Fourth Quarter 2016 Semi-Annual Groundwater Monitoring Report

Former Chevron-branded Service Station 92029 890 West MacArthur Boulevard Oakland, California Case #: RO0002438



Prepared for: Chevron Environmental Management Company 6001 Bollinger Canyon Road San Ramon, CA 94583

Prepared by: Stantec Consulting Services Inc. 15575 Los Gatos Blvd., Building C Los Gatos, CA 95032

February 14, 2017



Carryl MacLeod Project Manager Marketing Business Unit Chevron Environmental Management Company 6001 Bollinger Canyon Road San Ramon, CA 94583 Tel (925) 842-3201 CMacleod@chevron.com

February 14, 2017

Mr. Mark Detterman Alameda County Environmental Health 1131 Harbor Bay Parkway, Suite 250 Alameda, CA 94502

Dear Mr. Detterman:

Attached for your review is the *Fourth Quarter 2016 Semi-Annual Groundwater Monitoring Report* for former Chevron-branded service station 92029, located at 890 West MacArthur Boulevard in Oakland, California (**Case #:** RO0002438). This report was prepared by Stantec Consulting Services Inc. (Stantec), upon whose assistance and advice I have relied. I declare under penalty of perjury that the information and/or recommendations contained in the attached report are true and correct, to the best of my knowledge.

If you should have any further questions, please do not hesitate to contact me or the Stantec project manager, Travis Flora, at (408) 356-6124 ext. 238, or <u>travis.flora@stantec.com</u>.

Sincerely,

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Carryl MacLeod Project Manager



February 14, 2017

- Attention:Mr. Mark DettermanAlameda County Environmental Health1131 Harbor Bay Parkway, Suite 250, Alameda, CA 94502
- Reference: Fourth Quarter 2016 Semi-Annual Groundwater Monitoring Report Former Chevron-branded Service Station 92029 890 West MacArthur Boulevard, Oakland, California Case #: RO0002438

Dear Mr. Detterman:

On behalf of Chevron Environmental Management Company (CEMC), Stantec Consulting Services Inc. (Stantec) is pleased to submit the Fourth Quarter 2016 Semi-Annual Groundwater Monitoring Report for former Chevron-branded service station 92029, located at 890 West MacArthur Boulevard, Oakland, Alameda County, California (Site - shown on **Figure 1**). This report is presented in three sections: Site Background, Fourth Quarter 2016 Groundwater Monitoring and Sampling Program, and Conclusions and Recommendations.

SITE BACKGROUND

The Site is a former Chevron-branded service station located on the northeast corner at the intersection of West MacArthur Boulevard and Market Street in Oakland, California. The Site is currently a fenced vacant lot. A former Chevron-branded service station operated at the Site from approximately 1956 to 2004. Prior to 1970, Site features consisted of two 5,000-gallon and one 3,000-gallon gasoline underground storage tanks (USTs) located in the eastern portion of the Site, three fuel dispenser islands (one located in the northwestern portion of the Site and two located in the central portion of the Site), associated product piping, a station building with two hydraulic hoists, and a waste oil UST (unknown size) located in the northern portion of the Site. The product piping was replaced in 1970, and the 3,000-gallon UST was replaced with a 10,000-gallon UST sometime before 1978. In 1982, the two 5,000-gallon and one 10,000-gallon USTs were replaced with three 10,000-gallon fiberglass USTs.

In 1984, the service station building was demolished, the hydraulic hoists were removed, and a kiosk was installed near the center of the Site. In addition, the three fuel dispenser islands were removed from the Site and replaced with five fuel dispenser islands (two located in the north-central portion of the Site and three located in the south-central portion of the Site). The fuel dispenser islands were replaced and the USTs were upgraded in 1997. The waste oil UST was removed from the Site sometime between 1984 and 1997. In 2005, the service station was closed and all Site structures, including the three 10,000-gallon fiberglass USTs and fuel dispenser islands, were removed. According to the *Well Installation Report*, prepared by Conestoga-Rovers & Associates (CRA) and dated November 18, 2008, extensive over-excavation was performed at this time and approximately 5,135 tons of impacted soil and 25,500 gallons of groundwater were removed and disposed off-site.

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Land use near the Site consists of a mixture of commercial and residential properties. The Site is bounded to the north by a residential area, on the west by Market Street followed by a small grocery store and associated parking, on the south by West MacArthur Boulevard followed by a tire sales and service shop, and to the east by a motel.

FOURTH QUARTER 2016 GROUNDWATER MONITORING AND SAMPLING PROGRAM

Gettler-Ryan Inc. (G-R) performed the Fourth Quarter 2016 groundwater monitoring and sampling event on December 21, 2016. G-R's standard operating procedures (SOPs) and field data sheets are included in **Attachment A**. G-R gauged depth-to-groundwater (DTW) in four Site wells (MW-5 through MW-8) prior to collecting groundwater samples for laboratory analysis. All four wells, which are located down-gradient of the Site, were sampled.

Investigation-derived waste (IDW) generated during the Fourth Quarter 2016 groundwater monitoring and sampling event was transported by Clean Harbors Environmental Services to Seaport Environmental in Redwood City, California.

Groundwater Elevation and Gradient

Well construction details and a screen interval assessment for each Site well are presented in **Table 1**. Wells MW-5, MW-7, and MW-8 are currently screened across the prevailing groundwater table, while the DTW measurement in well MW-6 is above the screen interval, and the screen interval is currently entirely submerged. Current and historical groundwater elevation data are presented in **Table 2**. A groundwater elevation contour map (based on Fourth Quarter 2016 data) is shown on **Figure 2**. The direction of groundwater flow at the time of sampling was generally toward the southwest at an average hydraulic gradient of approximately 0.027 feet per foot (ft/ft). This is generally consistent with the historical direction of groundwater flow, as shown by the groundwater flow direction rose diagram on **Figure 3** illustrating the direction of groundwater flow from First Quarter 2002 to present.

Schedule of Laboratory Analysis

Groundwater samples were analyzed for total petroleum hydrocarbons as gasoline range organics (TPH-GRO) using United States Environmental Protection Agency (US EPA) Method 8015B (SW-846) and benzene, toluene, ethylbenzene, and total xylenes (BTEX compounds) and methyl *tertiary*-butyl ether (MtBE) using US EPA Method 8260B (SW-846).

Groundwater Analytical Results

During Fourth Quarter 2016, groundwater samples were collected from four Site wells (MW-5 through MW-8). Current and historical groundwater analytical results are included in **Table 2** and **Table 3**. A figure showing the latest groundwater analytical data plotted on a Site map is included as **Figure 4**. A TPH-GRO isoconcentration map is shown on **Figure 5**. A benzene isoconcentration map is shown on **Figure 6**. A MtBE isoconcentration map is shown on **Figure 7**.

Certified laboratory analysis reports and chain-of-custody documents are presented as **Attachment B.** Hydrographs based on current and historical groundwater elevations and analytical results are included in **Attachment C**. A summary of Fourth Quarter 2016 groundwater analytical results follows:

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- **TPH-GRO** was detected in three Site wells, at concentrations of 4,000 micrograms per liter (μg/L; well MW-5), 5,800 μg/L (well MW-7), and 7,400 μg/L (well MW-6).
- **Benzene** was detected in three Site wells, at concentrations of 1 μ g/L (well MW-5), 72 μ g/L (well MW-7), and 410 μ g/L (well MW-6).
- Toluene was detected in three Site wells, at concentrations of 0.6 μg/L (well MW-7), 1 μg/L (well MW-5), and 5 μg/L (well MW-6).
- **Ethylbenzene** was detected in three Site wells, at concentrations of 2 µg/L (well MW-5), 57 µg/L (well MW-6), and 160 µg/L (well MW-7).
- Total Xylenes were detected in two Site wells, at concentrations of 0.8 µg/L (well MW-5) and 2 µg/L (well MW-7).
- MtBE was detected in two Site wells, at concentrations of 2 μg/L (well MW-7) and 49 μg/L (well MW-6).

CONCLUSIONS AND RECOMMENDATIONS

During Fourth Quarter 2016, maximum concentrations of petroleum hydrocarbons were observed in well MW-6, located down-gradient of the former service station features (fuel dispenser islands and gasoline USTs) situated in the southern and eastern portions of the Site, and in well MW-7, which is located approximately 95 feet down-gradient of well MW-6. TPH-GRO and BTEX compounds were also detected in well MW-5, which is located down-gradient of the former service station features (fuel dispenser islands, hydraulic hoists, and waste oil UST) situated in the northern portion of the Site. The dissolved-phase petroleum hydrocarbon plume does not appear to extend to furthest down-gradient well MW-8, which is approximately 190 feet southwest of the Site.

Per Alameda County Environmental Health (ACEH) correspondence and the Low-Threat UST Case Closure Policy (LTCP) checklist posted to the GeoTracker[™] database, both dated August 26, 2016, the Site meets California State Water Resources Control Board (SWRCB) LTCP groundwater-specific criteria, and the current dissolved-phase concentrations do not pose a significant threat to human health, safety, or the environment.

Stantec requested low-threat case closure in the Response to Technical Comments, dated October 19, 2016. As of the date of this report, no response has been received from ACEH, but the case is currently under review by the SWRCB, as noted on the SWRCB GeoTrackerTM database. Until case closure is received, the Site will maintain an annual groundwater monitoring and sampling frequency, with events conducted in December of each year.

If you have any questions, please contact the Stantec Project Manager, Travis Flora, at (408) 356-6124 or <u>Travis.Flora@stantec.com.</u>

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LIMITATIONS

This document entitled Fourth Quarter 2016 Semi-Annual Groundwater Monitoring Report was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Chevron Environmental Management Company (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

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Erin O'Mailey Project Engineer

Reviewed by Marina Kaffenberger

Marisa Kaffenberger Senior Engineer

Reviewed by

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Travis L. Flora -Senior Project Manager

Muy **Reviewed by** (signature)



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Dorota Runyan, P.E. Senior Engineer

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Attachments:

Table 1 - Well Details / Screen Interval Assessment - Fourth Quarter 2016

- Table 2 Groundwater Monitoring Data and Analytical Results
- Table 3 Additional Groundwater Analytical Results
- Figure 1 Site Location Map
- Figure 2 Groundwater Elevation Contour Map Fourth Quarter 2016
- Figure 3 Groundwater Flow Direction Rose Diagram Fourth Quarter 2016
- Figure 4 Site Plan Showing Groundwater Concentrations Fourth Quarter 2016
- Figure 5 TPH-GRO Isoconcentration Map Fourth Quarter 2016
- Figure 6 Benzene Isoconcentration Map Fourth Quarter 2016
- Figure 7 MtBE Isoconcentration Map Fourth Quarter 2016

Attachment A – Gettler-Ryan Inc. Field Data Sheets and Standard Operating Procedures – Fourth Quarter 2016

Attachment B – Certified Laboratory Analysis Reports and Chain-of-Custody Documents Attachment C – Hydrographs

cc:

Ms. Carryl MacLeod, Chevron Environmental Management Company, 6001 Bollinger Canyon Road, San Ramon, CA 94583 – Electronic Copy

Mr. Buyandalai Itgel, 787 Marlesta Road, Pinole, CA 94564 – Electronic Copy

TABLES

Table 1 Well Details / Screen Interval Assessment Fourth Quarter 2016

Former Chevron-Branded Service Station 92029

890 West MacArthur Boulevard, Oakland, California

Well ID	Date Installed	Well Type	Casing Diameter (inches)	Top of Casing (feet above msl)	Construction Well Depth (feet bgs)	Current Well Depth ¹ (feet below TOC)	Current Depth to Groundwater ¹ (feet below TOC)	Screen Interval (feet bgs)	Screen Interval Assessment
MW-5	07/24/08	Monitoring	2	49.39	25.00	24.98	5.08	5-25	Depth-to-groundwater within screen interval.
MW-6	07/24/08	Monitoring	2	49.07	25.00	24.96	4.63	5-25	Depth-to-groundwater above screen interval.
MW-7	07/24/08	Monitoring	2	48.74	25.00	24.87	6.83	5-25	Depth-to-groundwater within screen interval.
MW-8	07/24/08	Monitoring	2	47.61	25.00	25.01	8.31	5-25	Depth-to-groundwater within screen interval.
Notes:									

bgs = below ground surface

msl = mean sea level

TOC = top of casing

 1 = As measured on December 21, 2016.

890 West MacArthur Boulevard,

WELL ID/	TOC*	DTW	GWE	TPH-GRO	В	T	E	X	MtBE
DATE	(ft.)	(ft.)	(msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-5									
08/22/08 ¹	49.39	9.97	39.42						
08/27/08 ³	49.39	10.03	39.36	54	0.5	0.8	<0.5	0.7	10
11/21/08 ³	49.39	8.42	40.97	6,000	93	6	37	6	8
02/13/09 ³	49.39	7.11	42.28	5,100	31	5	20	3	6
05/08/09 ³	49.39	7.21	42.18	3,600	18	4	14	2	2
08/07/09 ³	49.39	9.60	39.79	520	0.7	<0.5	<0.5	<0.5	2
11/05/09 ³	49.39	7.08	42.31	7,400	16	5	18	4	0.9
05/06/10 ³	49.39	6.08	43.31	3,500	4	2	3	0.9	0.9
11/03/10 ⁵	49.39	9.05	40.34	5,000	13	4	8	3	0.9
05/10/11 ⁵	49.39	7.26	42.13	3,200	6	4	7	0.9	<0.5
11/10/11 ⁵	49.39	7.60	41.79	2,600	6	3	10	2	<0.5
D5/11/12⁵	49.39	6.48	42.91	3,300	<3	<3	<3	<3	<3
11/14/12 ³	49.39	8.89	40.50	2,100	3	2	3	0.6	<0.5
05/08/13 ³	49.39	8.41	40.98	2,100	2	0.9	2	<0.5	<0.5
11/06/13 ³	49.39	9.81	39.58	160	<0.5	<0.5	<0.5	<0.5	<0.5
05/14/14 ³	49.39	6.74	42.65	3,500	1	2	4	<0.5	<0.5
11/19/14	49.39	INACCESSIBLE	E; FLOODED W	TH SURFACE WATER					
05/07/15 ³	49.39	7.08	42.31	2,800	1	1	2	<0.5	<0.5
12/29/15 ³	49.39	7.13	42.26	4,500	3	2	3	2	<0.5
05/18/16 ³	49.39	7.48	41.91	1,600	<0.5	<0.5	<0.5	<0.5	<0.5
12/21/16 ³	49.39	5.08	44.31	4,000	1	1	2	0.8	<0.5
MW-6									
08/22/08 ¹	49.07	8.98	40.09						
08/27/08 ³	49.07	8.98	40.09	6,000	990	4	350	530	440
11/21/08 ³	49.07	8.12	40.95	14,000	1,000	15	1,300	550	300
02/13/09 ³	49.07	5.84	43.23	9,700	630	4	510	36	180
05/08/09 ³	49.07	5.77	43.30	7,600	240	4	470	67	38
08/07/09 ³	49.07	8.49	40.58	14,000	1,500	12	1,400	180	330
11/05/09 ³	49.07	6.72	42.35	22,000	870	8	1,300	130	160
05/06/10 ³	49.07	4.89	44.18	5,200	110	2	160	23	9
11/03/10 ⁵	49.07	8.05	41.02	13,000	1,100	8	670	58	160
05/10/11 ^{4,5}	49.07	8.56	40.51	<50	0.6	<0.5	<0.5	<0.5	<0.5
11/10/115	49.07	7.59	41.48	5,700	260	7	180	13	37
05/11/12 ⁵	49.07	5.68	43.39	1,200	36	0.6	0.8	<0.5	1
11/14/12 ³	49.07	9.83	39.24	6,400	290	9	180	6	36

890 West MacArthur Boulevard,

WELL ID/	TOC*	DTW	GWE	TPH-GRO	В	Т	E	Х	MtBE
DATE	(ft.)	(ft.)	(msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-6 (cont)									
05/08/13 ³	49.07	7.21	41.86	2,000	77	1	9	<0.5	6
11/06/13 ³	49.07	9.27	39.80	5,300	330 ⁶	36	86	16	78 ⁶
05/14/14 ³	49.07	6.29	42.78	5,000	140	6	46	2	10
11/19/14	49.07	INACCESSIBLE	e; flooded w	TH SURFACE WATER					
05/07/15 ³	49.07	7.20	41.87	3,600	19	2	7	<0.5	2
12/29/15 ³	49.07	6.21	42.86	7,700	170	4	22	1	15
05/18/16 ³	49.07	6.78	42.29	4,500	150	4	23	1	12
12/21/16 ³	49.07	4.63	44.44	7,400	410	5	57	<3	49
MW-7									
08/22/08 ¹	48.74	10.20	38.54						
08/27/08 ³	48.74	10.19	38.55	<50	<0.5	0.6	<0.5	0.7	6
11/21/08 ³	48.74	9.51	39.23	1,100	80	<0.5	65	0.7	6
02/13/09 ³	48.74	7.95	40.79	630	30	<0.5	38	0.9	7
05/08/09 ³	48.74	8.04	40.70	1,200	83	<0.5	190	2	8
08/07/09 ³	48.74	9.88	38.86	8,900	240	0.7	770	5	5
11/05/09 ³	48.74	9.03	39.71	12,000	630	<]	1,300	420	5
05/06/10 ³	48.74	7.88	40.86	4,000	190	< 0.5	270	7	6
11/03/10 ⁵	48.74	9.48	39.26	5,700	150	0.7	45	2	4
05/10/115	48.74	8.82	39.92	3,500	180	< 0.5	150	2	5
11/10/11 ⁵	48.74	9.68	39.06	1,500	2	<0.5	2	<0.5	5
05/11/12 ⁵	48.74	8.37	40.37	9,200	440	<5	1,000	33	<5
$11/14/12^3$	48.74	9.79	38.95	5,000	<3	<3	6	<3	4
05/08/13 ³	48.74	9.54	39.20	2,200	10	< 0.5	2	<0.5	5
11/06/13 ³	48.74	10.60	38.14	790	<0.5	<0.5	<0.5	<0.5	4
05/14/14 ³	48.74	8.73	40.01	8,200	380 ⁶	<16	460 ⁶	34 ⁶	4 ⁶
11/19/14 ³	48.74	10.33	38.41	1,200	0.6	<0.5	1	<0.5	5
05/07/15 ³	48.74	9.33	39.41	5,000	24	0.8	19	1	3
$12/29/15^3$	48.74	7.68	41.06	6,000	88	0.5	120	2	3
05/18/16 ³	48.74	9.00	39.74	8,000	85	<3	190	3	3
12/21/16 ³	48.74	6.83	41.91	5,800	72	0.6	160	2	2
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MW-8	17 / 1	10.41	05.00						
08/22/08 ¹	47.61	12.41	35.20						
08/27/08 ³	47.61	12.42	35.19	<50	<0.5	0.7	<0.5	0.6	<0.5
11/21/08 ³	47.61	11.42	36.19	<50	<0.5	<0.5	<0.5	<0.5	<0.5
02/13/09 ³	47.61	8.87	38.74	<50	<0.5	<0.5	<0.5	<0.5	<0.5

890 West MacArthur Boulevard,

WELL ID/	TOC*	DTW	GWE	TPH-GRO	В	T	E	X	MtBE
DATE	(ff.)	(ft.)	(msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-8 (cont)									
05/08/09 ³	47.61	10.79	36.82	<50	<0.5	<0.5	<0.5	<0.5	<0.5
08/07/09 ³	47.61	12.33	35.28	<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/05/09 ³	47.61	11.23	36.38	<50	<0.5	<0.5	<0.5	<0.5	<0.5
05/06/10 ³	47.61	10.28	37.33	<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/03/10 ⁵	47.61	11.37	36.24	<50	<0.5	<0.5	<0.5	<0.5	<0.5
05/10/11 ⁵	47.61	11.55	36.06	<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/10/115	47.61	11.49	36.12	<50	<0.5	<0.5	<0.5	<0.5	<0.5
05/11/12 ⁵	47.61	10.89	36.72	<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/14/12 ³	47.61	11.73	35.88	<50	<0.5	<0.5	<0.5	<0.5	<0.5
05/08/13 ³	47.61	12.03	35.58	<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/06/13 ³	47.61	12.63	34.98	<50	<0.5	<0.5	<0.5	<0.5	<0.5
05/14/14 ³	47.61	11.69	35.92	<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/19/14 ³	47.61	12.33	35.28	<50	<0.5	<0.5	<0.5	<0.5	<0.5
05/07/15 ³	47.61	11.79	35.82	<50	<0.5	<0.5	<0.5	<0.5	<0.5
12/29/15 ³	47.61	9.58	38.03	<50	<0.5	<0.5	<0.5	<0.5	<0.5
05/18/16 ³	47.61	11.72	35.89	<50	<0.5	<0.5	<0.5	<0.5	<0.5
12/21/16 ³	47.61	8.31	39.30	<50	<0.5	<0.5	<0.5	<0.5	<0.5
MW-1									
03/12/02 ¹	50.71	6.50	44.21	<50	<0.50	<0.50	<0.50	<1.5	<2.5/<2 ²
06/07/02	50.71	8.69	42.02	<50	<0.50	<0.50	<0.50	<1.5	<2.5/<2 ²
09/13/02	50.71	9.28	41.43	<50	<0.50	<0.50	<0.50	<1.5	<2.5/<2 ²
12/13/02	50.71	8.48	42.23	<50	<0.50	<0.50	<0.50	<1.5	<2.5/<2
03/01/03	50.71	7.34	43.37	<50	<0.50	<0.50	<0.50	<1.5	<2.5/<0.5 ²
06/27/03 ³	50.71	9.29	41.42	<50	<0.5	0.6	<0.5	<0.5	<0.5
09/30/03 ³	50.71	10.17	40.54	<50	<0.5	0.6	<0.5	<0.5	<0.5
12/03/03 ³	50.71	7.82	42.89	<50	<0.5	<0.5	<0.5	<0.5	<0.5
03/10/04 ³	50.71	6.57	44.14	<50	<0.5	<0.5	<0.5	<0.5	<0.5
06/30/04 ³	50.71	9.78	40.93	<50	<0.5	<0.5	<0.5	<0.5	<0.5
09/30/04 ³	50.71	9.91	40.80	<50	<0.5	<0.5	<0.5	<0.5	<0.5
12/29/04 ³	50.71	2.90	47.81	<50	<0.5	<0.5	<0.5	<0.5	<0.5
03/23/05 ³	50.71	2.90	47.81	<50	<0.5	<0.5	<0.5	<0.5	<0.5
06/22/05 ³	50.71	8.59	42.12	<50	<0.5	<0.5	<0.5	<0.5	<0.5
08/22/05 09/02/05 ³	50.71	9.38	41.33	<50	<0.5	<0.5	<0.5	<0.5	<0.5
12/02/05	50.71	8.44	42.27						

890 West MacArthur Boulevard,

WELL ID/	TOC*	DTW	GWE	TPH-GRO	B (ug//)	T (//g//)	E	X (ug/l)	MtBE
DATE	(ft.)	(ft.)	(msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-1 (cont)									
03/20/06	50.71	3.05	47.66						
06/01/06	50.71	6.77	43.94						
09/11/06 Destroyed	50.71	9.18	41.53						
MW-2									
03/12/02 ¹	52.57	6.09	46.48	<50	< 0.50	<0.50	<0.50	<1.5	<2.5/3 ²
06/07/02	52.57	8.65	43.92	<50	<0.50	<0.50	<0.50	<1.5	<2.5/<2 ²
09/13/02	52.57	9.58	42.99	<50	<0.50	<0.50	<0.50	<1.5	<2.5/<2 ²
12/13/02	52.57	8.50	44.07	<50	<0.50	<0.50	<0.50	<1.5	<2.5/<2 ²
03/01/03	52.57	7.00	45.57	<50	<0.50	<0.50	<0.50	<1.5	<2.5/<0.5 ²
06/27/03 ³	52.57	9.59	42.98	<50	<0.5	<0.5	<0.5	<0.5	< 0.5
09/30/03 ³	52.57	10.64	41.93	<50	<0.5	<0.5	<0.5	<0.5	0.7
12/03/03 ³	52.57	7.54	45.03	<50	<0.5	<0.5	<0.5	<0.5	<0.5
03/10/04 ³	52.57	6.05	46.52	<50	<0.5	<0.5	< 0.5	<0.5	< 0.5
06/30/04 ³	52.57	10.15	42.42	<50	<0.5	<0.5	<0.5	<0.5	<0.5
09/30/04 ³	52.57	10.14	42.43	<50	<0.5	<0.5	< 0.5	<0.5	<0.5
12/29/04 ³	52.57	2.29	50.28	<50	<0.5	<0.5	<0.5	<0.5	<0.5
03/23/05 ³	52.57	2.44	50.13	<50	<0.5	<0.5	<0.5	<0.5	<0.5
06/22/05 ³	52.57	8.99	43.58	<50	<0.5	<0.5	<0.5	<0.5	<0.5
09/02/05 ³	52.57	10.17	42.40	<50	<0.5	<0.5	<0.5	<0.5	<0.5
12/02/05	52.57	8.99	43.58						
03/20/06	52.57	2.70	49.87						
06/01/06	51.57	6.51	45.06						
09/11/06 Destroyed	51.57	10.06	41.51						
MW-3									
03/12/02 ¹	50.31	6.50	43.81	12,000	600	8.5	1,100	370	700/650 ²
06/07/02	50.31	7.74	42.57	14,000	630	8.8	1,200	160	520/490 ²
09/13/02	50.31	9.73	40.58	3,000	270	3.2	200	11	600/640 ²
12/13/02	50.31	8.60	41.71	24,000	1,100	14	2,400	220	650/540 ²
03/01/03	50.31	6.75	43.56	16,000	500	9.0	1,200	130	460/330 ²
06/27/03 ³	50.31	9.25	41.06	9,500	390	6	450	30	470
09/30/03 ³	50.31	10.31	40.00	2,000	110	1	100	3	710
12/03/03 ³	50.31	8.18	42.13	19,000	970	8	2,100	85	420
03/10/04 ³	50.31	6.10	44.21	15,000	550	6	960	95	220

890 West MacArthur Boulevard,

WELL ID/	TOC*	DTW	GWE	TPH-GRO	B	Ţ	E	X	MtBE
DATE	(ft.)	(ft.)	(msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-3 (cont)									
06/30/04 ³	50.31	9.80	40.51	3,200	150	1	100	3	660
09/30/04 ³	50.31	10.18	40.13	1,900	66	0.8	84	4	690
12/29/04 ³	50.31	4.58	45.73	16,000	470	7	820	47	170
03/23/05 ³	50.31	5.07	45.24	18,000	380	6	960	58	140
06/22/05 ³	50.31	8.12	42.19	16,000	700	6	950	62	300
09/02/05 ³	50.31	9.41	40.90	8,400	380	4	510	41	440
12/02/05 ³	50.31	7.97	42.34	16,000	490	6	1,200	32	170
03/20/06 ³	50.31	5.32	44.99	4,200	79	0.8	2	10	34
06/01/06 ³	50.31	7.07	43.24	5,400	67	1	26	3	28
09/11/06 ³	50.31	9.07	41.24	14,000	270	5	240	38	97
DESTROYED									
MW-4									
03/12/02 ¹	49.93	5.34	44.59	9,700	360	5.3	1,100	150	170/170 ²
03/12/02 06/07/02	47.73	8.52	41.41	7,300	170	2.7	280	21	$\frac{170}{120^2}$
08/07/02	47.73	8.32 9.86	40.07	5,800	92	4.5	80	14	200/120 190/160 ²
						4.3 2.2			170/200 ²
12/13/02 03/01/03	49.93 49.93	9.42 7.33	40.51 42.60	10,000 12,000	250 300	4.6	330 900	19 110	
06/27/03 ³	47.73	7.33 9.62	42.80	7,500	110	4.0	200		160/100 ² 130
	49.93 49.93	9.62 11.13	38.80	3,600	18	<1	16	58 7	520
09/30/03 ³								52	
12/03/03 ³ 03/10/04 ³	49.93 49.93	7.80 6.69	42.13 43.24	16,000 2,200	1,000 230	6 3	720 610	52 71	73 55
03/10/04 [°] 06/30/04 ³	49.93	10.33	43.24 39.60	7,700	230 59	-1	78	17	110
08/30/04 09/30/04 ³	47.73	10.33	39.80	4,800	100	1	33	10	400
12/29/04 ³	49.93	3.34	46.59	13,000	250	3	480	27	400
	49.93 49.93	3.34 4.24	46.59 45.69	12,000	130	2	480 280	16	42 24
03/23/05 ³ 06/22/05 ³	49.93 49.93	4.24 7.95	45.69 41.98	6,400	290	2	280	18	24 18
06/22/05 ³	49.93 49.93	7.95 9.46	41.98	3,700	180	2	13	7	18
12/02/05 [°]	49.93 49.93	9.46 7.60	40.47 42.33	3,700	840	5	480	7 24	18 34
				790	14				
03/20/06 ³	49.93	4.50	45.43			<0.5	1	0.6	2
06/01/06 ³	49.93	7.30	42.63	5,100	48	0.8	42	4	2
09/11/06 ³ Destroyed	49.93	9.38	40.55	6,700	64	3	44	3	4

890 West MacArthur Boulevard,

WELL ID/	TOC*	DTW	GWE	TPH-GRO	В	т	E	х	MtBE
DATE	(ft.)	(ft.)	(msl)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
RIP BLANK									
QA									
03/12/02				<50	<0.50	<0.50	<0.50	<1.5	<2.5
06/07/02				<50	< 0.50	<0.50	<0.50	<1.5	<2.5
09/13/02				<50	< 0.50	<0.50	<0.50	<1.5	<2.5
12/13/02				<50	< 0.50	<0.50	<0.50	<1.5	<2.5
03/01/03				<50	< 0.50	<0.50	<0.50	<1.5	<2.5
06/27/03 ³				<50	<0.5	<0.5	< 0.5	<0.5	< 0.5
09/30/03 ³				<50	<0.5	<0.5	< 0.5	<0.5	< 0.5
12/03/03 ³				<50	<0.5	<0.5	<0.5	<0.5	<0.5
03/10/04 ³				<50	< 0.5	<0.5	<0.5	<0.5	<0.5
06/30/04 ³				<50	<0.5	<0.5	<0.5	<0.5	<0.5
09/30/04 ³				<50	< 0.5	<0.7	<0.8	<0.8	<0.5
12/29/04 ³				<50	<0.5	<0.5	< 0.5	<0.5	<0.5
03/23/05 ³				<50	<0.5	<0.5	< 0.5	<0.5	< 0.5
06/22/05 ³				<50	<0.5	<0.5	< 0.5	<0.5	<0.5
09/02/05 ³				<50	<0.5	14	<0.5	14	< 0.5
12/02/05 ³				<50	<0.5	< 0.5	< 0.5	<0.5	<0.5
03/20/06 ³				<50	<0.5	<0.5	< 0.5	<0.5	<0.5
06/01/06 ³				<50	<0.5	<0.5	< 0.5	<0.5	<0.5
09/11/06 ³				<50	<0.5	<0.5	< 0.5	<0.5	<0.5
08/27/08 ³				<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/21/085				<50	<0.5	< 0.5	< 0.5	<0.5	
02/13/095				<50	<0.5	<0.5	<0.5	<0.5	
05/08/095				<50	<0.5	<0.5	<0.5	<0.5	
08/07/09 ⁵				<50	<0.5	<0.5	<0.5	<0.5	
11/14/12 ³				<50	<0.5	<0.5	<0.5	<0.5	<0.5
05/08/13 ³				<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/06/13 ³				<50	<0.5	<0.5	<0.5	<0.5	<0.5
05/14/14 ³				<50	<0.5	<0.5	<0.5	<0.5	<0.5
11/19/14 ³				<50	<0.5	<0.5	<0.5	<0.5	<0.5
05/07/15 ³				<50	<0.5	<0.5	<0.5	<0.5	<0.5
12/29/15 ³				<50	<0.5	<0.5	<0.5	<0.5	<0.5
05/18/16 ³				<50	<0.5	<0.5	<0.5	<0.5	<0.5
12/21/16 ³				<50	<0.5	<0.5	<0.5	<0.5	<0.5

Oakland, California

EXPLANATIONS:

Current groundwater monitoring data was provided by Gettler-Ryan Inc. Current laboratory analytical results were provided by Eurofins Lancaster Laboratories.

TOC = Top of CasingTPH-GRO = Total Petroleum Hydrocarbons as Gasoline Range Organics(ft.) = FeetB = BenzeneDTW = Depth to WaterT = TolueneGWE = Groundwater ElevationE = Ethylbenzene(msl) = Mean sea levelX = Xylenes(µg/L) = Micrograms per literMtBE = Methyl tertiary-butyl ether

-- = Not Measured/Not Analyzed QA = Quality Assurance/Trip Blank EPA = Environmental Protection Agency

- * Current TOC elevations were surveyed on October 1, 2008, by CRA. The benchmark for this survey was a USGS bronze disk located near the north end of the curb return at the Northwest corner of 38th Street and Broadway, (Benchmark Elevation = 85.41 feet, NGVD29).
- ¹ Well development performed.
- ² MtBE by EPA Method 8260.
- ³ BTEX and MtBE by EPA Method 8260.
- ⁴ Laboratory confirmed analytical result.
- ⁵ BTEX by EPA Method 8260.
- ⁶ Laboratory report indicates reporting limits were raised due to interference from the sample matrix.

Former Chevron-Branded Service Station 92029

890 West MacArthur Boulevard,

WELL ID/	ETHANOL	TBA	DIPE	EtBE	TAME	1,2-DCA	1,2-DBA	PCE
DATE	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-5								
08/27/08		2	<0.5	<0.5	<0.5			
11/21/08		4	<0.5	<0.5	<0.5			
02/13/09		3	<0.5	<0.5	<0.5			
05/08/09		7	<0.5	<0.5	<0.5			
08/07/09		<2	<0.5	<0.5	<0.5			
11/05/09		2	<0.5	<0.5	<0.5			
05/06/10		<2	<0.5	<0.5	<0.5			
11/03/10		<2	<0.5	<0.5	<0.5			
05/10/11		<2	<0.5	<0.5	<0.5			
11/10/11		<2	<0.5	<0.5	<0.5			
05/11/12		<10	<3	<3	<3			
11/14/12		<2	<0.5	<0.5	<0.5			
05/08/13		<2	<0.5	<0.5	<0.5			
11/06/13		<2	<0.5	<0.5	<0.5			
05/14/14		<5	<0.5	<0.5	<0.5			<0.5
05/07/15		<2	<0.5	<0.5	<0.5			
MW-6								
08/27/08		390	<0.5	<0.5	6			
11/21/08		320	<13	<13	<13			
02/13/09		100	<1	<1	4			
05/08/09		16	<0.5	<0.5	0.9			
08/07/09		190	<3	<3	5			
11/05/09		86	<]	<]	4			
05/06/10		2	<0.5	<0.5	<0.5			
11/03/10		98	<3	<3	3			
05/10/11		<2	<0.5	<0.5	<0.5			
11/10/11		19	<1	<1	<1			
05/11/12		<2	<0.5	<0.5	<0.5			
11/14/12		16	<0.5	<0.5	0.7			
05/08/13		5	<0.5	<0.5	<0.5			
11/06/13 ²		60	<]	<]	2			
05/14/14		8	<0.5	<0.5	<0.5			<0.5
05/07/15		3	<0.5	<0.5	<0.5			

Former Chevron-Branded Service Station 92029

890 West MacArthur Boulevard,

WELL ID/	ETHANOL	TBA	DIPE	EtBE	TAME	1,2-DCA	1,2-DBA	PCE
DATE	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-7								
08/27/08		<2	<0.5	<0.5	<0.5			
11/21/08		5	<0.5	<0.5	<0.5			
02/13/09		<2	<0.5	<0.5	<0.5			
05/08/09		<2	<0.5	<0.5	<0.5			
08/07/09		4	<0.5	<0.5	<0.5			
11/05/09		9	<1	<1	<1			
05/06/10		3	<0.5	<0.5	<0.5			
11/03/10		6	<0.5	<0.5	<0.5			
05/10/11		3	<0.5	<0.5	<0.5			
11/10/11		4	<0.5	<0.5	<0.5			
05/11/12		<20	<5	<5	<5			
11/14/12		<10	<3	<3	<3			
05/08/13		<2	<0.5	<0.5	<0.5			
11/06/13		<2	<0.5	<0.5	<0.5			
05/14/14 ²		<10	<]	<]	<1			<]
11/19/14		<2	<0.5	<0.5	<0.5			
05/07/15		2	<0.5	<0.5	<0.5			
MW-8								
08/27/08		<2	<0.5	<0.5	<0.5			
11/21/08		<2	<0.5	<0.5	<0.5			
02/13/09		<2	<0.5	<0.5	<0.5			
05/08/09		<2	<0.5	<0.5	<0.5			
08/07/09		<2	<0.5	<0.5	<0.5			
11/05/09		<2	<0.5	<0.5	<0.5			
05/06/10		<2	<0.5	<0.5	<0.5			
11/03/10		<2	<0.5	<0.5	<0.5			
05/10/11		<2	<0.5	<0.5	<0.5			
11/10/11		<2	<0.5	<0.5	<0.5			
05/11/12		<2	<0.5	<0.5	<0.5			
11/14/12		<2	<0.5	<0.5	<0.5			
05/08/13		<2	<0.5	<0.5	<0.5			
11/06/13		<2	<0.5	<0.5	<0.5			
05/14/14		<5	<0.5	<0.5	<0.5			<0.5
11/19/14		<2	<0.5	<0.5	<0.5			
05/07/15		<2	<0.5	<0.5	<0.5			

Former Chevron-Branded Service Station 92029

890 West MacArthur Boulevard,

WELL ID/ DATE	ETHANOL (µg/L)	TBA (µg/L)	DIPE (µg/L)	EtBE (µg/L)	TAME (µg/L)	1,2-DCA (µg/L)	1,2-DBA (μg/L)	PCE (µg/L)
	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-1								
03/12/02		<100	<2	<2	<2	<2	<2	
06/07/02		<100	<2	<2	<2	<2	<2	
09/13/02		<100	<2	<2	<2	<2	<2	
12/13/02		<100	<2	<2	<2	<2	<2	
03/01/03		<5	<0.5	<0.5	<0.5	<0.5	<0.5	
06/27/03		<5	<0.5	<0.5	<0.5	<0.5	<0.5	
09/30/03	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
12/03/03	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
03/10/04	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
06/30/04	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
09/30/04	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
12/31/04	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
03/23/05	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
06/22/05	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
09/02/05	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
DESTROYED								
MW-2								
03/12/02		<100	<2	<2	<2	<2	<2	
06/07/02		<100	<2	<2	<2	<2	<2	
09/13/02		<100	<2	<2	<2	<2	<2	
12/13/02		<100	<2	<2	<2	<2	<2	
03/01/03		<5	<0.5	<0.5	<0.5	<0.5	<0.5	
06/27/03		<5	<0.5	<0.5	<0.5	<0.5	<0.5	
09/30/03	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
12/03/03	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
03/10/04	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
06/30/04	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
09/30/04	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
12/31/04	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
03/23/05	<50	<5	<0.5	< 0.5	<0.5	< 0.5	<0.5	
06/22/05	<50	<5	<0.5	<0.5	<0.5	< 0.5	<0.5	
09/02/05	<50	<5	<0.5	< 0.5	<0.5	< 0.5	<0.5	
DESTROYED								

Former Chevron-Branded Service Station 92029

890 West MacArthur Boulevard,

WELL ID/	ETHANOL	TBA	DIPE	EtBE	TAME	1,2-DCA	1,2-DBA	PCE
DATE	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
MW-3								
03/12/02		<100	<2	<2	18	<2	<2	
06/07/02		230	<5.0	<5.0	11	<5.0	<5.0	
09/13/02		170	<2	<2	8	<2	<2	
12/13/02		240	<2	<2	29	31	<2	
03/01/03		160	<0.5	<0.5	10	<0.5	<0.5	
06/27/03		200	<0.5	<0.5	11	<0.5	<0.5	
09/30/03	<50	120	<0.5	<0.5	6	0.7	<0.5	
12/03/03	<250	200	<3	<3	14	<3	<3	
03/10/04	<50	140	<0.5	<0.5	5	<0.5	<0.5	
06/30/04	<50	100	<0.5	<0.5	5	<0.5	<0.5	
09/30/04	<50	72	<0.5	<0.5	4	0.5	<0.5	
12/31/04	<50	77	<0.5	<0.5	5	<0.5	<0.5	
03/23/05	<50	<5	<0.5	<0.5	4	<0.5	3	
06/22/05	<250	150	<3	<3	6	<3	<3	
09/02/05	<100	99	<]	<]	<1	<]	<1	
12/02/05	<100	66	<]	<]	5	<]	<1	
03/20/06	<50	14	<0.5	<0.5	<0.5	<0.5	<0.5	
06/01/06	<50	12	<0.5	<0.5	0.8	<0.5	<0.5	
09/11/06	<50	47	<0.5	<0.5	2	<0.5	<0.5	
DESTROYED								
MW-4								
03/12/02		<100	<2	<2	13	<2	<2	
06/07/02		<100	<2	<2	14	<2	<2	
09/13/02		<100	<2	<2	14	<2	<2	
12/13/02		<100	<2	<2	17	<2	<2	
03/01/03		19	<0.5	<0.5	8	<0.5	<0.5	
06/27/03		22	<0.5	<0.5	11	<0.5	<0.5	
09/30/03	<100	<10	<]	<]	9	<]	<1	
12/03/03	<50	18	<0.5	<0.5	5	<0.5	<0.5	
03/10/04	<50	11	<0.5	<0.5	4	<0.5	<0.5	
06/30/04	<100	<10	<1	<1	6	<]	<1	
09/30/04	<50	17	<0.5	<0.5	7	<0.5	<0.5	
12/31/04	<50	11	<0.5	<0.5	2	<0.5	<0.5	
03/23/05	<50	<5	<0.5	<0.5	1	<0.5	0.9	
06/22/05	<50	15	<0.5	<0.5	1	<0.5	<0.5	
09/02/05	<50	6	<0.5	<0.5	<0.5	<0.5	<0.5	
12/02/05	<50	11	<0.5	<0.5	1	<0.5	<0.5	

Former Chevron-Branded Service Station 92029

890 West MacArthur Boulevard,

WELL ID/ DATE	ethanol (µg/l)	ΤΒΑ (μg/L)	DIPE (µg/L)	EtBE (µg/L)	TAME (µg/L)	1,2-DCA (µg/L)	1,2-DBA (µg/L)	PCE (µg/L)
MW-4 (cont)								
03/20/06	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
06/01/06	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	
09/11/06 Destroyed	<50	<5	<0.5	<0.5	<0.5	<0.5	<0.5	

Table 3Additional Groundwater Analytical ResultsFormer Chevron-Branded Service Station 92029890 West MacArthur Boulevard,
Oakland, California

EXPLANATIONS:

Current groundwater monitoring data was provided by Gettler-Ryan Inc. Current laboratory analytical results were provided by Eurofins Lancaster Laboratories

TBA = Tertiary-Butyl Alcohol DIPE = Di-Isopropyl Ether EtBE = Ethyl Tertiary-Butyl Ether TAME = Tertiary-Amyl Methyl Ether 1,2-DCA = 1,2-Dichloroethane 1,2-DBA = 1,2-Dibromoethane PCE = Tetrachloroethene (µg/L) = Micrograms per liter -- = Not Analyzed EPA = Environmental Protection Agency

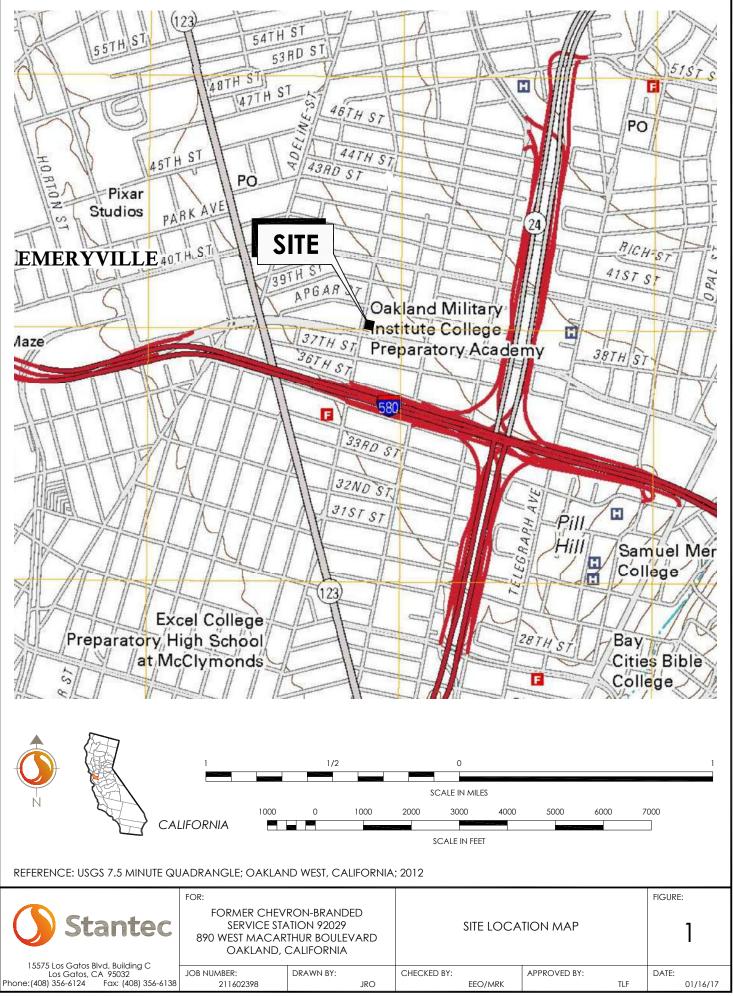
ANALYTICAL METHOD:

EPA Method 8260 for Oxygenate Compounds

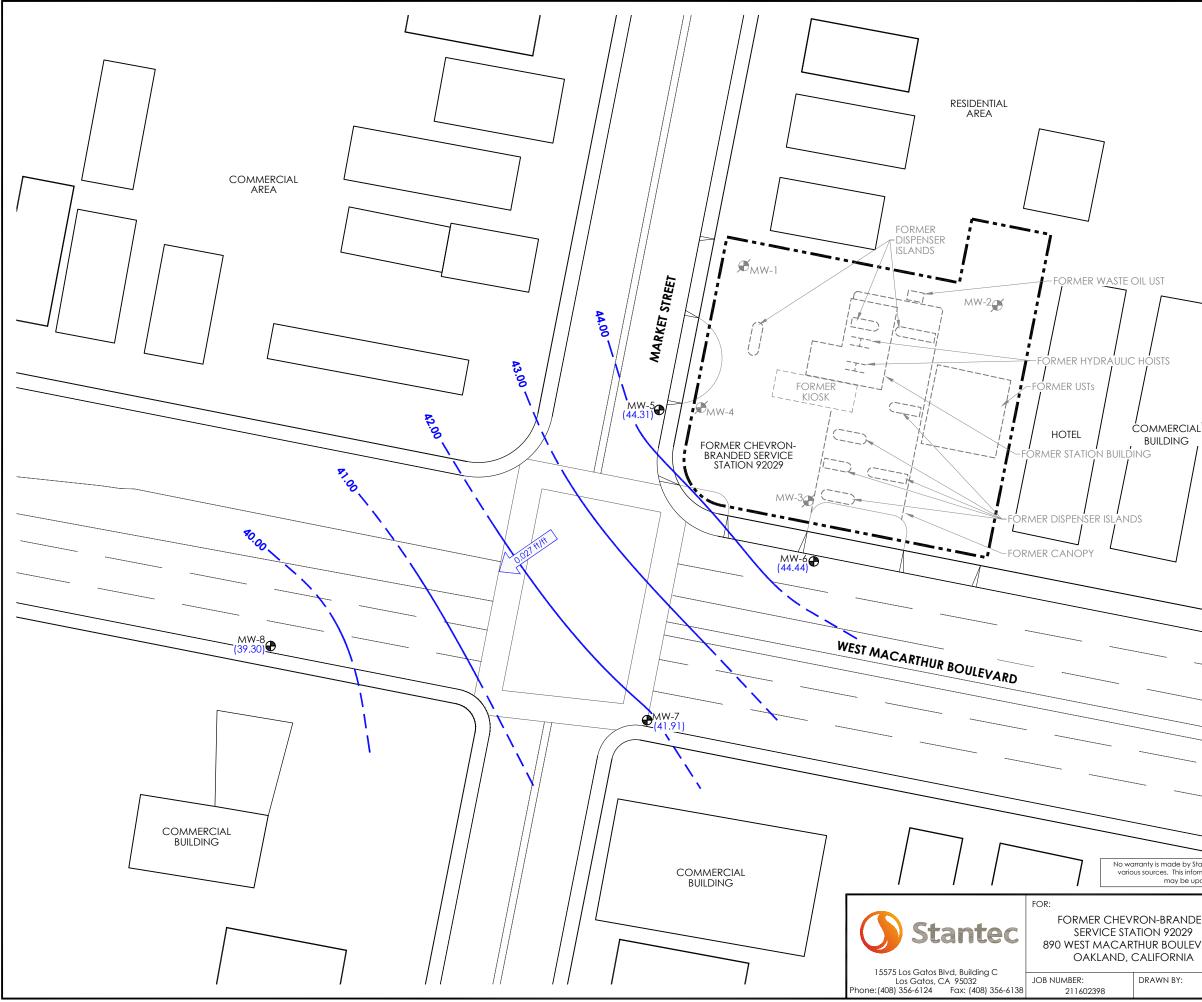
¹ Laboratory confirmed analytical result.

² Laboratory report indicates reporting limits were raised due to interference from the sample matrix.

FIGURES

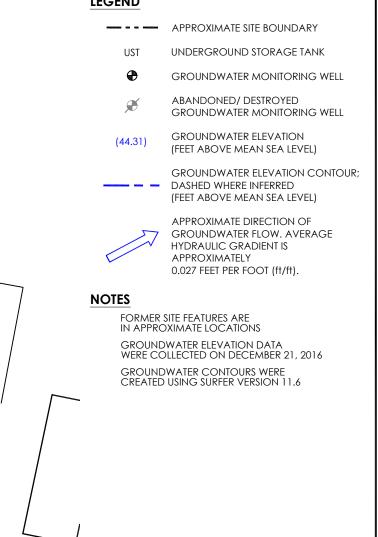


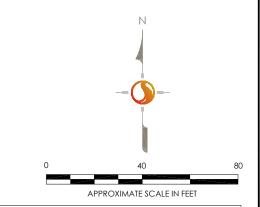
FILEPATH:C:\Users\jopalekopsah\\Documents\0_travel_cad\0_okemos\4q16\92029\4q16_gwr\figures\211602398_92029_allfigs_4q16.dwg|JOpalekOpsah|Jan 16, 2017 at 11:24|Layout: fig1_slm



FILEPATH:U:\211602398\05_report_deliv\deliverables\reports\4q16_gwr\figures\211602398_92029_allfigs_4q16.dwg|jopalekopsahl|Jan 24, 2017 at 12:45|Layout: fig2_gwe

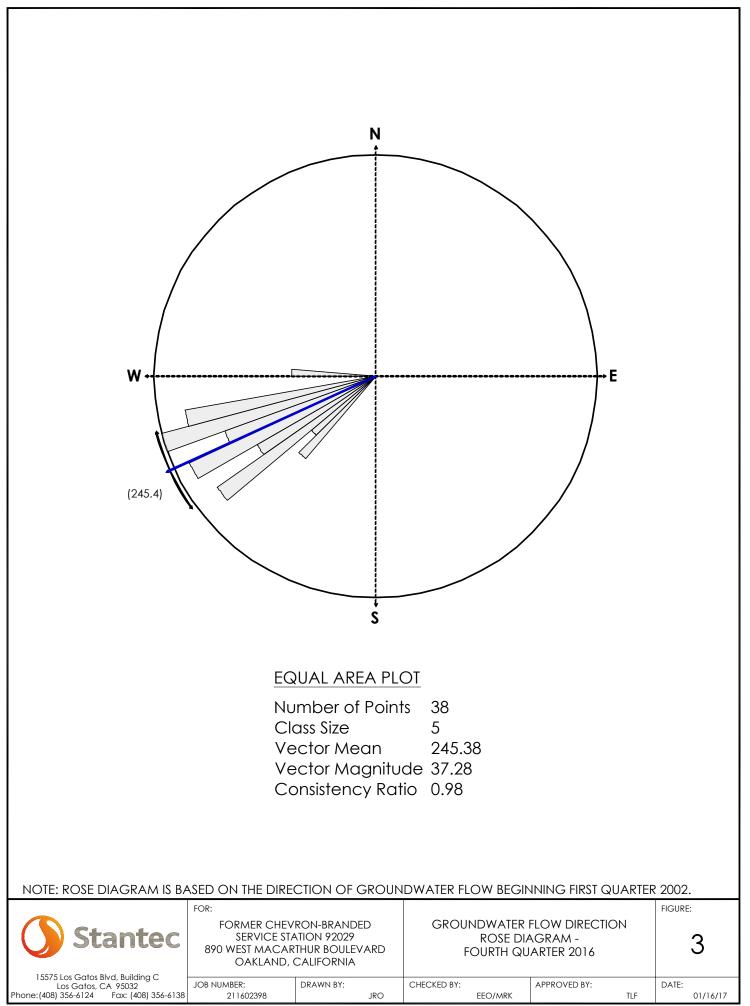
LEGEND



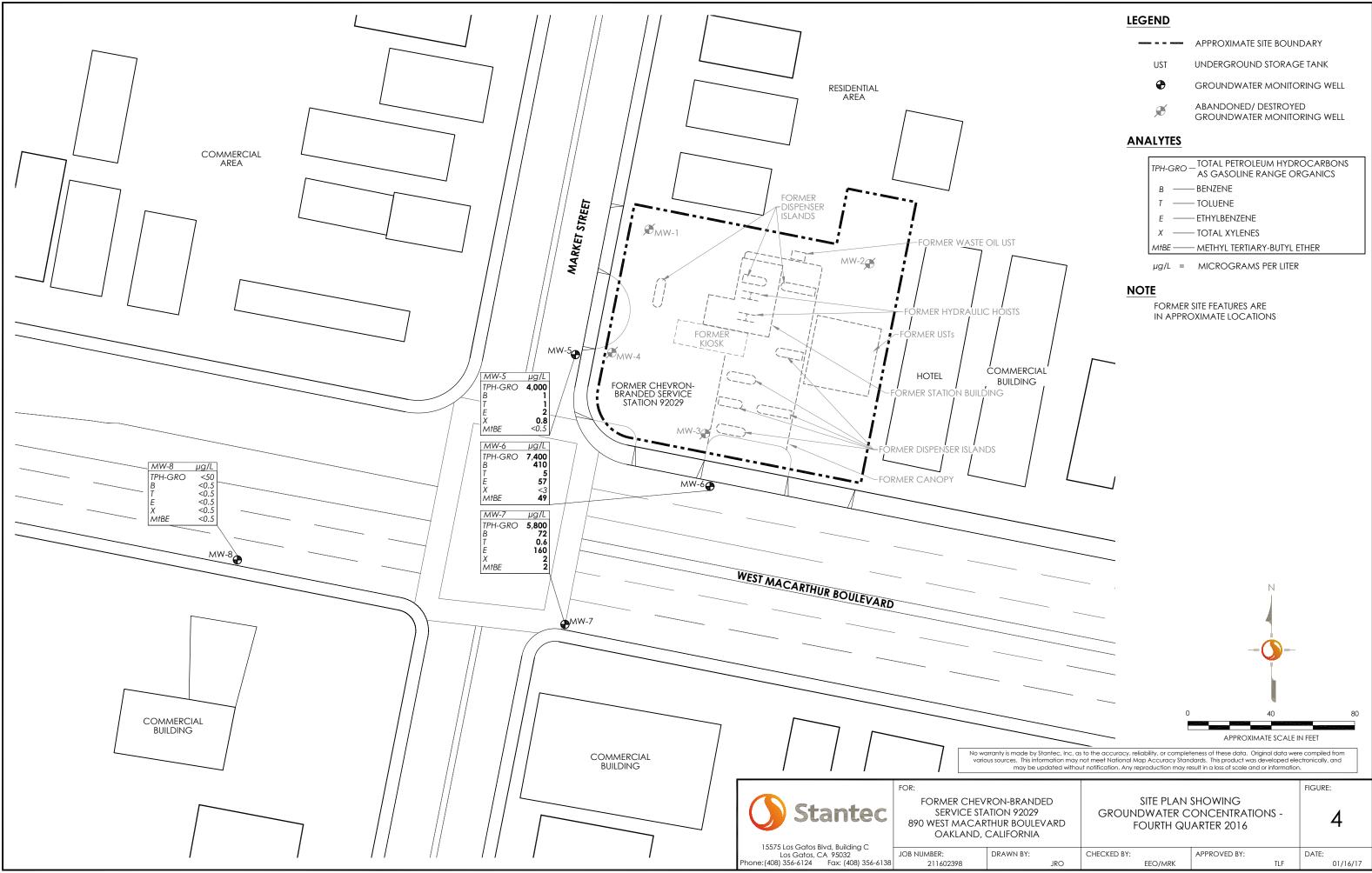


No warranty is made by Stantec, Inc. as to the accuracy, reliability, or completeness of these data. Original data were compiled from various sources. This information may not meet National Map Accuracy Standards. This product was developed electronically, and may be updated without notification. Any reproduction may result in a loss of scale and or information.

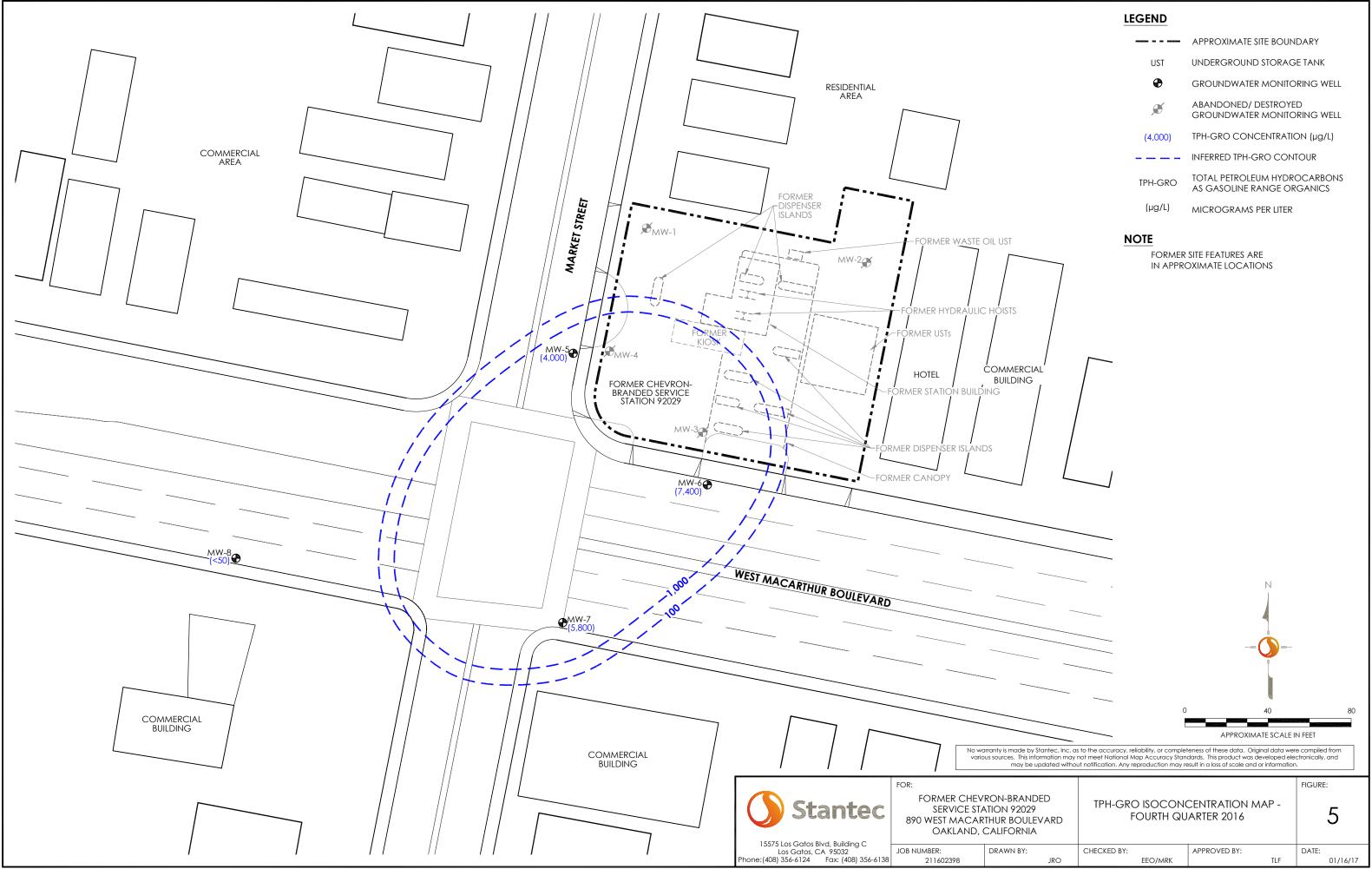
ANDED 2029 DULEVARD RNIA	CONTOL	ROUNDWATER ELEVATION CONTOUR MAP - FOURTH QUARTER 2016				
BY:	CHECKED BY:	APPROVED BY:		DATE:		
JRO	EEO/MRK		TLF	01/16/17		



FILEPATH:C:\Users\jopalekopsahl\Documents\0_travel_cad\0_okemos\4q16\92029\4q16_gwr\figures\211602398_92029_allfigs_4q16.dwg JOpalekOpsahl Jan 17, 2017 at 8:41 | Layout: fig3_rose



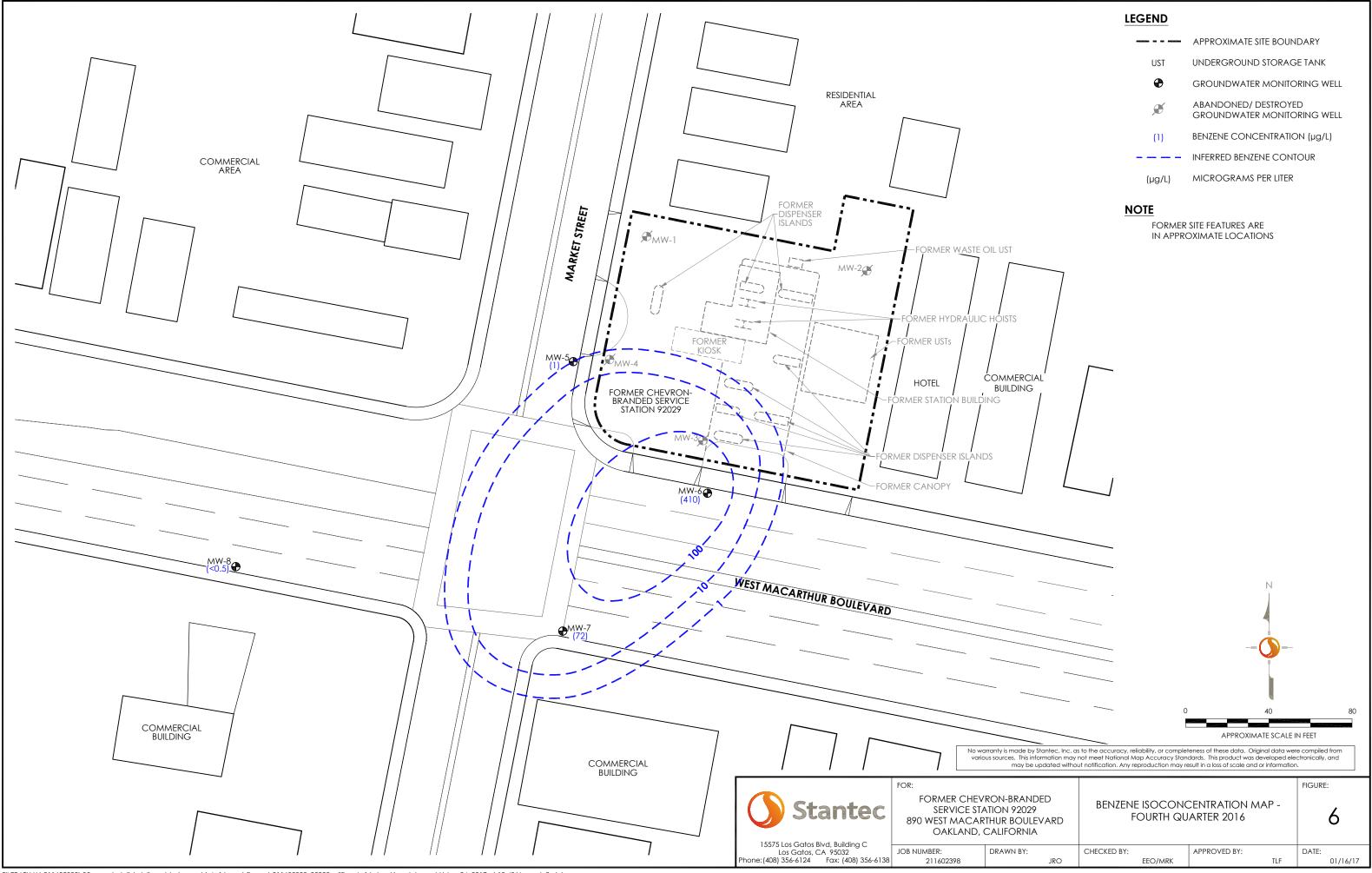
FILEPATH:C:\Users\jopalekopsahl\Documents\0_travel_cad\0_okemos\4q16\92029\4q16_gwr\figures\211602398_92029_allfigs_4q16.dwg | JOpalekOpsahl | Jan 17, 2017 at 8:35 | Layout: fig4_gwc



FILEPATH:C:\Users\jopalekopsahl\Documents\0_travel_cad\0_okemos\4q16\92029\4q16_gwr\figures\211602398_92029_allfigs_4q16.dwg | JOpalekOpsahl | Jan 16, 2017 at 12:17 | Layout: fig5_tphg

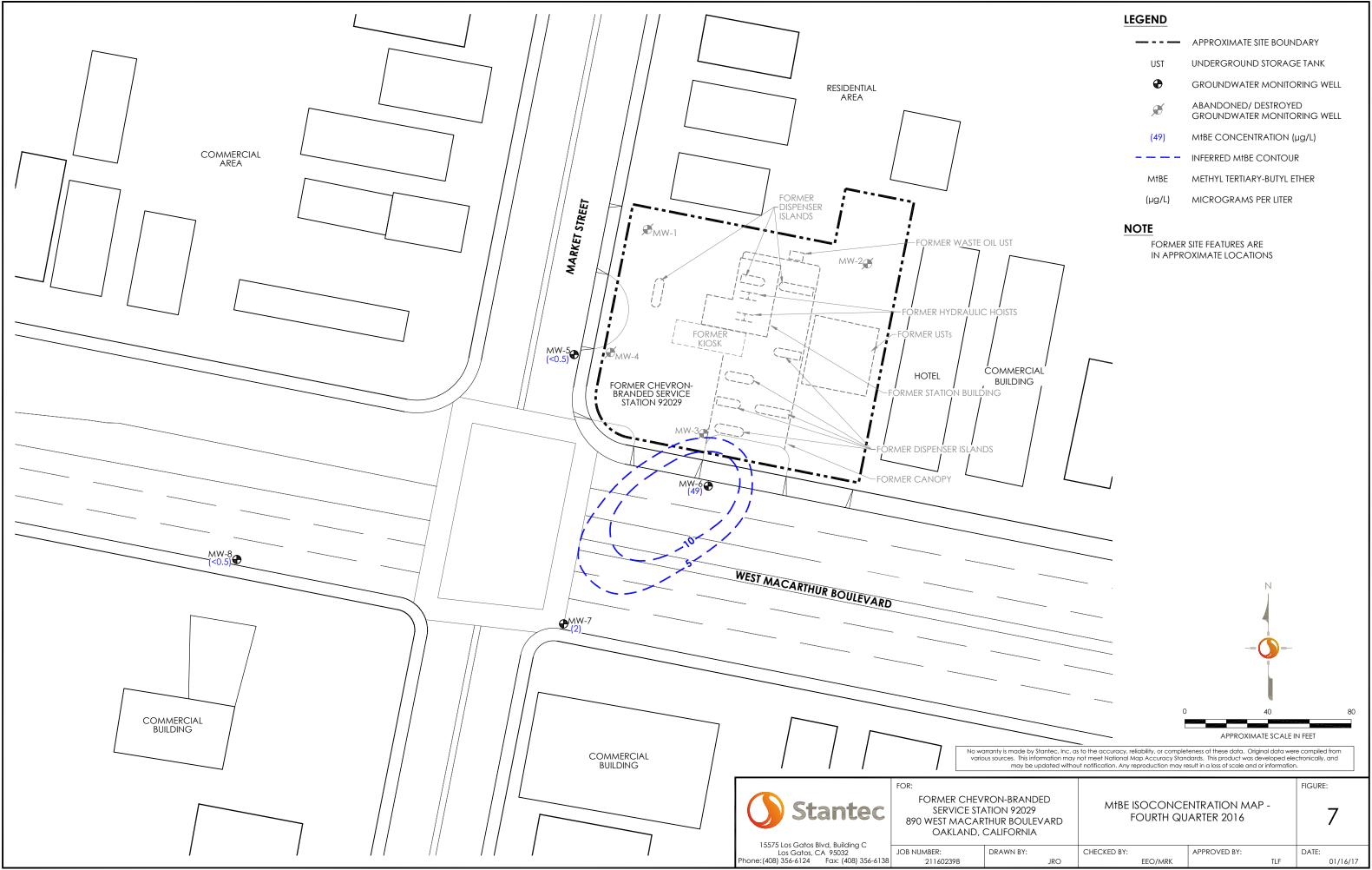
	APPROXIMATE SITE BOUNDARY
UST	UNDERGROUND STORAGE TANK
•	GROUNDWATER MONITORING WELL
Æ	ABANDONED/ DESTROYED GROUNDWATER MONITORING WELL
(4,000)	TPH-GRO CONCENTRATION (µg/L)
	INFERRED TPH-GRO CONTOUR
TPH-GRO	TOTAL PETROLEUM HYDROCARBONS AS GASOLINE RANGE ORGANICS
(µg/L)	MICROGRAMS PER LITER

	CHECKED BY:
RO	



FILEPATH:U:\211602398\05_report_deliv\deliverables\reports\4q16_gwr\figures\211602398_92029_allfigs_4q16.dwg|jopalekopsahl|Jan 24, 2017 at 13:48|Layout: fig6_bnz

	APPROXIMATE SITE BOUNDARY
UST	UNDERGROUND STORAGE TANK
Ð	GROUNDWATER MONITORING WELL
ø	ABANDONED/ DESTROYED GROUNDWATER MONITORING WELL
(1)	BENZENE CONCENTRATION (µg/L)
	INFERRED BENZENE CONTOUR
(µg/L)	MICROGRAMS PER LITER



	APPROXIMATE SITE BOUNDARY
UST	UNDERGROUND STORAGE TANK
•	GROUNDWATER MONITORING WELL
ø	ABANDONED/ DESTROYED GROUNDWATER MONITORING WELL
(49)	MTBE CONCENTRATION (µg/L)
	INFERRED MTBE CONTOUR
MtBE	METHYL TERTIARY-BUTYL ETHER
(µg/L)	MICROGRAMS PER LITER

ATTACHMENT A Gettler-Ryan Inc. Field Data Sheets and Standard Operating Procedures – Fourth Quarter 2016



TRANSMITTAL

December 30, 2016 G-R #386911

Former Chevron Service Station

890 West MacArthur Blvd.

Oakland, California

- TO: Mr. Travis Flora Stantec 15575 Los Gatos Blvd., Building C Los Gatos, California 95032
- FROM: Deanna L. Harding Project Coordinator Gettler-Ryan Inc. 6805 Sierra Court, Suite G Dublin, California 94568

WE HAVE ENCLOSED THE FOLLOWING:

COPIES	DESCRIPTION
VIA PDF	Groundwater Monitoring and Sampling Data Package Annual Event of December 21, 2016

RE:

#9-2029

RO 0002438

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.

WELL CONDITION STATUS SHEET

Client/Facility #:	Chevron	n #9-2029					Job #	386911			
Site Address:	890 Wes	t Macarth	nur Blvd.			•	Event Date:		12.21.	14	
City:	Oakland	I, CA					Sampler:		Fr		
WELL ID	Vault Frame Condition	Gasket/ O-Ring (M)missing	BOLTS (M) Missing (R) Replaced	Bolt Flanges B= Broken S= Stripped R=Retap	APRON Condition C=Cracked B=Broken G=Gone	Grout Seal (Deficient) inches from TOC	Casing (Condition prevents tight cap seal)	REPLACE LOCK Y	REPLACE CAP Y	WELL VAULT Manufacture/Size/ # of Bolts	Pictures Taken Yes / 🏠
MWS	OK						>	ł)	Monuson 6ª /2	
MW-6	DIL						>				
MW-7	OL						>				
MW-8	OK						\rightarrow	¥	4	* *	
									_		

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.



WELL MONITORING/SAMPLING **FIELD DATA SHEET**

Client/Facility#:	Chevron #9-2029		Job N	lumber: 3	86911			
Site Address:	890 West Macart	hur Blvd.	Event	Date:	12.21			(inclusive)
City:	Oakland, CA		Samp	ler:	FT			
Well ID	MW- 5	······································	Date Mo	nitored:	12.2	L		
Well Diameter	2 in.							
Total Depth	24.98 ft.		Volume Factor (VF)	3/4"= 0.02 4"= 0.66	1"= 0.04 5"≕ 1.02	2"= 0.17 6"= 1.50	3"= 0.38 12"= 5.80	
Depth to Water	5.08 ft.	Check if water c	olumn is less	then 0.50 ft.				
	19.90 XVF	.17 = 3.3			timated Purge	e Volume:	10.0	gal.
Depth to Water	w/ 80% Recharge [(Heigh	t of Water Column x 0	.20) + DTW]: _	9.06				
						arted:		
Purge Equipment:		Sampling Equipm	nent:	/		mpleted: Product:		
Disposable Bailer Stainless Steel Baile		Disposable Bailer Pressure Bailer				Water:		
Stack Pump	"	Metal Filters				rbon Thickne		ft
Peristaltic Pump		Peristaltic Pump		<u> </u>	Visual Co	onfirmation/[Description:	
QED Bladder Pump		QED Bladder Pum	p		Skimmor	/ Absorbant	Cook (oirol	
Other:		Other:			Amt Rem	noved from S	Sock (circii Skimmer:	e one) Itr
					Amt Rem	noved from V	Vell:	itr
					Water Re	emoved:		ltr
Start Time (purge			Conditions:		SUN			
Sample Time/Da			olor: <u>C</u>		dor: 🛛 / 🖪	I '		
Approx. Flow Ra			t Description			NONE		
Did well de-wate	r?O If yes	s, Time:	_ Volume: _	g	al. DTW (② Samplir	ng:8	.95
Time (2400 hr.)	Volume (gal.) pH	Conductivity Conductivity / mS µmhos/cm)	Tempe (🅝 /		D.O. (mg/L))RP mV)	
1119	3.5 7.4	725						
1123	7.0 7.5	2 733			$- \angle$		_	
1126	10.0 7.5	5741_		*		- —		

	LABORATORY INFORMATION									
SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES					
MW- 5	x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX+MTBE(8260)					
		· · · · · · · · · · · · · · · · · · ·								
·										

COMMENTS:

Add/Replaced Plug: ___



WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#:	Chevron #9	-2029		Job Nu	mber:	386911			
Site Address:	890 West M	acarthur Blvd.		Event E	Date:	12.	21.16		(inclusive)
City:	Oakland, CA	A		Sample	er:	Ē		·	(
Well ID	MW-6	-	9	Date Moni	tored:	12	-21.16	•	
Well Diameter		<u>n.</u>		/olume	3/4"= 0.0		2"= 0.17	3"= 0.38	
Total Depth Depth to Water	24.9L f			Factor (VF)	4"= 0.6		6"= 1.50	12"= 5.80)
Depth to water	4.63 ft 20.33	all the second second		umn is less th					
Depth to Water		= =		5 x3 case v	olume = E	Estimated Purge	e Volume:	0.0	gal.
		In reight of Water Col	umn x 0.2	0) + DTVVJ C		- Time St	arted:		(2400 hrs)
Purge Equipment:		Sampling	Equipme	nt:	/	11	mpleted:		(2400 hrs)
Disposable Bailer		Disposable	e Bailer						ft
Stainless Steel Baile	er	Pressure I	Bailer				Water:		ft
Stack Pump		Metal Filte					onfirmation		π
Peristaltic Pump QED Bladder Pump		Peristaltic	•						
Other:		QED Blad Other:					r / Absorbant		
	<u> </u>	Other	÷.				noved from S		
							noved from V emoved:		
8	122					vvalorit			,iu
Start Time (purge	e): 1230		leather (Conditions:		51	ولم		
Sample Time/Da						Odor: 0 / 1	<u></u>		
Approx. Flow Ra				Description:			שקסא		· · · · · · · · · · · · · · · · · · ·
Did well de-wate		_ If yes, Time:		•		gal. DTW			10.
			ductivity	• • • • • • • • • • • • • • • • • • •		_gai. D111	@ Oampin	' [.] 0	
Time (2400 hr.)	Volume (gal.)	рН 🖉	mS nos/cm)	Tempera (🖉 /	ture F)	D.O. (mg/L)		DRP mV)	
1234	3.5		20	19.0	-				
1238	7.0	7.35 8	27	9.9			<u> </u>		
1241	10.0	7.37 8	35	20.1					
····		23	đi			(

		L	ABORATORY IN	FORMATION	
SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES
MVV- 6	💪 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX+MTBE(8260)
					· · · · · · · · · · · · · · · · · · ·
	*.				

COMMENTS:

Add/Replaced Gasket:

Add/Replaced Bolt: ___



WELL MONITORING/SAMPLING **FIELD DATA SHEET**

Client/Facility#:	Chevron #9-2	029	Job Num	ber: 3	86911					
Site Address:	890 West Ma	carthur Blvd.	Event Da	ate:	12.2	1.16		(inclusive)		
City:	Oakland, CA		Sampler:		Fr			-		
Well ID	MW- '7		Date Monito	ored:	12.2	1.16				
Well Diameter	2 in.			3/4"= 0.02	1"= 0.04	2"= 0.17	3"= 0.38			
Total Depth	<u>24.87 ft.</u>		Factor (VF)	4"= 0.66	5"= 1.02	6"= 1.50	12"= 5.80	<u>)</u>		
Depth to Water	<u>6.83 ft.</u> 18.04 x	VF Check if water c	olumn is less the				a ~			
Depth to Water v		Height of Water Column x 0			mated Purge V	/olume:	1.0	_ gal.		
					Time Start	-		(2400 hrs)		
Purge Equipment:		Sampling Equips	nent:			pleted:				
Disposable Bailer		Disposable Bailer				roduct: Vater:				
Stainless Steel Baile		Pressure Bailer				on Thickne				
Stack Pump Peristaltic Pump		Metal Filters		<u> </u>		firmation/D		,``		
QED Bladder Pump		Peristaltic Pump QED Bladder Pum								
Other:	<u> </u>	Other:		<u> </u>	Skimmer /					
					Amt Remov			ltr		
					Water Rem					
Start Time (purge	1155	Weather	Conditions:		SUNT	3~	_			
Sample Time/Dat	te: 1214 /12.	21.1L Water C	olor: <u>Clea</u>	<u>n</u> Od	lor: 🖉 / N					
Approx. Flow Rat	e: <u>¥ .0</u> g	pm. Sedimer	nt Description:		NO	NE				
Did well de-water	? <u>No</u> 1	f yes, Time:	_ Volume:	ga	al. DTW @	Samplin	g:	9.82		
Time (2400 hr.)	Volume (gal.)	pH Conductivity pH µmhos/cm)	Temperatu (COC) / F		D.O. (mg/L)		RP 1V)			
1158	3.0 7	35 735	19.4							
1201	6.0 7.	37 742	19.7		\angle		\geq			
1204	<u> </u>	40 750	20.0			\leq				

	LABORATORY INFORMATION									
SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES					
M W- 7	🖌 x voa vial	YES	HCL.	LANCASTER	TPH-GRO(8015)/BTEX+MTBE(8260)					
	1									

COMMENTS:

=

Add/Replaced Lock: _____ Add/Replaced Plug: _____



WELL MONITORING/SAMPLING FIELD DATA SHEET

Client/Facility#:	Chevron #9-2029	Job Number:	386911		
Site Address:	890 West Macarthur Blvd.	Event Date:	12-21-16	(inclusive)	
City:	Oakland, CA	Sampler:	FT	·	
Well ID	MW- 8	Date Monitored:	12.21.16		
Well Diameter	2 in.	Volume 3/4"= 0.02		3" = 0.38	
Total Depth Depth to Water	25.01 ft. 8.31 ft. Check if wate	Factor (VF) 4"= 0.66		2"= 5.80	
Deptil to water		r column is less then 0.50 f	t. istimated Purge Volume: 		
Depth to Water	N/ 80% Recharge [(Height of Water Column	$x_0 = 20$ + DTAG: 11. L	stimated Purge Volume:	D gal.	
		x 0.20) + D1W].		(2400 hrs)	
Purge Equipment:	Sampling Equi	ipment:	Time Completed:		
Disposable Bailer	Disposable Bail		Depth to Product:ft Depth to Water:ft		
Stainless Steel Baile Stack Pump			Hydrocarbon Thickness		
Peristaltic Pump	Metal Filters Peristaltic Pum	- <u></u>	Visual Confirmation Des		
QED Bladder Pump	QED Bladder P			N	
Other:	Other:	· · · · · · · · · · · · · · · · · · ·	Skimmer / Absorbant So Amt Removed from Skim		
		17 C	Amt Removed from Well		
			Water Removed:	itr	
Start Time (purge		ner Conditions:	Suddy	······	
Sample Time/Da		Color: <u>Lr. Jen.</u>			
Approx. Flow Ra		ent Description:	S. SILTY		
Did well de-wate	r? If yes, Time:	Volume:	gal. DTW @ Sampling:	10.56	
Time (2400 hr.)	Conductiv Volume (gal.) pH John / m jumhos/c	S I emperature	D.O. ORP (mg/L) (mV)		
1309	3.0 7.25 629	20.1			
1312	6.0 7.29 635	20.3	-	<	
1313	<u>4.0</u> 7.30 641	20.6	$-\!\!\!/-$	<u> </u>	
·			· /		

	LABORATORY INFORMATION									
SAMPLE ID	(#) CONTAINER	REFRIG.	PRESERV. TYPE	LABORATORY	ANALYSES					
MW- %	6 x voa vial	YES	HCL	LANCASTER	TPH-GRO(8015)/BTEX+MTBE(8260)					
		~								
		·*								
		······································	ф. С							
	5									
			(ii)							
										

COMMENTS:

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=

Add/Replaced Gasket: _____

Chevron California Region Analysis Request/Chain of Custody

🔅 eurofins				Appt	4							ancas	ter La	borat		Envir		ntal	use o	nly							
122116-02	Lancaster Labor Environmental	atories		Acct.	#				Gr	roup # Inst		s on rev	/erse s	ide corr		mple # d with cir		umber	S.						- lof1		
	Client In					Matrix Analyses Requested					ed				SCR	:#:											
Facility # SS#9-2029-OML	G-R#386911	Global	WBS ID#T060	017388	7																						
Site Address 890 WEST MACA)., OAKI	AND, C	;A				Ø						다 역											esults in Dry W value reporting	-	
Chevron PM STANTECTF Lead Consultant					diment	Ground	Surface		S	8260 🕅	8260	Gel Cleanup	Cleanup									ММ	ust meet lowe	st detection			
Consultant/Office Getter-Ryan Inc.,	6805 Sierra C	court, Su	lite G, D	ublin, C	A 94	568	Sec	Ū	งี		ainer	82	82		Gel Ci										ompounds 021 MTBE Cor	nfirmation	
Consultant Project Mgr. Deanna L. Hardi	ng, deanna@g	rinc.cor	n								Containers		8015 🕅	out Silic	Silica (ő	Method	Method						onfirm highest onfirm all hits l	hit by 8260	
Consultant Phone # (925) 551-7444 x180						Potable	NPDES	Air	er of			5 witho	5 with		Oxygenates							🗌 Ri	un oxy un oxy	's on highes			
Sampler FVA	LT.					Composite					Total Number of	+ MTBE	RO	TPH-DRO 8015 without Silica	TPH-DRO 8015 with Silica	8260 Full Scan	ŏ	ead	Dissolved Lead								
Sample Iden	tification	Soil Depth	Colle Date	ected Time	Grab	Comp	Soil		Water	Oil	Total	BTEX 4	TPH-GRO	ID-H-	IO-Hd.	260 F		Total Lead	Dissolv						Rema	rks	
	QA				Ŭ	Ŭ		h	1		2	X	Ľ	-				-	<u> </u>								
			16.12.21									<u> </u>															_
	MW-5		1	1136	X						6	X,	X														
	MW-6			1251	X				\square		6	\times	X			\square											
	MW-7			1214	X						6	X,	X			└──┨											
	MW-8		4	1325	X			7			6	Х	X			\vdash											
			· · ·	<u> </u>					·							┝╼╼┨											
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				<u> </u>							\square					\vdash											
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Data Package	circle if required)		ED	F/EDD	Relind	luished	l by					Date			Time			Recei	ved by		N			Di	ate	Time	
Type I - Full	Type I - Full Type VI (Raw Data)			quist	quished by Commercial Carrier: Received by							ate	Time														
				PS FedEx Other																							
EDFFLAT (defaul	t) Other:					Temperature Upon Receipt°C Custody Seals Intact?					ct?		Yes	INo	 >												

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ATTACHMENT B Certified Laboratory Analysis Reports and Chain-of-Custody Documents



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

ANALYTICAL RESULTS

Prepared by:

Prepared for:

Eurofins Lancaster Laboratories Environmental 2425 New Holland Pike Lancaster, PA 17601 Chevron 6001 Bollinger Canyon Rd L4310 San Ramon CA 94583

Report Date: January 03, 2017

Project: 92029

Submittal Date: 12/22/2016 Group Number: 1747731 PO Number: 0015188594 Release Number: CMACLEOD State of Sample Origin: CA

	Lancaster Labs
Client Sample Description	<u>(LL) #</u>
QA-T-161221 NA Water	8759443
MW-5-W-161221 Grab Groundwater	8759444
MW-6-W-161221 Grab Groundwater	8759445
MW-7-W-161221 Grab Groundwater	8759446
MW-8-W-161221 Grab Groundwater	8759447

The specific methodologies used in obtaining the enclosed analytical results are indicated on the Laboratory Sample Analysis Record.

Regulatory agencies do not accredit laboratories for all methods, analytes, and matrices. Our current scopes of accreditation can be viewed at <u>http://www.eurofinsus.com/environment-testing/laboratories/eurofins-lancaster-laboratories-environmental/resources/certifications/</u>. To request copies of prior scopes of accreditation, contact your project manager.

Electronic Copy To	Stantec International
Electronic Copy To	Stantec
Electronic Copy To	Stantec
Electronic Copy To	Stantec
Electronic Copy To	Gettler-Ryan Inc.

Attn: Travis Flora Attn: Marisa Kaffenberger Attn: Erin O'Malley Attn: Laura Viesselman Attn: Gettler Ryan





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Respectfully Submitted,

amek Carts

Amek Carter Specialist

(717) 556-7252



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: QA-T-161221 NA Water Facility# 92029 Job# 386911 GRD 890 W Macarthur-Oakland T0600173887

LL Sample # WW 8759443 LL Group # 1747731 Account # 10906

Project Name: 92029

QAMBO

Collected: 12/21/2016

Submitted: 12/22/2016 12:00 Reported: 01/03/2017 14:05

6001 Bollinger Canyon Rd L4310 San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS	Volatiles SW-84	5 8260B	ug/l	ug/l	
10945	Benzene	71-43-2	N.D.	0.5	1
10945	Ethylbenzene	100-41-4	N.D.	0.5	1
10945	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	1
10945	Toluene	108-88-3	N.D.	0.5	1
10945	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC Vol	latiles SW-84	6 8015B	ug/l	ug/l	
01728	TPH-GRO N. CA water C6-C12	n.a.	N.D.	50	1

Chevron

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	BTEX/MTBE	SW-846 8260B	1	D170031AA	01/03/2017 08:37	Anita M Dale	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D170031AA	01/03/2017 08:37	Anita M Dale	1
01728	TPH-GRO N. CA water C6-C12	SW-846 8015B	1	16363A53A	12/28/2016 11:37	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	16363A53A	12/28/2016 11:37	Brett W Kenyon	1



Analysis Report

LL Sample # WW 8759444

LL Group # 1747731

Account # 10906

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-5-W-161221 Grab Groundwater Facility# 92029 Job# 386911 GRD 890 W Macarthur-Oakland T0600173887

Project Name: 92029

Collected:	12/21	/2016	11:36	by FI
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Submitted: 12/22/2016 12:00 Reported: 01/03/2017 14:05

M5MBO

		Dilution
5		
0	San Ramon CA 94583	

6001 Bollinger Canyon Rd L4310

Chevron

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS	Volatiles SW-	346 8260B	ug/l	ug/l	
10945	Benzene	71-43-2	1	0.5	1
10945	Ethylbenzene	100-41-4	2	0.5	1
10945	Methyl Tertiary Butyl Et	ner 1634-04-4	N.D.	0.5	1
10945	Toluene	108-88-3	1	0.5	1
10945	Xylene (Total)	1330-20-7	0.8	0.5	1
GC Vo	latiles SW-	346 8015B	ug/l	ug/l	
01728	TPH-GRO N. CA water C6-C	12 n.a.	4,000	250	5

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	BTEX/MTBE	SW-846 8260B	1	D170031AA	01/03/2017 08:59	Anita M Dale	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D170031AA	01/03/2017 08:59	Anita M Dale	1
01728	TPH-GRO N. CA water C6-C12	SW-846 8015B	1	16363A53A	12/28/2016 18:07	Brett W Kenyon	5
01146	GC VOA Water Prep	SW-846 5030B	1	16363A53A	12/28/2016 18:07	Brett W Kenyon	5



Analysis Report

Account

LL Sample # WW 8759445

10906

LL Group # 1747731

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-6-W-161221 Grab Groundwater Facility# 92029 Job# 386911 GRD 890 W Macarthur-Oakland T0600173887

Project Name: 92029

Collected:	12/21/	/2016	12:51	by FT
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Submitted: 12/22/2016 12:00 Reported: 01/03/2017 14:05

M6MBO

Chevron	
6001 Bollinger Canyon Rd L4310 San Ramon CA 94583	

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS	Volatiles SW	1-846 8	3260B	ug/l	ug/l	
10945	Benzene		71-43-2	410	3	5
10945	Ethylbenzene		100-41-4	57	3	5
10945	Methyl Tertiary Butyl H	Ether	1634-04-4	49	3	5
10945	Toluene		108-88-3	5	3	5
10945	Xylene (Total)		1330-20-7	N.D.	3	5
GC Vol	latiles SW	1-846 8	3015B	ug/l	ug/l	
01728	TPH-GRO N. CA water C6-	-C12	n.a.	7,400	500	10

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	BTEX/MTBE	SW-846 8260B	1	D170031AA	01/03/2017 10:30	Anita M Dale	5
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D170031AA	01/03/2017 10:30	Anita M Dale	5
01728	TPH-GRO N. CA water C6-C12	SW-846 8015B	1	16363A53A	12/28/2016 18:34	Brett W Kenyon	10
01146	GC VOA Water Prep	SW-846 5030B	1	16363A53A	12/28/2016 18:34	Brett W Kenyon	10



Analysis Report

Account

LL Sample # WW 8759446

10906

LL Group # 1747731

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-7-W-161221 Grab Groundwater Facility# 92029 Job# 386911 GRD 890 W Macarthur-Oakland T0600173887

Project Name: 92029

Collected:	12/21,	/2016	12:14	by	FT
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Submitted: 12/22/2016 12:00 Reported: 01/03/2017 14:05

M7MBO

Chevron 6001 Bollinger Canyon Rd L4310 San Ramon CA 94583

CAT No.	Analysis Name		CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS	Volatiles	SW-846	8260B	ug/l	ug/l	
10945	Benzene		71-43-2	72	0.5	1
10945	Ethylbenzene		100-41-4	160	0.5	1
10945	Methyl Tertiary Buty	l Ether	1634-04-4	2	0.5	1
10945	Toluene		108-88-3	0.6	0.5	1
10945	Xylene (Total)		1330-20-7	2	0.5	1
GC Vol	latiles	SW-846	8015B	ug/l	ug/l	
01728	TPH-GRO N. CA water	C6-C12	n.a.	5,800	500	10

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	BTEX/MTBE	SW-846 8260B	1	D170031AA	01/03/2017 10:52	Anita M Dale	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D170031AA	01/03/2017 10:52	Anita M Dale	1
01728	TPH-GRO N. CA water C6-C12	SW-846 8015B	1	16363A53A	12/28/2016 19:02	Brett W Kenyon	10
01146	GC VOA Water Prep	SW-846 5030B	1	16363A53A	12/28/2016 19:02	Brett W Kenyon	10



Analysis Report

Account

LL Sample # WW 8759447

10906

LL Group # 1747731

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Sample Description: MW-8-W-161221 Grab Groundwater Facility# 92029 Job# 386911 GRD 890 W Macarthur-Oakland T0600173887

Project Name: 92029

Collected: 1	2/21	/2016	13:25	by	FT
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Submitted: 12/22/2016 12:00 Reported: 01/03/2017 14:05

M8MBO

Chevron 6001 Bollinger Canyon Rd L4310 San Ramon CA 94583

CAT No.	Analysis Name	CAS Number	Result	Method Detection Limit	Dilution Factor
GC/MS	Volatiles SW-846	8260B	ug/l	ug/l	
10945	Benzene	71-43-2	N.D.	0.5	1
10945	Ethylbenzene	100-41-4	N.D.	0.5	1
10945	Methyl Tertiary Butyl Ether	1634-04-4	N.D.	0.5	1
10945	Toluene	108-88-3	N.D.	0.5	1
10945	Xylene (Total)	1330-20-7	N.D.	0.5	1
GC Vo	Latiles SW-846	8015B	ug/l	ug/l	
01728	TPH-GRO N. CA water C6-C12	n.a.	N.D.	50	1

Sample Comments

CA ELAP Lab Certification No. 2792

All QC is compliant unless otherwise noted. Please refer to the Quality Control Summary for overall QC performance data and associated samples.

CAT No.	Analysis Name	Method	Trial#	Batch#	Analysis Date and Time	Analyst	Dilution Factor
10945	BTEX/MTBE	SW-846 8260B	1	D170031AA	01/03/2017 11:15	Anita M Dale	1
01163	GC/MS VOA Water Prep	SW-846 5030B	1	D170031AA	01/03/2017 11:15	Anita M Dale	1
01728	TPH-GRO N. CA water C6-C12	SW-846 8015B	1	16363A53A	12/28/2016 12:33	Brett W Kenyon	1
01146	GC VOA Water Prep	SW-846 5030B	1	16363A53A	12/28/2016 12:33	Brett W Kenyon	1



Analysis Report

2425 New Holland Pike, Lancaster, PA 17601 • 717-656-2300 • Fax: 717-656-2681 • www.LancasterLabs.com

Quality Control Summary

Client Name: Chevron Reported: 01/03/2017 14:05 Group Number: 1747731

Matrix QC may not be reported if insufficient sample or site-specific QC samples were not submitted. In these situations, to demonstrate precision and accuracy at a batch level, a LCS/LCSD was performed, unless otherwise specified in the method.

All Inorganic Initial Calibration and Continuing Calibration Blanks met acceptable method criteria unless otherwise noted on the Analysis Report.

Method Blank

Analysis Name	Result	MDL
	ug/l	ug/l
Batch number: D170031AA	Sample numbe:	r(s): 8759443-8759447
Benzene	N.D.	0.5
Ethylbenzene	N.D.	0.5
Methyl Tertiary Butyl Ether	N.D.	0.5
Toluene	N.D.	0.5
Xylene (Total)	N.D.	0.5
Batch number: 16363A53A TPH-GRO N. CA water C6-C12	Sample numbe: N.D.	r(s): 8759443-8759447 50

LCS/LCSD

Analysis Name	LCS Spike Added ug/l	LCS Conc ug/l	LCSD Spike Added ug/l	LCSD Conc ug/l	LCS %REC	LCSD %REC	LCS/LCSD Limits	RPD	RPD Max
Batch number: D170031AA	Sample number	r(s): 87594	443-8759447						
Benzene	20	20.88			104		78-120		
Ethylbenzene	20	20.25			101		78-120		
Methyl Tertiary Butyl Ether	20	21.11			106		75-120		
Toluene	20	20.93			105		80-120		
Xylene (Total)	60	61.43			102		80-120		
	ug/l	ug/l	ug/l	ug/l					
Batch number: 16363A53A	Sample number	r(s): 87594	443-8759447						
TPH-GRO N. CA water C6-C12	1100	1044.61	1100	1076.22	95	98	77-120	3	30

MS/MSD

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Batch number: D170031AA Benzene	Sample numb	er(s): 8759 20	443-8759 20.78	20 20 20	3759444 21.88	98	104	78-120	5	30

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.





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Quality Control Summary

Client Name: Chevron Reported: 01/03/2017 14:05 Group Number: 1747731

MS/MSD (continued)

Unspiked (UNSPK) = the sample used in conjunction with the matrix spike

Analysis Name	Unspiked Conc ug/l	MS Spike Added ug/l	MS Conc ug/l	MSD Spike Added ug/l	MSD Conc ug/l	MS %Rec	MSD %Rec	MS/MSD Limits	RPD	RPD Max
Ethylbenzene	2.22	20	21.91	20	23.7	98	107	78-120	8	30
Methyl Tertiary Butyl Ether	N.D.	20	17.5	20	19.14	87	96	75-120	9	30
Toluene	1.18	20	20.56	20	21.88	97	104	80-120	6	30
Xylene (Total)	0.755	60	59.97	60	64.01	99	105	80-120	7	30

Surrogate Quality Control

Surrogate recoveries which are outside of the QC window are confirmed unless attributed to dilution or otherwise noted on the Analysis Report.

Analysis Name: BTEX/MTBE Batch number: D170031AA

	Dibromofluoromethane	1,2-Dichloroethane-d4	Toluene-d8	4-Bromofluorobenzene
8759443	106	100	99	95
8759444	105	99	99	102
8759445	102	100	100	98
8759446	103	100	99	100
8759447	102	100	99	95
Blank	105	98	97	96
LCS	104	99	98	96
MS	102	99	99	102
MSD	103	101	98	101
Limits:	80-116	77-113	80-113	78-113

Analysis Name: TPH-GRO N. CA water C6-C12 Batch number: 16363A53A

	Trifluorotoluene-F
8759443	98
8759444	105
8759445	95
8759446	96
8759447	99
Blank	117
LCS	104
LCSD	106
Limits:	63-135

*- Outside of specification

(1) The result for one or both determinations was less than five times the LOQ.

(2) The unspiked result was more than four times the spike added.

P###### is indicative of a Background or Unspiked sample that is batch matrix QC and was not performed using a sample from this submission group.

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ionsultant/Office Getter-Ryan Inc., 6805 Sierra C	hevron PM STANTECTF Flora onsultant/Office Getter-Ryan Inc., 6805 Sierra Court, Suite G, Dublin, CA 94568					Sedi	ъ С	nn N	ners	8260	8260		el Clea									compounds	
Consultant Project Mgr. Deanna L. Harding, deanna@grinc.com									Containers		8015	ut Silica	Silica G			Method	Method					8021 MTBE Co Confirm highest Confirm all hits	t hit by 8260
Consultant Phone # (925) 551-7444 x180					Potable		ď	8021	8015	TPH-DRO 8015 without Silica	TPH-DRO 8015 with Silica Gel		Oxygenates	2						Confirm all hits Run oxy Run oxy	y's on highest hit		
Sampler FRANKT.					osite			₽│□	Total Number	+ MTBE	Q	KO 801	KO 801	8260 Full Scan	Oxyo	ad	ed Lead						,
Sample Identification	Soil Depth	Coll Date	ected Time	Grab	Composite	Soil	Water	Oil	Total I	BTEX +	TPH-GRO	TPH-DF	TPH-DF	3260 Fu		Total Lead	Dissolved					Rema	arks
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MW-7			1251	\Diamond					6	\bigcirc	\mathbf{X}								-				
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EDFFLAT (default) Other:				Ĕ				e Upo				_		°C		-¥	H	11		ntact		12/22/10 (Yes)	<u> (2500)</u> №

Eurofins Lancaster Laboratories Environmental, LL Page 510eof Holand Pike, Lancaster, PA 17601 • 717-656-2300 The white copy should accompany samples to Eurofins Lancaster Laboratories Environmental. The yellow copy should be retained by the client.

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Lancaster Laboratories Environmental

Sample Administration Receipt Documentation Log

Doc Log ID:

171542

Group Number(s): | 7 4 7 7 3 |

Client: Chevron

D	elivery and l	Receipt Information		
Delivery Method: <u>BASC</u>		Arrival Timestamp:	12/22/2016	12:00
Number of Packages: <u>1</u>		Number of Projects:	<u>1</u>	
State/Province of Origin: CA				
	Arrival Con	dition Summary		
Shipping Container Sealed:	Yes	Sample IDs on COC m	atch Containers	Yes
Custody Seal Present:	Yes	Sample Date/Times ma	atch COC:	Yes
Custody Seal Intact:	Yes	VOA Vial Headspace ≥	: 6mm:	No
Samples Chilled:	Yes	Total Trip Blank Qty:		2.
Paperwork Enclosed:	Yes	Trip Blank Type:		hcl
Samples Intact:	Yes	Air Quality Samples Pr	esent:	No
Missing Samples:	No			
Extra Samples:	No			
Discrepancy in Container Qty on CO	C: No			

Unpacked by Porsha Hill (12046) at 13:39 on 12/22/2016

، 	Samples Chilled Details								
	The	ermometer Types	s: DT =	Digital (Temp. Bottle	e) IR :	= Infrared (Su	rface Temp)	All Temperatures in °C.	
·	O salar #	The survey of a start ID		The sure Trice of	les Ture	les Dressent?	les Container	Elevated Temp?	
	<u>Cooler #</u> 1	Thermometer ID DT121	Corrected Te	<u>mp Therm. Type</u> DT	<u>Ice Type</u> Wet	<u>Ice Present?</u> Y	<u>Ice Container</u> Bagged	<u>Elevated Temp?</u>	
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Lancaster Laboratories Environmental

Explanation of Symbols and Abbreviations

The following defines common symbols and abbreviations used in reporting technical data:

BMQL C Cfu CP Units F g IU kg L	Below Minimum Quantitation Level degrees Celsius colony forming units cobalt-chloroplatinate units degrees Fahrenheit gram(s) International Units kilogram(s) liter(s)	mg mL MPN N.D. ng NTU pg/L RL TNTC	milligram(s) milliliter(s) Most Probable Number none detected nanogram(s) nephelometric turbidity units picogram/liter Reporting Limit Too Numerous To Count						
lb. m3	pound(s) cubic meter(s)	μg μL	microgram(s) microliter(s)						
meq <	milliequivalents less than	umhos/cm	micromhos/cm						
>	greater than								
ppm	parts per million - One ppm is equivalent to one milligram per kilogram (mg/kg) or one gram per million grams. For aqueous liquids, ppm is usually taken to be equivalent to milligrams per liter (mg/l), because one liter of water has a weight very close to a kilogram. For gases or vapors, one ppm is equivalent to one microliter per liter of gas.								
ppb	parts per billion								
Drv weight	Results printed under this heading have be	een adjusted for mo	pisture content. This increases the analyte weight						

Dry weight basis Results printed under this heading have been adjusted for moisture content. This increases the analyte weight concentration to approximate the value present in a similar sample without moisture. All other results are reported on an as-received basis.

Laboratory Data Qualifiers:

- C Result confirmed by reanalysis
- E Concentration exceeds the calibration range
- J (or G, I, X) estimated value \geq the Method Detection Limit (MDL or DL) and < the Limit of Quantitation (LOQ or RL)
- P Concentration difference between the primary and confirmation column >40%. The lower result is reported.
- U Analyte was not detected at the value indicated

V - Concentration difference between the primary and confirmation column >100%. The reporting limit is raised due to this disparity and evident interference...

W - The dissolved oxygen uptake for the unseeded blank is greater than 0.20 mg/L.

Additional Organic and Inorganic CLP qualifiers may be used with Form 1 reports as defined by the CLP methods. Qualifiers specific to Dioxin/Furans and PCB Congeners are detailed on the individual Analysis Report.

Analytical test results meet all requirements of the associated regulatory program (i.e., NELAC (TNI), DoD, and ISO 17025) unless otherwise noted under the individual analysis.

Measurement uncertainty values, as applicable, are available upon request.

Tests results relate only to the sample tested. Clients should be aware that a critical step in a chemical or microbiological analysis is the collection of the sample. Unless the sample analyzed is truly representative of the bulk of material involved, the test results will be meaningless. If you have questions regarding the proper techniques of collecting samples, please contact us. We cannot be held responsible for sample integrity, however, unless sampling has been performed by a member of our staff.

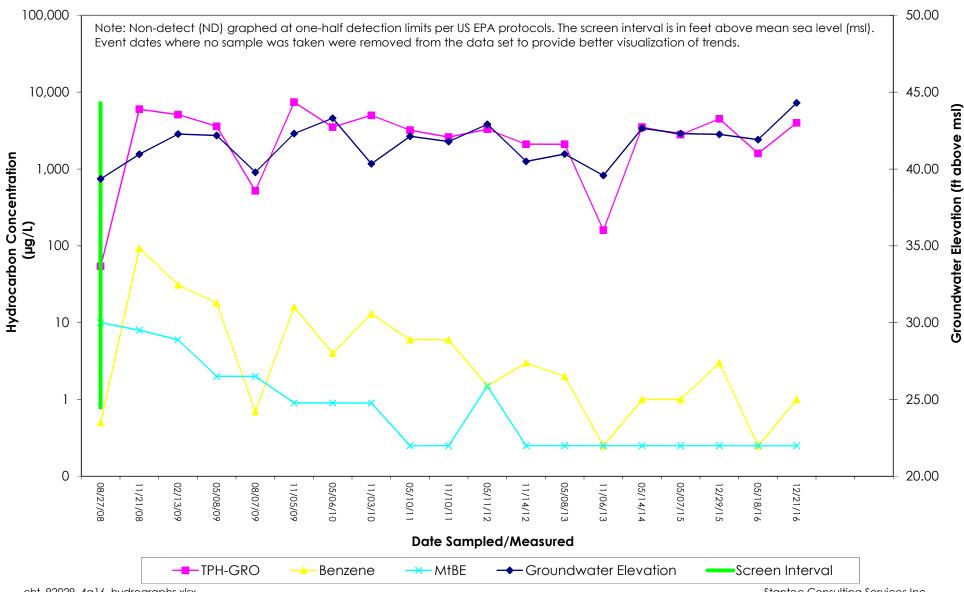
This report shall not be reproduced except in full, without the written approval of the laboratory.

Times are local to the area of activity. Parameters listed in the 40 CFR Part 136 Table II as "analyze immediately" are not performed within 15 minutes.

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MW-5 TPH-GRO, Benzene, & MtBE Concentrations and Groundwater Elevations vs. Time

Former Chevron-branded Service Station 92029 890 West MacArthur Boulevard Oakland, California

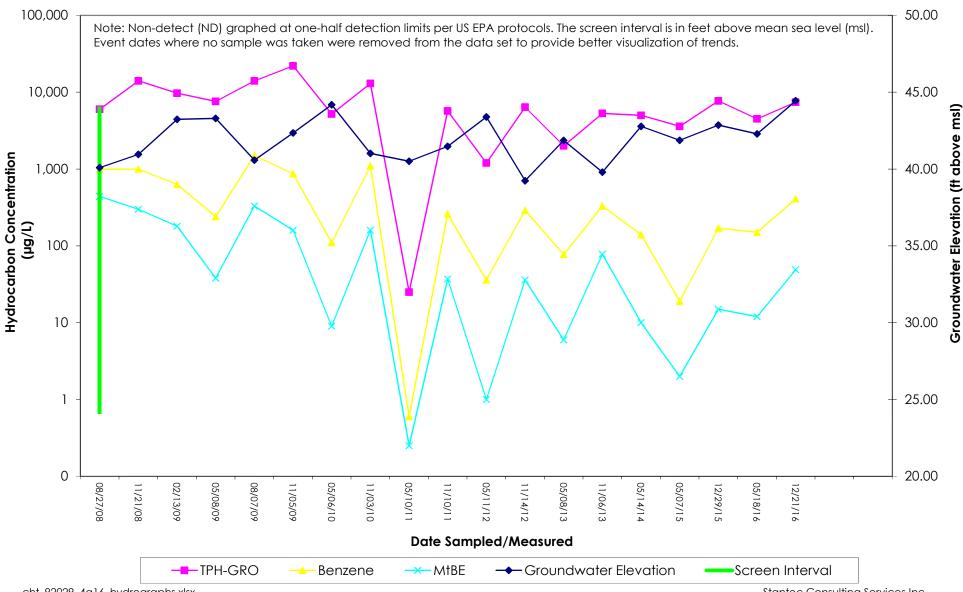


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Stantec Consulting Services Inc.

MW-6 TPH-GRO, Benzene, & MtBE Concentrations and Groundwater Elevations vs. Time

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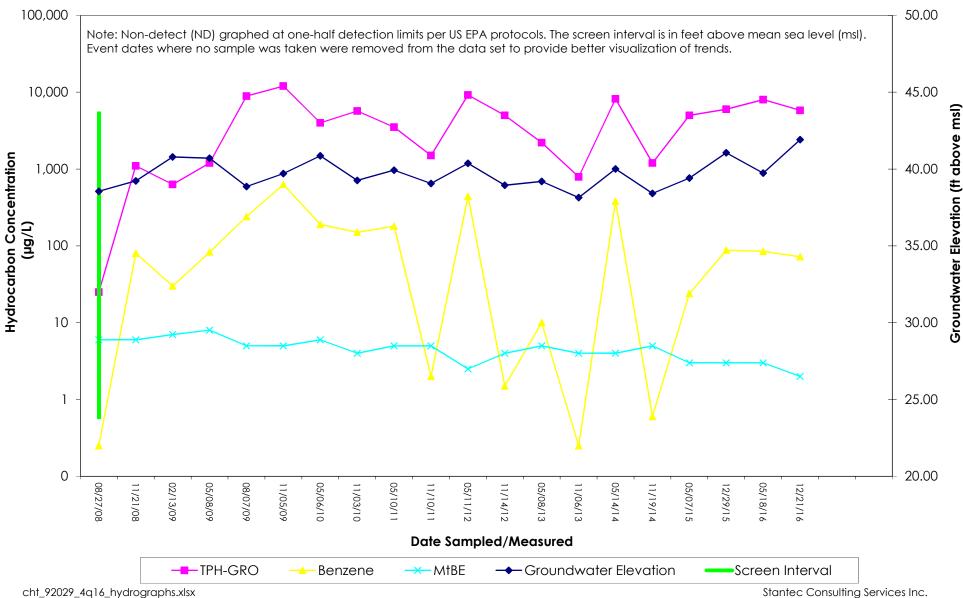


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Stantec Consulting Services Inc.

MW-7 TPH-GRO, Benzene, & MtBE Concentrations and Groundwater Elevations vs. Time

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cht_92029_4q16_hydrographs.xlsx

MW-8 TPH-GRO, Benzene, & MtBE Concentrations and Groundwater Elevations vs. Time

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