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By Alameda County Environmental Health 10:13 am, Aug 04, 2017

Ms. Karel Detterman
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, CA 94602

Arcadis U.S., Inc.
101 Creekside Ridge Court
Suite 200
Roseville
California 95678
Tel 916 786 0320
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Subject:

Second Quarter 2017 Groundwater Monitoring Report & Request for Closure
Former BP Facility No. 0402
1450 Fruitvale Avenue, Oakland, California 94601
Alameda County LOP Case #RO0000307

ENVIRONMENT

Date:
July 26, 2017

Dear Ms. Detterman:

Contact:
James M. Jacobsen, P.G.

"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."

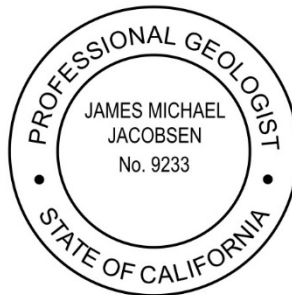
Phone:
916 865 3144

Sincerely,

Email:
james.jacobsen@arcadis.com

Arcadis U.S., Inc.

Our ref:
GP16BPNA.CA02



On behalf of BP West Coast Products, LLC
James M. Jacobsen, P.G.
Project Manager
Attorney-in-Fact

Ms. Karel Detterman
Alameda County Department of Environmental Health
1131 Harbor Bay Parkway
Alameda, California, 94602

Subject:
**CA 0402 - Second Quarter 2017 Monitoring Report & Request for Closure
Submittal
Case No. RO0000307**

Arcadis U.S., Inc.
101 Creekside Ridge
Court
Suite 200
Roseville
California 95678
Tel 916 786 0320
www.arcadis.com

Dear Ms. Detterman:

On behalf of BP West Coast Products, LLC (BP), Arcadis U.S., Inc. (Arcadis) is submitting the enclosed Semi-Annual Monitoring Report for the Second Quarter 2017. The enclosed quarterly report was prepared for the following Former BP facility (referred to herein as the "site"):

<u>Former BP Facility No.</u>	<u>Location</u>
0402	1450 Fruitvale Avenue, Oakland, CA 94601

If you have any questions, please contact the undersigned.

Sincerely,

Arcadis U.S., Inc.



James M. Jacobsen, P.G.
Project Manager



ENVIRONMENT

Date:
July 26, 2017

Contact:
James M. Jacobsen, P.G.

Phone:
916.865.3144

Email:
james.jacobsen@arcadis.com

Our ref:
GP16BPNA.CA02

Copies:
San Francisco Bay Regional Water Quality Control Board (GeoTracker)
Linli Lee, Fruitvale-Farnam Asso. LLC, (electronic copy)
File

SEMI-ANNUAL MONITORING AND STATUS REPORT
Second Quarter 2017
July 26, 2017

Station No:	0402	Address:	1450 Fruitvale Avenue, Oakland, California 94601
Arcadis Contact/Phone No.:	Mr. James Jacobsen / 916.865.3144		
Arcadis Project No.:	GP16BPNA.CA02.6B000		
Primary Agency/Regulatory ID No.:	San Francisco Regional Water Quality Control Board / Ms. Karel Detterman / Case No. RO0000307		
Other Agencies to Receive Copies:	NA		
Current Phase of Project:	Monitoring		
Frequency of Monitoring/Sampling:	Semi-annual		
Is Light Non-Aqueous Phase Liquid (LNAPL) Present On-site:	No		
LNAPL Detected During the current monitoring event (thickness in feet):	NA		
Approximate Depth to Groundwater (feet below top of casing [btoc]):	7.75 (MW-5) to 9.41 (MW-6)		
Groundwater Flow Direction:	Northeast		
Groundwater Flow Magnitude (foot/foot):	0.01		
Agency Directive Requirements:	Semi-annual monitoring and reporting; awaiting case closure review under the State's LTCP		

WORK PERFORMED DURING SECOND QUARTER 2017:

1. Conducted semi-annual groundwater monitoring and sampling on May 12, 2017. A local area map and a site map are provided as **Figure 1** and **Figure 2**, respectively. The following summarizes the Second Quarter 2017 event:
 - Prior to gauging, all monitoring wells were left open for at least 15 minutes for the water column to equilibrate with atmospheric pressure.
 - Gauged and sampled monitoring wells MW-4 through MW-7.
 - Monitoring wells were sampled for the analysis of Gasoline Range Organics (GRO), benzene, toluene, ethylbenzene, xylenes (total) (BTEX), fuel oxygenates including tert

butyl alcohol (TBA), diisopropyl ether (DIPE), tert amyl methyl ether (TAME), ethyl tert butyl ether (ETBE), methyl tert butyl ether (MTBE) and ethanol, and lead scavengers including 1,2-Dichloroethane (1,2-DCA), ethylene dibromide (EDB) according to United States Environmental Protection Agency (USEPA) Method 8260B.

2. A review of the analytical laboratory results, summarized in **Table 1** and **Table 2**, indicates the following:
 - Based on the analytical results, the constituents-of-concern (COCs) include GRO, benzene, ethylbenzene and MTBE.
 - GRO was detected exceeding the San Francisco Bay Regional Water Quality Control Board (RWQCB) Environmental Screening Level (ESL) in monitoring wells MW-4 and MW-7; however, the State's Low Threat Closure Policy (LTCP) does not have groundwater-specific criteria for this constituent.
 - Benzene was detected exceeding the RWQCB ESL in monitoring wells MW-4 and MW-7; however, below the benzene LTCP criteria limit of 3,000 micrograms per liter ($\mu\text{g/L}$).
 - Ethylbenzene was detected exceeding the RWQCB ESL in monitoring well MW-4; however, the State's LTCP does not have groundwater-specific criteria for this constituent.
 - MTBE was detected exceeding the RWQCB ESL in monitoring well MW-6; however, below the State's LTCP criteria of 1,000 $\mu\text{g/L}$.
 - Other than detections of DIPE in monitoring wells MW-4 and MW-6, no other fuel oxygenates or lead scavengers were detected above laboratory reporting limits.
3. Request updates from Alameda County Environmental Health (ACEH) on May 22, June 15, and June 29, regarding the apparent ongoing case closure conflict resolution between the State and ACEH; however, a response to date has not been provided.
4. Compare available data to the State's LTCP Vapor Intrusion and Indoor Air (VI/IA) Exposure Route Criteria.
5. Prepare and submit the Second Quarter 2017 Monitoring and Status Report, dated July 28, 2017.

SECOND QUARTER 2017 DATA DISCUSSION:

The Second Quarter 2017 gradient magnitude and direction is consistent with previous monitoring events. Historical groundwater flow has varied from north to south, but is primarily in an easterly direction. Figures illustrating the potentiometric surface for the Second Quarter 2017 event and a rose diagram representing the historic gradient and magnitude variances are provided as **Figure 3** and **Figure 4**.

GRO concentrations increased in monitoring wells MW-4 and MW-7 during the Second Quarter 2017 monitoring event and continue to be detected above the RWQCB ESLs. GRO concentrations have historically ranged between 600 $\mu\text{g/L}$ to 1,700 $\mu\text{g/L}$ in monitoring well MW-4 and 96 $\mu\text{g/L}$ to 2,200 $\mu\text{g/L}$ in monitoring well MW-7. GRO concentrations during the Second Quarter 2017 event are therefore within range of historical concentrations. Specifically, the GRO concentrations during the Second Quarter 2017 in monitoring well MW-4 and MW-7 are 1,700 $\mu\text{g/L}$ and 410 $\mu\text{g/L}$, respectively.

Benzene concentrations appear to be stable in monitoring well MW-7; however, increased in monitoring well MW-4. Concentrations of benzene have historically ranged between 9.4 $\mu\text{g/L}$ to 130 $\mu\text{g/L}$ in monitoring well

MW-4 and 1.6 ug/L to 59 ug/L in monitoring well MW-7. Benzene concentrations during the Second Quarter 2017 event are generally within range of historical concentrations. Specifically, the benzene concentrations during the Second Quarter 2017 event in monitoring well MW-4 and MW-7 are 200 ug/L and 30 ug/L, respectively. Since 2013, benzene groundwater concentrations have remained below the State's LTCP Groundwater-Specific Criteria.

Based on a review of the Second Quarter 2017 analytical data, it appears that the groundwater plume is generally delineated and stable. The Site appears to meet the Groundwater-Specific Criteria - Scenario 2. Groundwater analytical data map for the Second Quarter 2017 event is provided as **Figure 5**. Isoconcentration maps for GRO and benzene are provided as **Figure 6** and **Figure 7**, respectively. A copy of the field notes for the Second Quarter 2017 groundwater monitoring event are provided as **Attachment 1**. A copy of the laboratory analytical report is provided as **Attachment 2**. Hydrographs for select monitoring which have historically contained concentrations of COCs are presented in **Attachment 3**.

VAPOR INTRUSION TO INDOOR AIR EVALUATION:

Based on Broadbent's Addendum Conceptual Site Model and Closure Request dated March 11, 2016, the Site meets the Low Threat Closure Policy (LTCP) General Criteria, the Groundwater Specific Criteria, Indoor Air, and Direct Contact and Outdoor Air criteria. However, ACEH responded on August 30, 2016 indicating that the State's LTCP Vapor Intrusion to Indoor Air (VI/IA) Criteria had not been met. The ACEH identified two ways to satisfy the State's LTCP Criteria for VI/IA which included the following:

- Dissolved phase benzene concentration in groundwater - demonstrate dissolved phase benzene contamination in groundwater concentration is between 100 µg/L and 1,000 µg/L and is greater than 10-feet below the base of the elevator shaft (i.e. State's LTCP VI/IA – Scenario 3), and/or
- Direct measurement of soil gas concentrations – demonstrate soil gas concentrations at a depth of 5-feet beneath the bottom of the elevator pit meet commercial criteria (i.e. State's LTCP VI/IA – Scenario 4).

In order to make the above-referenced demonstrations, Arcadis referenced data and reports previously submitted to ACEH and determined the following:

- In June 2002, soil samples were collected from AEI-16, in the approximate location of the elevator pit. Soil samples were collected at depths of 10-feet and 19-feet below ground surface (bgs). The soil analytical data, associated with AEI-16, is below the State's LTCP Criteria for Direct Contact and Outdoor Air Exposure Residential Criteria.
- In June 2002, a groundwater sample was collected from AEI-16, in the approximate location of the elevator pit. The groundwater analytical data, associated with AEI-16, is below the State's LTCP VI/IA Criteria - Scenario 3 (i.e. benzene less than or equal to 100 µg/L). Additionally, the groundwater analytical data associated with monitoring well MW-6, located within 20-feet of the elevator, is non-detect and below the laboratory reporting limits since installation of the well in 2013.
- In December 2013, to provide a further evaluation of the VI/IA exposure route, a soil gas assessment was completed. Specifically, three nested soil gas points were installed (SG-1A/SG-1B, SG-2A/SG-2B, and SG-3A/SG-3B). One nested soil gas point, SG-1A(3-3.5-feet bgs)/SG-1B(5-5.5-feet bgs) was completed between MW-4 and the existing onsite building. The laboratory analytical data from SG-1A(3-3.5-feet bgs)/SG-1B(5-5.5-feet bgs) indicates that the concentrations of benzene, ethylbenzene, and naphthalene are below State's LTCP VI/IA Criteria – Scenario 4.

Based on the above-referenced information, further evaluation of the State's LTCP VI/IA Criteria appeared unwarranted; however, it has been suggested that the soil gas assessment was not adequate because it failed to take into consideration the elevator pit. Specifically, ACEH indicates a soil gas sample should be collected 5-feet below the bottom of the elevator shaft (i.e. 10-feet bgs). Since the soil gas assessment did not assess soil gas concentrations at 10-feet bgs, the elevator pit hasn't been fully evaluated.

In order to provide further discussion regarding the elevator pit, Arcadis considered the following technical and physical impediments that ACEH may not have considered regarding their above-referenced request:

- During the most recent groundwater monitoring event, depth-to-groundwater at monitoring well MW-6 was gauged at 9.41-feet bgs. The geometric mean has also been calculated to assess the average depth-to-groundwater at monitoring well MW-6 since 2013. In order to evaluate the range in depth-to-groundwater fluctuation with any confidence, two standard deviations were calculated from the mean. Based on this approach, the average depth-to-groundwater at monitoring well MW-6 is 9.07-feet below top of casing. The range in fluctuation or approximate top and bottom of the capillary fringe range are 8.14-feet to 10-feet btoc. Based on The Interstate Technology & Regulatory Council (ITRC) Vapor Intrusion Pathway: A Practical Guideline, published in January 2007, soil gas samples should not be collected below the top of the capillary fringe; therefore, it is technically impracticable to collect a soil gas sample at a depth of 10-feet bgs as suggested by ACEH.
- The elevator pit is also not habitable or fit for human occupation. The elevator pit is restricted access and is generally considered confined space entry according to Occupational Safety and Health Administration (OSHA). Because the elevator pit is not meant for human occupation and because the elevator shaft is an exterior feature that is apparently connected to the existing 3-story building by exterior causeways; the VI/IA exposure route in relation to the elevator pit is considered incomplete.

Based on the above-referenced evaluations, an additional soil gas sample cannot be completed as prescribed by ACEH due to technical impracticability; however, soil and groundwater analytical data from the location of the elevator pit demonstrates an additional assessment is unwarranted. Because the elevator pit is considered restricted access and elevator shaft is an exterior feature, the VI/IA pathway is incomplete. Since soil gas samples were collected in 2013, in general accordance with the State's LTCP – Scenario 4, and data associated with that assessment suggests compliance with the Residential Criteria, it is suggested that the site meets the criteria of Scenario 4 and that additional evaluation of the VI/IA pathway is unwarranted.

CONCLUSION:

On March 11, 2016, Broadbent submitted the Addendum Conceptual Site Model and Closure Request. As indicated in the report, the site meets all the criteria for case closure pursuant to the State's LTCP. Since March 2016, semi-annual groundwater monitoring has continued and a case closure response has not been provided; therefore, it is requested that semi-annual groundwater monitoring and sampling be suspended at this time. It is also requested that pursuant to Broadbent's request for closure in 2016 and the data presented above, that this Site be considered for closure.

REFERENCES

Detterman, Karel (Alameda County Environmental Health). "Re: Fuel Leak Case R0307 – Global ID T06019734265 – ARCO #0402/Parking Lot, 1450 Fruitvale Avenue, Oakland, CA 94601." Message to Charles Carmel. August 30, 2016. Email.

Broadbent & Associates, Inc. 2016. *Addendum Conceptual Site Model and Case Closure Request, Former ARCO Station #402, 1450 Fruitvale Avenue, Oakland, California, ACEH Case #RO0000307*. March 11.

The Interstate Technology & Regulatory Council, 2007. *Vapor Intrusion Pathway: A Practical Guideline*. January.

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

ENCLOSURES:

Tables

Table 1 – Current Groundwater Monitoring and Analytical Data – GRO/BTEX

Table 2 – Current Analytical Data – Oxygenates and Other Analytes

Table 3 – Historical Groundwater Monitoring and Analytical Data

Figures

Figure 1 – Site Location Map

Figure 2 – Site Plan

Figure 3 – Groundwater Elevation Contour Map – May 12, 2017

Figure 4 – Groundwater Flow Direction Rose Diagram

Figure 5 – Groundwater Analysis Concentration Map – May 12, 2017

Figure 6 – GRO Concentration Map – May 12, 2017

Figure 7 – Benzene Concentration Map – May 12, 2017

Attachments

Attachment 1 – Groundwater Sampling Data Package

Attachment 2 – Laboratory Report

Attachment 3 – Hydrographs

TABLES



Table 1. Current Groundwater Monitoring and Analytical Data – GRO/BTEX

Former ARCO Service Station No. 0402
 1450 Fruitvale Avenue,
 Oakland, California

Well ID	Date	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	DO (mg/L)	Notes
MW-4	5/12/2017	48.18	8.18	0.00	40.00	1,700	200	2.0	130	9.9	0.37	--
MW-5	5/12/2017	47.62	7.75	0.00	39.87	<50	<0.50	<0.50	<0.50	<1.0	0.09	--
MW-6	5/12/2017	48.89	9.41	0.00	39.48	<50	<0.50	<0.50	<0.50	<1.0	0.14	--
MW-7	5/12/2017	48.28	9.06	0.00	39.22	410	30	3.2	27	9.7	0.12	--
SF-RWQCB ESLs¹						220	1.0	40	30	20	--	--

Notes:

TOC = top of casing measured
 ft = feet
 ft msl = feet above mean sea level
 DTW = depth to water
 LNAPL = light non-aqueous phase liquid
 GW Elev = groundwater elevation
 GRO = gasoline range organics
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 DO = dissolved oxygen

BOLD = concentration exceeds SF-RWQCB ESLs
 SF-RWQCB ESLs = San Francisco Regional Water Quality Control Board Environmental Screening Levels - Direct Exposure Human Health Risk levels - MCL Priority
 -- = not analyzed/applicable/measured/available
 < = not detected at or above specified laboratory reporting limit
 µg/L = micrograms per liter
 mg/L = milligrams per liter

Table 2. Current Analytical Data - Oxygenates and Other Analytes

Former ARCO Service Station No. 0402

1450 Fruitvale Avenue,

Oakland, California

Well ID	Date	MTBE (µg/L)	TBA (µg/L)	1,2-DCA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	EDB (µg/L)	TAME (µg/L)	Ethanol (µg/L)	Notes
MW-4	5/12/2017	<0.50	<20	<0.50	3.2	<0.50	<0.50	<0.50	<500	--
MW-5	5/12/2017	<0.50	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<500	--
MW-6	5/12/2017	14	<20	<0.50	1.4	<0.50	<0.50	<0.50	<500	--
MW-7	5/12/2017	<0.50	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<500	--
SFRWQCB ESLs¹		5.0	12	0.50	--	--	0.05	--	--	--

Notes:

MTBE = methyl tert-butyl ether

TBA = tert-butyl alcohol

1,2-DCA = 1,2-dichloroethane

DIPE = di-isopropyl ether

ETBE = ethyl tert-butyl ether

EDB = 1,2-dibromoethane

TAME= tert-Amyl methyl ether

BOLD = concentration exceeds SF-RWQCB ESLs

SFRWQCB ESLs = San Francisco Bay Regional Water Quality Control Board Environmental Screening Levels - Direct Exposure Human Health Risk levels - MCL Priority

-- = not analyzed/applicable/measured/available

< = not detected at or above specified laboratory reporting limit

µg/L = micrograms per liter

Table 3. Historical Groundwater Monitoring and Analytical Data

Former ARCO Service Station No. 0402
 1450 Fruitvale Avenue,
 Oakland, California

Well ID	Date	TOC (ft msl)	DTW (ft)	Measured LNAPL Thickness (ft)	GW Elev (ft msl)	GRO (µg/L)	B (µg/L)	T (µg/L)	E (µg/L)	X (µg/L)	MTBE (µg/L)	TBA (µg/L)	1,2-DCA (µg/L)	DIPE (µg/L)	ETBE (µg/L)	EDB (µg/L)	TAME (µg/L)	Ethanol (µg/L)	DO (mg/L)	Notes
MW-4	12/2/2013	48.18	14.06	0.00	34.12	810	38	0.71	57	15	<0.50	<10	--	1.7	<0.50	--	<0.50	--	1.60	--
	3/18/2014	48.18	10.72	0.00	37.46	600	28	<0.50	20	4.8	<0.50	<10	<0.50	1.8	<0.50	<0.50	<0.50	<150	1.64	--
	6/26/2014	48.18	13.54	0.00	34.64	1,300	51	0.76	32	1.7	<0.50	<10	<0.50	1.9	<0.50	<0.50	<0.50	<150	1.58	--
	9/17/2014	48.18	15.37	0.00	32.81	1,100	41	<0.50	6.6	<1.0	<0.50	<10	<0.50	2.3	<0.50	<0.50	<0.50	<150	0.57	--
	3/12/2015	48.18	10.63	0.00	37.55	1,100	85	0.69	2.5	1.6	<0.50	<10	<0.50	2.1	<0.50	<0.50	<0.50	<150	1.78	--
	6/8/2016	48.18	11.75	0.00	36.43	1,700	130	1.5	12	3.3	<0.50	<10	<0.50	2.3	<0.50	<0.50	<0.50	<150	1.36	--
	12/23/2016	48.18	6.72	0.00	41.46	230	9.4	<0.50	0.78	1.1	<0.50	<20	<0.50	0.82	<0.50	<0.50	<0.50	<500	1.78	--
5/12/2017	48.18	8.18	0.00	40.00	1,700	200	2.0	130	9.9	<0.50	<20	<0.50	3.2	<0.50	<0.50	<0.50	<500	0.37	--	
MW-5	12/2/2013	47.62	13.67	0.00	33.95	<50	<0.50	<0.50	<0.50	<1.0	0.69	<10	--	<0.50	<0.50	--	<0.50	--	4.70	--
	3/18/2014	47.62	10.91	0.00	36.71	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	3.03	--
	6/26/2014	47.62	12.52	0.00	35.10	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	0.76	--
	9/17/2014	47.62	14.44	0.00	33.18	58	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	0.66	--
	3/12/2015	47.62	10.20	0.00	37.42	<50	<0.50	<0.50	<0.50	<1.0	0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	2.00	--
	6/8/2016	47.62	10.83	0.00	36.79	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	0.56	--
	12/23/2016	47.62	6.18	0.00	41.44	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<500	0.68	--
5/12/2017	47.62	7.75	0.00	39.87	<50	<0.50	<0.50	<0.50	<1.0	<0.50	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<500	0.09	--	
MW-6	12/2/2013	48.89	15.07	0.00	33.82	<50	<0.50	<0.50	<0.50	<1.0	10	<10	--	<0.50	<0.50	--	<0.50	--	1.25	--
	3/18/2014	48.89	11.72	0.00	37.17	<50	<0.50	<0.50	<0.50	<1.0	14	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	1.94	--
	6/26/2014	48.89	14.20	0.00	34.69	<50	<0.50	<0.50	<0.50	<1.0	13	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	0.47	--
	9/17/2014	48.89	16.10	0.00	32.79	<50	<0.50	<0.50	<0.50	<1.0	7.2	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	0.71	--
	3/12/2015	48.89	11.86	0.00	37.03	<50	<0.50	<0.50	<0.50	<1.0	5.0	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	1.66	--
	6/8/2016	48.89	12.94	0.00	35.95	<50	<0.50	<0.50	<0.50	<1.0	12	<10	<0.50	1.2	<0.50	<0.50	<0.50	<150	0.63	--
	12/23/2016	48.89	8.75	0.00	40.14	<50	<0.50	<0.50	<0.50	<1.0	11	<20	<0.50	0.82	<0.50	<0.50	<0.50	<500	0.60	--
5/12/2017	48.89	9.41	0.00	39.48	<50	<0.50	<0.50	<0.50	<1.0	14	<20	<0.50	1.4	<0.50	<0.50	<0.50	<500	0.14	--	
MW-7	12/2/2013	48.28	15.35	0.00	32.93	96	<0.50	<0.50	1.5	<1.0	<0.50	<10	--	<0.50	<0.50	--	<0.50	--	5.35	--
	3/18/2014	48.28	11.25	0.00	37.03	190	2.3	<0.50	2.2	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	2.63	--
	6/26/2014	48.28	13.44	0.00	34.84	530	5.0	0.63	1.9	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	1.14	--
	9/17/2014	48.28	15.75	0.00	32.53	360	2.5	<0.50	<0.50	<1.0	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	0.63	--
	3/12/2015	48.28	11.33	0.00	36.95	2,200	59	9.8	87	54	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	1.62	--
	6/8/2016	48.28	11.51	0.00	36.77	390	6.6	1.2	11	5.5	<0.50	<10	<0.50	<0.50	<0.50	<0.50	<0.50	<150	1.59	--
	12/23/2016	48.28	9.46	0.00	38.82	390	1.6	<0.50	1.2	<1.0	<0.50	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<500	0.35	--
5/12/2017	48.28	9.06	0.00	39.22	410	30	3.2	27	9.7	<0.50	<20	<0.50	<0.50	<0.50	<0.50	<0.50	<500	0.12	--	

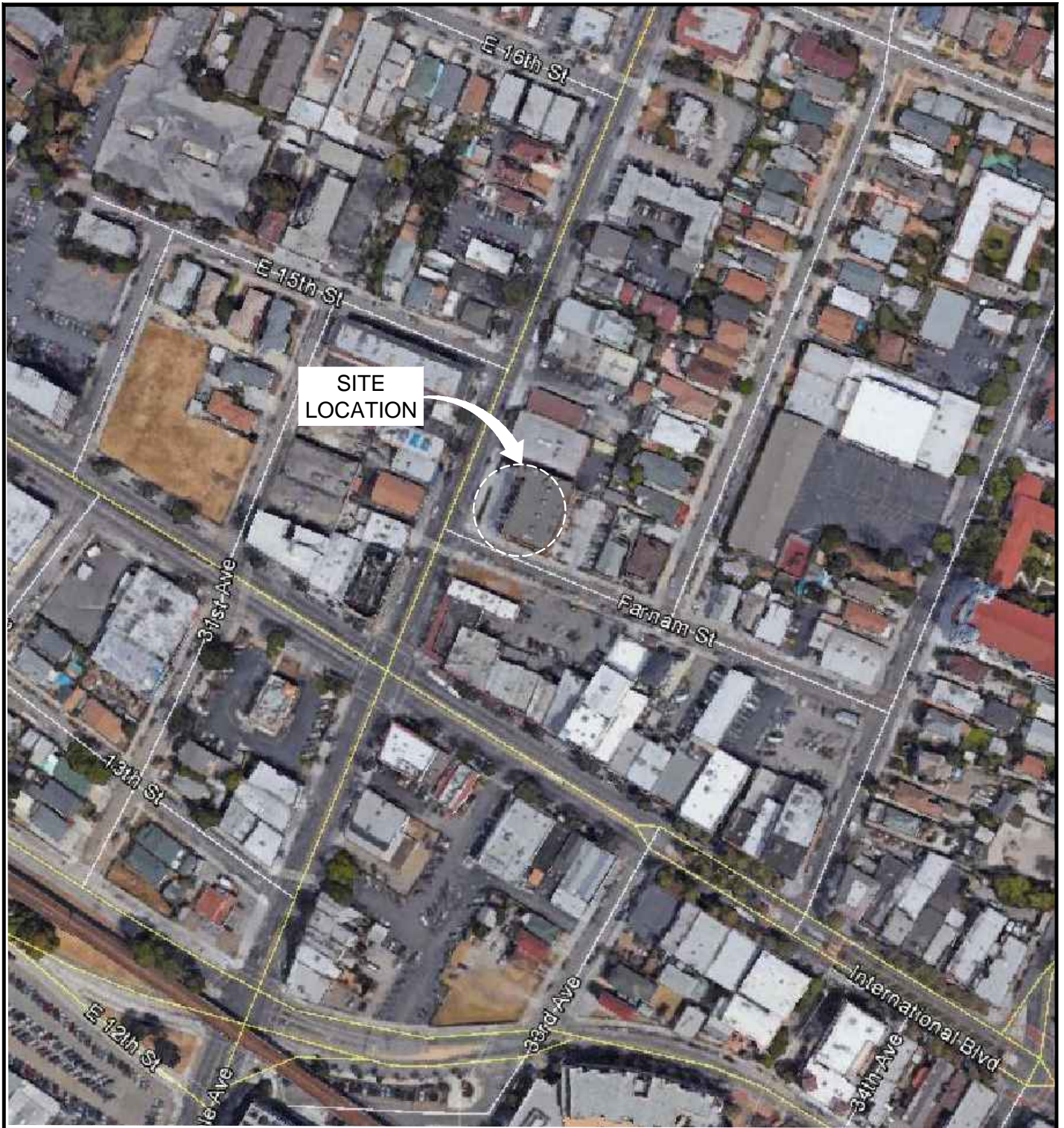
Notes:

GRO = gasoline range organics
 B = benzene
 T = toluene
 E = ethylbenzene
 X = total xylenes
 MTBE = methyl tert-butyl ether
 TBA = tert-butyl alcohol
 1,2-DCA = 1,2-dichloroethane
 DIPE = di-isopropyl ether
 ETBE = ethyl tert-butyl ether
 EDB = 1,2-dibromoethane
 TAME= tert-Amyl methyl ether
 DO = dissolved oxygen

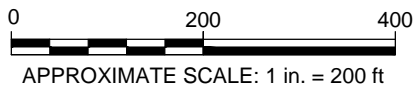
BOLD = concentration exceeds SF-RWQCB ESLs
 SF-RWQCB ESLs = San Francisco Regional Water Quality Control Board Environmental Screening Levels - Direct Exposure Human Health Risk levels - MCL Priority
 -- = not analyzed/applicable/measured/available
 < = not detected at or above specified laboratory reporting limit
 µg/L = micrograms per liter
 mg/L = milligrams per liter
 TOC = top of casing measured
 DTW = depth to water
 LNAPL = light non-aqueous phase liquid
 GW Elev = groundwater elevation
 ft = feet
 ft msl = feet above mean sea level

FIGURES





MAP SOURCE: Google Earth™ 2016, 37°46'41.57"N 122°13'30.57"W



FORMER ARCO STATION NO. 402
1450 FRUITVALE AVENUE
OAKLAND, CALIFORNIA

SITE LOCATION MAP

 ARCADIS <small>Design & Consultancy for natural and built assets</small>	FIGURE
	1

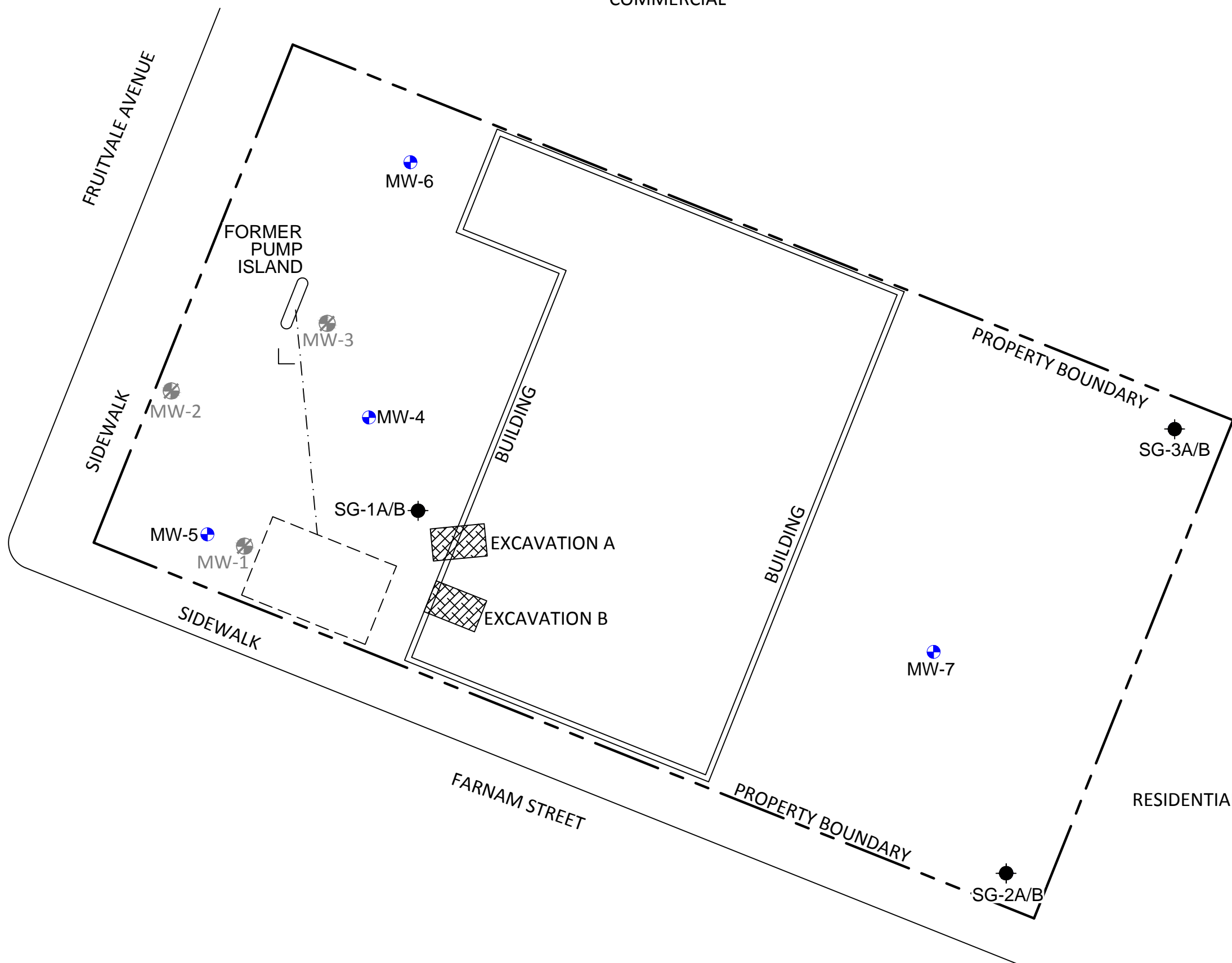
CITY:MUMBAI D:\GROUP-ENV\CAD_DB\SDSOUSA_LDE_PIC_PMI.TM:ES:
C:\Users\slc077\Desktop\IMPORTANT PROJECT\DATA\2017\BP\CA_0402\Combined CAD_CA_0402_02-21-2017\CAD files\FIG 2.BP_CA_0402 SITE PLAN.dwg LAYOUT: 8.5X11
SAVED: 6/12/2017 5:28 PM ACADVER: 20.05 (LMS TECH) PAGES: 10 PLOTSTYLETABLE: PLOTTED: 6/12/2017 5:28 PM BY: STEPHEN DSOUZA

COMMERCIAL



LEGEND:

- MONITORING WELL LOCATION
- SOIL VAPOUR PROBE WELL
- DESTROYED MONITORING WELL
- FORMER PRODUCT LINES
- FORMER UST LOCATION
- EXCAVATION

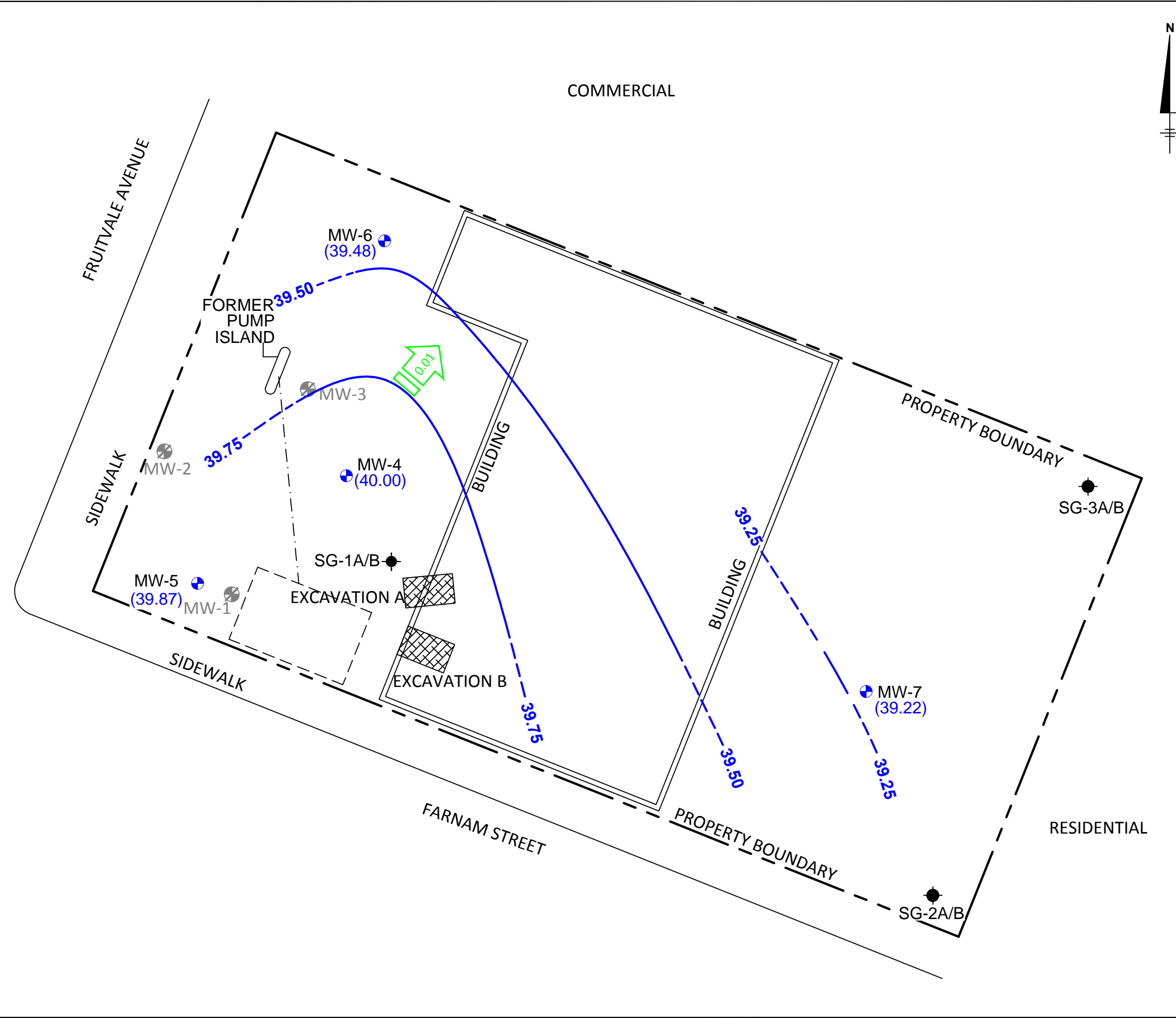


NOTE:
SITE MAP ADAPTED FROM BROADBENT &
ASSOCIATES, INC. FIGURES, SITE DIMENSIONS AND
FACILITY LOCATIONS NOT VERIFIED.



FORMER ARCO STATION NO. 402 1450 FRUITVALE AVENUE, OAKLAND, CALIFORNIA	
SITE PLAN	
	FIGURE 2

CITY\MUMBAI DIV\GROUP-ENVICAD_DBS\SOUSA, L.D.E. - PIC. PM: TM: ES:
 C:\Users\sl0077\Documents\IMPORTANT\PROJECT DATA\2017\BPIC\CA_0402\Combined CAD_CA_0402_02-21-2017\CAD files\FIG 3 BP_CA_0402_GROUND WATER ELEVATION CONTOUR.dwg LAYOUT: 8.BX11
 PLOTTED: 6/12/2017 5:48 PM BY: STEPHEN SOUZA



- LEGEND:**
- MONITORING WELL LOCATION
 - SOIL VAPOUR PROBE WELL
 - DESTROYED MONITORING WELL
 - FORMER PRODUCT LINES
 - FORMER UST LOCATION
 - EXCAVATION
 - GROUNDWATER ELEVATION (FEET MSL)
 - GROUNDWATER ELEVATION CONTOURLINE (FEET MSL; DASHED WHERE INFERRED)
 - GROUNDWATER FLOW DIRECTION GRADIENT (FT/FT)

- NOTES:**
- 1) SITE MAP ADAPTED FROM BROADBENT & ASSOCIATES, INC. FIGURES, SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.
 - 2) ALL MONITORING WELLS WERE GAUGED ON MAY 12, 2017.



FORMER ARCO STATION NO. 402
 1450 FRUITVALE AVENUE,
 OAKLAND, CALIFORNIA

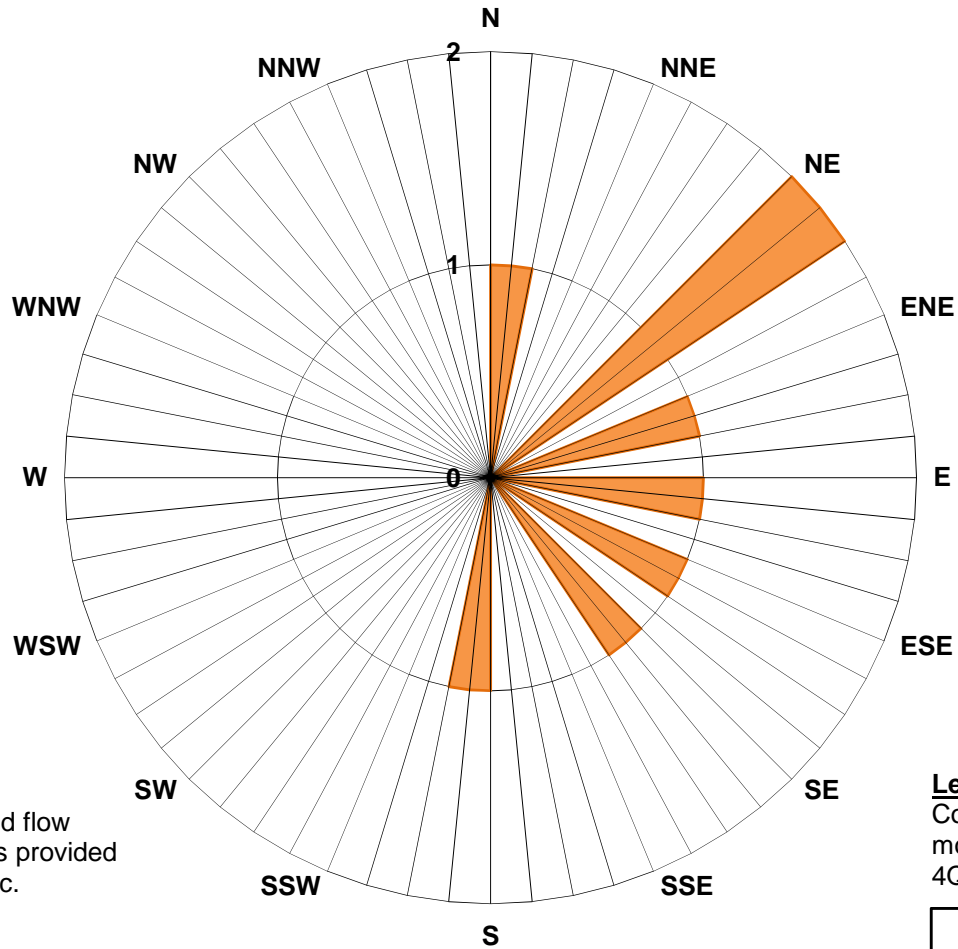
**GROUNDWATER ELEVATION CONTOUR MAP
 MAY 12, 2017**

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 for natural and built assets

FIGURE
3

Figure 4
GROUNDWATER FLOW DIRECTION ROSE DIAGRAM

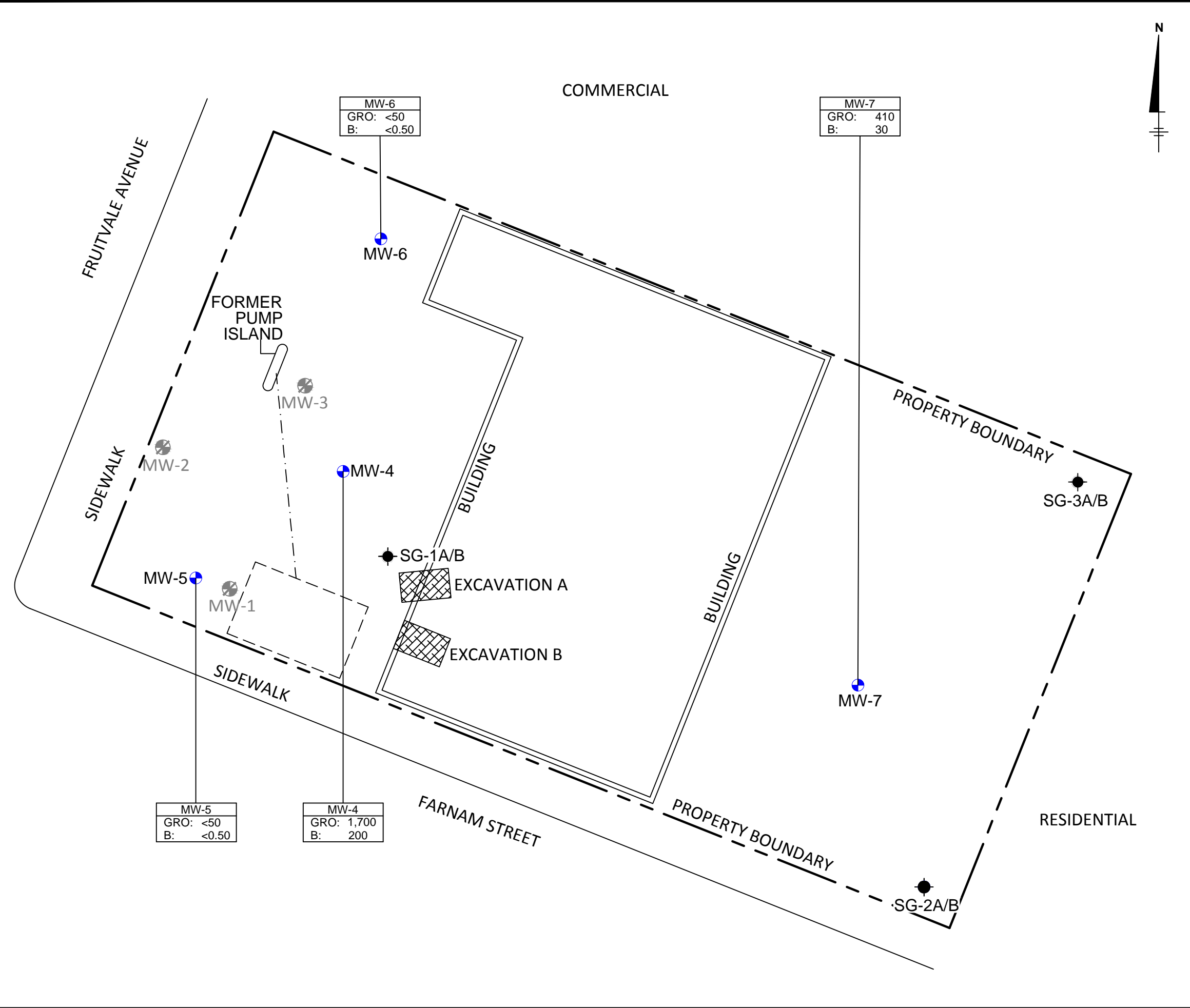
Former ARCO Service Station No. 0402
 1450 Fruitvale Avenue,
 Oakland, California



Note
 Historic groundwater gradient and flow direction data, prior to 4Q16, was provided by Broadbent and Associates, Inc.

Legend
 Concentric circles represent 8 monitoring events beginning 4Q13 through 2Q17.
 ■ Groundwater Flow Direction

CITY:MUNIBAI DIV\GROUP-ENVICAD_DBS\DSOUSA_LDE_PIC_PN.TM: ES:
 C:\Users\sf0877\Desktop\IMPORTANT PROJECT DATA\2017BP\CA\0402\combined CAD_CA_0402_02-21-2017\CAD files\FIG 5 BP_CA_0402_ANALYTICALCONCENTRATION MAP.dwg LAYOUT: 8.5X11
 SAVED: 6/14/2017 3:06 PM ACADVER: 20.05 (LMS TECH) PAGES: 10 PLOTSTYLETABLE:
 PLOTTED: 6/14/2017 3:06 PM BY: STEPHEN DSOUSA



LEGEND:

- MONITORING WELL LOCATION
- SOIL VAPOUR PROBE WELL
- DESTROYED MONITORING WELL
- - - - FORMER PRODUCT LINES
- - - - FORMER UST LOCATION
- ▨ EXCAVATION

MW-4	SAMPLE LOCATION ID CONCENTRATION (µg/L) GRO: GASOLINE RANGE ORGANICS B: BENZENE
GRO: 1,700	
B: 200	

< LESS THAN LABORATORY REPORTING LIMIT

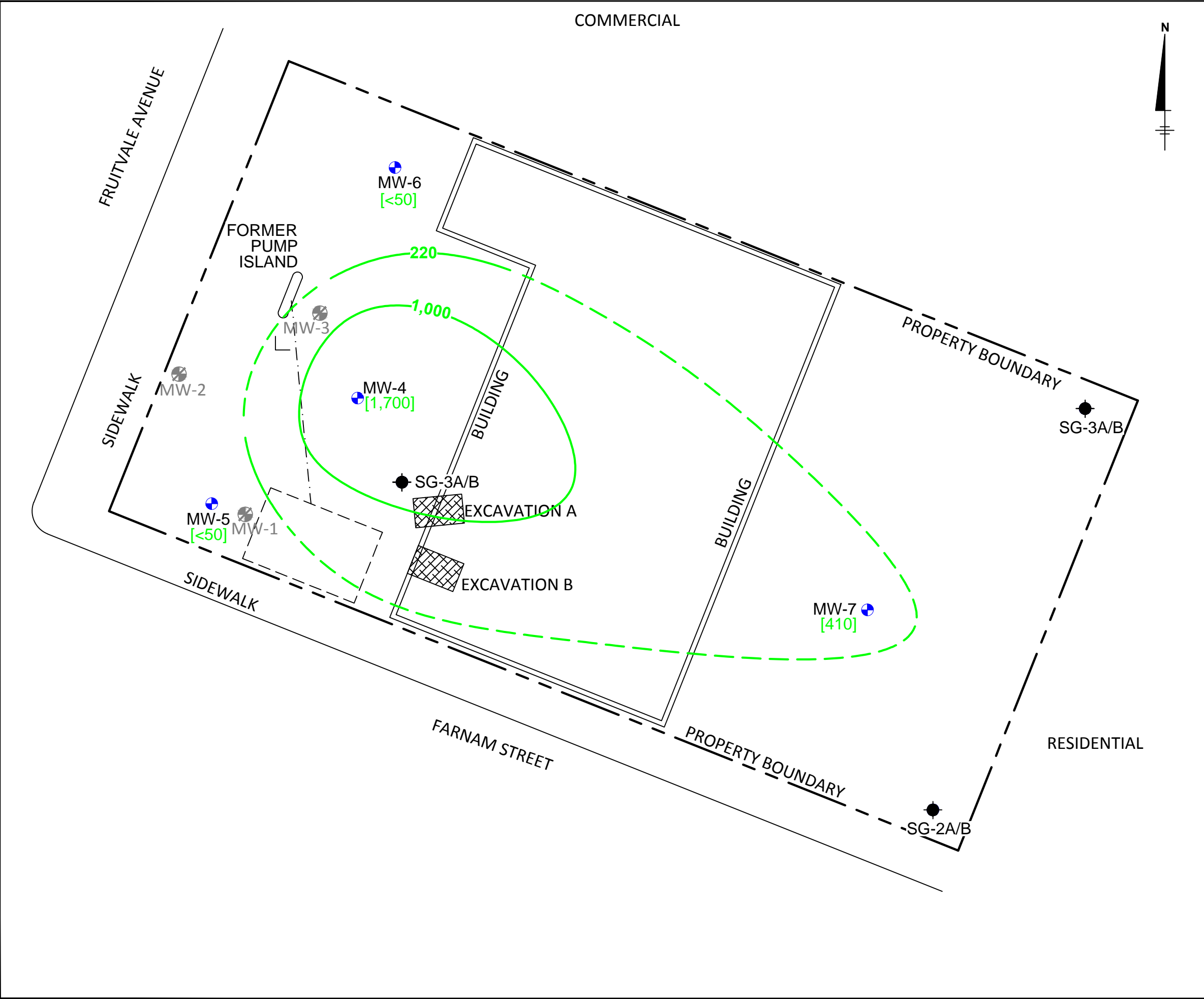
NOTES:

- 1) SITE MAP ADAPTED FROM BROADBENT & ASSOCIATES, INC. FIGURES, SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.
- 2) ALL MONITORING WELLS WERE GAUGED AND SAMPLED ON MAY 12, 2017.



FORMER ARCO STATION NO. 402 1450 FRUITVALE AVENUE, OAKLAND, CALIFORNIA	
GROUNDWATER ANALYSIS CONCENTRATION MAP MAY 12, 2017	
	FIGURE 5

CITY\MURBAI DIV\GROUP ENVI\CAD - DBSD\SOUZA, L.D.E - PIC. P.M. TM. ES.
 C:\Users\l0977\Documents\WORK\PROJECT DATA\3077\BP\CA\0402\Combined\CAD_CA_0402_02-21-2017\CAD files\FIG 6 BP_CA_0402 GRO CONCENTRATION.dwg LAYOUT: 8.5X11 SAVED: 6/12/2017 5:12 PM ACADVER: 20.05 (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ----
 PLOTTED: 6/12/2017 5:13 PM BY: STEPHEN DSOUZA



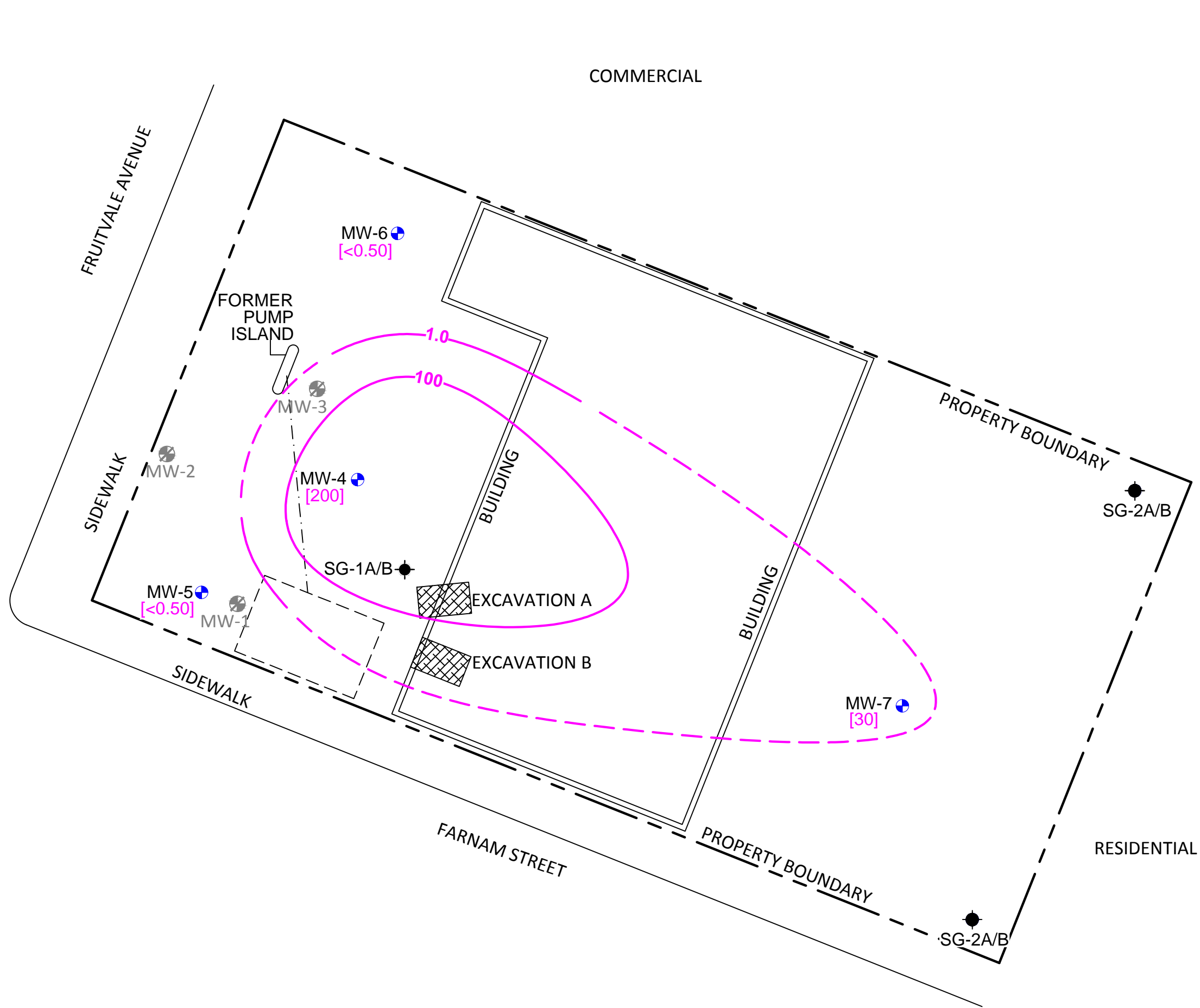
- LEGEND:**
- MONITORING WELL LOCATION
 - SOIL VAPOUR PROBE WELL
 - DESTROYED MONITORING WELL
 - - - - FORMER PRODUCT LINES
 - - - - FORMER UST LOCATION
 - ▨ EXCAVATION
 - [1,700] GRO CONCENTRATION (µg/L)
 - 220 GRO CONCENTRATION CONTOUR (µg/L; DASHED WHERE INFERRED)

- NOTE:**
- 1) SITE MAP ADAPTED FROM BROADBENT & ASSOCIATES, INC. FIGURES, SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.
 - 2) SAN FRANCISCO REGIONAL WATER QUALITY CONTROL BOARD ENVIRONMENTAL SCREENING LEVEL (ESL) - DIRECT EXPOSURE HUMAN HEALTH RISK LEVEL, MCL PRIORITY=220 µg/L.
 - 3) ALL MONITORING WELLS WERE GAUGED AND SAMPLED ON MAY 12, 2017.



FORMER ARCO STATION NO. 402 1450 FRUITVALE AVENUE, OAKLAND, CALIFORNIA	
GRO CONCENTRATION MAP MAY 12, 2017	
Design & Consultancy for natural and built assets	FIGURE 6

CITY\MURBAI DIV\GROUP ENVICAD - DBSDSOUSA - L.D.E - PIC - PM, TM, ES:
 C:\Users\stephen.dsouza\Documents\PROJECT DATA\3077BP\CA_0402\Combined CAD_CA_0402_02-21-2017\CAD files\FIG 7 BP_CA_0402_BENZENE CONCENTRATION.dwg LAYOUT: 9.5X11 SAVED: 6/12/2017 5:04 PM ACADVER: 20.05 (LMS TECH) PAGESETUP: ---- PLOTSTYLETABLE: ----
 PLOTTED: 6/12/2017 5:04 PM BY: STEPHEN.DSOUSA



- LEGEND:**
- MONITORING WELL LOCATION
 - SOIL VAPOUR PROBE WELL
 - DESTROYED MONITORING WELL
 - FORMER PRODUCT LINES
 - FORMER UST LOCATION
 - EXCAVATION
 - [200] BENZENE CONCENTRATION (µg/L)
 - 100 - BENZENE CONCENTRATION CONTOUR (µg/L; DASHED WHERE INFERRED)

- NOTES:**
- 1) SITE MAP ADAPTED FROM BROADBENT & ASSOCIATES, INC. FIGURES, SITE DIMENSIONS AND FACILITY LOCATIONS NOT VERIFIED.
 - 2) SAN FRANCISCO REGIONAL WATER QUALITY CONTROL BOARD ENVIRONMENTAL SCREENING LEVEL (ESL) - DIRECT EXPOSURE HUMAN HEALTH RISK LEVEL, MCL PRIORITY=1.0 µg/L.
 - 3) ALL MONITORING WELLS WERE GAUGED AND SAMPLED ON MAY 12, 2017.



FORMER ARCO STATION NO. 402
 1450 FRUITVALE AVENUE,
 OAKLAND, CALIFORNIA

**BENZENE CONCENTRATION MAP
 MAY 12, 2017**

ARCADIS Design & Consultancy
 for natural and built assets

FIGURE
7

ATTACHMENT 1

Groundwater Sampling Data Package



GROUNDWATER SAMPLING LOG

Project No. GPI6BPNA-CA02-4000 Well ID MW-4 Date 5/12/17

Project Name/Location CA-402, 1450 Fruitvale Ave, Oakland, CA. Weather Sunny /windy

Measuring Pt. Description _____ Screen Setting (ft-bmp) _____ Casing Diameter (in.) 2" Well Material X PVC _____ SS

Static Water Level (ft-bmp) 8.18 ft Total Depth (ft-bmp) 27.84 Water Column/ Gallons in Well 19.66 ft / 3.14 gal

MP Elevation _____ Pump Intake (ft-bmp) _____ Purge Method: Peri pump Sample Method Low flow

Pump On/Off _____ Volumes Purged ~1 Centrifugal _____ Submersible _____ Other _____

Sample Time: Label 0918 Replicate/ Code No. _____ Start 0900 End 0925 Sampled by ATB

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pH	Cond. (mMhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C) (°F)	Redox (mV)	Appearance	
											Color	Odor
0900	started	300	8.70		6.47	1155	5.19	0.41	18.0	-35.3	clear	strong
0903	3	250	9.30		6.59	1156	4.09	0.37	18.2	-51.3	clear	
0906	3	200	9.25		6.60	1158	3.38	0.32	17.6	-53.0		
0910	4	100	9.15		6.60	1154	2.37	0.26	17.7	-54.4		
0914	4	100	9.12		6.59	1153	2.14	0.36	17.9	-57.1		
0918	4	100	9.10	~1	6.59	1155	2.08	0.37	18.0	-56.2	↓	
<u>ATB</u>												

Stabilization Parameters (3 readings): ±0.1 3% 10% 10% 3% ±10 mv

Constituents Sampled	Container	Number	Preservative
Sample "MW-4" collected @ 0918 Groundwater	vial	3	HCl
*Well already has tubing for purging water /sampling.			

Well Casing Volumes

Gallons/Foot	1" = 0.04	1.5" = 0.09	2.5" = 0.26	3.5" = 0.50	6" = 1.47
	1.25" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65	

Well Information

Well Location: in front of building by La Clinica Well Locked at Arrival: Yes / No

Condition of Well: Good Well Locked at Departure: Yes / No

Well Completion: Flush Mount / Stick Up Key Number To Well: _____

GROUNDWATER SAMPLING LOG

Project No. GPI6BPNA-CA02-4000 Well ID MW-7 Date 5/12/17
 Project Name/Location CA-402, 1450 Fruitvale Ave, Oakland, CA Weather Sunny/windy
 Measuring Pt. Description _____ Screen Setting (ft-bmp) 22'-32' Casing Diameter (in.) 2" Well Material PVC SS
 Static Water Level (ft-bmp) 9.06 Total Depth (ft-bmp) 31.85 Water Column/ Gallons in Well 22.79' / 3.64 gal
 MP Elevation _____ Pump Intake (ft-bmp) _____ Purge Method: Peri pump Sample Method Low flow
 Pump On/Off _____ Volumes Purged ~1 1/2 gal Centrifugal _____ Submersible _____ Other _____
 Sample Time: Label 1206 Replicate/ Code No. _____ Sampled by AMB
 Start 1146
 End 1210

Time	Minutes Elapsed	Rate (gpm) (mL/min)	Depth to Water (ft)	Gallons Purged	pH	Cond. (mMhos) (mS/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/L)	Temp. (°C) (°F)	Redox (mV)	Appearance	
											Color	Odor
1146	start	250	9.68		6.70	1352	6.98	0.41	21.9	18.4	clear	some
1150	4	150	9.94		6.71	1351	4.96	0.25	21.3	18.2	clear	some
1154	4	150	10.05		6.70	1342	11.3	0.16	21.0	4.7	clear	some
1158	4	150	10.17		6.68	1331	6.02	0.13	21.1	-6.4	clear	↓
1202	4	150	10.25		6.64	1270	4.10	0.12	21.1	-10.3	clear	↓
1206	4	150	10.34	~1 1/2	6.61	1243	2.96	0.12	21.0	-7.8	clear	↓
AMB												

Stabilization Parameters (3 readings): ±0.1 3% 10% 10% 3% ±10 mv

Constituents Sampled	Container	Number	Preservative
Sample collected MW-7 @ 1206 Groundwater	vial	3	HCl

*Well already has tubing for purging water/sampling.

Well Casing Volumes

Gallons/Foot	1" = 0.04	1.5" = 0.09	2.5" = 0.26	3.5" = 0.50	6" = 1.47
	1.25" = 0.06	2" = 0.16	3" = 0.37	4" = 0.65	

Well Information

Well Location: <u>Behind building, on rear parking lot.</u>	Well Locked at Arrival: <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No
Condition of Well: <u>Good condition</u>	Well Locked at Departure: <input checked="" type="checkbox"/> Yes / <input type="checkbox"/> No
Well Completion: <input checked="" type="checkbox"/> Flush Mount / <input type="checkbox"/> Stick Up	Key Number To Well: _____

ATTACHMENT 2

Laboratory Report



TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

ANALYTICAL REPORT

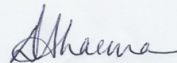
TestAmerica Laboratories, Inc.
TestAmerica Pleasanton
1220 Quarry Lane
Pleasanton, CA 94566
Tel: (925)484-1919

TestAmerica Job ID: 720-79483-1

Client Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

For:
ARCADIS U.S., Inc
2000 Powell Street 7th Floor
Emeryville, California 94608

Attn: Carl Edwards



Authorized for release by:
5/22/2017 5:11:36 PM

Dimple Sharma, Senior Project Manager
(925)484-1919
dimple.sharma@testamericainc.com

LINKS

Review your project
results through
TotalAccess

Have a Question?



Visit us at:
www.testamericainc.com

This report has been electronically signed and authorized by the signatory. Electronic signature is intended to be the legally binding equivalent of a traditionally handwritten signature.

Results relate only to the items tested and the sample(s) as received by the laboratory.

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15



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Detection Summary	5
Client Sample Results	6
Surrogate Summary	10
QC Sample Results	11
QC Association Summary	16
Lab Chronicle	17
Certification Summary	18
Method Summary	19
Sample Summary	20
Chain of Custody	21
Receipt Checklists	23

Definitions/Glossary

Client: ARCADIS U.S., Inc
Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Glossary

Abbreviation	These commonly used abbreviations may or may not be present in this report.
α	Listed under the "D" column to designate that the result is reported on a dry weight basis
%R	Percent Recovery
CFL	Contains Free Liquid
CNF	Contains No Free Liquid
DER	Duplicate Error Ratio (normalized absolute difference)
Dil Fac	Dilution Factor
DL	Detection Limit (DoD/DOE)
DL, RA, RE, IN	Indicates a Dilution, Re-analysis, Re-extraction, or additional Initial metals/anion analysis of the sample
DLC	Decision Level Concentration (Radiochemistry)
EDL	Estimated Detection Limit (Dioxin)
LOD	Limit of Detection (DoD/DOE)
LOQ	Limit of Quantitation (DoD/DOE)
MDA	Minimum Detectable Activity (Radiochemistry)
MDC	Minimum Detectable Concentration (Radiochemistry)
MDL	Method Detection Limit
ML	Minimum Level (Dioxin)
NC	Not Calculated
ND	Not Detected at the reporting limit (or MDL or EDL if shown)
PQL	Practical Quantitation Limit
QC	Quality Control
RER	Relative Error Ratio (Radiochemistry)
RL	Reporting Limit or Requested Limit (Radiochemistry)
RPD	Relative Percent Difference, a measure of the relative difference between two points
TEF	Toxicity Equivalent Factor (Dioxin)
TEQ	Toxicity Equivalent Quotient (Dioxin)

Case Narrative

Client: ARCADIS U.S., Inc
Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Job ID: 720-79483-1

Laboratory: TestAmerica Pleasanton

Narrative

**Job Narrative
720-79483-1**

Comments

No additional comments.

Receipt

The samples were received on 5/13/2017 11:47 AM; the samples arrived in good condition, properly preserved and, where required, on ice. The temperature of the cooler at receipt was 1.3° C.

GC/MS VOA

Method 8260B: The continuing calibration verification (CCV) associated with batch 720-223332 recovered above the upper control limit for TAME. The samples associated with this CCV were non-detects for the affected analytes; therefore, the data have been reported. The following samples are impacted: MW-4 (720-79483-1), MW-6 (720-79483-2), MW-5 (720-79483-3) and MW-7 (720-79483-4).

No additional analytical or quality issues were noted, other than those described above or in the Definitions/Glossary page.



Detection Summary

Client: ARCADIS U.S., Inc
Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Client Sample ID: MW-4

Lab Sample ID: 720-79483-1

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	200		2.5		ug/L	5		8260B	Total/NA
Ethylbenzene	130		2.5		ug/L	5		8260B	Total/NA
Toluene	2.0		0.50		ug/L	1		8260B	Total/NA
Xylenes, Total	9.9		1.0		ug/L	1		8260B	Total/NA
DIPE	3.2		0.50		ug/L	1		8260B	Total/NA
Gasoline Range Organics (GRO) -C6-C12	1700		50		ug/L	1		8260B	Total/NA

Client Sample ID: MW-6

Lab Sample ID: 720-79483-2

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
MTBE	14		0.50		ug/L	1		8260B	Total/NA
DIPE	1.4		0.50		ug/L	1		8260B	Total/NA

Client Sample ID: MW-5

Lab Sample ID: 720-79483-3

No Detections.

Client Sample ID: MW-7

Lab Sample ID: 720-79483-4

Analyte	Result	Qualifier	RL	MDL	Unit	Dil Fac	D	Method	Prep Type
Benzene	30		0.50		ug/L	1		8260B	Total/NA
Ethylbenzene	27		0.50		ug/L	1		8260B	Total/NA
Toluene	3.2		0.50		ug/L	1		8260B	Total/NA
Xylenes, Total	9.7		1.0		ug/L	1		8260B	Total/NA
Gasoline Range Organics (GRO) -C6-C12	410		50		ug/L	1		8260B	Total/NA

This Detection Summary does not include radiochemical test results.

TestAmerica Pleasanton

Client Sample Results

Client: ARCADIS U.S., Inc
 Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Client Sample ID: MW-4
Date Collected: 05/12/17 09:18
Date Received: 05/13/17 11:47

Lab Sample ID: 720-79483-1
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	200		2.5		ug/L			05/22/17 13:01	5
Ethylbenzene	130		2.5		ug/L			05/22/17 13:01	5
Ethanol	ND		500		ug/L			05/20/17 00:09	1
MTBE	ND		0.50		ug/L			05/20/17 00:09	1
TAME	ND		0.50		ug/L			05/20/17 00:09	1
Ethyl t-butyl ether	ND		0.50		ug/L			05/20/17 00:09	1
Toluene	2.0		0.50		ug/L			05/20/17 00:09	1
EDB	ND		0.50		ug/L			05/20/17 00:09	1
Xylenes, Total	9.9		1.0		ug/L			05/20/17 00:09	1
1,2-DCA	ND		0.50		ug/L			05/20/17 00:09	1
TBA	ND		20		ug/L			05/20/17 00:09	1
DIPE	3.2		0.50		ug/L			05/20/17 00:09	1
Gasoline Range Organics (GRO) -C6-C12	1700		50		ug/L			05/20/17 00:09	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	102		67 - 130		05/20/17 00:09	1
4-Bromofluorobenzene	83		67 - 130		05/22/17 13:01	5
1,2-Dichloroethane-d4 (Surr)	100		72 - 130		05/20/17 00:09	1
1,2-Dichloroethane-d4 (Surr)	92		72 - 130		05/22/17 13:01	5
Toluene-d8 (Surr)	95		70 - 130		05/20/17 00:09	1
Toluene-d8 (Surr)	98		70 - 130		05/22/17 13:01	5

Client Sample Results

Client: ARCADIS U.S., Inc
 Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Client Sample ID: MW-6
Date Collected: 05/12/17 10:18
Date Received: 05/13/17 11:47

Lab Sample ID: 720-79483-2
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			05/20/17 00:37	1
Ethylbenzene	ND		0.50		ug/L			05/20/17 00:37	1
Ethanol	ND		500		ug/L			05/20/17 00:37	1
MTBE	14		0.50		ug/L			05/20/17 00:37	1
TAME	ND		0.50		ug/L			05/20/17 00:37	1
Ethyl t-butyl ether	ND		0.50		ug/L			05/20/17 00:37	1
Toluene	ND		0.50		ug/L			05/20/17 00:37	1
EDB	ND		0.50		ug/L			05/20/17 00:37	1
Xylenes, Total	ND		1.0		ug/L			05/20/17 00:37	1
1,2-DCA	ND		0.50		ug/L			05/20/17 00:37	1
TBA	ND		20		ug/L			05/20/17 00:37	1
DIPE	1.4		0.50		ug/L			05/20/17 00:37	1
Gasoline Range Organics (GRO) -C6-C12	ND		50		ug/L			05/20/17 00:37	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	96		67 - 130		05/20/17 00:37	1
1,2-Dichloroethane-d4 (Surr)	102		72 - 130		05/20/17 00:37	1
Toluene-d8 (Surr)	95		70 - 130		05/20/17 00:37	1

Client Sample Results

Client: ARCADIS U.S., Inc
 Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Client Sample ID: MW-5
Date Collected: 05/12/17 11:10
Date Received: 05/13/17 11:47

Lab Sample ID: 720-79483-3
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			05/20/17 01:06	1
Ethylbenzene	ND		0.50		ug/L			05/20/17 01:06	1
Ethanol	ND		500		ug/L			05/20/17 01:06	1
MTBE	ND		0.50		ug/L			05/20/17 01:06	1
TAME	ND		0.50		ug/L			05/20/17 01:06	1
Ethyl t-butyl ether	ND		0.50		ug/L			05/20/17 01:06	1
Toluene	ND		0.50		ug/L			05/20/17 01:06	1
EDB	ND		0.50		ug/L			05/20/17 01:06	1
Xylenes, Total	ND		1.0		ug/L			05/20/17 01:06	1
1,2-DCA	ND		0.50		ug/L			05/20/17 01:06	1
TBA	ND		20		ug/L			05/20/17 01:06	1
DIPE	ND		0.50		ug/L			05/20/17 01:06	1
Gasoline Range Organics (GRO) -C6-C12	ND		50		ug/L			05/20/17 01:06	1

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	94		67 - 130		05/20/17 01:06	1
1,2-Dichloroethane-d4 (Surr)	101		72 - 130		05/20/17 01:06	1
Toluene-d8 (Surr)	95		70 - 130		05/20/17 01:06	1

Client Sample Results

Client: ARCADIS U.S., Inc
 Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Client Sample ID: MW-7
Date Collected: 05/12/17 12:06
Date Received: 05/13/17 11:47

Lab Sample ID: 720-79483-4
Matrix: Water

Method: 8260B - Volatile Organic Compounds (GC/MS)

Analyte	Result	Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	30		0.50		ug/L			05/20/17 01:34	1
Ethylbenzene	27		0.50		ug/L			05/20/17 01:34	1
Ethanol	ND		500		ug/L			05/20/17 01:34	1
MTBE	ND		0.50		ug/L			05/20/17 01:34	1
TAME	ND		0.50		ug/L			05/20/17 01:34	1
Ethyl t-butyl ether	ND		0.50		ug/L			05/20/17 01:34	1
Toluene	3.2		0.50		ug/L			05/20/17 01:34	1
EDB	ND		0.50		ug/L			05/20/17 01:34	1
Xylenes, Total	9.7		1.0		ug/L			05/20/17 01:34	1
1,2-DCA	ND		0.50		ug/L			05/20/17 01:34	1
TBA	ND		20		ug/L			05/20/17 01:34	1
DIPE	ND		0.50		ug/L			05/20/17 01:34	1
Gasoline Range Organics (GRO)	410		50		ug/L			05/20/17 01:34	1
-C6-C12									

Surrogate	%Recovery	Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	100		67 - 130		05/20/17 01:34	1
1,2-Dichloroethane-d4 (Surr)	108		72 - 130		05/20/17 01:34	1
Toluene-d8 (Surr)	96		70 - 130		05/20/17 01:34	1

Surrogate Summary

Client: ARCADIS U.S., Inc
 Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Matrix: Water

Prep Type: Total/NA

Percent Surrogate Recovery (Acceptance Limits)

Lab Sample ID	Client Sample ID	BFB (67-130)	12DCE (72-130)	TOL (70-130)
720-79483-1	MW-4	102	100	95
720-79483-1	MW-4	83	92	98
720-79483-2	MW-6	96	102	95
720-79483-3	MW-5	94	101	95
720-79483-4	MW-7	100	108	96
720-79483-4 MS	MW-7	100	110	97
720-79483-4 MSD	MW-7	101	105	98
LCS 720-223332/5	Lab Control Sample	98	97	95
LCS 720-223332/7	Lab Control Sample	100	97	96
LCS 720-223365/5	Lab Control Sample	88	93	96
LCS 720-223365/7	Lab Control Sample	84	95	99
LCSD 720-223332/6	Lab Control Sample Dup	100	96	95
LCSD 720-223332/8	Lab Control Sample Dup	99	99	95
LCSD 720-223365/6	Lab Control Sample Dup	89	93	97
LCSD 720-223365/8	Lab Control Sample Dup	86	97	100
MB 720-223332/4	Method Blank	97	96	94
MB 720-223365/4	Method Blank	78	91	97

Surrogate Legend

BFB = 4-Bromofluorobenzene
 12DCE = 1,2-Dichloroethane-d4 (Surr)
 TOL = Toluene-d8 (Surr)

QC Sample Results

Client: ARCADIS U.S., Inc
 Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Method: 8260B - Volatile Organic Compounds (GC/MS)

Lab Sample ID: MB 720-223332/4

Matrix: Water

Analysis Batch: 223332

Client Sample ID: Method Blank

Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			05/19/17 18:56	1
Ethylbenzene	ND		0.50		ug/L			05/19/17 18:56	1
Ethanol	ND		500		ug/L			05/19/17 18:56	1
MTBE	ND		0.50		ug/L			05/19/17 18:56	1
TAME	ND		0.50		ug/L			05/19/17 18:56	1
Ethyl t-butyl ether	ND		0.50		ug/L			05/19/17 18:56	1
Toluene	ND		0.50		ug/L			05/19/17 18:56	1
EDB	ND		0.50		ug/L			05/19/17 18:56	1
Xylenes, Total	ND		1.0		ug/L			05/19/17 18:56	1
1,2-DCA	ND		0.50		ug/L			05/19/17 18:56	1
TBA	ND		20		ug/L			05/19/17 18:56	1
DIPE	ND		0.50		ug/L			05/19/17 18:56	1
Gasoline Range Organics (GRO) -C6-C12	ND		50		ug/L			05/19/17 18:56	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	97		67 - 130		05/19/17 18:56	1
1,2-Dichloroethane-d4 (Surr)	96		72 - 130		05/19/17 18:56	1
Toluene-d8 (Surr)	94		70 - 130		05/19/17 18:56	1

Lab Sample ID: LCS 720-223332/5

Matrix: Water

Analysis Batch: 223332

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	26.5		ug/L		106	79 - 130
Ethylbenzene	25.0	25.4		ug/L		102	80 - 120
Ethanol	1000	1040		ug/L		104	31 - 216
m-Xylene & p-Xylene	25.0	25.4		ug/L		102	70 - 142
MTBE	25.0	29.0		ug/L		116	62 - 130
TAME	25.0	32.5		ug/L		130	79 - 130
Ethyl t-butyl ether	25.0	31.8		ug/L		127	70 - 130
Toluene	25.0	25.5		ug/L		102	78 - 120
EDB	25.0	26.2		ug/L		105	70 - 130
1,2-DCA	25.0	25.9		ug/L		104	61 - 132
TBA	250	246		ug/L		99	70 - 130
DIPE	25.0	29.7		ug/L		119	69 - 134
o-Xylene	25.0	25.9		ug/L		104	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	98		67 - 130
1,2-Dichloroethane-d4 (Surr)	97		72 - 130
Toluene-d8 (Surr)	95		70 - 130

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QC Sample Results

Client: ARCADIS U.S., Inc
 Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-223332/7

Matrix: Water

Analysis Batch: 223332

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Organics (GRO) -C6-C12	500	417		ug/L		83	58 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	100		67 - 130
1,2-Dichloroethane-d4 (Surr)	97		72 - 130
Toluene-d8 (Surr)	96		70 - 130

Lab Sample ID: LCSD 720-223332/6

Matrix: Water

Analysis Batch: 223332

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	25.0	25.4		ug/L		102	79 - 130	4	20
Ethylbenzene	25.0	24.7		ug/L		99	80 - 120	3	20
Ethanol	1000	1030		ug/L		103	31 - 216	1	30
m-Xylene & p-Xylene	25.0	24.9		ug/L		99	70 - 142	2	20
MTBE	25.0	27.2		ug/L		109	62 - 130	6	20
TAME	25.0	32.5		ug/L		130	79 - 130	0	20
Ethyl t-butyl ether	25.0	30.4		ug/L		122	70 - 130	5	20
Toluene	25.0	24.8		ug/L		99	78 - 120	3	20
EDB	25.0	24.5		ug/L		98	70 - 130	7	20
1,2-DCA	25.0	24.7		ug/L		99	61 - 132	5	20
TBA	250	246		ug/L		98	70 - 130	0	20
DIPE	25.0	28.5		ug/L		114	69 - 134	4	20
o-Xylene	25.0	25.3		ug/L		101	70 - 130	2	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene	100		67 - 130
1,2-Dichloroethane-d4 (Surr)	96		72 - 130
Toluene-d8 (Surr)	95		70 - 130

Lab Sample ID: LCSD 720-223332/8

Matrix: Water

Analysis Batch: 223332

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO) -C6-C12	500	429		ug/L		86	58 - 120	3	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene	99		67 - 130
1,2-Dichloroethane-d4 (Surr)	99		72 - 130
Toluene-d8 (Surr)	95		70 - 130

TestAmerica Pleasanton

QC Sample Results

Client: ARCADIS U.S., Inc
 Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: 720-79483-4 MS

Matrix: Water

Analysis Batch: 223332

Client Sample ID: MW-7

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MS Result	MS Qualifier	Unit	D	%Rec	%Rec. Limits	
Benzene	30		25.0	56.3		ug/L		104	60 - 140	
Ethylbenzene	27		25.0	50.6		ug/L		96	60 - 140	
Ethanol	ND		1000	899		ug/L		90	60 - 140	
m-Xylene & p-Xylene	8.4		25.0	33.1		ug/L		99	60 - 140	
MTBE	ND		25.0	28.5		ug/L		114	60 - 138	
TAME	ND		25.0	33.6		ug/L		134	60 - 140	
Ethyl t-butyl ether	ND		25.0	31.9		ug/L		128	60 - 140	
Toluene	3.2		25.0	27.0		ug/L		95	60 - 140	
EDB	ND		25.0	26.1		ug/L		104	60 - 140	
1,2-DCA	ND		25.0	28.0		ug/L		112	60 - 140	
TBA	ND		250	235		ug/L		94	60 - 140	
DIPE	ND		25.0	30.3		ug/L		120	60 - 140	
o-Xylene	1.2		25.0	26.5		ug/L		101	60 - 140	
MS MS										
Surrogate	%Recovery		Qualifier	Limits						
4-Bromofluorobenzene	100			67 - 130						
1,2-Dichloroethane-d4 (Surr)	110			72 - 130						
Toluene-d8 (Surr)	97			70 - 130						

Lab Sample ID: 720-79483-4 MSD

Matrix: Water

Analysis Batch: 223332

Client Sample ID: MW-7

Prep Type: Total/NA

Analyte	Sample Result	Sample Qualifier	Spike Added	MSD Result	MSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	30		25.0	54.7		ug/L		98	60 - 140	3	20
Ethylbenzene	27		25.0	49.7		ug/L		92	60 - 140	2	20
Ethanol	ND		1000	937		ug/L		94	60 - 140	4	20
m-Xylene & p-Xylene	8.4		25.0	32.8		ug/L		97	60 - 140	1	20
MTBE	ND		25.0	28.6		ug/L		114	60 - 138	0	20
TAME	ND		25.0	33.6		ug/L		134	60 - 140	0	20
Ethyl t-butyl ether	ND		25.0	31.6		ug/L		126	60 - 140	1	20
Toluene	3.2		25.0	26.8		ug/L		95	60 - 140	1	20
EDB	ND		25.0	26.3		ug/L		105	60 - 140	1	20
1,2-DCA	ND		25.0	27.5		ug/L		110	60 - 140	2	20
TBA	ND		250	229		ug/L		92	60 - 140	3	20
DIPE	ND		25.0	29.9		ug/L		118	60 - 140	1	20
o-Xylene	1.2		25.0	26.2		ug/L		100	60 - 140	1	20
MSD MSD											
Surrogate	%Recovery		Qualifier	Limits							
4-Bromofluorobenzene	101			67 - 130							
1,2-Dichloroethane-d4 (Surr)	105			72 - 130							
Toluene-d8 (Surr)	98			70 - 130							

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QC Sample Results

Client: ARCADIS U.S., Inc
 Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: MB 720-223365/4
Matrix: Water
Analysis Batch: 223365

Client Sample ID: Method Blank
Prep Type: Total/NA

Analyte	MB Result	MB Qualifier	RL	MDL	Unit	D	Prepared	Analyzed	Dil Fac
Benzene	ND		0.50		ug/L			05/22/17 09:15	1
Ethylbenzene	ND		0.50		ug/L			05/22/17 09:15	1
Ethanol	ND		500		ug/L			05/22/17 09:15	1
MTBE	ND		0.50		ug/L			05/22/17 09:15	1
TAME	ND		0.50		ug/L			05/22/17 09:15	1
Ethyl t-butyl ether	ND		0.50		ug/L			05/22/17 09:15	1
Toluene	ND		0.50		ug/L			05/22/17 09:15	1
EDB	ND		0.50		ug/L			05/22/17 09:15	1
Xylenes, Total	ND		1.0		ug/L			05/22/17 09:15	1
1,2-DCA	ND		0.50		ug/L			05/22/17 09:15	1
TBA	ND		20		ug/L			05/22/17 09:15	1
DIPE	ND		0.50		ug/L			05/22/17 09:15	1
Gasoline Range Organics (GRO) -C6-C12	ND		50		ug/L			05/22/17 09:15	1

Surrogate	MB %Recovery	MB Qualifier	Limits	Prepared	Analyzed	Dil Fac
4-Bromofluorobenzene	78		67 - 130		05/22/17 09:15	1
1,2-Dichloroethane-d4 (Surr)	91		72 - 130		05/22/17 09:15	1
Toluene-d8 (Surr)	97		70 - 130		05/22/17 09:15	1

Lab Sample ID: LCS 720-223365/5
Matrix: Water
Analysis Batch: 223365

Client Sample ID: Lab Control Sample
Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Benzene	25.0	23.0		ug/L		92	79 - 130
Ethylbenzene	25.0	22.1		ug/L		88	80 - 120
Ethanol	1000	1090		ug/L		109	31 - 216
m-Xylene & p-Xylene	25.0	21.8		ug/L		87	70 - 142
MTBE	25.0	23.5		ug/L		94	62 - 130
TAME	25.0	27.3		ug/L		109	79 - 130
Ethyl t-butyl ether	25.0	27.3		ug/L		109	70 - 130
Toluene	25.0	21.0		ug/L		84	78 - 120
EDB	25.0	26.8		ug/L		107	70 - 130
1,2-DCA	25.0	24.0		ug/L		96	61 - 132
TBA	250	247		ug/L		99	70 - 130
DIPE	25.0	27.5		ug/L		110	69 - 134
o-Xylene	25.0	22.6		ug/L		90	70 - 130

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	88		67 - 130
1,2-Dichloroethane-d4 (Surr)	93		72 - 130
Toluene-d8 (Surr)	96		70 - 130

TestAmerica Pleasanton

QC Sample Results

Client: ARCADIS U.S., Inc
 Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Method: 8260B - Volatile Organic Compounds (GC/MS) (Continued)

Lab Sample ID: LCS 720-223365/7

Matrix: Water

Analysis Batch: 223365

Client Sample ID: Lab Control Sample

Prep Type: Total/NA

Analyte	Spike Added	LCS Result	LCS Qualifier	Unit	D	%Rec	%Rec. Limits
Gasoline Range Organics (GRO) -C6-C12	500	419		ug/L		84	58 - 120

Surrogate	LCS %Recovery	LCS Qualifier	Limits
4-Bromofluorobenzene	84		67 - 130
1,2-Dichloroethane-d4 (Surr)	95		72 - 130
Toluene-d8 (Surr)	99		70 - 130

Lab Sample ID: LCSD 720-223365/6

Matrix: Water

Analysis Batch: 223365

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Benzene	25.0	23.5		ug/L		94	79 - 130	2	20
Ethylbenzene	25.0	22.7		ug/L		91	80 - 120	3	20
Ethanol	1000	1120		ug/L		112	31 - 216	3	30
m-Xylene & p-Xylene	25.0	22.4		ug/L		89	70 - 142	2	20
MTBE	25.0	23.3		ug/L		93	62 - 130	1	20
TAME	25.0	26.3		ug/L		105	79 - 130	4	20
Ethyl t-butyl ether	25.0	26.9		ug/L		108	70 - 130	1	20
Toluene	25.0	21.6		ug/L		86	78 - 120	2	20
EDB	25.0	26.1		ug/L		104	70 - 130	3	20
1,2-DCA	25.0	23.8		ug/L		95	61 - 132	1	20
TBA	250	255		ug/L		102	70 - 130	3	20
DIPE	25.0	27.7		ug/L		111	69 - 134	1	20
o-Xylene	25.0	22.9		ug/L		92	70 - 130	2	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene	89		67 - 130
1,2-Dichloroethane-d4 (Surr)	93		72 - 130
Toluene-d8 (Surr)	97		70 - 130

Lab Sample ID: LCSD 720-223365/8

Matrix: Water

Analysis Batch: 223365

Client Sample ID: Lab Control Sample Dup

Prep Type: Total/NA

Analyte	Spike Added	LCSD Result	LCSD Qualifier	Unit	D	%Rec	%Rec. Limits	RPD	RPD Limit
Gasoline Range Organics (GRO) -C6-C12	500	420		ug/L		84	58 - 120	0	20

Surrogate	LCSD %Recovery	LCSD Qualifier	Limits
4-Bromofluorobenzene	86		67 - 130
1,2-Dichloroethane-d4 (Surr)	97		72 - 130
Toluene-d8 (Surr)	100		70 - 130

TestAmerica Pleasanton

QC Association Summary

Client: ARCADIS U.S., Inc
Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

GC/MS VOA

Analysis Batch: 223332

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-79483-1	MW-4	Total/NA	Water	8260B	
720-79483-2	MW-6	Total/NA	Water	8260B	
720-79483-3	MW-5	Total/NA	Water	8260B	
720-79483-4	MW-7	Total/NA	Water	8260B	
MB 720-223332/4	Method Blank	Total/NA	Water	8260B	
LCS 720-223332/5	Lab Control Sample	Total/NA	Water	8260B	
LCS 720-223332/7	Lab Control Sample	Total/NA	Water	8260B	
LCSD 720-223332/6	Lab Control Sample Dup	Total/NA	Water	8260B	
LCSD 720-223332/8	Lab Control Sample Dup	Total/NA	Water	8260B	
720-79483-4 MS	MW-7	Total/NA	Water	8260B	
720-79483-4 MSD	MW-7	Total/NA	Water	8260B	

Analysis Batch: 223365

Lab Sample ID	Client Sample ID	Prep Type	Matrix	Method	Prep Batch
720-79483-1	MW-4	Total/NA	Water	8260B	
MB 720-223365/4	Method Blank	Total/NA	Water	8260B	
LCS 720-223365/5	Lab Control Sample	Total/NA	Water	8260B	
LCS 720-223365/7	Lab Control Sample	Total/NA	Water	8260B	
LCSD 720-223365/6	Lab Control Sample Dup	Total/NA	Water	8260B	
LCSD 720-223365/8	Lab Control Sample Dup	Total/NA	Water	8260B	

Lab Chronicle

Client: ARCADIS U.S., Inc
Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Client Sample ID: MW-4
Date Collected: 05/12/17 09:18
Date Received: 05/13/17 11:47

Lab Sample ID: 720-79483-1
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	223332	05/20/17 00:09	A1C	TAL PLS
Total/NA	Analysis	8260B		5	223365	05/22/17 13:01	JRM	TAL PLS

Client Sample ID: MW-6
Date Collected: 05/12/17 10:18
Date Received: 05/13/17 11:47

Lab Sample ID: 720-79483-2
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	223332	05/20/17 00:37	A1C	TAL PLS

Client Sample ID: MW-5
Date Collected: 05/12/17 11:10
Date Received: 05/13/17 11:47

Lab Sample ID: 720-79483-3
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	223332	05/20/17 01:06	A1C	TAL PLS

Client Sample ID: MW-7
Date Collected: 05/12/17 12:06
Date Received: 05/13/17 11:47

Lab Sample ID: 720-79483-4
Matrix: Water

Prep Type	Batch Type	Batch Method	Run	Dilution Factor	Batch Number	Prepared or Analyzed	Analyst	Lab
Total/NA	Analysis	8260B		1	223332	05/20/17 01:34	A1C	TAL PLS

Laboratory References:

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919

Accreditation/Certification Summary

Client: ARCADIS U.S., Inc
Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Laboratory: TestAmerica Pleasanton

All accreditations/certifications held by this laboratory are listed. Not all accreditations/certifications are applicable to this report.

Authority	Program	EPA Region	Identification Number	Expiration Date
California	State Program	9	2496	01-31-18

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Method Summary

Client: ARCADIS U.S., Inc
Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Method	Method Description	Protocol	Laboratory
8260B	Volatile Organic Compounds (GC/MS)	SW846	TAL PLS

Protocol References:

SW846 = "Test Methods For Evaluating Solid Waste, Physical/Chemical Methods", Third Edition, November 1986 And Its Updates.

Laboratory References:

TAL PLS = TestAmerica Pleasanton, 1220 Quarry Lane, Pleasanton, CA 94566, TEL (925)484-1919



Sample Summary

Client: ARCADIS U.S., Inc
Project/Site: BP-402 - 1450 Fruitvale Ave., Oakland

TestAmerica Job ID: 720-79483-1

Lab Sample ID	Client Sample ID	Matrix	Collected	Received
720-79483-1	MW-4	Water	05/12/17 09:18	05/13/17 11:47
720-79483-2	MW-6	Water	05/12/17 10:18	05/13/17 11:47
720-79483-3	MW-5	Water	05/12/17 11:10	05/13/17 11:47
720-79483-4	MW-7	Water	05/12/17 12:06	05/13/17 11:47

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Sharma, Dimple

From: Wong, Melanie <Melanie.A.Wong@arcadis.com>
Sent: Monday, May 15, 2017 3:00 PM
To: Sharma, Dimple; Jacobsen, Brittani; Edwards, Carl; Jacobsen, James
Subject: RE: TestAmerica Sample Login Confirmation files from 720-79483 BP-402 - 1450 Fruitvale Ave., Oakland
Attachments: Std_Tal_Login_Ack for 720-79483-1.pdf; COC 720-79483 (201705151304).pdf

Hi Dimple,

Can you please remove the trip blank from the sample list? I marked up the COC for your reference.

Thank you,
Melanie

From: Sharma, Dimple [<mailto:dimple.sharma@testamericainc.com>]
Sent: Monday, May 15, 2017 2:10 PM
To: Jacobsen, Brittani <Brittani.Jacobsen@arcadis.com>; Edwards, Carl <Carl.Edwards@arcadis.com>; Jacobsen, James <James.Jacobsen@arcadis.com>; Wong, Melanie <Melanie.A.Wong@arcadis.com>
Subject: TestAmerica Sample Login Confirmation files from 720-79483 BP-402 - 1450 Fruitvale Ave., Oakland

Hello,

Attached, please find the Sample Confirmation files for job 720-79483; BP-402 - 1450 Fruitvale Ave., Oakland

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

Thank you.

Please let us know if we met your expectations by rating the service you received from TestAmerica on this project by visiting our website at: [Project Feedback](#)

DIMPLE SHARMA
Senior Project Manager

TestAmerica Pleasanton
THE LEADER IN ENVIRONMENTAL TESTING

Tel: 925.484.1919
www.testamericainc.com

Reference: [246607]
Attachments: 3

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TestAmerica

THE LEADER IN ENVIRONMENTAL TESTING

Report To **Melanie Wong** Analysis Request

Reference #: 175892
 Date 5/12/17 Page 1 of 1
 TESTAMERICA Pleasanton Chain of Custody
 1220 Quarry Lane • Pleasanton CA 94566-4756
 Phone: (925) 798-7948 Fax: (925) 798-7942
 728-79483

Attn: Melanie Wong
 Company: Artadis North America
 Address: 101 Creekside Ridge Ct #200 Roseville CA 95678
 Email: Melanie.A.Wong@artadis.com
 Bill To: GP16BPNA-CA02-40000
 Sampled By: Angel Torrens-Bonano
 Phone: 416 865 3134

Sample ID	Date	Time	Mat	Preserv	Volatile Organics GC/MS (VOCs) <input type="checkbox"/> EPA 8260B	HVOCs by <input type="checkbox"/> EPA 8260B	EPA 8260B <input checked="" type="checkbox"/> Gas <input checked="" type="checkbox"/> BTEX <input type="checkbox"/> 5 Oxygenates <input checked="" type="checkbox"/> DCA, EDB <input checked="" type="checkbox"/> Ethanol	TEPH EPA 8015B <input type="checkbox"/> Silica Gel <input type="checkbox"/> Diesel <input type="checkbox"/> Motor Oil <input type="checkbox"/> Other	SemiVolatile Organics GC/MS <input type="checkbox"/> EPA 8270C	PNA/PAH's by <input type="checkbox"/> 8270C <input type="checkbox"/> 8270C SIM	Oil and Grease <input type="checkbox"/> Petroleum (EPA 1664/9071) <input type="checkbox"/> Total	Pesticides <input type="checkbox"/> EPA 8081 PCBs <input type="checkbox"/> EPA 8082	CAM17 Metals (EPA 6010/7470/7471)	Metals: <input type="checkbox"/> 6010B <input type="checkbox"/> 200.7 <input type="checkbox"/> Lead <input type="checkbox"/> LUFT <input type="checkbox"/> RCRA <input type="checkbox"/> Other:	Metals: <input type="checkbox"/> 6020 <input type="checkbox"/> 200.8 (ICP-MS):	<input type="checkbox"/> W.E.T (STLC) <input type="checkbox"/> W.E.T (DI) <input type="checkbox"/> TCLP	Hex. Chrom by <input type="checkbox"/> EPA 7196 <input type="checkbox"/> or EPA 7199	pH <input type="checkbox"/> 9040 <input type="checkbox"/> SM4500	<input type="checkbox"/> Spec. Cond. <input type="checkbox"/> Alkalinity <input type="checkbox"/> TSS <input type="checkbox"/> SS <input type="checkbox"/> TDS	Anions: <input type="checkbox"/> Cl <input type="checkbox"/> SO ₄ <input type="checkbox"/> NO ₃ <input type="checkbox"/> F <input type="checkbox"/> Br <input type="checkbox"/> NO ₂ <input type="checkbox"/> PO ₄	<input type="checkbox"/> Perchlorate by EPA 314.0	COD <input type="checkbox"/> EPA 410.4 <input type="checkbox"/> SM5220D <input type="checkbox"/> Turbidity	TBA/DIPE/TAME/ ETBE	Number of Containers	
MM-4	5/12/17	0918	W	HCl																					3
MM-6	5/12/17	1018	W	HCl																					3
MM-5	5/12/17	1110	W	HCl																					3
MM-7	5/12/17	1206	W	HCl																					3
Trip Blank	5/12/17	-	W	-																					3

720-79483 Chain of Custody



Project Info

Project Name/ #: CA-402 GW Sampling
 Date: 5/12/17
 PO#: GP16BPNA-CA02-40000
 Credit Card Y/N
 Temp: 1.3°C
 If yes, please call with payment information ASAP

Sample Receipt

of Containers: 1300
 Head Space:
 1) Relinquished by: [Signature] Time 1300
 Signature: [Signature] Time 1300
 Printed Name: Angel Torrens-Bonano Date 5/12/17
 Company: Artadis
 2) Relinquished by: [Signature] Time 1650
 Signature: [Signature] Time 1650
 Printed Name: Michelle Date 5-12-17
 Company: [Signature]
 3) Relinquished by: [Signature] Time [Signature]
 Signature: [Signature] Time [Signature]
 Printed Name: [Signature] Date [Signature]
 Company: [Signature]

T	10	5	4	3	2	1	Other:
A	Day	Day	Day	Day	Day	Day	

1) Received by: [Signature] Time 1610
 Signature: [Signature] Time 1610
 Printed Name: Michelle Date 5-12-17
 Company: [Signature]
 2) Received by: [Signature] Time 147
 Signature: [Signature] Time 147
 Printed Name: [Signature] Date 5-12-17
 Company: [Signature]
 3) Received by: [Signature] Time [Signature]
 Signature: [Signature] Time [Signature]
 Printed Name: [Signature] Date [Signature]
 Company: [Signature]

Report: Routine Level 3 Level 4 EDD EDF
 Special Instructions / Comments: Global ID Call Melanie if any questions
 See Terms and Conditions on reverse

Signature: [Signature] Time [Signature]
 Printed Name: [Signature] Date [Signature]
 Company: [Signature]

Login Sample Receipt Checklist

Client: ARCADIS U.S., Inc

Job Number: 720-79483-1

Login Number: 79483

List Number: 1

Creator: Mullen, Joan

List Source: TestAmerica Pleasanton

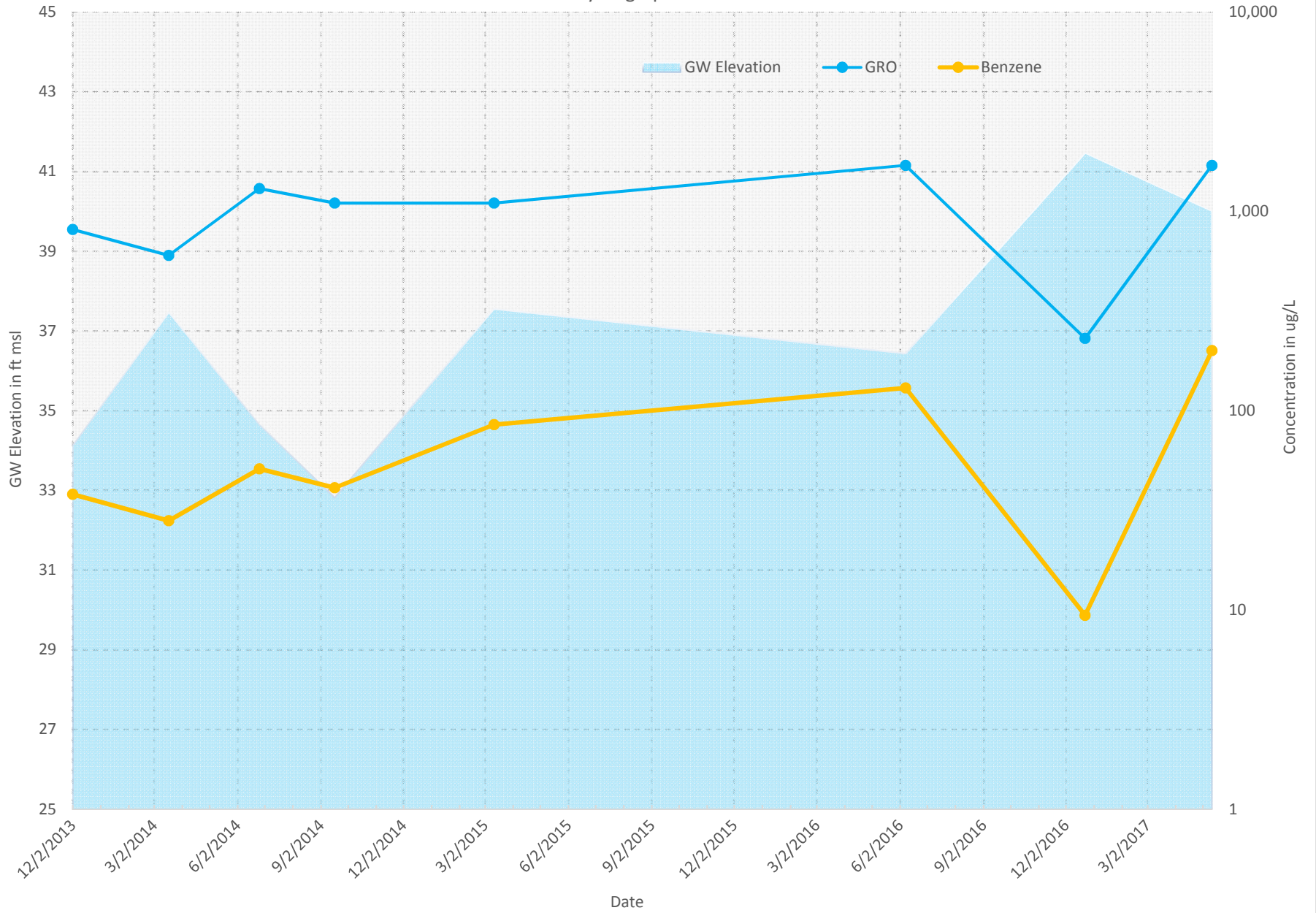
Question	Answer	Comment
Radioactivity wasn't checked or is </= background as measured by a survey meter.	N/A	
The cooler's custody seal, if present, is intact.	N/A	
Sample custody seals, if present, are intact.	N/A	
The cooler or samples do not appear to have been compromised or tampered with.	True	
Samples were received on ice.	True	
Cooler Temperature is acceptable.	True	
Cooler Temperature is recorded.	True	
COC is present.	True	
COC is filled out in ink and legible.	True	
COC is filled out with all pertinent information.	True	
Is the Field Sampler's name present on COC?	True	
There are no discrepancies between the containers received and the COC.	True	
Samples are received within Holding Time (excluding tests with immediate HTs)	True	
Sample containers have legible labels.	True	
Containers are not broken or leaking.	True	
Sample collection date/times are provided.	True	
Appropriate sample containers are used.	True	
Sample bottles are completely filled.	True	
Sample Preservation Verified.	N/A	
There is sufficient vol. for all requested analyses, incl. any requested MS/MSDs	True	
Containers requiring zero headspace have no headspace or bubble is <6mm (1/4").	True	
Multiphasic samples are not present.	True	
Samples do not require splitting or compositing.	True	
Residual Chlorine Checked.	N/A	

ATTACHMENT 3

Hydrographs



Hydrograph - MW-4



Hydrograph - MW-7

