RILEYGROUP

April 19, 2017

Mr. Pui Leung
Solterra
P.O. Box 84084
Seattle, Washington 98124

RE: Groundwater Monitoring – 2nd Quarter 2017
Former Arnold's Texaco
631 Queen Anne Avenue North
Seattle, Washington 98109
RGI Project No. 2017-015B

Dear Mr. Leung:

The Riley Group, Inc. (RGI) has completed a Groundwater Monitoring 2nd Quarter Groundwater Monitoring event pertaining to the Former Arnold's Texaco, located at 631 Queen Anne Avenue North, Seattle, Washington (hereafter referred to as the Property, Figure 1).

SCOPE OF WORK

The objectives for this project include the following:

- Perform groundwater monitoring for six existing groundwater monitoring wells located on the Property.

GROUNDWATER SAMPLING EVENT

On April 6, 2017, RGI sampled six groundwater monitoring wells (MW-9, MW-10, MW-13, DPE-5, DPE-6, and DPE-7, located on the Property. The existing monitoring wells on the Property were constructed as 2-inch and 4-inch diameter wells. The locations of all groundwater monitoring wells are illustrated on Figure 2.

GROUNDWATER ELEVATIONS AND FLOW DIRECTION

Prior to purging each groundwater monitoring well, depth to static groundwater was measured using an electronic water level meter in all monitoring wells located on the Property. Depth to groundwater ranged from 11.43 to 17.93 feet below top of casing (TOC). Corresponding groundwater elevations ranged from 11.43 feet (MW-10) to 17.93 feet (MW-9) (Table 1 and Figure 2).

Groundwater flow direction was determined to be southwest beneath the Site. This groundwater flow data is consistent with previous groundwater sampling events.

GROUNDWATER SAMPLE COLLECTION

Prior to sampling, groundwater monitoring wells were purged using a submersible pump and new polyethylene tubing. Well purging continued until at least three well volumes were purged, until field parameters stabilized, or the well pumped dry. During the sampling event, water quality parameters (for example, water temperature, dissolved oxygen, pH, and conductivity) were obtained using a Horiba U-52 water quality meter with a flow-through cell. Groundwater was

Corporate Office
17522 Bothell Way Northeast
Bothell, Washington 98011
Phone 425.415.0551 ♦ Fax 425.415.0311

www.riley-group.com

transferred to laboratory-supplied containers using a peristaltic pump and utilizing standard low-flow sampling methodology. Sample containers were placed in an ice-chilled cooler and transported to the analytical laboratory using standard chain-of-custody protocols. Groundwater recovery, startup time, and duration of the purging operations were recorded on field data sheets. These field documents are maintained in a permanent project file and are available upon written request.

Purge water was placed in two labeled 55-gallon drums and left on the Site pending profiling and disposal.

Laboratory Analysis

Groundwater samples were submitted to Friedman and Bruya, Inc. of Seattle, Washington and analyzed for one or more of the following:

- Gasoline-range total petroleum hydrocarbons (TPH) using the Northwest Test Method NWTPH-Gx.
- Benzene, toluene, ethylbenzene, and xylenes (BTEX) using EPA Method 8021B.
- Halogenated Volatile Organic Compounds (HVOCs) using EPA Method 8260C.

Copies of the analytical laboratory report and associated sample chain-of-custody are included in Appendix A.

GROUNDWATER CLEANUP LEVELS

Groundwater analytical results obtained during this project were compared to the following groundwater screening levels:

- Washington State Department of Ecology Model Toxics Control Act (MTCA) Method A Cleanup Levels for Ground Water (WAC 173-340-900, Table 720-1).

FINDINGS

Analytical Results

Analytical results and groundwater screening levels for the Site are summarized in Table 1 and Figure 2.

Gasoline-range TPH and BTEX were not detected above laboratory detection limits (non-detect) in MW-10 and MW-13. MW-9 was found to contain toluene, ethylbenzene, xylene, and gasoline-range TPH concentrations above the laboratory detection limit, but well below their respective MTCA Method A Clean up Levels.

HVOCs were not found above laboratory detection limits in any of the six groundwater samples submitted for analysis.

This report is the property of RGI, Solterra, and their representatives and was prepared in a manner consistent with the level of skill and care ordinarily exercised by members of the profession currently practicing in the same locality and under similar conditions. This report is intended for specific application to 631 Queen Anne Avenue North in Seattle, Washington. No other warranty, expressed or implied, is made.

If you have any questions or need additional information, please contact the undersigned at (425) 415-0551.

Respectfully submitted,

THE RILEY GROUP, INC.

for Stafford Larsen
Project Geologist

Paul D. Riley, LG, LHG
Principal

Attachments *Table 1, Summary of Groundwater Sample Analytical Results*
Figure 1, Site Vicinity Map
Figure 2, Site Plan with Groundwater Elevation Contours and Analytical Laboratory
Appendix A, Analytical Laboratory Report

Distribution *Mr. Pui Leung, Solterra (PDF)*
Mr. Pui Leung, Vibrant Cities (PDF)
Mr. Ken Okamoto, Solterra (PDF)

Table 1. Summary of Groundwater Sample Analytical Laboratory Results
Arnold's/Former Texaco Service Station No. 211577
631 Queen Anne Avenue North, Seattle, Washington 98109
The Riley Group, Inc. Project No. 2017-015B

Sample Number	Sample Date	TOC Elevation	Depth to Water (bgs)	Groundwater Elevation	Gasoline TPH	BTEX				PCE	TCE	cis-1,2-DCE	trans-1,2-DCE	VC	1,1-DCE	Other HVOCs
						B	T	E	X							
MW 9	04/06/17	114.27	17.93	96.34	**480**	ND<1	**2.2**	**1.8**	**3.4**	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND
MW 10	04/06/17	115.28	11.43	103.85	ND<100	ND<1	ND<1	ND<1	ND<3	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND
MW 13	04/06/17	114.80	16.26	98.54	ND<100	ND<1	ND<1	ND<1	ND<3	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND
DPE 5	04/06/17	113.81	13.37	100.44	----	----	----	----	----	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND
DPE 6	04/06/17	113.32	17.75	95.57	----	----	----	----	----	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND
DPE 7	04/06/17	113.15	17.28	95.87	----	----	----	----	----	ND<1	ND<1	ND<1	ND<1	ND<0.2	ND<1	ND
MTCA Method A Cleanup Levels for Ground Water					**800/1,000[1]**	**5**	**1,000**	**700**	**1,000**	**5**	**5**	----	----	**0.2**	----	**Analyte Specific**
MTCA Method B Cleanup Levels for Ground Water[2]					----	----	----	----	----	----	----	**16**	**160**	----	**400**	----

Notes:

Samples collected by RGI field staff using a peristaltic pump under low-flow conditions.

Unless otherwise noted, all analytical results are given in micrograms per liter (ug/L), equivalent to parts per billion (ppb).

Gasoline TPH (total petroleum hydrocarbons) determined using Northwest Test Method NWTPH-Gx.

BTEX (benzene, toluene, ethylbenzene, and xylenes) determined using EPA Test Method 8021B.

PCE (tetrachloroethene), TCE (trichloroethene), cis-1,2-DCE (cis-1,2-dichloroethene), trans-1,2-DCE (trans-1,2-dichloroethene), VC (vinyl chloride), 1,1-DCE (1,1-dichloroethene), and other HVOCs (halogenated volatile organic compounds) determined using EPA Test Method 8260C.

ND = Not detected above the noted analytical detection limit.

---- = Not analyzed or not applicable.

Washington State Department of Ecology (Ecology) Model Toxics Control Act (MTCA) Method A Cleanup Levels for Ground Water (WAC 173-340-900, Table 720-1). MTCA Method B Standard Formula Values for Ground Water from Ecology's Cleanup Level and Risk Calculation (CLARC) database.

[1] The higher cleanup level is applicable if no benzene is detected in groundwater.

[2] No MTCA Method A Cleanup Level has been established. Therefore, the MTCA Method B Non-Carcinogenic Standard Formula Value is listed for reference.

Bold results indicated concentrations above laboratory detection limits.

Bold and yellow highlighted results indicate concentrations (if any) that exceed MTCA Method A or B Cleanup Levels for Ground Water.

USGS, 2014, Seattle North, Washington
USGS, 2014, Seattle South, Washington
7.5-Minute Quadrangle

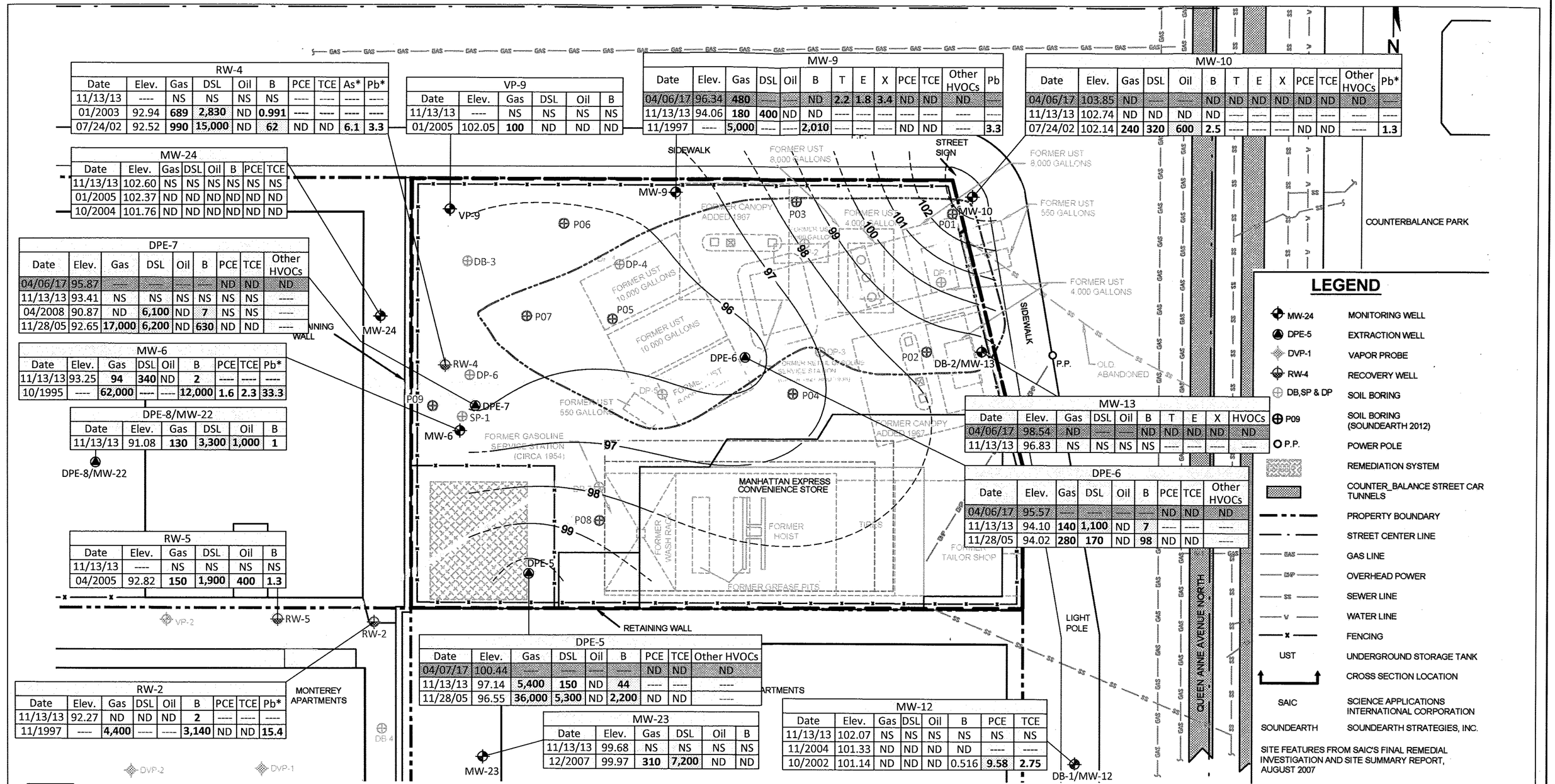
Approximate Scale: 1"=1000'

0 500 1000 2000

N

RILEYGROUP
Corporate Office
17522 Bothell Way Northeast
Bothell, Washington 98011
Phone: 425.415.0551
Fax: 425.415.0311

Arnold's/Former Texaco Service Station No. 211577		Figure 1
RGI Project Number 2017-015B	Site Vicinity Map	Date Drawn: 04/2017
Address: 631 Queen Anne Avenue North, Seattle, Washington 98109		



RW-4									
Date	Elev.	Gas	DSL	Oil	B	PCE	TCE	As*	Pb*
11/13/13	----	NS	NS	NS	NS	----	----	----	----
01/2003	92.94	**689**	**2,830**	ND	**0.991**	----	----	----	----
07/24/02	92.52	**990**	**15,000**	ND	**62**	ND	ND	**6.1**	**3.3**

VP-9					
Date	Elev.	Gas	DSL	Oil	B
11/13/13	----	NS	NS	NS	NS
01/2005	102.05	**100**	ND	ND	ND

MW-9												
Date	Elev.	Gas	DSL	Oil	B	T	E	X	PCE	TCE	Other HVOCs	Pb
04/06/17	96.34	**480**	----	----	ND	**2.2**	**1.8**	**3.4**	ND	ND	ND	----
11/13/13	94.06	**180**	**400**	ND	ND	----	----	----	----	----	----	----
11/1997	----	**5,000**	----	----	**2,010**	----	----	----	ND	ND	----	**3.3**

MW-10												
Date	Elev.	Gas	DSL	Oil	B	T	E	X	PCE	TCE	Other HVOCs	Pb*
04/06/17	103.85	ND	----	----	ND	ND	ND	ND	ND	ND	ND	----
11/13/13	102.74	ND	ND	ND	ND	----	----	----	----	----	----	----
07/24/02	102.14	**240**	**320**	**600**	**2.5**	----	----	----	ND	ND	----	**1.3**

MW-24							
Date	Elev.	Gas	DSL	Oil	B	PCE	TCE
11/13/13	102.60	NS	NS	NS	NS	NS	NS
01/2005	102.37	ND	ND	ND	ND	ND	ND
10/2004	101.76	ND	ND	ND	ND	ND	ND

DPE-7								
Date	Elev.	Gas	DSL	Oil	B	PCE	TCE	Other HVOCs
04/06/17	95.87	----	----	----	----	ND	ND	ND
11/13/13	93.41	NS	NS	NS	NS	NS	NS	----
04/2008	90.87	ND	**6,100**	ND	**7**	NS	NS	----
11/28/05	92.65	**17,000**	**6,200**	ND	**630**	ND	ND	----

MW-6								
Date	Elev.	Gas	DSL	Oil	B	PCE	TCE	Pb*
11/13/13	93.25	**94**	**340**	ND	**2**	----	----	----
10/1995	----	**62,000**	----	----	**12,000**	**1.6**	**2.3**	**33.3**

DPE-8/MW-22					
Date	Elev.	Gas	DSL	Oil	B
11/13/13	91.08	**130**	**3,300**	**1,000**	**1**

RW-5					
Date	Elev.	Gas	DSL	Oil	B
11/13/13	----	NS	NS	NS	NS
04/2005	92.82	**150**	**1,900**	**400**	**1.3**

RW-2								
Date	Elev.	Gas	DSL	Oil	B	PCE	TCE	Pb*
11/13/13	92.27	ND	ND	ND	**2**	----	----	----
11/1997	----	**4,400**	----	----	**3,140**	ND	ND	**15.4**

DPE-5								
Date	Elev.	Gas	DSL	Oil	B	PCE	TCE	Other HVOCs
04/07/17	100.44	----	----	----	----	ND	ND	ND
11/13/13	97.14	**5,400**	**150**	ND	**44**	----	----	----
11/28/05	96.55	**36,000**	**5,300**	ND	**2,200**	ND	ND	----

MW-23					
Date	Elev.	Gas	DSL	Oil	B
11/13/13	99.68	NS	NS	NS	NS
12/2007	99.97	**310**	**7,200**	ND	ND

MW-12							
Date	Elev.	Gas	DSL	Oil	B	PCE	TCE
11/13/13	102.07	NS	NS	NS	NS	NS	NS
11/2004	101.33	ND	ND	ND	ND	----	----
10/2002	101.14	ND	ND	ND	0.516	**9.58**	**2.75**

MW-13									
Date	Elev.	Gas	DSL	Oil	B	T	E	X	HVOCs
04/06/17	98.54	ND	----	----	ND	ND	ND	ND	ND
11/13/13	96.83	NS	NS	NS	NS	----	----	----	----

DPE-6								
Date	Elev.	Gas	DSL	Oil	B	PCE	TCE	Other HVOCs
04/06/17	95.57	----	----	----	----	ND	ND	ND
11/13/13	94.10	**140**	**1,100**	ND	**7**	----	----	----
11/28/05	94.02	**280**	**170**	ND	**98**	ND	ND	----

LEGEND

MW-24	MONITORING WELL
DPE-5	EXTRACTION WELL
DVP-1	VAPOR PROBE
RW-4	RECOVERY WELL
DB,SP & DP	SOIL BORING
P09	SOIL BORING (SOUNDEARTH 2012)
P.P.	POWER POLE
	REMEDIATION SYSTEM
	COUNTER_BALANCE STREET CAR TUNNELS
	PROPERTY BOUNDARY
	STREET CENTER LINE
GAS	GAS LINE
OHP	OVERHEAD POWER
SS	SEWER LINE
W	WATER LINE
	FENCING
UST	UNDERGROUND STORAGE TANK
	CROSS SECTION LOCATION
SAIC	SCIENCE APPLICATIONS INTERNATIONAL CORPORATION
SOUNDEARTH	SOUNDEARTH STRATEGIES, INC.

SITE FEATURES FROM SAIC'S FINAL REMEDIAL INVESTIGATION AND SITE SUMMARY REPORT, AUGUST 2007

= Groundwater Analytical Data in ug/L, gray data box indicates RGI's April 2017 Groundwater Sampling Event (not all historical data shown here)

Elev. = Groundwater elevation (in feet)
Gas/DSL/Oil = Gasoline/diesel/oil total petroleum hydrocarbons
BTEX = Benzene, toluene, ethylbenzene, xylenes
ND = Not detected
NS = Not sampled
Bold and yellow highlight indicates concentrations above MTCA Groundwater screening levels.

PCE = Tetrachloroethene
TCE = Trichloroethene
VOCs = Volatile organic compounds
As = Arsenic
Pb = Lead
* = Indicates dissolved metal

= UST Removal/Cleanup Excavation Limits (1993)
= Site boundary

Groundwater contours generated using Surfer Software (based on Kriging method).
Contours based on April 4, 2017 water level measurements.

Approximate Scale: 1"=20'
0 10 20 40

RILEYGROUP
Corporate Office
17522 Bothell Way Northeast
Bothell, Washington 98011
Phone: 425.415.0551
Fax: 425.415.0311

Arnold's/Former Texaco Service Station No. 211577 | Figure 2

RGI Project Number 2017-015B | Summary of Groundwater Analytical Data | Date Drawn: 04/2017

Address: 631 Queen Anne Avenue North, Seattle, Washington 98109

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

James E. Bruya, Ph.D.
Yelena Aravkina, M.S.
Michael Erdahl, B.S.
Arina Podnozova, B.S.
Eric Young, B.S.

3012 16th Avenue West
Seattle, WA 98119-2029
(206) 285-8282
fbi@isomedia.com
www.friedmanandbruya.com

April 12, 2017

Stafford Larsen, Project Manager
The Riley Group, Inc.
17522 Bothell Way NE
Bothell, WA 98011

Dear Mr Larsen:

Included are the results from the testing of material submitted on April 6, 2017 from the 2017-015B, F&BI 704089 project. There are 12 pages included in this report. Any samples that may remain are currently scheduled for disposal in 30 days. If you would like us to return your samples or arrange for long term storage at our offices, please contact us as soon as possible.

We appreciate this opportunity to be of service to you and hope you will call if you have any questions.

Sincerely,

FRIEDMAN & BRUYA, INC.

Michael Erdahl
Project Manager

Enclosures
TRG0412R.DOC

CASE NARRATIVE

This case narrative encompasses samples received on April 6, 2017 by Friedman & Bruya, Inc. from the The Riley Group 2017-015B, F&BI 704089 project. Samples were logged in under the laboratory ID's listed below.

Laboratory ID	The Riley Group
704089 -01	MW 10
704089 -02	MW 13
704089 -03	MW 9
704089 -04	DPE 5
704089 -05	DPE 7
704089 -06	DPE 6
704089 -07	Trip Blank

All quality control requirements were acceptable.

Date of Report: 04/12/17
Date Received: 04/06/17
Project: 2017-015B, F&BI 704089
Date Extracted: 04/10/17
Date Analyzed: 04/10/17

RESULTS FROM THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES AND TPH AS GASOLINE USING METHODS 8021B AND NWTPH-Gx

Results Reported as ug/L (ppb)

Sample ID Laboratory ID	Benzene	Toluene	Ethyl Benzene	Total Xylenes	Gasoline Range	Surrogate (% Recovery) (Limit 52-124)
MW 10 704089-01	<1	<1	<1	<3	<100	81
MW 13 704089-02	<1	<1	<1	<3	<100	81
MW 9 704089-03	<1	2.2	1.8	3.4	480	83
Method Blank 07-706 MB	<1	<1	<1	<3	<100	80

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW 10	Client:	The Riley Group
Date Received:	04/06/17	Project:	2017-015B, F&BI 704089
Date Extracted:	04/06/17	Lab ID:	704089-01
Date Analyzed:	04/06/17	Data File:	040632.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	103	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW 13	Client:	The Riley Group
Date Received:	04/06/17	Project:	2017-015B, F&BI 704089
Date Extracted:	04/06/17	Lab ID:	704089-02
Date Analyzed:	04/06/17	Data File:	040633.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	MW 9	Client:	The Riley Group
Date Received:	04/06/17	Project:	2017-015B, F&BI 704089
Date Extracted:	04/06/17	Lab ID:	704089-03
Date Analyzed:	04/06/17	Data File:	040634.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	DPE 5	Client:	The Riley Group
Date Received:	04/06/17	Project:	2017-015B, F&BI 704089
Date Extracted:	04/06/17	Lab ID:	704089-04
Date Analyzed:	04/06/17	Data File:	040635.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	DPE 7	Client:	The Riley Group
Date Received:	04/06/17	Project:	2017-015B, F&BI 704089
Date Extracted:	04/06/17	Lab ID:	704089-05
Date Analyzed:	04/06/17	Data File:	040636.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	100	57	121
Toluene-d8	103	63	127
4-Bromofluorobenzene	101	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	DPE 6	Client:	The Riley Group
Date Received:	04/06/17	Project:	2017-015B, F&BI 704089
Date Extracted:	04/06/17	Lab ID:	704089-06
Date Analyzed:	04/06/17	Data File:	040637.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	102	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	The Riley Group
Date Received:	Not Applicable	Project:	2017-015B, F&BI 704089
Date Extracted:	04/06/17	Lab ID:	07-678 mb
Date Analyzed:	04/06/17	Data File:	040605.D
Matrix:	Water	Instrument:	GCMS4
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	103	57	121
Toluene-d8	102	63	127
4-Bromofluorobenzene	99	60	133

Compounds:	Concentration ug/L (ppb)
Vinyl chloride	<0.2
Chloroethane	<1
1,1-Dichloroethene	<1
Methylene chloride	<5
trans-1,2-Dichloroethene	<1
1,1-Dichloroethane	<1
cis-1,2-Dichloroethene	<1
1,2-Dichloroethane (EDC)	<1
1,1,1-Trichloroethane	<1
Trichloroethene	<1
Tetrachloroethene	<1

Date of Report: 04/12/17
Date Received: 04/06/17
Project: 2017-015B, F&BI 704089

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR BENZENE, TOLUENE, ETHYLBENZENE, XYLENES, AND TPH AS GASOLINE USING EPA METHOD 8021B AND NWTPH-Gx

Laboratory Code: 704085-13 (Duplicate)

Analyte	Reporting Units	Sample Result	Duplicate Result	RPD (Limit 20)
Benzene	ug/L (ppb)	<1	<1	nm
Toluene	ug/L (ppb)	<1	<1	nm
Ethylbenzene	ug/L (ppb)	<1	<1	nm
Xylenes	ug/L (ppb)	<3	<3	nm
Gasoline	ug/L (ppb)	<100	<100	nm

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Benzene	ug/L (ppb)	50	103	65-118
Toluene	ug/L (ppb)	50	100	72-122
Ethylbenzene	ug/L (ppb)	50	100	73-126
Xylenes	ug/L (ppb)	150	96	74-118
Gasoline	ug/L (ppb)	1,000	108	69-134

Date of Report: 04/12/17
Date Received: 04/06/17
Project: 2017-015B, F&BI 704089

QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER SAMPLES FOR VOLATILES BY EPA METHOD 8260C

Laboratory Code: 704071-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	112	36-166
Chloroethane	ug/L (ppb)	50	<1	115	46-160
1,1-Dichloroethene	ug/L (ppb)	50	<1	120	60-136
Methylene chloride	ug/L (ppb)	50	<5	112	67-132
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	114	72-129
1,1-Dichloroethane	ug/L (ppb)	50	<1	110	70-128
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	109	71-127
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	107	69-133
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	106	60-146
Trichloroethene	ug/L (ppb)	50	<1	105	66-135
Tetrachloroethene	ug/L (ppb)	50	<1	98	10-226

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Vinyl chloride	ug/L (ppb)	50	112	105	50-154	6
Chloroethane	ug/L (ppb)	50	114	105	58-146	8
1,1-Dichloroethene	ug/L (ppb)	50	122	120	67-136	2
Methylene chloride	ug/L (ppb)	50	111	108	39-148	3
trans-1,2-Dichloroethene	ug/L (ppb)	50	115	112	68-128	3
1,1-Dichloroethane	ug/L (ppb)	50	110	107	79-121	3
cis-1,2-Dichloroethene	ug/L (ppb)	50	109	107	80-123	2
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	105	103	73-132	2
1,1,1-Trichloroethane	ug/L (ppb)	50	107	105	83-130	2
Trichloroethene	ug/L (ppb)	50	107	104	80-120	3
Tetrachloroethene	ug/L (ppb)	50	98	96	76-121	2

Data Qualifiers & Definitions

a - The analyte was detected at a level less than five times the reporting limit. The RPD results may not provide reliable information on the variability of the analysis.

b - The analyte was spiked at a level that was less than five times that present in the sample. Matrix spike recoveries may not be meaningful.

ca - The calibration results for the analyte were outside of acceptance criteria. The value reported is an estimate.

c - The presence of the analyte may be due to carryover from previous sample injections.

cf - The sample was centrifuged prior to analysis.

d - The sample was diluted. Detection limits were raised and surrogate recoveries may not be meaningful.

dv - Insufficient sample volume was available to achieve normal reporting limits.

f - The sample was laboratory filtered prior to analysis.

fb - The analyte was detected in the method blank.

fc - The compound is a common laboratory and field contaminant.

hr - The sample and duplicate were reextracted and reanalyzed. RPD results were still outside of control limits. Variability is attributed to sample inhomogeneity.

hs - Headspace was present in the container used for analysis.

ht – The analysis was performed outside the method or client-specified holding time requirement.

ip - Recovery fell outside of control limits. Compounds in the sample matrix interfered with the quantitation of the analyte.

j - The analyte concentration is reported below the lowest calibration standard. The value reported is an estimate.

J - The internal standard associated with the analyte is out of control limits. The reported concentration is an estimate.

jl - The laboratory control sample(s) percent recovery and/or RPD were out of control limits. The reported concentration should be considered an estimate.

js - The surrogate associated with the analyte is out of control limits. The reported concentration should be considered an estimate.

lc - The presence of the analyte is likely due to laboratory contamination.

L - The reported concentration was generated from a library search.

nm - The analyte was not detected in one or more of the duplicate analyses. Therefore, calculation of the RPD is not applicable.

pc - The sample was received with incorrect preservation or in a container not approved by the method. The value reported should be considered an estimate.

ve - The analyte response exceeded the valid instrument calibration range. The value reported is an estimate.

vo - The value reported fell outside the control limits established for this analyte.

x - The sample chromatographic pattern does not resemble the fuel standard used for quantitation.

704089

SAMPLE CHAIN OF CUSTODY

ME 04-06-17 VW2

Page # 1 of

Report To Stafford Larsen

Company The Riley Group

Address 17522 Bothell Way NE

City, State, ZIP Bothell WA 98011

Phone ______ Email Slarsen@Riley-Group.com

SAMPLERS (signature) Stoffer

PROJECT NAME 2017-015 B

PO #

REMARKS

INVOICE TO

TURNAROUND TIME
☑ Standard Turnaround
☐ RUSH
Rush charges authorized by:

SAMPLE DISPOSAL
☐ Dispose after 30 days
☐ Archive Samples
☐ Other

Sample ID	Lab ID	Date Sampled	Time Sampled	Sample Type	# of Jars	TPH-HCID	TPH-Diesel	TPH-Gasoline	BTEX by 8021B	VOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	HVOC				Notes
MW 10	01 A-C	4/6/17	750	H2O	3			X	X				X				
MW 13	02	↓	825	↓	↓			X	X				X				
MW 9	03	↓	910	↓	↓			X	X				X				
DPE 5	04	↓	955	↓	↓								X				
DPE 7	05	↓	1050	↓	↓								X				
DPE 6	06	↓	1200	↓	↓								X				
Trip Blank	07 A.B																added in lab
																	Samples received at 3 °C

Friedman & Bruya, Inc.
3012 16th Avenue West
Seattle, WA 98119-2029
Ph. (206) 285-8282

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
Relinquished by: [signature]	Stoffer	RGI	4/6/17	1230
Received by: [signature]	Do Vo	FeBI	4-6-17	12:30
Relinquished by:				
Received by:				