



Technical Memorandum

Page 1 of 2

Date:	March 22, 2017	From:	Kellie M. Andrews, Trevor W. Louviere, P.E.
To:	Quantum Builders	Project Manager:	Trevor W. Louviere, P.E.
	1534 1 st Avenue South, Suite 100	Principal in Charge:	Matthew A. Miller, P.E.
	Seattle, Washington 98134	Project Name:	S Orr Street Property Assemblage
Attn:	Mr. Kevin Weare	Project No:	170051V001
Subject:	Redevelopment and Sampling of Existing Monitoring Wells		

This technical memorandum provides a summary of fieldwork and findings regarding the redevelopment and sampling of existing monitoring wells performed at the S Orr Street Property Assemblage Site (Subject Property) in King County, Washington. Approximate monitoring well locations are shown on the Washington State Department of Ecology's (Ecology's) site plan, attached to this memorandum.

Historically the property south of the S Orr Street residential block was an operational aircraft industry manufacturing facility operated by Spencer Industries, Inc. which utilized petroleum products and chlorinated solvents. The facility is currently an active manufacturing facility operated by JAC Corporate, LLC. We understand that Ecology listed the site in 1999 (Cleanup Site ID: 4796) and produced a summary report detailing the site remedial history in 2015. The report states ground water contamination is present onsite and possibly extending under S Orr Street. Ground water flow in the area varies from a north-northwest to northeast direction as reported by Ecology, with ground water depths ranging from 9 to 11 feet below ground surface. We understand this limited ground water sampling has been requested to assist in identifying the potential presence of contaminants below the proposed property assemblage and assist in the possible future redevelopment of the Subject Property.

Associated Earth Sciences, Inc. (AESI) was onsite March 8, 2017 to redevelop monitoring wells HC-1, HC-2, and HC-3. Depth to water measurements were collected using an audible interface probe, after which the sensor was allowed to descend to the bottom of the well. The length of the water column was used to estimate the volume of water in the well for well purging purposes. Approximately 8 to 10 well casing volumes of ground water were purged from each well during redevelopment using inertial pump tubing and a foot valve in addition to a surge block to remove accumulated sediment within the well casing and increase the conductivity between the well and the surrounding formation. A significant decrease in turbidity was observed in water removed from each of the wells over the redevelopment period. After redevelopment, each well was re-secured per Ecology protocol.

Following redevelopment, AESI conducted a ground water sampling event on March 13, 2017. Ground water samples were collected per the Environmental Protection Agency's (EPA's) low flow sampling guidance. The wells were purged using a peristaltic pump and field parameters were stabilized prior to sample collection per the guidance. Ground water stabilization parameters are presented in Table 1.

Samples were submitted to a subcontracted analytical laboratory for analysis. Each sample was analyzed for diesel and heavy oil using the NWTPH Diesel extended method, RCRA 8 metals using EPA method 200.8/1631E, and chlorinated solvents using EPA method 8260C. Analytical results are summarized in Table 2. Barium was detected in HC-1, HC-2, and HC-3 at concentrations of 5.40 micrograms per liter ($\mu\text{g/L}$), 4.84 $\mu\text{g/L}$, and 19.20 $\mu\text{g/L}$, respectively. All concentrations of barium are significantly below the Model Toxics Control Act (MTCA) Method B cleanup level of 3,200 $\mu\text{g/L}$. Selenium was detected in HC-1 at a concentration of 1.04 $\mu\text{g/L}$, below the MTCA Method B cleanup level of 80 $\mu\text{g/L}$. All other analytes were non-detect, or below the laboratory reporting limits. The laboratory analytical results are attached.

Attachments: Table 1: Summary of Ground Water Stabilization Parameters
Table 2: Summary of Ground Water Sampling Analytical Results
Ecology Site Overview Map
Laboratory Analytical Results

Table 1
Summary of Groundwater Stabilization Parameters

	Well No.	HC-1	HC-2	HC-3
	Sample Date	3/13/2017	3/13/2017	3/13/2017
	Sample ID	HC-1-170313	HC-2-170313	HC-3-170313
Parameter				
Initial Depth to Water (' btoc)		7.92	8.53	7.58
Final Depth to Water (' btoc)		7.97	8.83	7.79
Flow Rate (mL/min)		200	220	200
Temp (deg C)		13.2	12.4	12.7
SpC (µS/cm)		244.3	105.1	304.6
pH (s.u.)		6.37	6.02	6.28
DO(mg/L)		0.62	3.45	0.31
ORP (mV)		-63.1	-51.6	-50.7
Turbidity (NTU)		2.72	6.32	66.6

NOTES:

' btoc = feet below top of casing
 mL/min = milliliters per minute
 deg C = degrees Celcius
 µS/cm = microsiemens per centimeter
 s.u. = standard unit
 mg/L = milligrams per liter
 mV = millivolts
 NTU = Nephelometric Turbidity Units

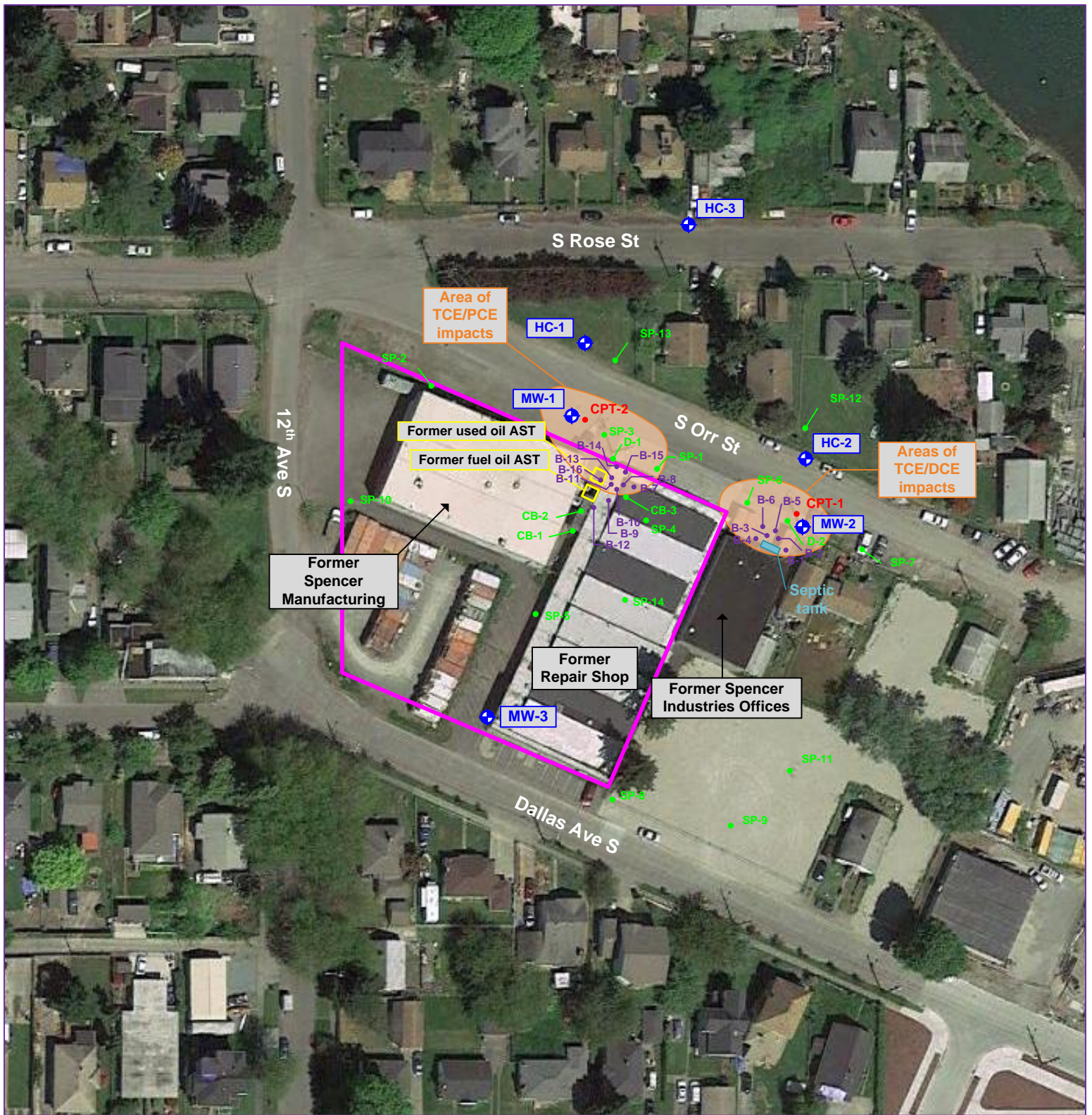
Table 2
Summary of Ground Water Analytical Results
RCRA 8 Metals, Petroleum Hydrocarbons, and Chlorinated Volatile Organic Compounds

Analyte	Unit	MTCA Cleanup Level ¹	Well No.	HC-1	HC-2	HC-3
			Sample Date	3/13/2017	3/13/2017	3/13/2017
			Sample ID	HC-1-170313	HC-2-170313	HC-3-170313
Metals						
Arsenic	µg/L	5 ²		<1	<1	<1
Barium	µg/L	3,200		5.40	4.84	19.20
Cadmium	µg/L	5 ²		<1	<1	<1
Chromium	µg/L	50 ²		<1	<1	<10
Lead	µg/L	15 ²		<1	<1	<1
Mercury	µg/L	2 ²		<1	<1	<1
Selenium	µg/L	80		1.04	<1	<1
Silver	µg/L	80		<1	<1	<1
Total Petroleum Hydrocarbons (TPH)						
Diesel Range Hydrocarbons	µg/L	500 ²		<50	<50	<50
Heavy Oil Range Hydrocarbons	µg/L	500 ²		<250	<250	<250
Volatile Organic Compounds (VOCs)						
Vinyl chloride	µg/L	0.2 ²		<0.2	<0.2	<0.2
Chloroethane	µg/L			<1	<1	<1
1,1-Dichloroethene	µg/L			<1	<1	<1
Methylene chloride	µg/L	5 ²		<5	<5	<5
trans-1,2-Dichloroethene	µg/L			<1	<1	<1
1,1-Dichloroethane	µg/L			<1	<1	<1
cis-1,2-Dichloroethene	µg/L			<1	<1	<1
1,2-Dichloroethane (EDC)	µg/L	5 ²		<1	<1	<1
1,1,1-Trichloroethane	µg/L	200 ²		<1	<1	<1
Trichloroethene	µg/L	5 ²		<1	<1	<1
Tetrachloroethene	µg/L	5 ²		<1	<1	<1

NOTES:

- 1 MTCA Method B Cleanup Level, Non-Carcinogen Direct Contact, Standard Formula Value, CLARC Website
- 2 MTCA Method A Groundwater Cleanup Levels

Bold Result exceeds groundwater quality criteria
 NL No Limit
 nm Not measured
 µg/L Micrograms per Liter
 na Not analysed
 MTCA Model Toxics Control Act, Chapter 173-340 WAC
 CLARC Cleanup Levels and Risk Calculation
 Samples analyzed by Friedman & Bruya, Inc. of Seattle, Washington



Legend:

- Property location (approximate)
- Former AST location (approximate)
- Groundwater plume boundary (approximate)
- + Monitoring well (approximate)
- 1996 soil sample location (approximate)
- 1997 soil sample location (approximate)
- 1997 groundwater sample location (approximate)

Notes:

1. All locations are approximate, and not to scale.



DEPARTMENT OF
ECOLOGY
State of Washington

Spencer Industries Inc
8410 Dallas Avenue South &
1205 South Orr Street
Seattle, WA 98108

Site Overview Map

CSID 4796

CSID4796.vsd

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

March 20, 2017

Trevor Louviere, Project Manager
Associated Earth Sciences, Inc.
911 5th Avenue, Suite 100
Kirkland, WA 98033

Dear Mr Louviere:

Included are the results from the testing of material submitted on March 13, 2017 from the S. Orr St Property, PO 170051-V001, F&BI 703228 project. There are 15 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
c: Kellie Andrews
AE10320R.DOC

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

CASE NARRATIVE

This case narrative encompasses samples received on March 13, 2017 by Friedman & Bruya, Inc. from the Associated Earth Sciences S. Orr St Property, PO 170051-V001, F&BI 703228 project. Samples were logged in under the laboratory ID's listed below.

<u>Laboratory ID</u>	<u>Associated Ear th Sciences</u>
703228 -01	HC-1-170313
703228 -02	HC-2-170313
703228 -03	HC-3-170313

A 200.8 internal standard failed the acceptance criteria for sample HC-3-170313 due to matrix interferences. The data were flagged accordingly. The sample was diluted and reanalyzed.

All other quality control requirements were acceptable.

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/20/17

Date Received: 03/13/17

Project: S. Orr St Property, PO 170051-V001, F&BI 703228

Date Extracted: 03/15/17

Date Analyzed: 03/15/17

**RESULTS FROM THE ANALYSIS OF WATER SAMPLES
FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL AND MOTOR OIL
USING METHOD NWTPH-Dx**
Results Reported as ug/L (ppb)

<u>Sample ID</u> Laboratory ID	<u>Diesel Range</u> (C ₁₀ -C ₂₅)	<u>Motor Oil Range</u> (C ₂₅ -C ₃₆)	<u>Surrogate</u> (% Recovery) (Limit 47-140)
HC-1-170313 703228-01	<50	<250	98
HC-2-170313 703228-02	<50	<250	75
HC-3-170313 703228-03	<50	<250	96
Method Blank 07-526 MB	<50	<250	115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	HC-1-170313	Client:	Associated Earth Sciences
Date Received:	03/13/17	Project:	S. Orr St Property, PO 170051-V001
Date Extracted:	03/14/17	Lab ID:	703228-01
Date Analyzed:	03/15/17	Data File:	703228-01.052
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Barium	5.40
Cadmium	<1
Chromium	<1
Lead	<1
Mercury	<1
Selenium	1.04
Silver	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	HC-2-170313	Client:	Associated Earth Sciences
Date Received:	03/13/17	Project:	S. Orr St Property, PO 170051-V001
Date Extracted:	03/14/17	Lab ID:	703228-02
Date Analyzed:	03/15/17	Data File:	703228-02.053
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Barium	4.84
Cadmium	<1
Chromium	<1
Lead	<1
Mercury	<1
Selenium	<1
Silver	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	HC-3-170313	Client:	Associated Earth Sciences
Date Received:	03/13/17	Project:	S. Orr St Property, PO 170051-V001
Date Extracted:	03/14/17	Lab ID:	703228-03
Date Analyzed:	03/15/17	Data File:	703228-03.054
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Barium	19.2
Cadmium	<1
Chromium	<1 J
Lead	<1
Mercury	<1
Selenium	<1
Silver	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	HC-3-170313	Client:	Associated Earth Sciences
Date Received:	03/13/17	Project:	S. Orr St Property, PO 170051-V001
Date Extracted:	03/14/17	Lab ID:	703228-03 x10
Date Analyzed:	03/15/17	Data File:	703228-03 x10.082
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Chromium	<10

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Total Metals By EPA Method 200.8

Client ID:	Method Blank	Client:	Associated Earth Sciences
Date Received:	NA	Project:	S. Orr St Property, PO 170051-V001
Date Extracted:	03/14/17	Lab ID:	I7-137 mb
Date Analyzed:	03/15/17	Data File:	I7-137 mb.033
Matrix:	Water	Instrument:	ICPMS2
Units:	ug/L (ppb)	Operator:	SP

Analyte:	Concentration ug/L (ppb)
Arsenic	<1
Barium	<1
Cadmium	<1
Chromium	<1
Lead	<1
Mercury	<1
Selenium	<1
Silver	<1

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC-1-170313	Client:	Associated Earth Sciences
Date Received:	03/13/17	Project:	S. Orr St Property, PO 170051-V001
Date Extracted:	03/14/17	Lab ID:	703228-01
Date Analyzed:	03/14/17	Data File:	031433.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	98	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	99	76	126

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC-2-170313	Client:	Associated Earth Sciences
Date Received:	03/13/17	Project:	S. Orr St Property, PO 170051-V001
Date Extracted:	03/14/17	Lab ID:	703228-02
Date Analyzed:	03/14/17	Data File:	031434.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	105	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	98	76	126

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	HC-3-170313	Client:	Associated Earth Sciences
Date Received:	03/13/17	Project:	S. Orr St Property, PO 170051-V001
Date Extracted:	03/14/17	Lab ID:	703228-03
Date Analyzed:	03/14/17	Data File:	031435.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	102	85	117
Toluene-d8	101	91	108
4-Bromofluorobenzene	99	76	126

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Analysis For Volatile Compounds By EPA Method 8260C

Client Sample ID:	Method Blank	Client:	Associated Earth Sciences
Date Received:	Not Applicable	Project:	S. Orr St Property, PO 170051-V001
Date Extracted:	03/14/17	Lab ID:	07-481 mb
Date Analyzed:	03/14/17	Data File:	031410.D
Matrix:	Water	Instrument:	GCMS9
Units:	ug/L (ppb)	Operator:	JS

Surrogates:	% Recovery:	Lower Limit:	Upper Limit:
1,2-Dichloroethane-d4	99	85	117
Toluene-d8	100	91	108
4-Bromofluorobenzene	98	76	126

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

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/20/17

Date Received: 03/13/17

Project: S. Orr St Property, PO 170051-V001, F&BI 703228

**QUALITY ASSURANCE RESULTS FOR THE ANALYSIS OF WATER
SAMPLES FOR TOTAL PETROLEUM HYDROCARBONS AS
DIESEL EXTENDED USING METHOD NWTPH-Dx**

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Percent Recovery LCSD	Acceptance Criteria	RPD (Limit 20)
Diesel Extended	ug/L (ppb)	2,500	102	104	61-133	2

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/20/17

Date Received: 03/13/17

Project: S. Orr St Property, PO 170051-V001, F&BI 703228

**QUALITY ASSURANCE RESULTS
FOR THE ANALYSIS OF WATER SAMPLES
FOR TOTAL METALS USING EPA METHOD 200.8**

Laboratory Code: 703214-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Percent Recovery MSD	Acceptance Criteria	RPD (Limit 20)
Arsenic	ug/L (ppb)	10	2.90	107	99	70-130	8
Barium	ug/L (ppb)	50	45.1	113	110	70-130	3
Cadmium	ug/L (ppb)	5	<1	102	99	70-130	3
Chromium	ug/L (ppb)	20	4.64	105	99	70-130	6
Lead	ug/L (ppb)	10	<1	83	78	70-130	6
Mercury	ug/L (ppb)	10	<1	85	80	70-130	6
Selenium	ug/L (ppb)	5	<1	100	93	70-130	7
Silver	ug/L (ppb)	5	<1	88	85	70-130	3

Laboratory Code: Laboratory Control Sample

Analyte	Reporting Units	Spike Level	Percent Recovery LCS	Acceptance Criteria
Arsenic	ug/L (ppb)	10	98	85-115
Barium	ug/L (ppb)	50	98	85-115
Cadmium	ug/L (ppb)	5	102	85-115
Chromium	ug/L (ppb)	20	104	85-115
Lead	ug/L (ppb)	10	103	85-115
Mercury	ug/L (ppb)	10	99	85-115
Selenium	ug/L (ppb)	5	99	85-115
Silver	ug/L (ppb)	5	99	85-115

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

Date of Report: 03/20/17

Date Received: 03/13/17

Project: S. Orr St Property, PO 170051-V001, F&BI 703228

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

Laboratory Code: 703226-01 (Matrix Spike)

Analyte	Reporting Units	Spike Level	Sample Result	Percent Recovery MS	Acceptance Criteria
Vinyl chloride	ug/L (ppb)	50	<0.2	94	61-139
Chloroethane	ug/L (ppb)	50	<1	102	55-149
1,1-Dichloroethene	ug/L (ppb)	50	<1	100	71-123
Methylene chloride	ug/L (ppb)	50	<5	104	61-126
trans-1,2-Dichloroethene	ug/L (ppb)	50	<1	96	72-122
1,1-Dichloroethane	ug/L (ppb)	50	<1	99	79-113
cis-1,2-Dichloroethene	ug/L (ppb)	50	<1	94	63-126
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	<1	101	70-119
1,1,1-Trichloroethane	ug/L (ppb)	50	<1	99	75-121
Trichloroethene	ug/L (ppb)	50	<1	100	75-109
Tetrachloroethene	ug/L (ppb)	50	<1	96	72-113

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	94	94	70-119	0
Chloroethane	ug/L (ppb)	50	103	102	66-149	1
1,1-Dichloroethene	ug/L (ppb)	50	101	102	75-119	1
Methylene chloride	ug/L (ppb)	50	102	99	63-132	3
trans-1,2-Dichloroethene	ug/L (ppb)	50	98	97	76-118	1
1,1-Dichloroethane	ug/L (ppb)	50	99	98	80-116	1
cis-1,2-Dichloroethene	ug/L (ppb)	50	96	95	80-112	1
1,2-Dichloroethane (EDC)	ug/L (ppb)	50	102	100	79-109	2
1,1,1-Trichloroethane	ug/L (ppb)	50	99	99	80-116	0
Trichloroethene	ug/L (ppb)	50	102	101	77-108	1
Tetrachloroethene	ug/L (ppb)	50	99	99	78-109	0

FRIEDMAN & BRUYA, INC.

ENVIRONMENTAL CHEMISTS

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.

703228

SAMPLE CHAIN OF CUSTODY

ME 03/13/17 VW2/AT2/DOY
Page # 1 of 1

Report To Trevor Louviere / Kellie Andrews

Company AESI

Address 911 5th Ave

City, State, ZIP Kirkland WA 98033

Phone 425 827 7701 Email TLOUVIERE@AESGEO.COM

SAMPLERS (signature) Kellie Andrews

PROJECT NAME S. Orr St Property PO # 170051-V001
~~170051~~
~~KV170051~~

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	ANALYSES REQUESTED										Notes	
						TPH-HCID	TPH-Diesel X	TPH-Gasoline	BTEX by 8021B	CVOCs by 8260C	SVOCs by 8270D	PAHs 8270D SIM	PCPA 8	MEANS			
HC-1-170313	01A-E	3-13-17	908	H ₂ O	5	X				X			X				
HC-2-170313	02	↓	1015	↓	↓	X				X			X				
HC-3-170313	03	↓	1118	↓	↓	X				X			X				
															Samples received at <u>4</u> ¹⁶		

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

SIGNATURE	PRINT NAME	COMPANY	DATE	TIME
	Kellie Andrews	AESI	3-13-17	1255
	Trevor Louviere	AESI	3/13/17	1255
	Trevor Louviere	AESI	3/13/17	1545
	Eric Clamb	FAB	3/13/17	1545