0	143.29	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	6/22/2016	154.62	11.50	0	0	143.12	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/25/2016	154.62	13.98	0	0	140.64	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/23/2016	154.62	11.46	0	0	143.16	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/10/2017	154.62	11.25	0	0	143.37	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/1/2017	154.62	11.53	0	0	143.09	<50	--	<50	<0.50	<0.50	<0.50	<1.0	**1.3**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	S1
	11/10/2017	154.62	15.13	0	0	139.49	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
MW-7	12/21/2010	155.38	13.46	0	0	141.92	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/10/2011	155.38	12.07	0	0	143.31	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	06/07/2011	155.38	12.59	0	0	142.79	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	08/18/2011	155.38	14.37	0	0	141.01	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/04/2011	155.38	15.22	0	0	140.16	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	01/24/2012	155.38	15.32	0	0	140.06	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	04/06/2012	155.38	13.09	0	0	142.29	<49	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	07/02/2012	155.38	14.42	0	0	140.96	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/4/2012	155.38	16.20	0	0	139.18	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/23/2013	155.38	13.27	0	0	142.11	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/22/2013	155.38	14.30	0	0	141.08	<50	--	52	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/31/2013	155.38	16.30	0	0	139.08			Insufficient Water to Sample													
	10/17/2013	155.38	16.77	0	0	138.61	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/24/2014	155.38	15.33	0	0	140.05	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	

Table 2. Historical Groundwater Gauging and Analytical Results
Fourth Quarter 1990 to Current
Union Oil Company of California
Unocal No. 5781 (351640)
3535 Pierson Street, Oakland, California

	Sample	TOC	DTW	PSH thickness	PSH recovered	GW Elev	TPH-d	TPH-d (w/SGC)	TPH-g	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	EDB	EDC	DIPE	ETBE	TAME	Ethanol	Comments
	4/17/2014	155.38	13.82	0	0	141.56	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/18/2014	155.38	15.70	0	0	139.68	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/21/2014	155.38	16.67	0	0	138.71	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/20/2015	155.38	14.13	0	0	141.25	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	pre-purge
	1/20/2015	155.38	--	--	--	--	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	post-purge
	6/3/2015	155.38	15.13	0	0	140.25	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	9/7/2015	155.38	16.17	0	0	139.21	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	12/22/2015	155.38	15.58	0	0	139.80	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/15/2016	155.38	12.83	0	0	142.55	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	6/22/2016	155.38	14.20	0	0	141.18	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/25/2016	155.38	15.67	0	0	139.71	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/23/2016	155.38	14.87	0	0	140.51	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/10/2017	155.38	11.32	0	0	144.06	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/1/2017	155.38	14.38	0	0	141.00	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	S1
	11/10/2017	155.38	16.08	0	0	139.30	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
MW-8	12/21/2010	153.71	11.63	0	0	142.08	81	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/10/2011	153.71	11.38	0	0	142.33	61	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	06/07/2011	153.71	11.54	0	0	142.17	71	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	08/18/2011	153.71	12.47	0	0	141.24	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/04/2011	153.71	12.90	0	0	140.81	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	01/24/2012	153.71	12.52	0	0	141.19	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	04/06/2012	153.71	11.35	0	0	142.36	160	--	270	<0.50	3.7	7.8	91	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	07/02/2012	153.71	12.50	0	0	141.21	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/4/2012	153.71	13.89	0	0	139.82	<50	--	<50	<0.50	<0.50	<0.50	2.4	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/23/2013	153.71	13.06	0	0	140.65	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/22/2013	153.71	12.82	0	0	140.89	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/31/2013	153.71	13.63	0	0	140.08	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/17/2013	153.71	14.48	0	0	139.23	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/24/2014	153.71	13.56	0	0	140.15	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/17/2014	153.71	11.90	0	0	141.81	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/18/2014	153.71	13.78	0	0	139.93	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/21/2014	153.71	14.38	0	0	139.33	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/20/2015	153.71	13.28	0	0	140.43	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	pre-purge
	1/20/2015	153.71	--	--	--	--	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	post-purge
	6/3/2015	153.71	12.88	0	0	140.83	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	9/7/2015	153.71	14.19	0	0	139.52	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	12/22/2015	153.71	12.90	0	0	140.81	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/15/2016	153.71	13.14	0	0	140.57	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	6/22/2016	153.71	12.32	0	0	141.39	<50	--	<50	<0.50	<0.50	<0.50	<1.0	**0.97**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/25/2016	153.71	13.57	0	0	140.14	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/23/2016	153.71	13.46	0	0	140.25	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/10/2017	153.71	9.60	0	0	144.11	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/1/2017	153.71	12.10	0	0	141.61	**680**	--	<50	<0.50	<0.50	<0.50	<1.0	**0.63**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/10/2017	153.71	13.75	0	0	139.96	<50	--	<50	<0.50	<0.50	<0.50	<1.0	**2.2**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
MW-9	12/21/2010	153.37	10.53	0	0	142.84	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/10/2011	153.37	10.86	0	0	142.51	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	06/07/2011	153.37	11.36	0	0	142.01	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	08/18/2011	153.37	12.52	0	0	140.85	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/04/2011	153.37	13.32	0	0	140.05	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	01/24/2012	153.37	11.23	0	0	142.14	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	04/06/2012	153.37	10.98	0	0	142.39	<40	--	340	<0.50	4.4	9	120	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	07/02/2012	153.37	12.58	0	0	140.79	<40	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/4/2012	153.37	14.31	0	0	139.06	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	

Table 2. Historical Groundwater Gauging and Analytical Results
Fourth Quarter 1990 to Current
Union Oil Company of California
Unocal No. 5781 (351640)
3535 Pierson Street, Oakland, California

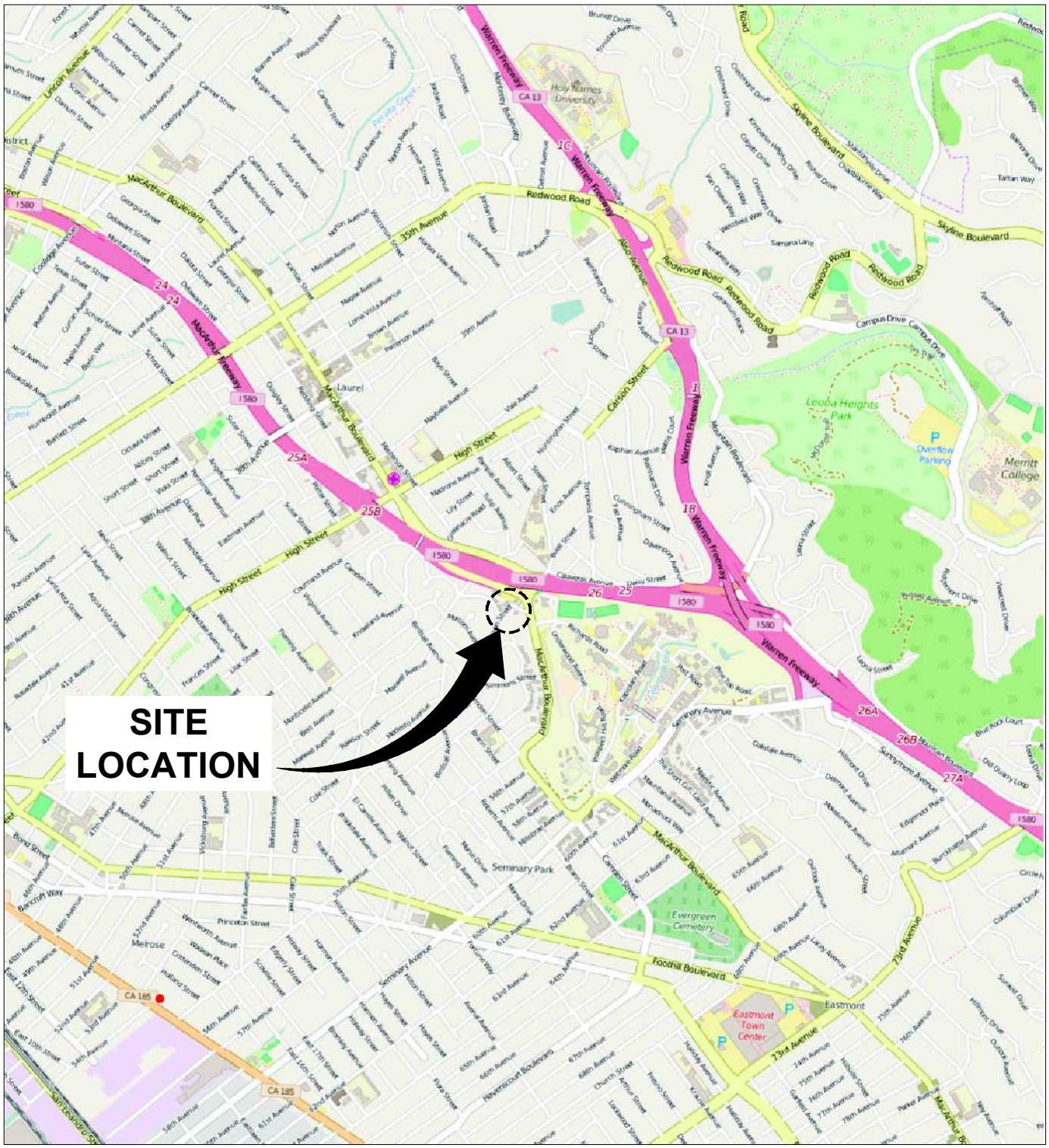
	Sample	TOC	DTW	PSH thickness	PSH recovered	GW Elev	TPH-d	TPH-d (w/SGC)	TPH-g	Benzene	Toluene	Ethyl-benzene	Total Xylenes	MTBE	TBA	EDB	EDC	DIPE	ETBE	TAME	Ethanol	Comments
	1/23/2013	153.37	11.11	0	0	142.26	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/22/2013	153.37	12.22	0	0	141.15	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/31/2013	153.37	14.10	0	0	139.27	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/17/2013	153.37	14.56	0	0	138.81	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/24/2014	153.37	12.85	0	0	140.52	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/17/2014	153.37	11.73	0	0	141.64	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/18/2014	153.37	13.69	0	0	139.68	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/21/2014	153.37	14.32	0	0	139.05	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	1/20/2015	153.37	11.80	0	0	141.57	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	pre-purge
	1/20/2015	153.37	--	--	--	--	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	post-purge
	6/3/2015	153.37	13.30	0	0	140.07	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	9/7/2015	153.37	14.05	0	0	139.32	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	12/22/2015	153.37	10.50	0	0	142.87	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/15/2016	153.37	10.26	0	0	143.11	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	6/22/2016	153.37	11.92	0	0	141.45	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/25/2016	153.37	13.75	0	0	139.62	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/23/2016	153.37	11.62	0	0	141.75	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/10/2017	153.37	9.79	0	0	143.58	**60**	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/1/2017	153.37	11.97	0	0	141.40	<50	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/10/2017	153.37	13.65	0	0	139.72	<50	--	<50	<0.50	<0.50	<0.50	<1.0	**0.54**	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
QA	1/23/2013	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/22/2013	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/31/2013	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/17/2013	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/24/2014	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	4/17/2014	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	7/18/2014	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	10/21/2014	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	9/7/2015	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	12/22/2015	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	3/15/2016	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<10	<250	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	6/22/2016	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/25/2016	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/23/2016	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	2/10/2017	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	8/1/2017	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	
	11/10/2017	--	--	--	--	--	--	--	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<250	

Notes:

MW = Groundwater monitoring well
TOC = Top of casing
ft amsl = Feet above mean sea level
DTW = Depth to groundwater
ft bTOC = Feet below top of casing
PSH = Phase separate hydrocarbons
ft = Feet
gal = Gallons
GW Elev = Groundwater elevation
µg/L = Micrograms per liter
Bold = Value exceeds laboratory reporting limits; PSH thickness is greater than 0.00 ft
<0.50 = Not detected at or above the stated limit
-- = Not sampled/Not measured
A52 = Chromatogram not typical of diesel

TPH-g = Total petroleum hydrocarbons, gasoline range by LUFT GC/MS according to Environmental Protection Agency (EPA) Method 8015
TPH-d = Total petroleum hydrocarbons, diesel range by LUFT GC/MS according to EPA Method 8015B
TPH-d (w/SGC) = Total petroleum hydrocarbons, diesel with Silica Gel Cleanup, by LUFT method
Benzene, toluene, ethylbenzene, and total xylenes (collectively BTEX)
MTBE = Methyl tert-butyl ether
TBA = Tert-butanol or tertiary butyl alcohol
EDB = 1,2-Dibromoethane
EDC = 1,2-Dichloroethane
DIPE = Di-isopropyl ether
ETBE = Ethyl tert-butyl ether
TAME = Tert-amyl methyl ether
S1 - TPH-g was analyzed after hold time expired to confirm initial TPH-g carry over in original run.
Z1 = 10uL of antifoamer solution added to sample VOA
Data QA/QC by: IC 11.24.2017

FIGURES



SOURCE: OpenStreetMap (and) contributors, CC-BY-SA

N

0 2,000' 4,000'

APPROXIMATE SCALE 1 in. = 2,000 ft.

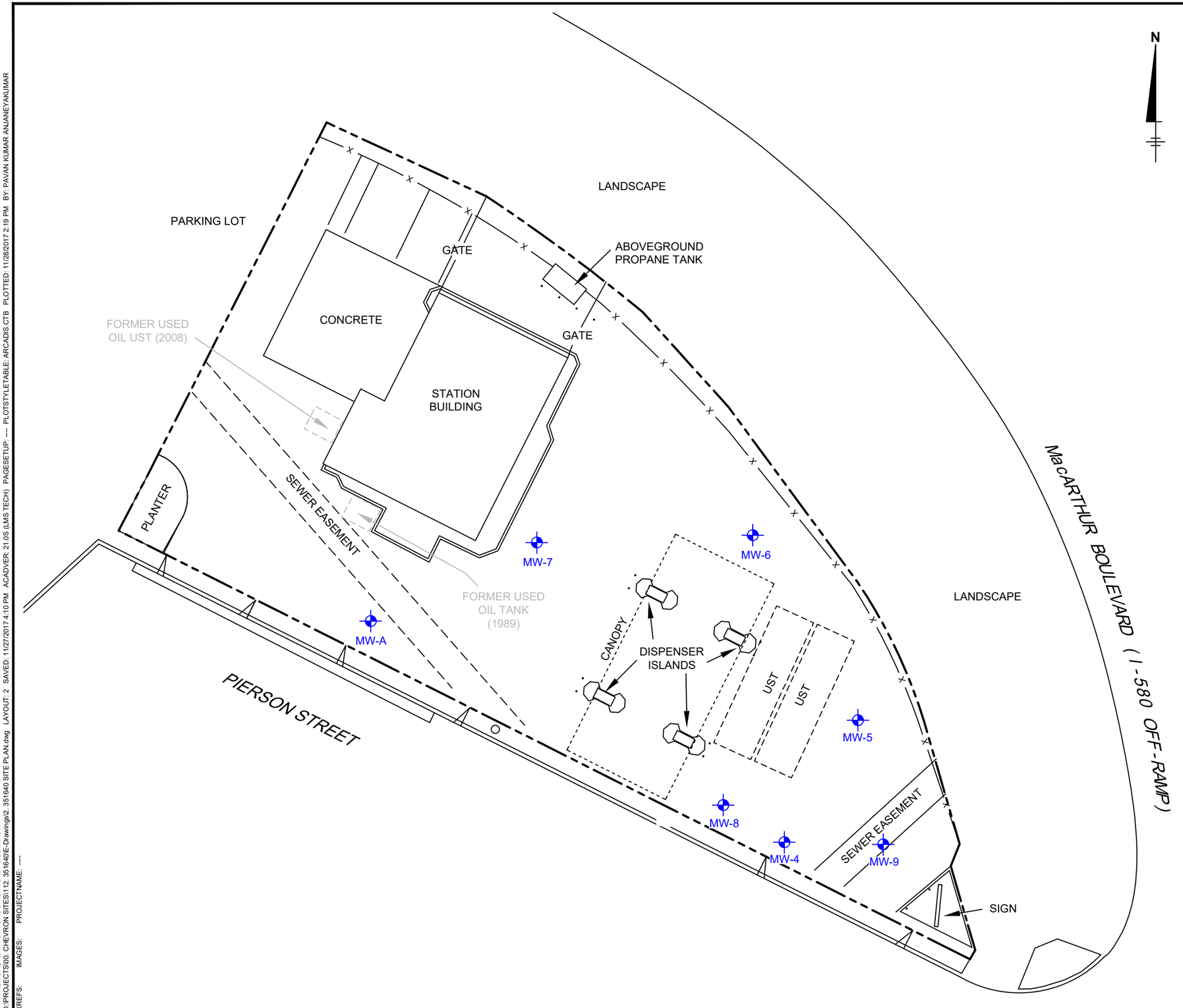
CALIFORNIA

UNOCAL NO. 5781
3535 PIERSON STREET, OAKLAND, CALIFORNIA
GROUNDWATER MONITORING REPORT
FOURTH QUARTER 2017

SITE LOCATION MAP

ARCADIS Design & Consultancy for natural and built assets

FIGURE
1

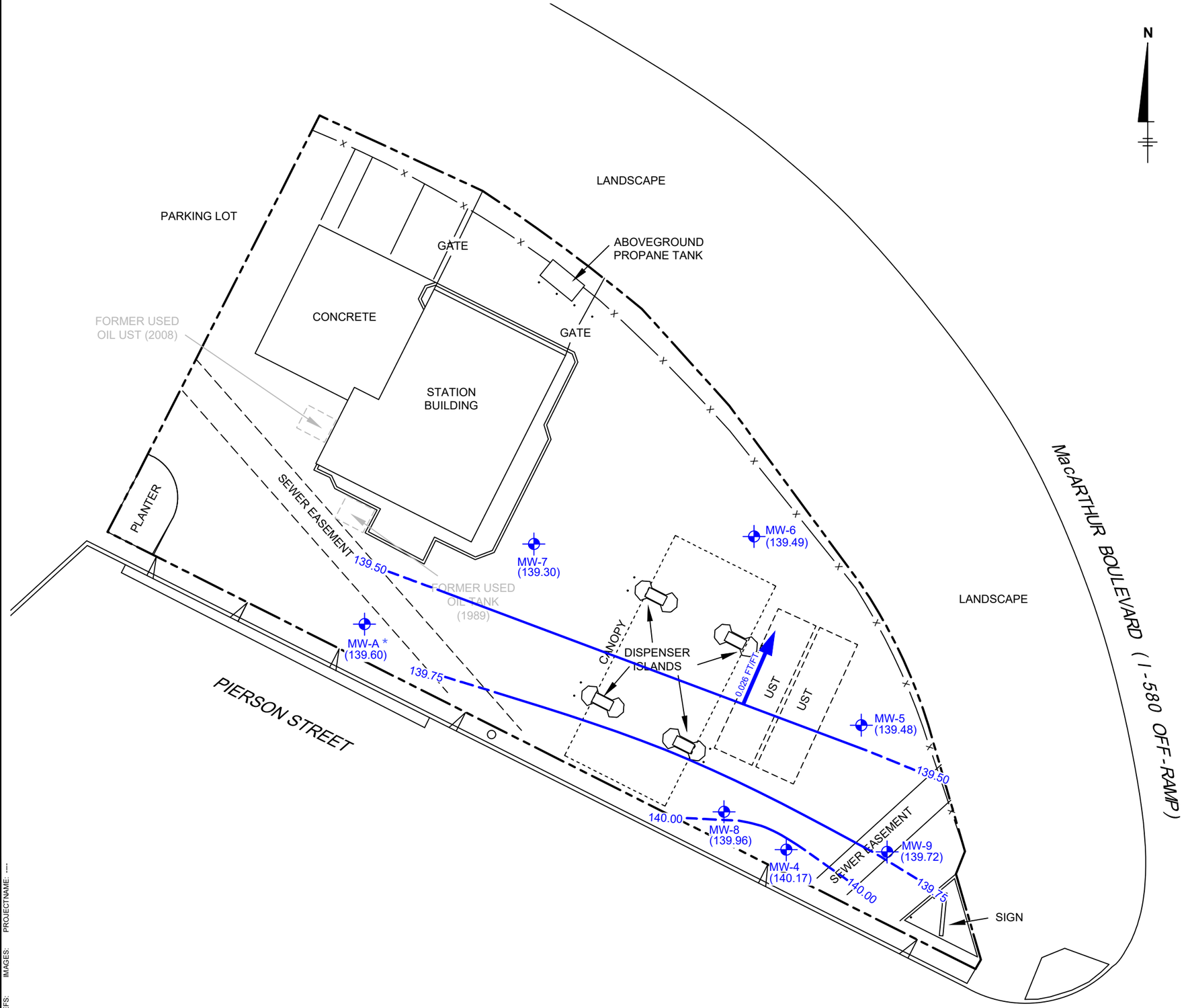


UNOCAL NO. 5781
3535 PIERSON STREET, OAKLAND, CALIFORNIA
GROUNDWATER MONITORING REPORT
FOURTH QUARTER 2017

SITE PLAN

ARCADIS Design & Consultancy for natural and built assets

FIGURE
2



LEGEND

- SUBJECT PROPERTY BOUNDARY
- FENCE LINE
- UST — UNDERGROUND STORAGE TANK
- MW-4 — GROUNDWATER MONITORING WELL
- (140.17) — GROUNDWATER ELEVATION (FEET)
- 140.00 — GROUNDWATER ELEVATION (DASHED WHERE INFERRED)
- APPROXIMATE GROUNDWATER FLOW DIRECTION
- 0.026 FT/FT — APPROXIMATE HYDRAULIC GRADIENT (FEET/FOOT)
- MW-A* — NOT USED IN CONTOURING AS IT WAS SCREENED IN DEEPER AQUIFER

0 20' 40'

APPROXIMATE SCALE 1 in. = 20 ft.

UNOCAL NO. 5781
3535 PIERSON STREET, OAKLAND, CALIFORNIA
GROUNDWATER MONITORING REPORT
FOURTH QUARTER 2017

GROUNDWATER ELEVATION CONTOUR MAP NOVEMBER 10, 2017

ARCADIS Design & Consultancy for natural and built assets

FIGURE 3

LEGEND

- SUBJECT PROPERTY BOUNDARY
- x FENCE LINE
- UST UNDERGROUND STORAGE TANK
- MW-4 MONITORING WELL
- (5,400) TOTAL PETROLEUM HYDROCARBONS AS GASOLINE (TPH-g) CONCENTRATION IN MICROGRAMS PER LITER (µg/L)
- 1,000 TPH-g CONCENTRATION CONTOUR (DASHED WHERE INFERRED)
- (<50) NOT DETECTED AT OR ABOVE LABORATORY METHOD DETECTION LIMIT

0 20' 40'

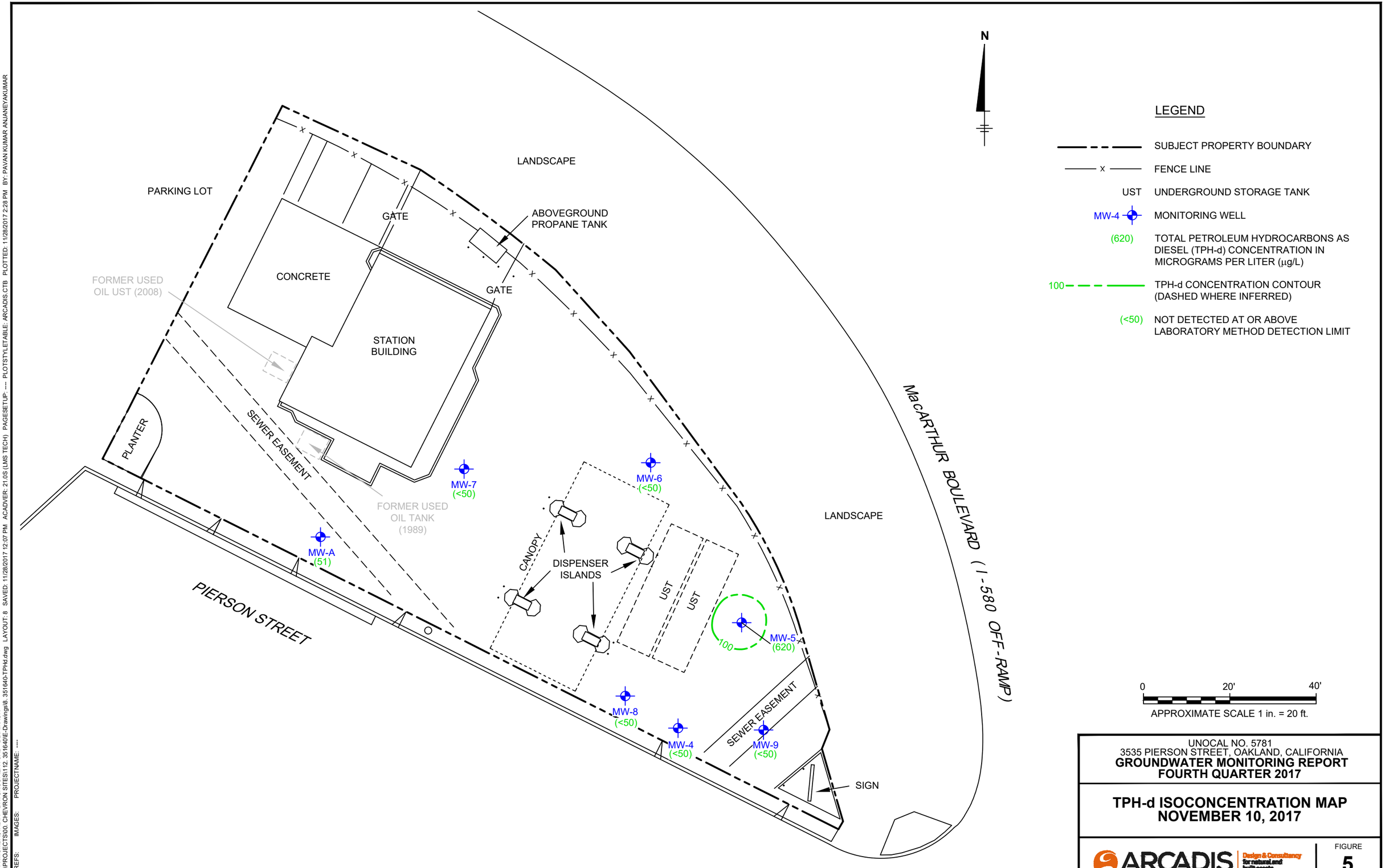
APPROXIMATE SCALE 1 in. = 20 ft.

UNOCAL NO. 5781
3535 PIERSON STREET, OAKLAND, CALIFORNIA
GROUNDWATER MONITORING REPORT
FOURTH QUARTER 2017

TPH-g ISOCONCENTRATION MAP NOVEMBER 10, 2017

ARCADIS Design & Consultancy for natural and built assets

FIGURE
4

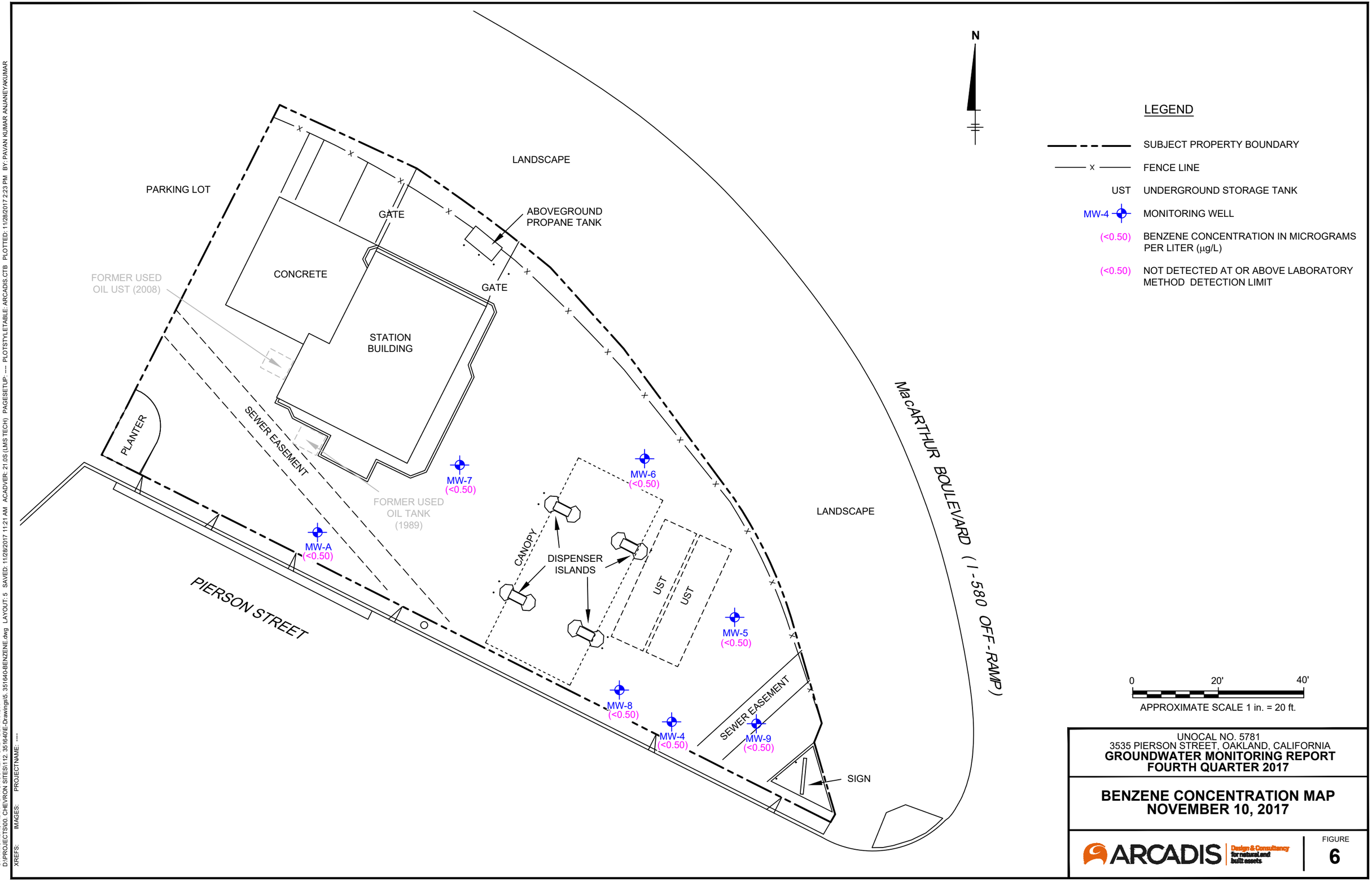


UNOCAL NO. 5781
3535 PIERSON STREET, OAKLAND, CALIFORNIA
GROUNDWATER MONITORING REPORT
FOURTH QUARTER 2017

TPH-d ISOCONCENTRATION MAP NOVEMBER 10, 2017

ARCADIS Design & Consultancy for natural and built assets

FIGURE
5



UNOCAL NO. 5781
3535 PIERSON STREET, OAKLAND, CALIFORNIA
GROUNDWATER MONITORING REPORT
FOURTH QUARTER 2017

BENZENE CONCENTRATION MAP
NOVEMBER 10, 2017

ARCADIS Design & Consultancy for natural and built assets

FIGURE
6

UNOCAL NO. 5781
3535 PIERSON STREET, OAKLAND, CALIFORNIA
GROUNDWATER MONITORING REPORT
FOURTH QUARTER 2017

MTBE CONCENTRATION MAP
NOVEMBER 10, 2017

ARCADIS Design & Consultancy for natural and built assets

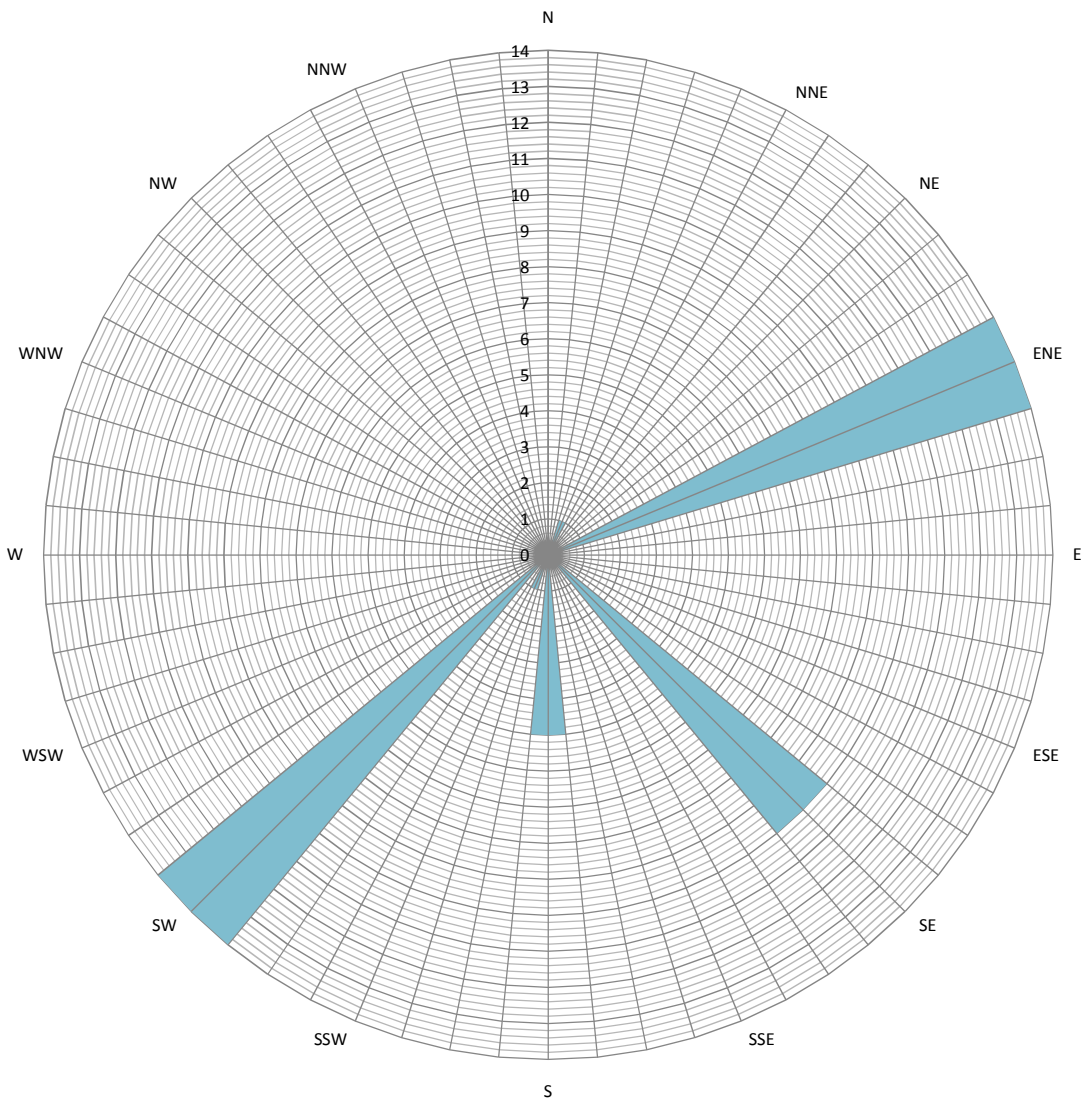
FIGURE
7

UNOCAL NO. 5781
3535 PIERSON STREET, OAKLAND, CALIFORNIA
GROUNDWATER MONITORING REPORT
FOURTH QUARTER 2017

TBA CONCENTRATION MAP NOVEMBER 10, 2017

ARCADIS Design & Consultancy for natural and built assets

FIGURE
8



Legend

N=North
NNE= North Northeast
NE= Northeast
ENE= East Northeast
E= East
ESE= East Southeast
SE=Southeast
SSE= South Southeast
S= South
SW= Southwest
SSW= South Southwest
WSW= West South West
W= West
WNW= West Northwest
NW=Northwest
NNW= North Northwest

Note

Rose diagram based on gradient direction calculations from groundwater monitoring events conducted by Arcadis from 2012 to 2017. Prior to 2012, monitoring events were conducted by Stantec, TRC and ATC Associates.

Number of Events Observed = 45

UNOCAL NO. 5781 (351640)
3535 PIERSON STREET
OAKLAND, CALIFORNIA

GROUNDWATER FLOW DIRECTION ROSE DIAGRAM

ARCADIS Design & Consultancy for natural and built assets

FIGURE 9

LEGEND

- APPROXIMATE PROPERTY LINE
- FENCE
- MONITORING WELL
- SOIL SAMPLE LOCATION (1989)
- SOIL SAMPLE LOCATION (FEBRUARY 1990)
- EXPLORATORY BORING (APRIL 1990)
- EXPLORATORY BORING (JULY 1990)
- SOIL BORING (OCTOBER 2003)
- SOIL SAMPLE LOCATION (2008)
- SOIL BORING LOCATION (MARCH/JUNE 2010)
- SOIL SAMPLE LOCATION (2015)
- SAMPLING LOCATION (ARCADIS 2017)
- EXCAVATION EXTENTS

NOTE:

1. BASE MAP PROVIDED BY AECOM, DATED 01/26/2016. OFF-SITE FEATURES DIGITIZED FROM AERIAL IMAGERY. ALL FEATURES AND LOCATIONS ARE APPROXIMATE.

0 30' 60'

GRAPHIC SCALE

UNOCAL NO. 5781 (351640)
3535 PIERSON STREET OAKLAND, CALIFORNIA

GROUNDWATER MONITORING REPORT FOURTH QUARTER 2017

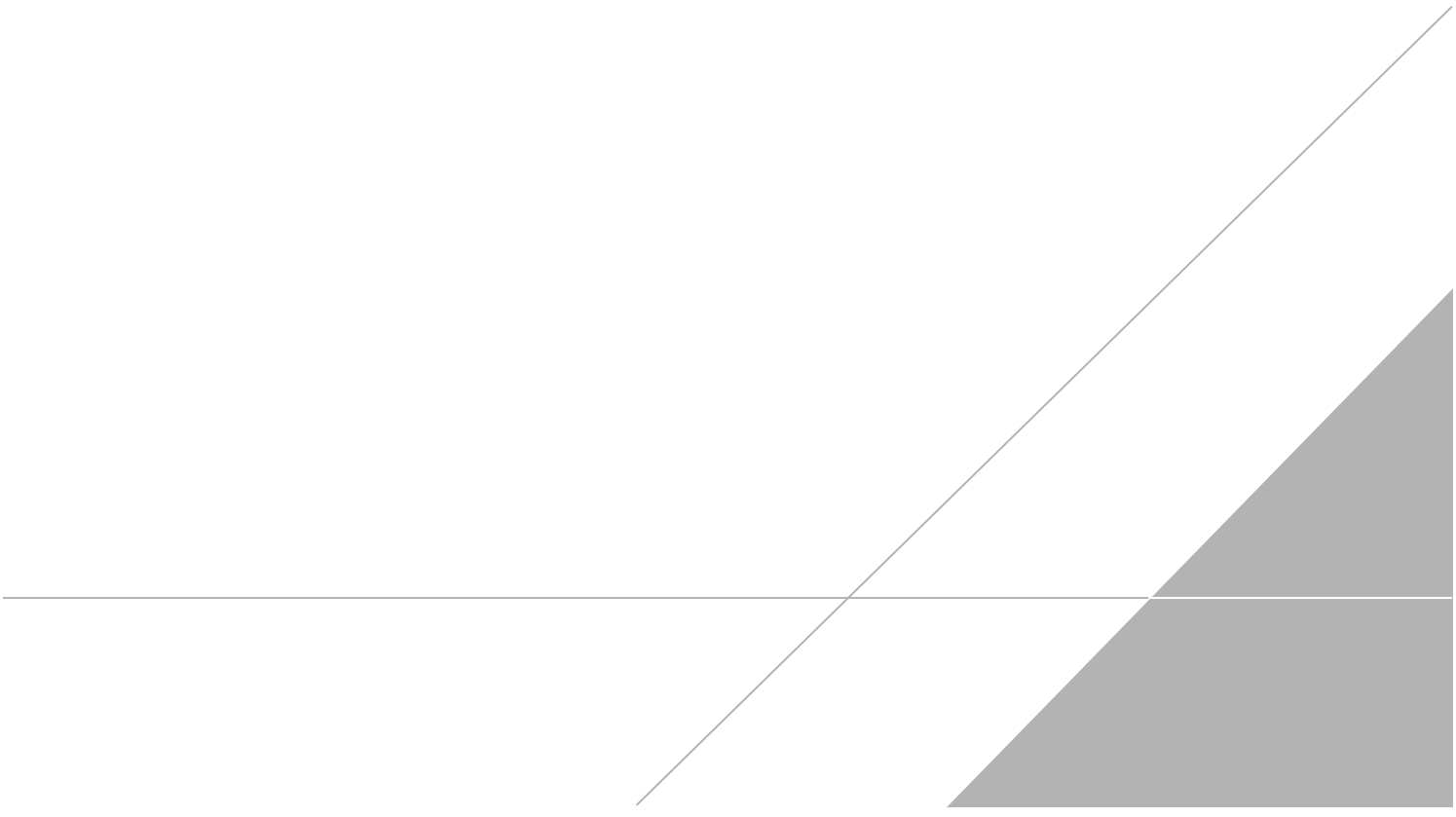
SITE PLAN SHOWING BORING LOCATIONS

ARCADIS Design & Consultancy for natural and built assets

FIGURE 10

ATTACHMENT A

Field Data Sheets and General Procedures



GETTLER-RYAN INC.

TRANSMITTAL

November 15, 2017
G-R #17155641

TO: Ms. Jennifer Granborg
Arcadis
100 Smith Ranch Road, Suite 329
San Rafeal, California 94903

FROM: Deanna L. Harding
Project Manager
Gettler-Ryan Inc.
6805 Sierra Court, Suite G
Dublin, California 94568

RE: Chevron Facility
#351640/5781
3535 Pierson Street
Oakland, California

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package **Special Event of November 10, 2017**

COMMENTS:

Pursuant to your request, we are providing you with copies of the above referenced data for your use.

Please provide us the updated historical data prior to the next monitoring and sampling event for our field use.

Please feel free to contact me if you have any comments/questions.

trans/351640 5781

WELL CONDITION STATUS SHEET

Client/
Facility #: Chevron #351640 / 5781 Job #: 17155641

Site Address: 3535 Pierson Street Event Date: 11.10.17

City: Oakland, CA Sampler: FT

WELL ID	Vault Frame Condition	Gasket/ O-Ring (M) Missing (R) Replaced	Bolts (M) Missing (R) Replaced	Bolt Flanges B=Broken S=Stripped R=Retaped	Apron Condition C=Cracked B=Broken G=Gone	Grout Seal (Deficient) Inches from TOC	Casing (Condition prevents tight cap seal)	REPLACE LOCK Y / (N)	REPLACE CAP Y / (N)	WELL VAULT Manufacture/Size/ # of Bolts	Pictures Taken Y (N)
MW-A	OK	→	→	S=1	OK	→	→			Emco 8" 2	
MW-4	OK	←					→			Emco 12" 2	
MW-5	OK	→	→	BBF-1	OK	→	→				
MW-6	OK	→					→				
MW-7	OK	→	→	S=1	OK	→	→				
MW-8	OK	→					→				
MW-9	OK	→					→				

DRUMS PRESENT ONSITE? Y (N) #: ARE DRUMS PROPERLY LABELED? Y / N NA LOCATION OF DRUMS: NA

Comments

STANDARD OPERATING PROCEDURE
GROUNDWATER SAMPLING

Gettler-Ryan Inc. (GR) field personnel adhere to the following procedures for the collection and handling of groundwater samples prior to analysis by the analytical laboratory. All work is performed in accordance with the GR Health & Safety Plan and all client-specific programs. The scope of work and type of analysis to be performed is determined prior to commencing field work.

Prior to sampling, the presence or absence of free-phase hydrocarbons is determined using an interface probe. Product thickness, if present, is measured to the nearest 0.01 foot and is noted in the field notes. In addition, all depth to water level measurements are collected with a static water level indicator and are also recorded in the field notes, prior to purging and sampling any wells. Total well depths are measured annually.

After water levels are collected and prior to sampling, if purging is to occur, each well is purged a minimum of three well casing volumes of water using pre-cleaned pumps (stack, peristaltic or Grundfos), or disposable bailers. Temperature, pH and electrical conductivity are measured a minimum of three times during the purging (additional parameters such as dissolved oxygen, oxidation reduction potential, turbidity may also be measured, depending on specific scope of work.). Purging continues until these parameters stabilize.

Groundwater samples are collected using disposable bailers. The water samples are transferred from the bailer into appropriate containers. Pre-preserved containers, supplied by analytical laboratories, are used. When pre-preserved containers are not available, the laboratory is instructed to preserve the sample as appropriate. Duplicate samples are collected for the laboratory to use in maintaining quality assurance/quality control standards, as directed by the scope of work. The samples are labeled to include the job number, sample identification, collection date and time, analysis, preservation (if any), and the sample collector's initials. The water samples are placed in a cooler, maintained at 4°C for transport to the laboratory. Once collected in the field, all samples are maintained under chain of custody until delivered to the laboratory.

The chain of custody document includes the job number, type of preservation, if any, analysis requested, sample identification, date and time collected, and the sample collector's name. The chain of custody is signed and dated (including time of transfer) by each person who receives or surrenders the samples, beginning with the field personnel and ending with the laboratory personnel.

A laboratory supplied trip blank accompanies each sampling set. The trip blank is analyzed for some or all of the same compounds as the groundwater samples.

As requested by Chevron Environmental Management Company, the purge water and decontamination water generated during sampling activities is transported by Clean Harbors Environmental Services to Seaport Environmental located in Redwood City, California.

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #351640 / 5781 Job Number: 17155641
Site Address: 3535 Pierson Street Event Date: 11.10.17 (inclusive)
City: Oakland, CA Sampler: FT

Well ID MW- A Date Monitored: 11.10.17
Well Diameter 2/4 in.
Total Depth 45.00 ft.
Depth to Water 15.19 ft. ☐ Check if water column is less then 0.50 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

29.81 xVF .17 = 5.06 x3 case volume = Estimated Purge Volume: 16.0 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 21.15

Purge Equipment:
Disposable Bailer
Stainless Steel Bailer
Stack Pump ✓
Peristaltic Pump
QED Bladder Pump
Other:

Sampling Equipment:
Disposable Bailer ✓
Pressure Bailer
Metal Filters
Peristaltic Pump
QED Bladder Pump
Other:

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: ltr
Amt Removed from Well: ltr
Water Removed: ltr

Start Time (purge): 1100 Weather Conditions: CLOUDY
Sample Time/Date: 1345 / 11.10.17 Water Color: CLEAR Odor: Y / (N)
Approx. Flow Rate: ≈ 1.0 gpm. Sediment Description: NONE
Did well de-water? NO If yes, Time: Volume: gal. DTW @ Sampling: 19.15

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (µS mS µmhos/cm)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1105	5.0	7.21	544	21.2		
1110	10.0	7.24	562	20.9		
1115	15.0	7.28	572	20.5		

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW- A	6 x voa vial	YES	HCL	BC LABS	TPH-GRO(8015)/BTEX+MTBE(8260)/8 OXYS(8260)
	2 x 1 liter ambers	YES	NP	BC LABS	TPH-DRO(8015M)
	x 1 liter ambers	YES	NP	BC LABS	TPH-DRO w/sgc(8015M)

COMMENTS: SLOW RECOVERY

WERE PRE PURGE SAMPLES SUBMITTED TO THE LAB? Y (N) DTW READING: TIME:

Add/Replaced Gasket: Add/Replaced Bolt: Add/Replaced Lock: Add/Replaced Plug:

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #351640 / 5781 Job Number: 17155641
Site Address: 3535 Pierson Street Event Date: 11.10.17 (inclusive)
City: Oakland, CA Sampler: FT

Well ID MW-4 Date Monitored: 11.10.17
Well Diameter 2 (4) in.
Total Depth 24.74 ft.
Depth to Water 13.31 ft. ☐ Check if water column is less then 0.50 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

11.43 xVF .66 = 7.54 x3 case volume = Estimated Purge Volume: 23.0 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 15.59

Purge Equipment:
Disposable Bailer
Stainless Steel Bailer
Stack Pump ✓
Peristaltic Pump
QED Bladder Pump
Other:

Sampling Equipment:
Disposable Bailer ✓
Pressure Bailer
Metal Filters
Peristaltic Pump
QED Bladder Pump
Other:

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: ltr
Amt Removed from Well: ltr
Water Removed: ltr

Start Time (purge): 1200 Weather Conditions: LT. RAIN
Sample Time/Date: 1155 /11.10.17 Water Color: CLEAR Odor: Y (N)
Approx. Flow Rate: ~2.0 gpm. Sediment Description: NONE
Did well de-water? YES If yes, Time: 1208 Volume: 16.0 gal. DTW @ Sampling: 13.31

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (µS mS µmhos/cm)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1204	8.0	6.95	365	21.3		
1208	16.0	6.98	373	20.9		

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-4	6 x voa vial	YES	HCL	BC LABS	TPH-GRO(8015)/BTEX+MTBE(8260)/8 OXYS(8260)
	2 x 1 liter ambers	YES	NP	BC LABS	TPH-DRO(8015M)
	x 1 liter ambers	YES	NP	BC LABS	TPH-DRO w/sgc(8015M)

COMMENTS:

WERE PRE PURGE SAMPLES SUBMITTED TO THE LAB? (Y) / N DTW READING: 16.58 TIME: 1405

Add/Replaced Gasket: _____ Add/Replaced Bolt: _____ Add/Replaced Lock: _____ Add/Replaced Plug: _____

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #351640 / 5781 Job Number: 17155641
Site Address: 3535 Pierson Street Event Date: 11.10.17 (inclusive)
City: Oakland, CA Sampler: FT

Well ID MW-5 Date Monitored: 11.10.17
Well Diameter 2 (4) in.
Total Depth 19.89 ft.
Depth to Water 14.18 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

5.71 xVF .66 = 3.76 x3 case volume = Estimated Purge Volume: 11.0 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 15.32

Purge Equipment:		Sampling Equipment:	
Disposable Bailer		Disposable Bailer	✓
Stainless Steel Bailer		Pressure Bailer	
Stack Pump	✓	Metal Filters	
Peristaltic Pump		Peristaltic Pump	
QED Bladder Pump		QED Bladder Pump	
Other:		Other:	

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: ltr
Amt Removed from Well: ltr
Water Removed: ltr

Start Time (purge): 1315 Weather Conditions: LT. RAIN
Sample Time/Date: 1310 /11.10.17 Water Color: CLEAR Odor: (Y) / N MODERATE
Approx. Flow Rate: ≈ 1.0 gpm. Sediment Description: NONE
Did well de-water? Yes If yes, Time: 1321 Volume: 6.0 gal. DTW @ Sampling: 14.18

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (µS) mS µmhos/cm)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1319	3.5	6.81	547	21.6		

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-5	6 x voa vial	YES	HCL	BC LABS	TPH-GRO(8015)/BTEX+MTBE(8260)/8 OXYS(8260)
	2 x 1 liter ambers	YES	NP	BC LABS	TPH-DRO(8015M)
	2 x 1 liter ambers	YES	NP	BC LABS	TPH-DRO w/sgc(8015M)

COMMENTS:

WERE PRE PURGE SAMPLES SUBMITTED TO THE LAB? (Y) / N DTW READING: 17.23 TIME: 1420

Add/Replaced Gasket: _____ Add/Replaced Bolt: _____ Add/Replaced Lock: _____ Add/Replaced Plug: _____

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #351640 / 5781 Job Number: 17155641
Site Address: 3535 Pierson Street Event Date: 11.10.17 (inclusive)
City: Oakland, CA Sampler: FT

Well ID MW-6 Date Monitored: 11.10.17
Well Diameter 2/4 in.
Total Depth 19.95 ft.
Depth to Water 15.13 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

4.82 xVF .17 = .81 x3 case volume = Estimated Purge Volume: 2.0 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 16.09

Purge Equipment:		Sampling Equipment:	
Disposable Bailer	✓	Disposable Bailer	✓
Stainless Steel Bailer		Pressure Bailer	
Stack Pump		Metal Filters	
Peristaltic Pump		Peristaltic Pump	
QED Bladder Pump		QED Bladder Pump	
Other:		Other:	

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: ltr
Amt Removed from Well: ltr
Water Removed: ltr

Start Time (purge): 1240 Weather Conditions: LT. RAIN
Sample Time/Date: 1248/11.10.17 Water Color: LT. BRN Odor: Y / N
Approx. Flow Rate: ✓ gpm. Sediment Description: S. SILTY
Did well de-water? NO If yes, Time: Volume: gal. DTW @ Sampling: 15.13

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (µS / mS µmhos/cm)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1251	.75	6.83	322	21.1		
1254	1.5	6.85	326	21.0		
1257	2.0	6.86	329	20.8		

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-6	6 x voa vial	YES	HCL	BC LABS	TPH-GRO(8015)/BTEX+MTBE(8260)/8 OXYS(8260)
	2 x 1 liter ambers	YES	NP	BC LABS	TPH-DRO(8015M)
	x 1 liter ambers	YES	NP	BC LABS	TPH-DRO w/sgc(8015M)

COMMENTS: SLOW RECOVERY

WERE PRE PURGE SAMPLES SUBMITTED TO THE LAB? Y / N DTW READING: 16.23 TIME: 1415

Add/Replaced Gasket: Add/Replaced Bolt: Add/Replaced Lock: Add/Replaced Plug:

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #351640 / 5781 Job Number: 17155641
Site Address: 3535 Pierson Street Event Date: 11.10.17 (inclusive)
City: Oakland, CA Sampler: FT

Well ID MW-7 Date Monitored: 11.10.17
Well Diameter (2)/4 in.
Total Depth 19.69 ft.
Depth to Water 16.08 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

3.61 xVF .17 = .61 x3 case volume = Estimated Purge Volume: 2.0 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 16.80

Purge Equipment:		Sampling Equipment:	
Disposable Bailer	✓	Disposable Bailer	✓
Stainless Steel Bailer		Pressure Bailer	
Stack Pump		Metal Filters	
Peristaltic Pump		Peristaltic Pump	
QED Bladder Pump		QED Bladder Pump	
Other:		Other:	

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: ltr
Amt Removed from Well: ltr
Water Removed: ltr

Start Time (purge): 1035 Weather Conditions: CLOUDY
Sample Time/Date: 1035 / 11.10.17 Water Color: LT. BRN. Odor: Y / (N)
Approx. Flow Rate: — gpm. Sediment Description: S. SILTY
Did well de-water? Yes If yes, Time: 1039 Volume: 1.0 gal. DTW @ Sampling: 16.08

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (µS) / mS µmhos/cm)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1038	.75	7.18	367	22.1		

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-7	6 x voa vial	YES	HCL	BC LABS	TPH-GRO(8015)/BTEX+MTBE(8260)/8 OXYS(8260)
	2 x 1 liter ambers	YES	NP	BC LABS	TPH-DRO(8015M)
	x 1 liter ambers	YES	NP	BC LABS	TPH-DRO w/sgc(8015M)

COMMENTS:

WERE PRE PURGE SAMPLES SUBMITTED TO THE LAB? (Y) N DTW READING: 17.40 TIME: 1400

Add/Replaced Gasket: _____ Add/Replaced Bolt: _____ Add/Replaced Lock: _____ Add/Replaced Plug: _____

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING
FIELD DATA SHEET

Client/Facility#: Chevron #351640 / 5781 Job Number: 17155641
Site Address: 3535 Pierson Street Event Date: 11.10.17 (inclusive)
City: Oakland, CA Sampler: FT

Well ID MW-8 Date Monitored: 11.10.17
Well Diameter (2)/ 4 in.
Total Depth 19.92 ft.
Depth to Water 13.75 ft. ☐ Check if water column is less then 0.50 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

6.17 xVF .17 = 1.04 x3 case volume = Estimated Purge Volume: 3.0 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 14.98

Purge Equipment:		Sampling Equipment:	
Disposable Bailer	✓	Disposable Bailer	✓
Stainless Steel Bailer		Pressure Bailer	
Stack Pump		Metal Filters	
Peristaltic Pump		Peristaltic Pump	
QED Bladder Pump		QED Bladder Pump	
Other:		Other:	

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: ltr
Amt Removed from Well: ltr
Water Removed: ltr

Start Time (purge): 1130 Weather Conditions: LT. RAIN
Sample Time/Date: 1335 / 11.10.17 Water Color: CLEAR Odor: Y / (N)
Approx. Flow Rate: / gpm. Sediment Description: NONE
Did well de-water? No If yes, Time: Volume: gal. DTW @ Sampling: 14.18

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (µS mS µmhos/cm)	Temperature (C / F)	D.O. (mg/L)	ORP (mV)
1133	1.0	6.92	486	21.4		
1136	2.0	6.93	490	21.2		
1139	3.0	6.95	495	20.9		

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-8	6 x voa vial	YES	HCL	BC LABS	TPH-GRO(8015)/BTEX+MTBE(8260)/8 OXYS(8260)
	2 x 1 liter ambers	YES	NP	BC LABS	TPH-DRO(8015M)
	x 1 liter ambers	YES	NP	BC LABS	TPH-DRO w/sgc(8015M)

COMMENTS: SLOW RECOVERY

WERE PRE PURGE SAMPLES SUBMITTED TO THE LAB? Y (N) DTW READING: TIME:

Add/Replaced Gasket: Add/Replaced Bolt: Add/Replaced Lock: Add/Replaced Plug:

GETTLER-RYAN INC.

WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#: Chevron #351640 / 5781 Job Number: 17155641
Site Address: 3535 Pierson Street Event Date: 11.10.17 (inclusive)
City: Oakland, CA Sampler: FT

Well ID MW-9 Date Monitored: 11.10.17
Well Diameter (2)/4 in.
Total Depth 19.65 ft.
Depth to Water 13.65 ft.

Volume Factor (VF)	3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38
	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80

☐ Check if water column is less then 0.50 ft.

6.00 xVF .17 = 1.02 x3 case volume = Estimated Purge Volume: 3.0 gal.

Depth to Water w/ 80% Recharge [(Height of Water Column x 0.20) + DTW]: 14.85

Purge Equipment:		Sampling Equipment:	
Disposable Bailer	✓	Disposable Bailer	✓
Stainless Steel Bailer		Pressure Bailer	
Stack Pump		Metal Filters	
Peristaltic Pump		Peristaltic Pump	
QED Bladder Pump		QED Bladder Pump	
Other:		Other:	

Time Started: (2400 hrs)
Time Completed: (2400 hrs)
Depth to Product: ft
Depth to Water: ft
Hydrocarbon Thickness: ft
Visual Confirmation/Description:
Skimmer / Absorbant Sock (circle one)
Amt Removed from Skimmer: ltr
Amt Removed from Well: ltr
Water Removed: ltr

Start Time (purge): 1225 Weather Conditions: LT. RAIN
Sample Time/Date: 1225/11.10.17 Water Color: CLEAR Odor: Y / (N)
Approx. Flow Rate: / gpm. Sediment Description: NONE
Did well de-water? NO If yes, Time: Volume: gal. DTW @ Sampling: 13.65

Time (2400 hr.)	Volume (gal.)	pH	Conductivity (µS) mS µmhos/cm)	Temperature (C) / F)	D.O. (mg/L)	ORP (mV)
1228	1.0	6.86	374	21.6		
1231	2.0	6.87	379	21.4		
1234	3.0	6.89	385	21.2	/	/

LABORATORY INFORMATION

SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MW-9	6 x voa vial	YES	HCL	BC LABS	TPH-GRO(8015)/BTEX+MTBE(8260)/8 OXYS(8260)
	2 x 1 liter ambers	YES	NP	BC LABS	TPH-DRO(8015M)
	x 1 liter ambers	YES	NP	BC LABS	TPH-DRO w/sgc(8015M)

COMMENTS: SLOW RECOVERY

WERE PRE PURGE SAMPLES SUBMITTED TO THE LAB? (Y) / N DTW READING: 16.60 TIME: 1410

Add/Replaced Gasket: Add/Replaced Bolt: Add/Replaced Lock: Add/Replaced Plug:

CHAIN OF CUSTODY FORM

Union Oil Company of California ■ 6101 Bollinger Canyon Road ■ San Ramon, CA 94583

COC 1 of 1

Union Oil Site ID: 5781	Union Oil Consultant: ARCADIS
Site Global ID: T0600101467	Consultant Contact: JENNIFER GRANBACK
Site Address: 3535 PIERSON ST., OAKLAND, CA	Consultant Phone No.: (415) 491-4530
Union Oil PM: JAMES P. KIERNAN	Sampling Company: GETTLER-RYAN INC.
Union Oil PM Phone No.: (925) 842-3220	Sampled By (PRINT): FILAMI TELLINGHAM
Charge Code: NWRTB-0 351 640 **-0- LAB**	Sampler Signature:
This is a LEGAL document. ALL fields must be filled out CORRECTLY and COMPLETELY.	**BC Laboratories, Inc.** **Project Manager: Molly Meyers** 4100 Atlas Court, Bakersfield, CA 93308 Phone No. 661-327-4911

ANALYSES REQUIRED

Turnaround Time (TAT): Standard ☒ 24 Hours ☐ 48 Hours ☐ 72 Hours ☐

Special Instructions

SAMPLE ID: Field Point Name	Matrix	Depth	Date (yymmdd)	Sample Time	# of Containers	TPH - Diesel by EPA 8015 M	TPH - G by [redacted] (8015)	BTEX/MTBE/[redacted] by EPA 8260B	Ethanol by EPA 8260B	EPA 8260B [redacted] with OXYS (8)	TPH-DRO w/SGC (8015M)	Notes / Comments
QH	W-S-A		PR 11.10		2		X	X				
MW-A	W-S-A			1345	8	X	X	X		X		
MW-4	W-S-A			1155	8							
MW-5	W-S-A			1310	10						X	
MW-6	W-S-A			1248	8							
MW-7	W-S-A			1035	8							
MW-8	W-S-A			1335	8							
MW-9	W-S-A			1225	8							
	W-S-A											
	W-S-A											
	W-S-A											
	W-S-A											

Relinquished By	Company	Date / Time:
[signature]	GTL	11.11.10 (1630)
[signature]	GTL	11-13-17 1115

Received By	Company	Date / Time:
GETTLER-RYAN-RIDGE		11-13-17 1100
Doug Boyce	BCLab	11-13-17 1115

ATTACHMENT B

Historical Groundwater Analytical Data

Table 3 - Historical Groundwater Analytical Data
February 2004 - March 2009
Unocal No. 5781 (351640)
3535 Pierson Street
Oakland, California

WELL ID	DATE	DICHLORO-dIFLUORO-METHANE (µg/L)	1,1-DCA (µg/L)	1,1-DCE (µg/L)	cis-1,2-DCE (µg/L)	trans-1,2-DCE (µg/L)	1,2-DICHLORO-PROPANE (µg/L)	cis-1,3-DICHLORO-PROPANE (µg/L)	1,1,2,2-TETRACHLORO-ETHANE (µg/L)	TETRACHLORO-ETHENE (µg/L)	TRICHLORO-TRIFLUORO-ETHANE (µg/L)	1,1,1-TRICHLORO-ETHANE (µg/L)	1,1,2-TRICHLORO-ETHANE (µg/L)	TRICHLORO-ETHENE (µg/L)	TRICHLORO-FLUORO-METHANE (µg/L)	VINYL CHLORIDE (µg/L)
MW-A	2/3/2004	ND<1.0	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<0.50
	2/18/2005	ND<1.0	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<1.0	ND<0.50
	3/29/2006	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	3/28/2007	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	3/22/2008	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50
	3/27/2009	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50	ND<0.50

NOTES:

µg/L = Micrograms per liter

ID = Identification

ND<# = Analyte not detected at or above indicated laboratory practical quantitation limit

ATTACHMENT C

Laboratory Report and Chain-of-Custody Documentation

Date of Report: 11/17/2017

Tamera Rogers

Arcadis- San Jose
6296 San Ignacio Ave, Suite C&D
San Jose, CA 95119

Client Project:	351640
BCL Project:	5781
BCL Work Order:	1732381
Invoice ID:	B285636

Enclosed are the results of analyses for samples received by the laboratory on 11/13/2017. If you have any questions concerning this report, please feel free to contact me.

Sincerely,

Molly Meyers

Contact Person: Molly Meyers
Client Service Rep

Stuart Buttram
Technical Director

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Chain of Custody and Cooler Receipt Form for 1732381 Page 1 of 3

CHAIN OF CUSTODY FORM

Union Oil Company of California ■ 6101 Bollinger Canyon Road ■ San Ramon, CA 94583

17-32381

COC 1 of 1

Union Oil Site ID: 5781
Site Global ID: T0600101467
Site Address: 3535 Pierson St., Oakland, CA
Union Oil PM: James P. Kiernan
Union Oil PM Phone No.: (925) 842-3220
Charge Code: NWRTB-0351_640-0-LAB

Union Oil Consultant: ARCADIS
Consultant Contact: Jennifer Graybeal
Consultant Phone No.: (415) 491-4530
Sampling Company: Gettler-Ryan Inc
Sampled By (PRINT): Fausto Tenorio
Sampler Signature:

BC Laboratories, Inc.
Project Manager: Molly Meyers
4100 Atlas Court, Bakersfield, CA 93308
Phone No. 661-327-4911

This is a LEGAL document. ALL fields must be filled out CORRECTLY and COMPLETELY.

ANALYSES REQUIRED

SAMPLE ID: Field Point Name	Matrix	Depth	Date (yymmdd)	Sample Time	# of Containers	TPH - Diesel by EPA 8015 M	TPH - G by (8015)	BTEX/MTBE/ by EPA 8260B	Ethanol by EPA 8260B	EPA 8260B with OXYS (8)	TPH-Dro E/Sgl (8015M)	Notes / Comments
1 QA	W-S-A		11.10									
2 MW-A	W-S-A			1345	8	X	X	X		X		
3 MW-4	W-S-A			1155	8							
4 MW-5	W-S-A			1310	10					X		
5 MW-6	W-S-A			1248	8							
6 MW-7	W-S-A			1035	8							
7 MW-8	W-S-A			1335	8							
8 MW-9	W-S-A			1225	8	↓	↓	↓		↓		
	W-S-A											
	W-S-A											
	W-S-A											
	W-S-A											

CHK BY [illegible]

DISTRIBUTION

SUB-OUT ☐

Turnaround Time (TAT): Standard ☒ 24 Hours ☐ 48 Hours ☐ 72 Hours ☐

Special Instructions

	Relinquished By	Company	Date / Time:	Received By	Company	Date / Time:
1	[illegible]	6-mrk	17.11.10 (1630)	[illegible]	Gettler-Ryan	11-10-17 1730
2	[illegible]	Gettler-Ryan	11-10-17 1115	[illegible]	BC Labs	11-13-17 1115
3	[illegible]	BC Labs	11/13/17 2215	[illegible]		

Relinquished By Company Date / Time: Received By Company Date / Time:

Gettler-Ryan Bridge 11-13-17 (TAT) Rel. 11/13/17 2215 Courier 11/13/17 2215

Chain of Custody and Cooler Receipt Form for 1732381 Page 2 of 3

BC LABORATORIES INC. COOLER RECEIPT FORM Page 1 Of 2

Submission #: 17-322361

SHIPPING INFORMATION	SHIPPING CONTAINER	FREE LIQUID
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐	Ice Chest ☑ None ☐ Box ☐	YES ☐ NO ☐
BC Lab Field Service ☑ Other ☐ (Specify)_____	Other ☐ (Specify)_____	W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: 0.96 Container: amber Thermometer ID: 206 Date/Time 11/13/17 2215

Temperature: (A) 1.3 °C / (C) 1.3 °C Analyst Init KLR

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PIA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK	AB									
40ml VOA VIAL		A-F	A-F	A-F	A-F	A-F	A-F	A-F		
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M		G				GH				
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:

Sample Numbering Completed By: Date/Time: 11/13/17 2250

A = Actual / C = Corrected

Rev 21 05/23/2016

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Chain of Custody and Cooler Receipt Form for 1732381 Page 3 of 3

BC LABORATORIES INC. COOLER RECEIPT FORM Page 2 Of 2

Submission #: 17-32381

SHIPPING INFORMATION
Fed Ex ☐ UPS ☐ Ontrac ☐ Hand Delivery ☐
BC Lab Field Service ☑ Other ☐ (Specify)_____

SHIPPING CONTAINER
Ice Chest ☑ None ☐ Box ☐
Other ☐ (Specify)_____

FREE LIQUID
YES ☐ NO ☐
W / S

Refrigerant: Ice ☑ Blue Ice ☐ None ☐ Other ☐ Comments:

Custody Seals Ice Chest ☐ Intact? Yes ☐ No ☐ Containers ☐ Intact? Yes ☐ No ☐ None ☑ Comments:

All samples received? Yes ☑ No ☐ All samples containers intact? Yes ☑ No ☐ Description(s) match COC? Yes ☑ No ☐

COC Received ☑ YES ☐ NO

Emissivity: 0.96 Container: AMBER Thermometer ID: 206 Date/Time 11/13/17 2258

Temperature: (A) 0.5 °C / (C) 0.5 °C Analyst Init KR

SAMPLE CONTAINERS	SAMPLE NUMBERS 1	2	3	4	5	6	7	8	9	10
QT PE UNPRES										
4oz / 8oz / 16oz PE UNPRES										
2oz Cr^{+6}										
QT INORGANIC CHEMICAL METALS										
INORGANIC CHEMICAL METALS 4oz / 8oz / 16oz										
PT CYANIDE										
PT NITROGEN FORMS										
PT TOTAL SULFIDE										
2oz. NITRATE / NITRITE										
PT TOTAL ORGANIC CARBON										
PT CHEMICAL OXYGEN DEMAND										
PtA PHENOLICS										
40ml VOA VIAL TRAVEL BLANK										
40ml VOA VIAL										
QT EPA 1664										
PT ODOR										
RADIOLOGICAL										
BACTERIOLOGICAL										
40 ml VOA VIAL- 504										
QT EPA 508/608/8080										
QT EPA 515.1/8150										
QT EPA 525										
QT EPA 525 TRAVEL BLANK										
40ml EPA 547										
40ml EPA 531.1										
8oz EPA 548										
QT EPA 549										
QT EPA 8015M		H	GH	G-J	G,H	~~G,H~~ KR 11/13	GH	GH		
QT EPA 8270										
8oz / 16oz / 32oz AMBER										
8oz / 16oz / 32oz JAR										
SOIL SLEEVE										
PCB VIAL										
PLASTIC BAG										
TEDLAR BAG										
FERROUS IRON										
ENCORE										
SMART KIT										
SUMMA CANISTER										

Comments:_____
Sample Numbering Completed By: KR Date/Time: 11/13/17 2258
A = Actual / C = Corrected

Rev 21 05/23/2016
[S:\WPDoc\WordPerfect\LAB_DOCS\FORMS\SAMRECrev 20]

Arcadis- San Jose
6296 San Ignacio Ave, Suite C&D
San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1732381-01	**COC Number:**	---	**Receive Date:**	11/13/2017 22:15
	Project Number:	5781	**Sampling Date:**	11/10/2017 00:00
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	QA-W-171110	**Lab Matrix:**	Water
	Sampled By:	GRD	**Sample Type:**	Water
	Delivery Work Order:			
	Global ID: T0600101467			
	Location ID (FieldPoint): QA			
	Matrix: W			
	Sample QC Type (SACode): CS			
	Cooler ID:			
1732381-02	**COC Number:**	---	**Receive Date:**	11/13/2017 22:15
	Project Number:	5781	**Sampling Date:**	11/10/2017 13:45
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	MW-A-W-171110	**Lab Matrix:**	Water
	Sampled By:	GRD	**Sample Type:**	Water
	Delivery Work Order:			
	Global ID: T0600101467			
	Location ID (FieldPoint): MW-A			
	Matrix: W			
	Sample QC Type (SACode): CS			
	Cooler ID:			
1732381-03	**COC Number:**	---	**Receive Date:**	11/13/2017 22:15
	Project Number:	5781	**Sampling Date:**	11/10/2017 11:55
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	MW-4-W-171110	**Lab Matrix:**	Water
	Sampled By:	GRD	**Sample Type:**	Water
	Delivery Work Order:			
	Global ID: T0600101467			
	Location ID (FieldPoint): MW-4			
	Matrix: W			
	Sample QC Type (SACode): CS			
	Cooler ID:			

Arcadis- San Jose
6296 San Ignacio Ave, Suite C&D
San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1732381-04	**COC Number:**	---	**Receive Date:**	11/13/2017 22:15
	Project Number:	5781	**Sampling Date:**	11/10/2017 13:10
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	MW-5-W-171110	**Lab Matrix:**	Water
	Sampled By:	GRD	**Sample Type:**	Water
	Delivery Work Order:			
	Global ID: T0600101467			
	Location ID (FieldPoint): MW-5			
	Matrix: W			
	Sample QC Type (SACode): CS			
	Cooler ID:			
1732381-05	**COC Number:**	---	**Receive Date:**	11/13/2017 22:15
	Project Number:	5781	**Sampling Date:**	11/10/2017 12:48
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	MW-6-W-171110	**Lab Matrix:**	Water
	Sampled By:	GRD	**Sample Type:**	Water
	Delivery Work Order:			
	Global ID: T0600101467			
	Location ID (FieldPoint): MW-6			
	Matrix: W			
	Sample QC Type (SACode): CS			
	Cooler ID:			
1732381-06	**COC Number:**	---	**Receive Date:**	11/13/2017 22:15
	Project Number:	5781	**Sampling Date:**	11/10/2017 10:35
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	MW-7-W-171110	**Lab Matrix:**	Water
	Sampled By:	GRD	**Sample Type:**	Water
	Delivery Work Order:			
	Global ID: T0600101467			
	Location ID (FieldPoint): MW-7			
	Matrix: W			
	Sample QC Type (SACode): CS			
	Cooler ID:			

Arcadis- San Jose
6296 San Ignacio Ave, Suite C&D
San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Laboratory / Client Sample Cross Reference

Laboratory	Client Sample Information			
1732381-07	**COC Number:**	---	**Receive Date:**	11/13/2017 22:15
	Project Number:	5781	**Sampling Date:**	11/10/2017 13:35
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	MW-8-W-171110	**Lab Matrix:**	Water
	Sampled By:	GRD	**Sample Type:**	Water
			Delivery Work Order:	
			Global ID: T0600101467	
			Location ID (FieldPoint): MW-8	
			Matrix: W	
			Sample QC Type (SACode): CS	
			Cooler ID:	
1732381-08	**COC Number:**	---	**Receive Date:**	11/13/2017 22:15
	Project Number:	5781	**Sampling Date:**	11/10/2017 12:25
	Sampling Location:	---	**Sample Depth:**	---
	Sampling Point:	MW-9-W-171110	**Lab Matrix:**	Water
	Sampled By:	GRD	**Sample Type:**	Water
			Delivery Work Order:	
			Global ID: T0600101467	
			Location ID (FieldPoint): MW-9	
			Matrix: W	
			Sample QC Type (SACode): CS	
			Cooler ID:	

Arcadis- San Jose
6296 San Ignacio Ave, Suite C&D
San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 1732381-01 | **Client Sample Name:** 5781, QA-W-171110, 11/10/2017 12:00:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50		EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50		EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Toluene	ND	ug/L	0.50		EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
t-Butyl alcohol	ND	ug/L	10		EPA-8260B	ND		1
Diisopropyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Ethanol	ND	ug/L	250		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	105	%	75 - 125 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	101	%	80 - 120 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	97.3	%	80 - 120 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	11/16/17	11/17/17 04:55	AKM	MS-V14	1	B[K1679

Arcadis- San Jose
6296 San Ignacio Ave, Suite C&D
San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-01 | **Client Sample Name:** 5781, QA-W-171110, 11/10/2017 12:00:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C4 - C12)	ND	ug/L	50		EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	111	%	70 - 130 (LCL - UCL)		EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	11/15/17	11/15/17 16:37	TDH	GC-V9	1	B[K1363

Arcadis- San Jose
6296 San Ignacio Ave, Suite C&D
San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 1732381-02 | **Client Sample Name:** 5781, MW-A-W-171110, 11/10/2017 1:45:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50		EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50		EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Toluene	ND	ug/L	0.50		EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
t-Butyl alcohol	ND	ug/L	10		EPA-8260B	ND		1
Diisopropyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Ethanol	ND	ug/L	250		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	111	%	75 - 125 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	104	%	80 - 120 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	101	%	80 - 120 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	11/16/17	11/17/17 01:04	AKM	MS-V14	1	B[K1679

Arcadis- San Jose
6296 San Ignacio Ave, Suite C&D
San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-02 | **Client Sample Name:** 5781, MW-A-W-171110, 11/10/2017 1:45:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C4 - C12)	ND	ug/L	50		EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	108	%	70 - 130 (LCL - UCL)		EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	11/15/17	11/15/17 16:57	TDH	GC-V9	1	B[K1363

Arcadis- San Jose
6296 San Ignacio Ave, Suite C&D
San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-02 | **Client Sample Name:** 5781, MW-A-W-171110, 11/10/2017 1:45:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Diesel Range Organics (C12 - C24)	**51**	**ug/L**	**50**		**EPA-8015B/TPHd**	ND	**A52**	1
Tetracosane (Surrogate)	105	%	40 - 140 (LCL - UCL)		EPA-8015B/TPHd			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B/TPHd	11/14/17	11/15/17 21:55	RSM	GC-5	1	B[K1816

Arcadis- San Jose
6296 San Ignacio Ave, Suite C&D
San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 1732381-03 | **Client Sample Name:** 5781, MW-4-W-171110, 11/10/2017 11:55:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50		EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50		EPA-8260B	ND		1
Methyl t-butyl ether	**1.1**	**ug/L**	**0.50**		**EPA-8260B**	ND		1
Toluene	ND	ug/L	0.50		EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
t-Butyl alcohol	ND	ug/L	10		EPA-8260B	ND		1
Diisopropyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Ethanol	ND	ug/L	250		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	106	%	75 - 125 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	99.7	%	80 - 120 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	99.8	%	80 - 120 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	11/16/17	11/17/17 05:18	AKM	MS-V14	1	B[K1679

Arcadis- San Jose
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San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-03 | **Client Sample Name:** 5781, MW-4-W-171110, 11/10/2017 11:55:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C4 - C12)	ND	ug/L	50		EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	99.9	%	70 - 130 (LCL - UCL)		EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	11/15/17	11/15/17 17:18	TDH	GC-V9	1	B[K1363

Arcadis- San Jose
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San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-03 | **Client Sample Name:** 5781, MW-4-W-171110, 11/10/2017 11:55:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Diesel Range Organics (C12 - C24)	ND	ug/L	50		EPA-8015B/TPHd	ND		1
Tetracosane (Surrogate)	110	%	40 - 140 (LCL - UCL)		EPA-8015B/TPHd			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B/TPHd	11/14/17	11/15/17 22:08	RSM	GC-5	0.950	B[K1816

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 1732381-04 | **Client Sample Name:** 5781, MW-5-W-171110, 11/10/2017 1:10:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50		EPA-8260B	ND	Z1	1
1,2-Dibromoethane	ND	ug/L	0.50		EPA-8260B	ND	Z1	1
1,2-Dichloroethane	ND	ug/L	0.50		EPA-8260B	ND	Z1	1
Ethylbenzene	**14**	**ug/L**	**0.50**		**EPA-8260B**	ND	**Z1**	1
Methyl t-butyl ether	**3.7**	**ug/L**	**0.50**		**EPA-8260B**	ND	**Z1**	1
Toluene	ND	ug/L	0.50		EPA-8260B	ND	Z1	1
Total Xylenes	**56**	**ug/L**	**1.0**		**EPA-8260B**	ND	**Z1**	1
t-Amyl Methyl ether	ND	ug/L	0.50		EPA-8260B	ND	Z1	1
t-Butyl alcohol	ND	ug/L	10		EPA-8260B	ND	Z1	1
Diisopropyl ether	ND	ug/L	0.50		EPA-8260B	ND	Z1	1
Ethanol	ND	ug/L	250		EPA-8260B	ND	Z1	1
Ethyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND	Z1	1
1,2-Dichloroethane-d4 (Surrogate)	110	%	75 - 125 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	100	%	80 - 120 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	101	%	80 - 120 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	11/16/17	11/17/17 09:32	AKM	MS-V14	1	B[K1679

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-04 | **Client Sample Name:** 5781, MW-5-W-171110, 11/10/2017 1:10:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C4 - C12)	**5400**	**ug/L**	**500**		**EPA-8015B**	ND	**A01**	1
a,a,a-Trifluorotoluene (FID Surrogate)	116	%	70 - 130 (LCL - UCL)		EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	11/15/17	11/16/17 11:26	TDH	GC-V9	10	B[K1363

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-04 | **Client Sample Name:** 5781, MW-5-W-171110, 11/10/2017 1:10:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Diesel Range Organics (C12 - C24)	**620**	**ug/L**	**50**		**EPA-8015B/TPHd**	ND	**A52**	1
Tetracosane (Surrogate)	89.9	%	40 - 140 (LCL - UCL)		EPA-8015B/TPHd			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B/TPHd	11/14/17	11/15/17 22:23	RSM	GC-5	0.960	B[K1816

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Total Petroleum Hydrocarbons (Silica Gel Treated)

BCL Sample ID: 1732381-04 | **Client Sample Name:** 5781, MW-5-W-171110, 11/10/2017 1:10:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Diesel Range Organics (C12 - C24)	**68**	**ug/L**	**50**		**Luft/TPHd**	ND	**A52**	1
Tetracosane (Surrogate)	49.5	%	40 - 140 (LCL - UCL)		Luft/TPHd			1
Capric acid (Reverse Surrogate)	0	%	0 - 1 (LCL - UCL)		Luft/TPHd			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	Luft/TPHd	11/14/17	11/16/17 03:40	RSM	GC-5	1	B[K1574

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 1732381-05 | **Client Sample Name:** 5781, MW-6-W-171110, 11/10/2017 12:48:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50		EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50		EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Toluene	ND	ug/L	0.50		EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
t-Butyl alcohol	ND	ug/L	10		EPA-8260B	ND		1
Diisopropyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Ethanol	ND	ug/L	250		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	110	%	75 - 125 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	101	%	80 - 120 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	99.8	%	80 - 120 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	11/16/17	11/17/17 05:41	AKM	MS-V14	1	B[K1679

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-05 | **Client Sample Name:** 5781, MW-6-W-171110, 11/10/2017 12:48:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C4 - C12)	ND	ug/L	50		EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	94.5	%	70 - 130 (LCL - UCL)		EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	11/15/17	11/15/17 17:38	TDH	GC-V9	1	B[K1363

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-05 | **Client Sample Name:** 5781, MW-6-W-171110, 11/10/2017 12:48:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Diesel Range Organics (C12 - C24)	ND	ug/L	50		EPA-8015B/TPHd	ND		1
Tetracosane (Surrogate)	101	%	40 - 140 (LCL - UCL)		EPA-8015B/TPHd			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B/TPHd	11/14/17	11/15/17 22:37	RSM	GC-5	0.980	B[K1816

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 1732381-06 | **Client Sample Name:** 5781, MW-7-W-171110, 11/10/2017 10:35:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50		EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50		EPA-8260B	ND		1
Methyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Toluene	ND	ug/L	0.50		EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
t-Butyl alcohol	ND	ug/L	10		EPA-8260B	ND		1
Diisopropyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Ethanol	ND	ug/L	250		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	105	%	75 - 125 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	103	%	80 - 120 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	98.8	%	80 - 120 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	11/16/17	11/17/17 06:04	AKM	MS-V14	1	B[K1679

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-06 | **Client Sample Name:** 5781, MW-7-W-171110, 11/10/2017 10:35:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C4 - C12)	ND	ug/L	50		EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	99.6	%	70 - 130 (LCL - UCL)		EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	11/15/17	11/15/17 17:58	TDH	GC-V9	1	B[K1363

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-06 | **Client Sample Name:** 5781, MW-7-W-171110, 11/10/2017 10:35:00AM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Diesel Range Organics (C12 - C24)	ND	ug/L	50		EPA-8015B/TPHd	ND		1
Tetracosane (Surrogate)	95.2	%	40 - 140 (LCL - UCL)		EPA-8015B/TPHd			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B/TPHd	11/14/17	11/15/17 23:32	RSM	GC-5	0.960	B[K1816

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 1732381-07 | **Client Sample Name:** 5781, MW-8-W-171110, 11/10/2017 1:35:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50		EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50		EPA-8260B	ND		1
Methyl t-butyl ether	**2.2**	**ug/L**	**0.50**		**EPA-8260B**	ND		1
Toluene	ND	ug/L	0.50		EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
t-Butyl alcohol	ND	ug/L	10		EPA-8260B	ND		1
Diisopropyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Ethanol	ND	ug/L	250		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	104	%	75 - 125 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	102	%	80 - 120 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	103	%	80 - 120 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	11/16/17	11/17/17 06:27	AKM	MS-V14	1	B[K1679

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-07 | **Client Sample Name:** 5781, MW-8-W-171110, 11/10/2017 1:35:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C4 - C12)	ND	ug/L	50		EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	102	%	70 - 130 (LCL - UCL)		EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	11/15/17	11/15/17 18:18	TDH	GC-V9	1	B[K1363

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San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-07 | **Client Sample Name:** 5781, MW-8-W-171110, 11/10/2017 1:35:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Diesel Range Organics (C12 - C24)	ND	ug/L	50		EPA-8015B/TPHd	ND		1
Tetracosane (Surrogate)	90.7	%	40 - 140 (LCL - UCL)		EPA-8015B/TPHd			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B/TPHd	11/14/17	11/15/17 23:46	RSM	GC-5	0.970	B[K1816

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B)

BCL Sample ID: 1732381-08 | **Client Sample Name:** 5781, MW-9-W-171110, 11/10/2017 12:25:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Benzene	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dibromoethane	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane	ND	ug/L	0.50		EPA-8260B	ND		1
Ethylbenzene	ND	ug/L	0.50		EPA-8260B	ND		1
Methyl t-butyl ether	**0.54**	**ug/L**	**0.50**		**EPA-8260B**	ND		1
Toluene	ND	ug/L	0.50		EPA-8260B	ND		1
Total Xylenes	ND	ug/L	1.0		EPA-8260B	ND		1
t-Amyl Methyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
t-Butyl alcohol	ND	ug/L	10		EPA-8260B	ND		1
Diisopropyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
Ethanol	ND	ug/L	250		EPA-8260B	ND		1
Ethyl t-butyl ether	ND	ug/L	0.50		EPA-8260B	ND		1
1,2-Dichloroethane-d4 (Surrogate)	106	%	75 - 125 (LCL - UCL)		EPA-8260B			1
Toluene-d8 (Surrogate)	101	%	80 - 120 (LCL - UCL)		EPA-8260B			1
4-Bromofluorobenzene (Surrogate)	99.8	%	80 - 120 (LCL - UCL)		EPA-8260B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8260B	11/16/17	11/17/17 06:51	AKM	MS-V14	1	B[K1679

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6296 San Ignacio Ave, Suite C&D
San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Purgeable Aromatics and Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-08 | **Client Sample Name:** 5781, MW-9-W-171110, 11/10/2017 12:25:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Gasoline Range Organics (C4 - C12)	ND	ug/L	50		EPA-8015B	ND		1
a,a,a-Trifluorotoluene (FID Surrogate)	98.3	%	70 - 130 (LCL - UCL)		EPA-8015B			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B	11/15/17	11/15/17 18:38	TDH	GC-V9	1	B[K1363

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San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Total Petroleum Hydrocarbons

BCL Sample ID: 1732381-08 | **Client Sample Name:** 5781, MW-9-W-171110, 11/10/2017 12:25:00PM

Constituent	Result	Units	PQL	MDL	Method	MB Bias	Lab Quals	Run #
Diesel Range Organics (C12 - C24)	ND	ug/L	50		EPA-8015B/TPHd	ND		1
Tetracosane (Surrogate)	77.5	%	40 - 140 (LCL - UCL)		EPA-8015B/TPHd			1

Run #	Method	Prep Date	Run Date/Time	Analyst	Instrument	Dilution	QC Batch ID
1	EPA-8015B/TPHd	11/14/17	11/15/17 23:59	RSM	GC-5	0.970	B[K1816

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6296 San Ignacio Ave, Suite C&D
San Jose, CA 95119

Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B[K1679						
Benzene	B[K1679-BLK1	ND	ug/L	0.50		
1,2-Dibromoethane	B[K1679-BLK1	ND	ug/L	0.50		
1,2-Dichloroethane	B[K1679-BLK1	ND	ug/L	0.50		
Ethylbenzene	B[K1679-BLK1	ND	ug/L	0.50		
Methyl t-butyl ether	B[K1679-BLK1	ND	ug/L	0.50		
Toluene	B[K1679-BLK1	ND	ug/L	0.50		
Total Xylenes	B[K1679-BLK1	ND	ug/L	1.0		
t-Amyl Methyl ether	B[K1679-BLK1	ND	ug/L	0.50		
t-Butyl alcohol	B[K1679-BLK1	ND	ug/L	10		
Diisopropyl ether	B[K1679-BLK1	ND	ug/L	0.50		
Ethanol	B[K1679-BLK1	ND	ug/L	250		
Ethyl t-butyl ether	B[K1679-BLK1	ND	ug/L	0.50		
1,2-Dichloroethane-d4 (Surrogate)	**B[K1679-BLK1**	**109**	%	**75 - 125**	**(LCL - UCL)**	
Toluene-d8 (Surrogate)	**B[K1679-BLK1**	**102**	%	**80 - 120**	**(LCL - UCL)**	
4-Bromofluorobenzene (Surrogate)	**B[K1679-BLK1**	**102**	%	**80 - 120**	**(LCL - UCL)**	

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B[K1679										
Benzene	B[K1679-BS1	LCS	24.977	25.000	ug/L	99.9		70 - 130		
Toluene	B[K1679-BS1	LCS	25.022	25.000	ug/L	100		70 - 130		
1,2-Dichloroethane-d4 (Surrogate)	B[K1679-BS1	LCS	11.260	10.000	ug/L	113		75 - 125		
Toluene-d8 (Surrogate)	B[K1679-BS1	LCS	10.310	10.000	ug/L	103		80 - 120		
4-Bromofluorobenzene (Surrogate)	B[K1679-BS1	LCS	10.460	10.000	ug/L	105		80 - 120		

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Volatile Organic Analysis (EPA Method 8260B)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B[K1679	Used client sample: Y - Description: MW-A-W-171110, 11/10/2017 13:45										
Benzene	MS	1732381-02	ND	24.326	25.000	ug/L		97.3		70 - 130	
	MSD	1732381-02	ND	24.399	25.000	ug/L	0.3	97.6	20	70 - 130	
Toluene	MS	1732381-02	ND	24.059	25.000	ug/L		96.2		70 - 130	
	MSD	1732381-02	ND	24.521	25.000	ug/L	1.9	98.1	20	70 - 130	
1,2-Dichloroethane-d4 (Surrogate)	MS	1732381-02	ND	11.430	10.000	ug/L		114		75 - 125	
	MSD	1732381-02	ND	11.170	10.000	ug/L	2.3	112		75 - 125	
Toluene-d8 (Surrogate)	MS	1732381-02	ND	10.070	10.000	ug/L		101		80 - 120	
	MSD	1732381-02	ND	10.030	10.000	ug/L	0.4	100		80 - 120	
4-Bromofluorobenzene (Surrogate)	MS	1732381-02	ND	10.090	10.000	ug/L		101		80 - 120	
	MSD	1732381-02	ND	10.000	10.000	ug/L	0.9	100		80 - 120	

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Project Manager: Tamera Rogers

Purgeable Aromatics and Total Petroleum Hydrocarbons

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B[K1363						
Gasoline Range Organics (C4 - C12)	B[K1363-BLK1	ND	ug/L	50		
a,a,a-Trifluorotoluene (FID Surrogate)	**B[K1363-BLK1**	**103**	%	**70 - 130 (LCL - UCL)**		

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Purgeable Aromatics and Total Petroleum Hydrocarbons

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B[K1363										
Gasoline Range Organics (C4 - C12)	B[K1363-BS1	LCS	939.08	1000.0	ug/L	93.9		85 - 115		
a,a,a-Trifluorotoluene (FID Surrogate)	B[K1363-BS1	LCS	39.685	40.000	ug/L	99.2		70 - 130		

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Project Manager: Tamera Rogers

Purgeable Aromatics and Total Petroleum Hydrocarbons

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B[K1363	Used client sample: N										
Gasoline Range Organics (C4 - C12)	MS	1730221-56	ND	1032.8	1000.0	ug/L		103		70 - 130	
	MSD	1730221-56	ND	1040.0	1000.0	ug/L	0.7	104	20	70 - 130	
a,a,a-Trifluorotoluene (FID Surrogate)	MS	1730221-56	ND	40.349	40.000	ug/L		101		70 - 130	
	MSD	1730221-56	ND	40.473	40.000	ug/L	0.3	101		70 - 130	

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Project Manager: Tamera Rogers

Total Petroleum Hydrocarbons

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B[K1816						
Diesel Range Organics (C12 - C24)	B[K1816-BLK1	ND	ug/L	50		
Tetracosane (Surrogate)	**B[K1816-BLK1**	**72.3**	%	**40 - 140 (LCL - UCL)**		

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Total Petroleum Hydrocarbons

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B[K1816										
Diesel Range Organics (C12 - C24)	B[K1816-BS1	LCS	444.23	500.00	ug/L	88.8		50 - 120		
Tetracosane (Surrogate)	B[K1816-BS1	LCS	15.185	20.008	ug/L	75.9		40 - 140		

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Total Petroleum Hydrocarbons

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B[K1816	Used client sample: N										
Diesel Range Organics (C12 - C24)	MS	1730221-82	ND	490.65	500.00	ug/L		98.1		50 - 120	
	MSD	1730221-82	ND	468.32	500.00	ug/L	4.7	93.7	30	50 - 120	
Tetracosane (Surrogate)	MS	1730221-82	ND	20.390	20.008	ug/L		102		40 - 140	
	MSD	1730221-82	ND	18.487	20.008	ug/L	9.8	92.4		40 - 140	

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Reported: 11/17/2017 15:05
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Project Manager: Tamera Rogers

Total Petroleum Hydrocarbons (Silica Gel Treated)

Quality Control Report - Method Blank Analysis

Constituent	QC Sample ID	MB Result	Units	PQL	MDL	Lab Quals
QC Batch ID: B[K1574						
Diesel Range Organics (C12 - C24)	B[K1574-BLK1	ND	ug/L	50		
Tetracosane (Surrogate)	**B[K1574-BLK1**	**60.8**	%	**40 - 140 (LCL - UCL)**		
Capric acid (Reverse Surrogate)	B[K1574-BLK1	0	%	0 - 1 (LCL - UCL)		

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Total Petroleum Hydrocarbons (Silica Gel Treated)

Quality Control Report - Laboratory Control Sample

Constituent	QC Sample ID	Type	Result	Spike Level	Units	Percent Recovery	RPD	Control Limits Percent Recovery	Control Limits RPD	Lab Quals
QC Batch ID: B[K1574										
Diesel Range Organics (C12 - C24)	B[K1574-BS1	LCS	201.79	500.00	ug/L	40.4		20 - 110		
Tetracosane (Surrogate)	B[K1574-BS1	LCS	8.7590	20.008	ug/L	43.8		40 - 140		
Capric acid (Reverse Surrogate)	B[K1574-BS1	LCS	ND	100.00	ug/L	0		0 - 1		

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Reported: 11/17/2017 15:05
Project: 5781
Project Number: 351640
Project Manager: Tamera Rogers

Total Petroleum Hydrocarbons (Silica Gel Treated)

Quality Control Report - Precision & Accuracy

Constituent	Type	Source Sample ID	Source Result	Result	Spike Added	Units	RPD	Percent Recovery	Control Limits RPD	Control Limits Percent Recovery	Lab Quals
QC Batch ID: B[K1574	Used client sample: N										
Diesel Range Organics (C12 - C24)	MS	1728746-82	ND	242.03	500.00	ug/L		48.4		20 - 110	
	MSD	1728746-82	ND	211.69	500.00	ug/L	13.4	42.3	30	20 - 110	
Tetracosane (Surrogate)	MS	1728746-82	ND	10.620	20.008	ug/L		53.1		40 - 140	
	MSD	1728746-82	ND	9.2110	20.008	ug/L	14.2	46.0		40 - 140	
Capric acid (Reverse Surrogate)	MS	1728746-82	ND	ND	100.00	ug/L		0		0 - 1	
	MSD	1728746-82	ND	ND	100.00	ug/L		0		0 - 1	

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Reported: 11/17/2017 15:05
Project: 5781
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Project Manager: Tamera Rogers

Notes And Definitions

MDL	Method Detection Limit
ND	Analyte Not Detected
PQL	Practical Quantitation Limit
A01	Detection and quantitation limits are raised due to sample dilution.
A52	Chromatogram not typical of diesel.
Z1	10uL OF ANTIFOAMER SOLUTION ADDED TO THE SAMPLE VOA

ATTACHMENT D

Arcadis Correspondence

Edwards, Carl

From: Edwards, Carl
Sent: Tuesday, October 3, 2017 4:05 PM
To: 'Nowell, Keith, Env. Health'
Cc: James Kiernan; Khatri, Paresh, Env. Health; Roe, Dilan, Env. Health; Rogers, Tamera
Subject: RE: Fuel Leak Case RO253 Unocal #5781, 3535 Pierson St., Oakland

Hi Keith,
Arcadis will proceed with scheduling groundwater sampling for 4Q17 and assess the data against the Low Threat Closure Policy Criteria as part of the 4Q17 groundwater monitoring report submittal.

Given the additional requirements for the report, and that our subcontractor cannot sample the site until mid-November, we are requesting a report submittal deadline of 45 days after quarter end, if that is acceptable.

Thanks,
Carl

From: Nowell, Keith, Env. Health [mailto:Keith.Nowell@acgov.org]
Sent: Thursday, September 28, 2017 3:23 PM
To: Edwards, Carl <Carl.Edwards@arcadis.com>
Cc: Little, Jason <Jason.Little@arcadis.com>; James Kiernan <JKiernan@chevron.com>; Brandt, Katherine <Katherine.Brandt@arcadis.com>; Khatri, Paresh, Env. Health <paresh.khatri@acgov.org>; Roe, Dilan, Env. Health <Dilan.Roe@acgov.org>
Subject: Fuel Leak Case RO253 Unocal #5781, 3535 Pierson St., Oakland

Carl,

Thank you for this follow up email. I received your voice mail message but our outside lines appear down, and I am currently unable to return calls.

I can deny the report entitled *Semi-Annual Status Report, Third Quarter 2017* and the associated monitoring well EDF (confirmation number 3055284500) on GeoTracker for file resubmittal. I have a problem with the hold time exceedance, however, as we'd be trading one potentially bad analysis for another. Perhaps we can adjust the sampling dates to accommodate a well resampling in the near future. Let's discuss.

Does the potential lab contamination have any effect on the SB analyses for samples collected in May 22-23, 2017?

Regards,
Keith Nowell

From: Edwards, Carl [mailto:Carl.Edwards@arcadis.com]
Sent: Thursday, September 28, 2017 2:58 PM
To: Nowell, Keith, Env. Health <Keith.Nowell@acgov.org>
Cc: Little, Jason <Jason.Little@arcadis.com>; James Kiernan <JKiernan@chevron.com>; Brandt, Katherine

<Katherine.Brandt@arcadis.com>
Subject: Case #RO0000253

Hi Keith,
We were notified by BC Labs about cross contamination associated with the groundwater samples collected at 3535 Pierson Street for the routine monitoring event conducted on August 1, 2017. The cross contamination occurred while BC Labs was running the sample analyses and is the likely cause of TPH-g detections in onsite wells (MW-A, MW-4, MW-6, MW-7) which have not had detectable TPH-g concentrations for many years. The report was already submitted based on the ACDEH's deadline of September 25, 2017, and we were not able to incorporate this new information into the report.

Arcadis is requesting to remove the current groundwater monitoring report from Geotracker, and upload a new version of the report by October 20, 2017. We are attempting to re-run the groundwater samples, although they are past holding time, to confirm that the lab machinery is indeed the likely source of cross contamination. Please advise if the new reporting deadline is acceptable. This is not to be confused with a separate email, sent on 9/27, requesting that we submit future groundwater monitoring reports 60 days following the sampling event.

Thanks,
Carl

Carl Edwards | Environmental Scientist | Carl.Edwards@arcadis-us.com

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ARCADIS, Imagine the result

ATTACHMENT E

Linear Regressions

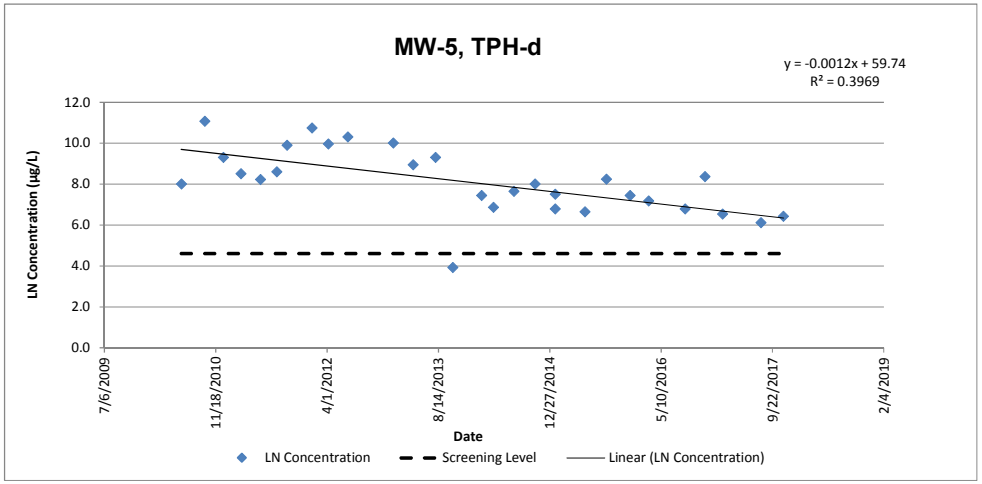
Summary of Statistical Analysis of Groundwater Analytical Data
Semi-Annual Status Report and Low Threat Closure Review, Fourth Quarter 2017
Union Oil Company of California, Unocal No. 5781 (351640)
3535 Pierson Street, Oakland, CA

Constituent	Well	Cleanup Goal/Screening Level/Remediation goal (µg/L)[1]	Data Range						Linear Regression Analysis					
			Minimum Concentration (µg/L)	Maximum Concentration (µg/L)	Concentration Measured Most Recently (µg/L)	% of Data Above Laboratory Reporting Limit	Start Date	End Date	Coefficient of Determination, R-squared[2]	p-value of Correlation (Significance of Slope)	Attenuation Half-life (days)	Trend Direction	Significance of Trend[3]	Projected Year to Screening Level
TPH-d	MW-5	100	50	64,000	620	97	6/16/2010	11/10/2017	0.40	<0.01	559	Decreasing	Significant	2021
TPH-g	MW-5	100	1,600	86,000	5,400	100	6/16/2010	11/10/2017	0.67	<0.01	536	Decreasing	Significant	2024

Notes, Abbreviations and Assumptions:
µg/L = micrograms per liter
NS = not significant
NA = not applicable due to increasing trend or non-significant trend
[1] Mention source/reference of CGs/SLs/RGs here.
[2] Linear regression analysis with R^2 values <0.1 and no statistically significant trend were defined as having no apparent trend (No Trend).
[3] Statistically significant trend defined as having p-value ≤ 0.10 or 0.05 (keep one based on size of dataset).
Data in italics ND taken at reporting limit/reported value
Data is underlined Qualified data converted to reported value

Sample Information
Semi-Annual Status Report, MW-5
Constituent TPH-d

Data		
Sample Date	Concentration	LN Concentration
	(ug/L)	
6/16/2010	3000	8.01
9/29/2010	64000	11.07
12/21/2010	11000	9.31
3/10/2011	4900	8.50
6/7/2011	3700	8.22
8/18/2011	5400	8.59
10/4/2011	20000	9.90
1/24/2012	46000	10.74
4/6/2012	21000	9.95
7/2/2012	30000	10.31
1/23/2013	22000	10.00
4/22/2013	7600	8.94
7/31/2013	11000	9.31
10/17/2013	50	3.91
2/24/2014	1,700	7.44
4/17/2014	960	6.87
7/18/2014	2100	7.65
10/21/2014	3000	8.01
1/20/2015	880	6.78
1/20/2015	1800	7.50
6/3/2015	760	6.63
9/7/2015	3800	8.24
12/22/2015	1700	7.44
3/15/2016	1300	7.17
8/25/2016	880	6.78
11/23/2016	4300	8.37
2/10/2017	690	6.54
8/1/2017	450	6.11
11/10/2017	620	6.43



Notes:

ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	29
# of nondetects	1
% of data as detects	97

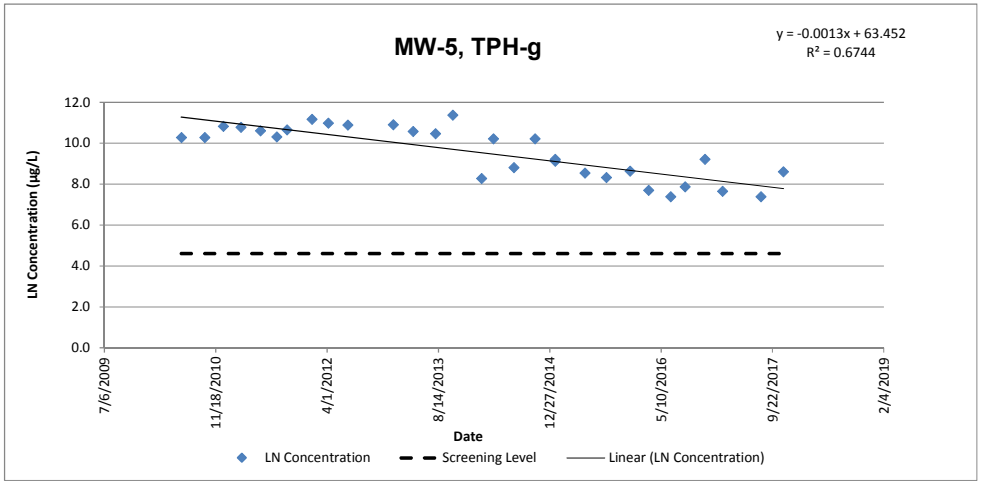
Results		
Coefficient of Determination (R^2) =	0.3969	
p-Value =	2.50E-04	
Attenuation Rate in Groundwater (K) =	0.0012	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	0.0006	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	5.59E+02	days

Date Screening Level Reached	
Screening Level	100
LN Screening Level	4.6
Intercept	59.740
Slope	-0.0012
Date to Screening Level	2021

Abbreviations and Notes
ug/l = micrograms per liter
LN = Natural Logarithm

Sample Information
Semi-Annual Status Report, MW-5
Constituent TPH-g

Data		
Sample Date	Concentration	LN Concentration
	(ug/L)	
6/16/2010	29000	10.28
9/29/2010	29000	10.28
12/21/2010	50000	10.82
3/10/2011	48000	10.78
6/7/2011	40000	10.60
8/18/2011	30000	10.31
10/4/2011	42000	10.65
1/24/2012	71000	11.17
4/6/2012	58000	10.97
7/2/2012	53000	10.88
1/23/2013	54000	10.90
4/22/2013	39000	10.57
7/31/2013	35000	10.46
10/17/2013	86000	11.36
2/24/2014	3,900	8.27
4/17/2014	27000	10.20
7/18/2014	6600	8.79
10/21/2014	27000	10.20
1/20/2015	9100	9.12
1/20/2015	10000	9.21
6/3/2015	5100	8.54
9/7/2015	4100	8.32
12/22/2015	5600	8.63
3/15/2016	2200	7.70
6/22/2016	1600	7.38
8/25/2016	2600	7.86
11/23/2016	10000	9.21
2/10/2017	2100	7.65
8/1/2017	1600	7.38
11/10/2017	5400	8.59



Notes:

ND taken at reporting limit/reported value
Qualified data converted to reported value

Data quality	
Total # of data points used in regression	30
# of nondetects	0
% of data as detects	100

Results		
Coefficient of Determination (R^2) =	0.6744	
p-Value =	2.69E-08	
Attenuation Rate in Groundwater (K) =	0.0013	$days^{-1}$
Attenuation Rate in Groundwater at 90% confidence (K) =	0.0009	$days^{-1}$
Chemical Half Life in Groundwater ($t_{1/2}$) =	5.36E+02	days

Date Screening Level Reached	
Screening Level	100
LN Screening Level	4.6
Intercept	63.452
Slope	-0.0013
Date to Screening Level	2024

Abbreviations and Notes
ug/l = micrograms per liter
LN = Natural Logarithm

USEPA. 2009. Statistical Analysis of Groundwater Monitoring Data at RCRA Facilities. Office of Resource Conservation and Recovery. Unified Guidance. EPA 530-R-09-007.

STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER ESI

UPLOADING A GEO_REPORT FILE

SUCCESS

Your GEO_REPORT file has been successfully submitted!

Submittal Type:	GEO_REPORT
Report Title:	Semi-Annual Status Report and Low Threat Closure Review, Fourth Quarter 2017
Report Type:	Request for Closure
Report Date:	12/21/2017
Facility Global ID:	T0600101467
Facility Name:	UNOCAL #5781
File Name:	351640 2SA17 GWMR Report FIN 12212017-signed.pdf
Organization Name:	ARCADIS
Username:	ARCADIS76
IP Address:	199.19.248.121
Submittal Date/Time:	12/21/2017 5:11:59 PM
Confirmation Number:	4836282551