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August 10, 2016

Mr. Steve Teel
Washington State Department of Ecology
Southwest Regional Office
300 Desmond Drive SE
Lacey, WA 98503

SUBJECT: SECOND QUARTER 2016 GROUNDWATER COMPLIANCE MONITORING REPORT
Former Olympia Dry Cleaners Site
601 Union Avenue SE
Olympia, Washington

Dear Mr. Teel:

This quarterly groundwater compliance monitoring report is the second report for the Former Olympia Dry Cleaners Site (Site) prepared on behalf of the Estate of Katherine Burleson and GJG, LLC, to meet the reporting requirements of Consent Decree No. 14-2-02104-3 (State of Washington 2014) and the Cleanup Action Plan (CAP; Ecology 2014). The Site is located at 606 Union Avenue SE in Olympia, Washington (Figure 1).

In September 2015, an excavation to remove accessible soil contaminated with chlorinated solvents was completed in accordance with the Remedial Action Work Plan (RAWP; Floyd Snider 2015a) and RAWP Addendum (Floyd|Snider 2015b). After the remedial action was completed, a Compliance Monitoring Plan (CMP) for post-remediation monitoring was developed in coordination with the Washington State Department of Ecology (Ecology; Floyd|Snider 2016). The objective of this report is to document the results of the second post-remediation quarterly groundwater monitoring completed in June 2016. The cumulative results from these quarterly monitoring events will be used to assess the effectiveness of the cleanup action and will be further documented in an annual report to be prepared after the fourth round of monitoring.

COMPLIANCE MONITORING SAMPLE COLLECTION

This section describes the groundwater and seep water sampling performed during the June 2016 monitoring event. Except for the deviations noted in the section "Deviations from Compliance Monitoring Plan," the field methods used during the monitoring event were in substantive accordance with the CMP. The compliance monitoring locations are shown on Figure 2.

Monitoring Well Groundwater Sampling

Groundwater samples were collected from the five compliance wells (identified in the CMP) on June 9, 2016. Groundwater samples were collected from monitoring wells MW-06, MW-09, MW-11, MW-13, and MW-14 using standard low-flow sampling methods described in the CMP. Monitoring well MW-14 (artesian) was flowing much slower than it had during the March event; therefore, a low-flow sample was collected. A field duplicate was also collected from MW-14. The groundwater sample collection forms are included in Attachment 1.

The samples were submitted to Fremont Analytical, Inc., in Seattle, Washington, under chain of custody for analysis of the chemicals of concern (COCs) at the Site, which are tetrachloroethene (PCE), trichloroethene (TCE), *cis*- and *trans*-1,2-dichloroethene (DCE), 1,1-DCE, and vinyl chloride.

French Drain Water Sampling

At the time of the quarterly monitoring, the French drain sampling standpipe that collects artesian water downgradient of the excavated area was found to have approximately 1 foot of accumulated water. The volume of the entire drain pipe, approximately 20 gallons of water, was purged using a 1 gallon-per-minute (gpm) submersible pump. The water level in the stand pipe showed minimal drawdown during purging, suggesting a recharge rate of about 1 gpm. In accordance with the CMP, a water sample (FD-01) was collected from the standpipe after purging.

The sample was submitted to Fremont Analytical, Inc. under chain of custody for analysis of PCE, TCE, *cis- and trans*-1,2-DCE, 1,1-DCE, and vinyl chloride.

Seep Water Sampling

The groundwater seep observed during the March 2016 monitoring was observed to still be flowing between curb sections along the curb line of Cherry Street SE north of the main excavation area and the former seep area, between the concrete curb and the asphalt roadway (Figure 2). The seep is being expressed through a small void in the asphalt under the curb and was noted to be flowing at a slower rate than in March. A grab sample was collected from the seep on June 9, 2016. An additional seep grab sample (Seep-CB) was collected downhill at the point of discharge on the southern end of the catch basin on the west side of Cherry Street SE (Figure 2).

The samples were submitted to Fremont Analytical, Inc. under chain of custody for analysis of PCE, TCE, *cis*- and *trans*-1,2-DCE, 1,1-DCE, and vinyl chloride.

Data Validation

A Compliance Screening, Tier 1 data quality review was performed on volatile organic compound data resulting from laboratory analysis by USEPA Method 8260C. The analytical data were

validated in accordance with the USEPA *National Functional Guidelines for Superfund Organic Methods Data Review* (USEPA 2014).

A total of two seep samples and seven groundwater samples were submitted in one sample delivery group (FB1606154) to Fremont Analytical, Inc. for chemical analysis. For all analyses, the analytical holding times were met and the method blanks had no detections. The surrogate, matrix spike (MS), matrix spike duplicate (MSD), laboratory control sample recoveries, MS/MSD, and sample/sample duplicate relative percent differences all met USEPA requirements.

No qualifiers were added to the analytical results based on the data quality review. Data are determined to be of acceptable quality for use as reported by the laboratory.

COMPLIANCE MONITORING ANALYTICAL RESULTS

The analytical results from the June 2016 groundwater monitoring are provided in Table 1, along with data from the first quarter monitoring event in March 2016 and the pre-remediation monitoring well sampling in August 2013 (SES 2013) for comparison. Both the March and June 2016 groundwater monitoring results are also shown on Figure 3. A copy of the laboratory report is included in Attachment 2.

Monitoring Well Groundwater Results

Groundwater collected from monitoring well MW-14 contained TCE, PCE, *cis*-1,2-DCE, and vinyl chloride at concentrations greater than their respective cleanup levels, consistent with the March 2016 data. MW-14 is located south of the main excavation area and downgradient of residual soil contamination underlying the Cherry Street Q-Tip Trust building. This well is located within the artesian groundwater aquifer where groundwater flow direction has likely been altered by the use of impermeable controlled density fill as backfill in the main excavation area.

The groundwater sample collected from well MW-09 contained *cis*-1,2-DCE and vinyl chloride at concentrations greater than the CUL and at slightly greater concentrations than in March 2016. MW-09 is located in the alleyway between the Former Olympia Dry Cleaners building and the Cherry Street Q-Tip Trust building, downgradient of the secondary excavation area.

Groundwater samples collected from monitoring wells MW-06, MW-11, and MW-13 had no detectable COC concentrations, consistent with both the March 2016 and the pre-remediation monitoring data.

French Drain Water Results

The water sample from the artesian aquifer south of the excavation, which is captured by the French drain sampling location (FD-01) had PCE, TCE, *cis*-1,2-DCE, and vinyl chloride concentrations exceeding their respective cleanup levels. Similar to MW-14, the French drain

collects water from the artesian aquifer south of the primary excavation area, and the water quality at both FD-01 and MW-14 in June 2016 was fairly similar to past sample dates.

Seep Water Results

The seep water samples collected from the curb line had PCE and vinyl chloride concentrations exceeding their respective cleanup levels, with water quality similar (but less than) the groundwater collected from MW-14 and FD-01. The concentrations of all analytes are nearly unchanged from the previous monitoring period in March 2016.

The water sample taken at seep discharge location, Seep-CB, had no exceedances for the tested analytes, confirming that the water quality at the point of discharge meets the CULs.

DEVIATIONS FROM COMPLIANCE MONITORING PLAN

During the June 2016 compliance monitoring, there were no significant deviations from the CMP except for the additional sample location, Seep-CB, to confirm the water quality at the point of discharge (at the catch basin).

CORRECTIVE ACTIONS

The seep water sample collected from the curb line on June 9, 2016, confirmed that PCE and vinyl chloride are present at concentrations greater than their respective cleanup levels. Per the CMP, contingency actions for addressing the groundwater seep identified between the curb line and the asphalt roadway along Cherry Street SE (Figure 2) are currently being evaluated.

On May 27, 2016, a local asphalt company (Affordable Asphalt) cleaned the curb line in the seep area using compressed air, and attempted to apply a rubberized sealant between the curb and the roadway. The seal started south of the seep, but the ground was too wet in the seep area for the seal to adhere and they were not able to get a good seal and complete the application.

During the June sampling event, Floyd|Snider observed the seep flow while purging the French drain and it appeared that pumping from the artesian aquifer at a fairly low rate (about 1 to 2 gpm) did not have an effect on the seep flow.

On June 9, 2016, an attempt was made at plugging the seep area with hydraulic cement, but again it could not set up and the seep continued to flow around the cement. Hydraulic cement is an expanding product suitable for wet use, but may not be suitable for v-shaped cracks. Further attempts at plugging the seep with hydraulic cement may require enlargement and undermining of the crack between the curb and the roadway for the hydraulic cement plug to be effective.

Floyd|Snider has continued to evaluate other options for sealing or treating the seep area, and has been in communication with the City of Olympia (City) regarding potential options, as the seep is discharging in the City roadway. A passive treatment option (activated carbon filter sock) was selected as the best option, due to limited disruption of the City street. The filter sock is

made of a heavy duty geotextile fabric sock that contains activated carbon. The specification for the filter sock is included as Attachment 3. It is 9 feet long and would be tied down tight (using bolts) in the gutter in front of the seep and immediately downslope. A small berm would be placed on the up-hill side so stormwater is diverted around the sock. A City right-of-way Obstruction Permit will be required for the installation of a filter sock. The City will require that the filter sock be bolted to the curb and routinely checked to make sure it doesn't become detached from the curb, that it is immediately replaced if it gets damaged, and that, if possible, it is removed within 6 months of the date of permit issuance and bolt holes filled. This option was verbally discussed with Ecology on July 27, 2016. The application for the right-of-way Obstruction Permit was submitted for preliminary review on August 9, 2016. The sock will be installed within 1 week of permit issuance.

If the filter sock is not effective in treating the seep water, and if seep water quality does not improve in the next 6 months, then more aggressive treatment or sealing options will be evaluated in consultation with Ecology and the City.

COMPLIANCE MONITORING SCHEDULE

The next quarterly monitoring event, which will be completed in September 2016, will consist of the collection of groundwater samples from the five compliance wells and water samples from the French drain and seep. In addition, a sample will be collected from the discharge of the filter sock to document treatment efficiency of the filter sock. The final 2016 quarterly monitoring event will be completed in December 2016. The results of the 2016 compliance monitoring will be documented in an Annual Summary Report, which will be submitted to Ecology after the first year of compliance monitoring has been completed.

REFERENCES

Floyd|Snider. 2015a. *Former Olympia Dry Cleaners Site Remedial Action Work Plan*. Prepared for Washington State Department of Ecology. 15 April.

_____. 2015b. *Memorandum Re: Remedial Action Work Plan Addendum, Former Olympia Dry Cleaners Site*. Prepared for Steve Teel, Washington State Department of Ecology. 22 June.

_____. 2016. *Former Olympia Dry Cleaners Site Compliance Monitoring Plan*. Prepared for Washington State Department of Ecology. 28 January.

Sound Earth Strategies (SES). 2013. Groundwater Monitoring Data (obtained from Washington State Department of Ecology Environmental Information Management Database). 13 August.

State of Washington. 2014. *Consent Decree No. 14-2-02104-3, State of Washington, Department of Ecology v. The Estate of Katherine Burleson and GJG, LLC*. Thurston County Superior Court. 31 October.

U.S. Environmental Protection Agency (USEPA). 2014. *National Functional Guidelines for Superfund Organic Methods Data Review*. Prepared by the Office of Superfund Remediation and Technology Innovation. OSWER 9355.0-132/EPA-540-R-014-002. August.

Washington State Department of Ecology (Ecology). 2014. *Former Olympia Dry Cleaners Site Cleanup Action Plan*. 29 October.

Sincerely yours,

FLOYD | SNIDER

Lynn Grochala
Senior Environmental Scientist

Encl.: Table 1 Groundwater Monitoring Data
Figure 1 Site Vicinity Map
Figure 2 Source Removal Areas and Compliance Monitoring Locations
Figure 3 March and June 2016 Groundwater Monitoring Results
Attachment 1 Field Forms
Attachment 2 Laboratory Data
Attachment 3 Filter Sock Specification

Table

Table 1

Groundwater Monitoring Data[1]

Sample Location	Status	Date	Tetrachloroethene (µg/L)	Trichloroethene (µg/L)	*cis* -1,2-Dichloroethene (µg/L)	*trans* -1,2-Dichloroethene (µg/L)	1,1-Dichloroethene (µg/L)	Vinyl Chloride (µg/L)
MW-06	Pre-remediation[1]	8/13/2013	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.20 U
	Post-remediation	3/12/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		6/9/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
MW-09	Pre-remediation	8/13/2013	1.0 U	1.0 U	4.1	1.0 U	1.0 U	**2.7**
	Post-remediation	3/12/2016	1.0 U	2.2	11	1.0 U	1.0 U	**5.0**
		6/9/2016	1.0 U	3.2	**26**	1.0 U	1.0 U	**9.8**
MW-11	Pre-remediation	8/13/2013	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.20 U
	Post-remediation	3/12/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		6/9/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
MW-13	Pre-remediation	8/13/2013	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.20 U
	Post-remediation	3/12/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
		6/9/2016	1.0 U	0.50 U	1.0 U	1.0 U	1.0 U	0.20 U
MW-14	Pre-remediation	8/13/2013	1.0 U	1.0 U	1.0 U	1.0 U	1.0 U	0.20 U
	Post-remediation	3/8/2016	**52**	**17**	**23**	1.0 U	1.0 U	**2.4**
		6/9/2016[2]	**99**	**34**	**33**	1.0 U	1.0 U	**2.8**
FD-01	Post-remediation	3/12/2016	**46**	**26**	**160**	1.0	1.0 U	**36**
		6/9/2016	**31**	**34**	**428**	2.4	1.2	**87**
Groundwater Cleanup Level (µg/L)			5.0	5.0	16	100	7.0	0.20
SEEP	Post-remediation	3/8/2016	**33**	15	110	1.0 U	1.0 U	**15**
		3/30/2016	**23**	17	160	1.0 U	1.0 U	**22**
		6/9/2016	**16**	18	170	1.3	1.0 U	**20**
SEEP-CB	Post-remediation	6/9/2016	1.0 U	0.50 U	1.8	1.0 U	1.0 U	0.20 U
Surface Water Cleanup Level (µg/L)			3.3	30	NA	10,000	3.2	2.4

Notes:

BOLD Indicates a concentration that exceeds the Site cleanup level.

1 Pre-remediation groundwater monitoring data collected by Sound Earth Strategies.

2 Field duplicate taken at this location on this date, the greatest concentration between the two samples is shown.

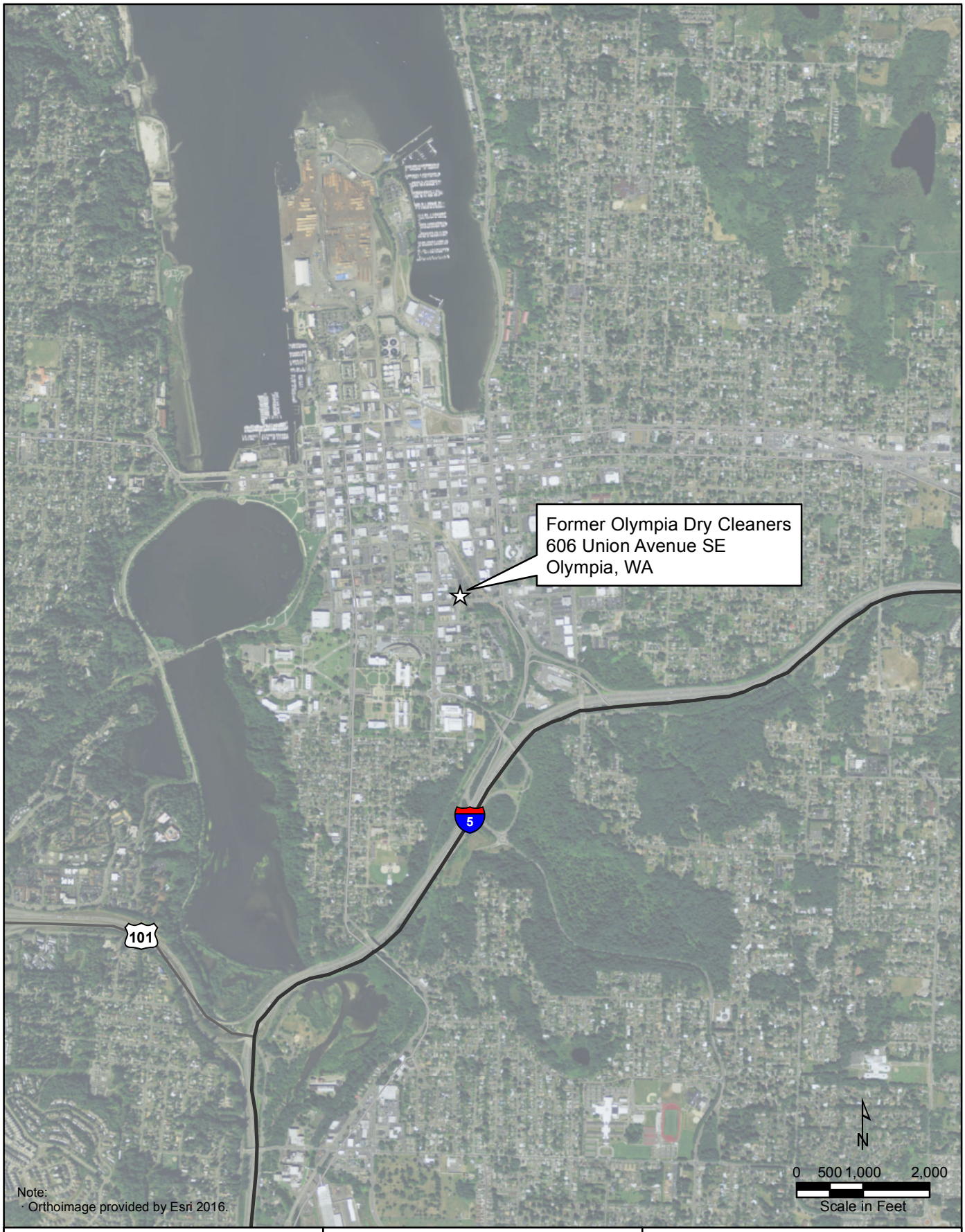
Abbreviation:

µg/L Micrograms per liter

Qualifier:

U The analyte was not detected at the given reporting limit.

Figures



Note:
· Orthoimage provided by Esri 2016.

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Quarterly Groundwater Compliance Monitoring
Former Olympia Dry Cleaners Site
Olympia, Washington

Figure 1
Site Vicinity Map

I:\GIS\Projects\GTH-Olympia_Dry_Cleaners\MXD\QuarterlyGroundwaterComplianceMonitoring\Figure 1 Vicinity Map.mxd
6/2/2016

Legend

- Compliance Monitoring Well
- Compliance Monitoring Point
- Seep

Utilities

- E — Underground Electric Line
- GAS — Underground Gas Line
- OE — Overhead Electric Line
- SW — Underground Stormwater Line
- T — Overhead Telephone Line
- W — Underground Water Line
- SS — Underground Sanitary Sewer Line

- Sidewalk
- Concrete Pad
- Building Outline
- Property Boundary
- Building Awning
- Soil Excavation Limits (2015)
- Shrubs/Trees

ASPHALT LOT

GRASSY AREA

ASPHALT LOT

UNION AVE SOUTHEAST

MW-06

Cherry Street Q-Tip Trust Building

MW-09

Boiler Room

Dry Cleaner Machine

Former Olympia Dry Cleaners Building

Roof Line

ARTESIAN SUPPLY WELL

MW-14

FD-01

MW-11

SEEP

FORMER SEEP AREA

CATCHBASIN

MANHOLE

MANHOLE

MANHOLE

CHERRY STREET SOUTHEAST

MW-13

N

0 12.5 25 50

Scale in Feet

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Quarterly Groundwater Compliance Monitoring
Former Olympia Dry Cleaners Site
Olympia, Washington

Figure 2
Source Removal Areas and
Compliance Monitoring Locations

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8/8/2016

Legend

- Compliance Monitoring Well
- Compliance Monitoring Point
- Seep
- Sidewalk
- Concrete Pad
- Building Outline
- Property Boundary
- Building
- Soil Excavation Limits (2015)
- Shrubs/Trees

Notes:
- All results reported in µg/L.
- **Bold** indicates a concentration that exceeds the cleanup level.

Abbreviations:
DCE = Dichloroethene
µg/L = Micrograms per liter
PCE = Tetrachloroethene
TCE = Trichloroethene

Qualifier:
U = Analyte was not detected at the given reporting limit.

MW-06

Analyte	March 2016	June 2016
PCE	1.0 U	1.0 U
TCE	0.50 U	0.50 U
cis-1,2-DCE	1.0 U	1.0 U
trans-1,2-DCE	1.0 U	1.0 U
1,1-DCE	1.0 U	1.0 U
Vinyl Chloride	0.20 U	0.20 U

MW-09

Analyte	March 2016	June 2016
PCE	1.0 U	1.0 U
TCE	2.2	3.2
cis-1,2-DCE	11	**26**
trans-1,2-DCE	1.0 U	1.0 U
1,1-DCE	1.0 U	1.0 U
Vinyl Chloride	**5.0**	**9.8**

MW-14

Analyte	March 2016	June 2016
PCE	**52**	**99**
TCE	**17**	**34**
cis-1,2-DCE	**23**	**33**
trans-1,2-DCE	1.0 U	1.0 U
1,1-DCE	1.0 U	1.0 U
Vinyl Chloride	**2.4**	**2.8**

MW-11

Analyte	March 2016	June 2016
PCE	1.0 U	1.0 U
TCE	0.50 U	0.50 U
cis-1,2-DCE	1.0 U	1.0 U
trans-1,2-DCE	1.0 U	1.0 U
1,1-DCE	1.0 U	1.0 U
Vinyl Chloride	0.20 U	0.20 U

FD-1

Analyte	March 2016	June 2016
PCE	**46**	**31**
TCE	**26**	**34**
cis-1,2-DCE	**160**	**428**
trans-1,2-DCE	1.0	2.4
1,1-DCE	1.0 U	1.2
Vinyl Chloride	**36**	**87**

SEEP-CB

Analyte	June 2016
PCE	1.0 U
TCE	0.50 U
cis-1,2-DCE	1.8
trans-1,2-DCE	1.0 U
1,1-DCE	1.0 U
Vinyl Chloride	0.20 U

SEEP

Analyte	March 2016	June 2016
PCE	**23**	**16**
TCE	17	18
cis-1,2-DCE	160	170
trans-1,2-DCE	1.0 U	1.3
1,1-DCE	1.0 U	1.0 U
Vinyl Chloride	**22**	**20**

MW-13

Analyte	March 2016	June 2016
PCE	1.0 U	1.0 U
TCE	0.50 U	0.50 U
cis-1,2-DCE	1.0 U	1.0 U
trans-1,2-DCE	1.0 U	1.0 U
1,1-DCE	1.0 U	1.0 U
Vinyl Chloride	0.20 U	0.20 U

ASPHALT LOT
GRASSY AREA
ASPHALT LOT
UNION AVE SOUTHEAST
Boiler Room
Dry Cleaner Machine
Former Olympia Dry Cleaners Building
Roof Line
Cherry Street Q-Tip Trust Building
CATCHBASIN
FORMER SEEP AREA
CHERRY STREET
N
0 12.5 25 50
Scale in Feet

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Quarterly Groundwater Compliance Monitoring
Former Olympia Dry Cleaners Site
Olympia, Washington

Figure 3
March and June 2016 Groundwater Monitoring Results

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8/8/2016

Attachment 1
Field Forms

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH - Olympia t-9 Date of Collection: 6/9/16

Project Number: Field Personnel: IC - Anderson

Purge Data

Well ID: MW-06 Secure: ☒ Yes ☐ No Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: ☐ Yes ☐ No One Casing Volume (gal): < 0.1 gal

Depth of water (from top of well casing): 0.86 Well Casing Type/Diameter/Screened Interval: 3/4" PVC, 10-20'

After 5 minutes of purging (from top of casing): (too narrow to measure)

Begin purge (time): 1320

End purge (time):

Volume purged:

Purge water disposal method: ground

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged L	pH	DO mg/L	Conductivity ms/cm	Turbidity NTU	Temp °C	ORP MV	Comments
1325		1	5.37		0.269	272	18.88	116	cloudy (?) - v. little water
~~1330~~									purging - stopped
~~1335~~									purging, re-started
1340		1.5	5.41	0.95	0.341	188	20.01	99	at slow rate at
1345		2	5.38	0.72	0.381	155	19.49	84	1335. Stopped
~~1350~~		2.5							again to recharge
1355		2.5	5.46	0.96	0.378	156	18.72	57	1345 - 1350

Sampling Data

Sample No: MW-06-060916 Location and Depth: MW-6, 15'

Date Collected (mo/dy/yr): 6/9/16 Time Collected: 1400 Weather: mild, cloudy

Type: ☒ Ground Water ☐ Surface Water Other: Sample: ☐ Filtered ☒ Unfiltered Other:

Sample Collected with: ☐ Bailer ☒ Pump Other: Type: peristaltic

Water Quality Instrument Data Collected with: Type: ☐ Horiba U-22 ☒ Horiba U-50 Other:

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing. Other:

Sample Description (Color, Turbidity, Odor, Other): clear, no odor (possibly slight sulfide?)

Sample Analyses

TPH-D	(HCl) ☐	Chlor / Fluor	(unpres) ☐	COD / TOC	(H2SO4) ☐	Orthophos	(FILTER) ☐	Diss. Metals	(HNO3) ☐
TPH-G	(HCl) ☐	BTEX	(HCl) ☐	Total Metals	(HNO3) ☐	TKN/Phos	(N2SO4) ☐	C VOCs	(HCl) ☒

Additional Information

Types of Sample Containers: Quantity:	Duplicate Sample Numbers:	Comments:
40 mL VOA w/ HCl 3	NA	Ecology TAG # A6E836

Signature: Date: 6/9/16

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH - Olympia Date of Collection: 6/9/16

Project Number: L-9 Field Personnel: K. Anderson

Purge Data

Well ID: MW-09 Secure: ☒ Yes ☐ No Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: ☐ Yes ☐ No One Casing Volume (gal): 0.6 gal

Depth of water (from top of well casing): 3.41 ft Well Casing Type/Diameter/Screened Interval: 2" PVC, 3-6'

After 5 minutes of purging (from top of casing): 3.61 ft

Begin purge (time): 1235

End purge (time): 1300

Volume purged: 5 L

Purge water disposal method: ground

Volume of Schedule 40 PVC Pipe

Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH	DO (mg/L)	Conductivity (ms/cm)	Turbidity (NTU)	Temp (°C)	ORP	Comments
1240	3.61	1	5.70	2.12	0.180	13.8	15.95	128	
1245	3.64	2	5.68	0.73	0.185	3.1	15.80	101	
1250	3.68	3	5.67	0.48	0.188	1.9	15.84	82	
1255	3.70	4	5.68	0.40	0.193	1.0	15.65	69	
1300	3.71	5	5.68	0.36	0.195	1.2	15.74	61	

Sampling Data

Sample No: MW-09-060916 Location and Depth: MW-9, 4.5'

Date Collected (mo/dy/yr): _____ Time Collected: 1305 Weather: mild, cloudy

Type: ☒ Ground Water ☐ Surface Water Other: _____ Sample: ☐ Filtered ☒ Unfiltered Other: _____

Sample Collected with: ☐ Bailer ☒ Pump Other: _____ Type: peristaltic

Water Quality Instrument Data Collected with: Type: ☐ Horiba U-22 ☒ Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): clear, no odor

Sample Analyses

TPH-D	(HCl) ☐	Chlor / Fluor	(unpres) ☐	COD / TOC	(H2SO4) ☐	Orthophos	(FILTER) ☐	Diss. Metals	(HNO3) ☐
TPH-G	(HCl) ☐	BTEX	(HCl) ☐	Total Metals	(HNO3) ☐	TKN/Phos	(N2SO4) ☐	☒ VOCs	(HCl) ☒

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
40 mL VOA w/ HCl	3	N/A	Ecology ID # AFE262

Signature: _____ **Date:** _____

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH - Olympia Date of Collection: 6/9/16

Project Number: t-9 Field Personnel: K. Anderson

Purge Data

Well ID: MW-11 Secure: ☒ Yes ☐ No Well Condition/Damage Description:

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No One Casing Volume (gal):

Depth of water (from top of well casing): overtopping Well Casing Type/Diameter/Screened Interval: 2" PVC, 5-10'

After 5 minutes of purging (from top of casing):

Begin purge (time): 0950

End purge (time): 1015

Volume purged: 5L

Purge water disposal method: ground

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH	DO (mg/L)	Conductivity (mS/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
0955	3.57	1	5.16	0.53	0.107	13.1	16.59	220	
1000		2	5.16	0.41	0.105	7.8	16.37	184	
1005	0.84	3	5.19	0.36	0.105	5.3	16.05	155	
1010	0.70	4	5.20	0.36	0.106	3.2	16.10	141	
1015	0.70	5	5.21	0.35	0.106	2.5	16.01	130	

Sampling Data

Sample No: MW-11-060916 Location and Depth: MW-11, 7.5'

Date Collected (mo/dy/yr): 6/9/16 Time Collected: 1020 Weather: mild, clear

Type: ☒ Ground Water ☐ Surface Water Other: Sample: ☐ Filtered ☒ Unfiltered Other:

Sample Collected with: ☐ Bailer ☒ Pump Other: Type: peristaltic

Water Quality Instrument Data Collected with: Type: ☐ Horiba U-22 ☒ Horiba U-50 Other:

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other:

Sample Description (Color, Turbidity, Odor, Other): clear, slight sulfide odor

Sample Analyses

TPH-D	(HCl) ☐	Chlor / Fluor	(unpres) ☐	COD / TOC	(H_2SO_4) ☐	Orthophos	(FILTER) ☐	Diss. Metals	(HNO_3) ☐
TPH-G	(HCl) ☐	BTEX	(HCl) ☐	Total Metals	(HNO_3) ☐	TKN/Phos	(N_2SO_4) ☐	VOCs	(HCl) ☒

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
40mL VOA w/ HCl	3	N/A	well tag missing

Signature: Date: 6/9/16

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH - Olympia Date of Collection: 6/9/16

Project Number: 6-9 Field Personnel: K. Andersen

Purge Data

Well ID: MW-13 Secure: ☒ Yes ☐ No Well Condition/Damage Description: good

Depth Sounder decontaminated Prior to Placement in Well: ☐ Yes ☐ No One Casing Volume (gal): 1.9 gal

Depth of water (from top of well casing): 0.17 ft Well Casing Type/Diameter/Screened Interval: 2" PVC, 4.5 - 9.5'

After 5 minutes of purging (from top of casing): 2.67

Begin purge (time): 0910

End purge (time): 0930

Volume purged: 4L

Purge water disposal method: ground

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water (ft)	Vol. Purged (L)	pH	DO (mg/L)	Conductivity (mS/cm)	Turbidity (NTU)	Temp (°C)	ORP (mV)	Comments
0915	2.67	1	4.80	0.48	0.124	2.9	14.06	303	purging as slowly as possible
0920	3.10	2	4.98	0.46	0.125	1.1	14.12	288	
0925	3.41	3	5.20	0.47	0.125	0.0	13.95	273	
0930	3.25	4	5.33	0.47	0.125	0.0	13.80	261	

Sampling Data

Sample No: MW-13-060916 Location and Depth: MW-13, 7'

Date Collected (mo/dy/yr): 6/9/16 Time Collected: 0935 Weather: mild, sunny

Type: ☒ Ground Water ☐ Surface Water Other: _____ Sample: ☐ Filtered ☒ Unfiltered Other: _____

Sample Collected with: ☐ Bailer ☒ Pump Other: _____ Type: pensalta

Water Quality Instrument Data Collected with: Type: ☐ Horiba U-22 ☒ Horiba U-50 Other: _____

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other: _____

Sample Description (Color, Turbidity, Odor, Other): clear, no odor

Sample Analyses

TPH-D	(HCl) ☐	Chlor / Fluor	(unpres) ☐	COD / TOC	(H2SO4) ☐	Orthophos	(FILTER) ☐	Diss. Metals	(HNO3) ☐
TPH-G	(HCl) ☐	BTEX	(HCl) ☐	Total Metals	(HNO3) ☐	TKN/Phos	(N2SO4) ☐	VOCs	(HCl) ☒

Additional Information

Types of Sample Containers:	Quantity:	Duplicate Sample Numbers:	Comments:
40mL VOA w/ HCl	3	~~N/A~~ N/A	well tag missing

Signature: _____ Date: 6/9/16

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH - Olympia
Project Number: 1.9
Date of Collection: 6/9/16
Field Personnel: K. Anderson

Purge Data

Well ID: MW-14
Secure: ☒ Yes ☐ No
Well Condition/Damage Description:

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No NA
One Casing Volume (gal): 3 gal
Depth of water (from top of well casing): overtopping casing
Well Casing Type/Diameter/Screened Interval: 2" PVC, 10-15' (angled)
After 5 minutes of purging (from top of casing): overtopping
Begin purge (time): 1120
End purge (time): 1145
Volume purged: 10 L
Purge water disposal method: ground

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged (L)	pH	DO mg/L	Conductivity mS/cm	Turbidity NTU	Temp °C	ORP mV	Comments
1125	↓	2	6.30	0.37	0.116	3.9	15.35	175	
1130		4	6.12	0.33	0.118	5.2	15.03	135	
1135		6	5.99	0.33	0.119	10.9	14.88	96	
1140		8	5.89	0.30	0.122	6.3	14.91	76	
1145		10	5.84	0.30	0.123	6.9	14.85	66	

Sampling Data

Sample No: MW-14-060916
Location and Depth: MW-14, 12.5'
Date Collected (mo/dy/yr): 6/9/16
Time Collected: 1150
Weather: cloudy, mild
Type: ☒ Ground Water ☐ Surface Water Other:
Sample: ☐ Filtered ☒ Unfiltered Other:
Sample Collected with: ☐ Bailer ☒ Pump Other:
Type: peristaltic
Water Quality Instrument Data Collected with: Type: ☐ Horiba U-22 ☒ Horiba U-50 Other:
Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other:
Sample Description (Color, Turbidity, Odor, Other): clear, slight sulfide odor

Sample Analyses

TPH-D	(HCl) ☐	Chlor / Fluor	(unpres) ☐	COD / TOC	(H2SO4) ☐	Orthophos	(FILTER)☐	Diss. Metals	(HNO3) ☐
TPH-G	(HCl) ☐	BTEX	(HCl) ☐	Total Metals	(HNO3) ☐	TKN/Phos	(N2SO4) ☐	CVOCs	(HCl) ☒

Additional Information

Types of Sample Containers: Quantity:	Duplicate Sample Numbers:	Comments:
40 mL VOA w/ HCl	MW-14-060916-D @ 1155	well tag missing

Signature: [signature]
Date: 6/9/16

GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH - Olympia Date of Collection: 6/9/16

Project Number: Field Personnel: K. Anderson

Purge Data

Well ID: FD-01 Secure: ☐ Yes ☒ No Well Condition/Damage Description:

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No One Casing Volume (gal): ~ 20 gal

Depth of water (from top of well casing): 1.30 Well Casing Type/Diameter/Screened Interval: 4" PVC french drain

After 5 minutes of purging (from top of casing): 1.36

Begin purge (time): 1055

End purge (time): 1103

Volume purged: 20 gal

Purge water disposal method: ground

Volume of Schedule 40 PVC Pipe				
Diameter	O.D.	I.D.	Volume (Gal/Linear Ft.)	Weight of Water (Lbs/Lineal Ft.)
1 ¼"	1.660"	1.380"	0.08	0.64
2"	2.375"	2.067"	0.17	1.45
3"	3.500"	3.068"	0.38	3.2
4"	4.500"	4.026"	0.66	5.51
6"	6.625"	6.065"	1.5	12.5

Time	Depth to Water	Vol. Purged gal	pH	DO mg/L	Conductivity mS/cm	Turbidity NTU	Temp °C	ORP mV	Comments
1055	1.36	4							
1057	1.44	8							
1059	1.50	12							
1101	1.53	16							
1103	1.58	20	6.01	3.36	0.200	0.8	18.52	218	

Sampling Data

Sample No: FD-01-060916 Location and Depth:

Date Collected (mo/dy/yr): 6/9/16 Time Collected: 1110 Weather: cloudy, mild

Type: ☐ Ground Water ☐ Surface Water Other: Sample: ☐ Filtered ☒ Unfiltered Other:

Sample Collected with: ☐ Bailer ☒ Pump Other: Type: centrifugal (2 gpm)

Water Quality Instrument Data Collected with: Type: ☐ Horiba U-22 ☒ Horiba U-50 Other: (collected 1 round after purging 20 gal)

Sample Decon Procedure: Sample collected with (circle one): decontaminated all tubing; disposable and/or dedicated silicon and poly tubing Other:

Sample Description (Color, Turbidity, Odor, Other): clear, no odor

Sample Analyses

TPH-D	(HCl) ☐	Chlor / Fluor	(unpres) ☐	COD / TOC	(H2SO4) ☐	Orthophos	(FILTER)☐	Diss. Metals	(HNO3) ☐
TPH-G	(HCl) ☐	BTEX	(HCl) ☐	Total Metals	(HNO3) ☐	TKN/Phos	(N2SO4) ☐	C VOCs	(HCl) ☒

Additional Information

Types of Sample Containers: Quantity:	Duplicate Sample Numbers:	Comments:
40 mL VOA w/ HCl 3	NA	

Signature: Date: 6/9/16

Attachment 2
Laboratory Data

3600 Fremont Ave. N.
Seattle, WA 98103
T: (206) 352-3790
F: (206) 352-7178
info@fremontanalytical.com

Floyd | Snider
Lynn Grochala
601 Union St., Suite 600
Seattle, WA 98101

RE: GTH - Olympia
Lab ID: 1606154

June 17, 2016

Attention Lynn Grochala:

Fremont Analytical, Inc. received 10 sample(s) on 6/10/2016 for the analyses presented in the following report.

Volatile Organic Compounds by EPA Method 8260C

This report consists of the following:

- Case Narrative
- Analytical Results
- Applicable Quality Control Summary Reports
- Chain of Custody

All analyses were performed consistent with the Quality Assurance program of Fremont Analytical, Inc. Please contact the laboratory if you should have any questions about the results.

Thank you for using Fremont Analytical.

Sincerely,

Mike Ridgeway
President

Date: *06/17/2016*

CLIENT: Floyd | Snider
Project: GTH - Olympia
Lab Order: 1606154

Work Order Sample Summary

Lab Sample ID	Client Sample ID	Date/Time Collected	Date/Time Received
1606154-001	MW-13-060916	06/09/2016 9:35 AM	06/10/2016 11:12 AM
1606154-002	MW-11-060916	06/09/2016 10:20 AM	06/10/2016 11:12 AM
1606154-003	MW-14-060916	06/09/2016 11:50 AM	06/10/2016 11:12 AM
1606154-004	MW-09-060916	06/09/2016 1:05 PM	06/10/2016 11:12 AM
1606154-005	MW-06-060916	06/09/2016 2:00 PM	06/10/2016 11:12 AM
1606154-006	FD-01-060916	06/09/2016 11:10 AM	06/10/2016 11:12 AM
1606154-007	SEEP-060916	06/09/2016 10:10 AM	06/10/2016 11:12 AM
1606154-008	SEEP-CB-060916	06/09/2016 12:05 PM	06/10/2016 11:12 AM
1606154-009	MW-14-060916-D	06/09/2016 11:55 AM	06/10/2016 11:12 AM
1606154-010	Trip Blank	06/08/2016 9:34 AM	06/10/2016 11:12 AM

Case Narrative

WO#: **1606154**
Date: **6/17/2016**

CLIENT: Floyd | Snider
Project: GTH - Olympia

I. SAMPLE RECEIPT:
Samples receipt information is recorded on the attached Sample Receipt Checklist.

II. GENERAL REPORTING COMMENTS:
Results are reported on a wet weight basis unless dry-weight correction is denoted in the units field on the analytical report ("mg/kg-dry" or "ug/kg-dry").

Matrix Spike (MS) and MS Duplicate (MSD) samples are tested from an analytical batch of "like" matrix to check for possible matrix effect. The MS and MSD will provide site specific matrix data only for those samples which are spiked by the laboratory. The sample chosen for spike purposes may or may not have been a sample submitted in this sample delivery group. The validity of the analytical procedures for which data is reported in this analytical report is determined by the Laboratory Control Sample (LCS) and the Method Blank (MB). The LCS and the MB are processed with the samples and the MS/MSD to ensure method criteria are achieved throughout the entire analytical process.

III. ANALYSES AND EXCEPTIONS:
Exceptions associated with this report will be footnoted in the analytical results page(s) or the quality control summary page(s) and/or noted below.

Qualifiers:

* - Flagged value is not within established control limits
B - Analyte detected in the associated Method Blank
D - Dilution was required
E - Value above quantitation range
H - Holding times for preparation or analysis exceeded
I - Analyte with an internal standard that does not meet established acceptance criteria
J - Analyte detected below Reporting Limit
N - Tentatively Identified Compound (TIC)
Q - Analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20%RSD, <20% Drift or minimum RRF)
S - Spike recovery outside accepted recovery limits
ND - Not detected at the Reporting Limit
R - High relative percent difference observed

Acronyms:

%Rec - Percent Recovery
CCB - Continued Calibration Blank
CCV - Continued Calibration Verification
DF - Dilution Factor
HEM - Hexane Extractable Material
ICV - Initial Calibration Verification
LCS/LCSD - Laboratory Control Sample / Laboratory Control Sample Duplicate
MB or MBLANK - Method Blank
MDL - Method Detection Limit
MS/MSD - Matrix Spike / Matrix Spike Duplicate
PDS - Post Digestion Spike
Ref Val - Reference Value
RL - Reporting Limit
RPD - Relative Percent Difference
SD - Serial Dilution
SGT - Silica Gel Treatment
SPK - Spike
Surr - Surrogate

Analytical Report

WO#: **1606154**
Date Reported: **6/17/2016**

Client: Floyd | Snider
Project: GTH - Olympia
Lab ID: 1606154-001
Client Sample ID: **MW-13-060916**

Collection Date: 6/9/2016 9:35:00 AM
Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: R29987		Analyst: EM
Vinyl chloride	ND	0.200		µg/L	1	6/15/2016 8:55:01 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 8:55:01 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 8:55:01 AM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 8:55:01 AM
Trichloroethene (TCE)	ND	0.500		µg/L	1	6/15/2016 8:55:01 AM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	6/15/2016 8:55:01 AM
Surr: Dibromofluoromethane	96.4	45.4-152		%Rec	1	6/15/2016 8:55:01 AM
Surr: Toluene-d8	96.6	40.1-139		%Rec	1	6/15/2016 8:55:01 AM
Surr: 1-Bromo-4-fluorobenzene	95.6	64.2-128		%Rec	1	6/15/2016 8:55:01 AM

Analytical Report

WO#: **1606154**
Date Reported: **6/17/2016**

Client: Floyd | Snider
Project: GTH - Olympia
Lab ID: 1606154-002
Client Sample ID: **MW-11-060916**

Collection Date: 6/9/2016 10:20:00 AM
Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: R29987		Analyst: EM
Vinyl chloride	ND	0.200		µg/L	1	6/15/2016 9:24:15 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 9:24:15 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 9:24:15 AM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 9:24:15 AM
Trichloroethene (TCE)	ND	0.500		µg/L	1	6/15/2016 9:24:15 AM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	6/15/2016 9:24:15 AM
Surr: Dibromofluoromethane	95.8	45.4-152		%Rec	1	6/15/2016 9:24:15 AM
Surr: Toluene-d8	97.6	40.1-139		%Rec	1	6/15/2016 9:24:15 AM
Surr: 1-Bromo-4-fluorobenzene	94.6	64.2-128		%Rec	1	6/15/2016 9:24:15 AM

Analytical Report

WO#: **1606154**
Date Reported: **6/17/2016**

Client: Floyd | Snider
Collection Date: 6/9/2016 11:50:00 AM
Project: GTH - Olympia
Lab ID: 1606154-003
Matrix: Water
Client Sample ID: **MW-14-060916**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: R29987		Analyst: EM
Vinyl chloride	2.77	0.200		µg/L	1	6/15/2016 9:54:36 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 9:54:36 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 9:54:36 AM
cis-1,2-Dichloroethene	30.6	1.00		µg/L	1	6/15/2016 9:54:36 AM
Trichloroethene (TCE)	33.2	0.500		µg/L	1	6/15/2016 9:54:36 AM
Tetrachloroethene (PCE)	98.8	10.0	D	µg/L	10	6/16/2016 12:30:09 PM
Surr: Dibromofluoromethane	97.0	45.4-152		%Rec	1	6/15/2016 9:54:36 AM
Surr: Toluene-d8	97.4	40.1-139		%Rec	1	6/15/2016 9:54:36 AM
Surr: 1-Bromo-4-fluorobenzene	95.6	64.2-128		%Rec	1	6/15/2016 9:54:36 AM

Analytical Report

WO#: **1606154**
Date Reported: **6/17/2016**

Client: Floyd | Snider
Project: GTH - Olympia
Lab ID: 1606154-004
Client Sample ID: **MW-09-060916**

Collection Date: 6/9/2016 1:05:00 PM
Matrix: Water

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: R29987		Analyst: EM
Vinyl chloride	9.77	0.200		µg/L	1	6/15/2016 10:24:58 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 10:24:58 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 10:24:58 AM
cis-1,2-Dichloroethene	26.4	1.00		µg/L	1	6/15/2016 10:24:58 AM
Trichloroethene (TCE)	3.17	0.500		µg/L	1	6/15/2016 10:24:58 AM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	6/15/2016 10:24:58 AM
Surr: Dibromofluoromethane	98.0	45.4-152		%Rec	1	6/15/2016 10:24:58 AM
Surr: Toluene-d8	98.0	40.1-139		%Rec	1	6/15/2016 10:24:58 AM
Surr: 1-Bromo-4-fluorobenzene	94.7	64.2-128		%Rec	1	6/15/2016 10:24:58 AM

Analytical Report

WO#: **1606154**
Date Reported: **6/17/2016**

Client: Floyd | Snider
Collection Date: 6/9/2016 2:00:00 PM
Project: GTH - Olympia
Lab ID: 1606154-005
Matrix: Water
Client Sample ID: **MW-06-060916**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: R29987		Analyst: EM
Vinyl chloride	ND	0.200		µg/L	1	6/15/2016 10:55:29 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 10:55:29 AM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 10:55:29 AM
cis-1,2-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 10:55:29 AM
Trichloroethene (TCE)	ND	0.500		µg/L	1	6/15/2016 10:55:29 AM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	6/15/2016 10:55:29 AM
Surr: Dibromofluoromethane	96.5	45.4-152		%Rec	1	6/15/2016 10:55:29 AM
Surr: Toluene-d8	95.7	40.1-139		%Rec	1	6/15/2016 10:55:29 AM
Surr: 1-Bromo-4-fluorobenzene	95.6	64.2-128		%Rec	1	6/15/2016 10:55:29 AM

Analytical Report

WO#: **1606154**
Date Reported: **6/17/2016**

Client: Floyd | Snider
Collection Date: 6/9/2016 11:10:00 AM
Project: GTH - Olympia
Lab ID: 1606154-006
Matrix: Water
Client Sample ID: **FD-01-060916**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: R29987		Analyst: EM
Vinyl chloride	87.4	4.00	D	µg/L	20	6/16/2016 1:00:51 PM
1,1-Dichloroethene	1.21	1.00		µg/L	1	6/15/2016 11:25:59 AM
trans-1,2-Dichloroethene	2.43	1.00		µg/L	1	6/15/2016 11:25:59 AM
cis-1,2-Dichloroethene	428	20.0	D	µg/L	20	6/16/2016 1:00:51 PM
Trichloroethene (TCE)	34.1	0.500		µg/L	1	6/15/2016 11:25:59 AM
Tetrachloroethene (PCE)	31.0	1.00		µg/L	1	6/15/2016 11:25:59 AM
Surr: Dibromofluoromethane	99.6	45.4-152		%Rec	1	6/15/2016 11:25:59 AM
Surr: Toluene-d8	97.8	40.1-139		%Rec	1	6/15/2016 11:25:59 AM
Surr: 1-Bromo-4-fluorobenzene	96.3	64.2-128		%Rec	1	6/15/2016 11:25:59 AM

Analytical Report

WO#: **1606154**
Date Reported: **6/17/2016**

Client: Floyd | Snider
Collection Date: 6/9/2016 10:10:00 AM
Project: GTH - Olympia
Lab ID: 1606154-007
Matrix: Water
Client Sample ID: **SEEP-060916**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: R29987		Analyst: EM
Vinyl chloride	19.8	0.200		µg/L	1	6/15/2016 11:56:25 AM
1,1-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 11:56:25 AM
trans-1,2-Dichloroethene	1.30	1.00		µg/L	1	6/15/2016 11:56:25 AM
cis-1,2-Dichloroethene	170	10.0	D	µg/L	10	6/16/2016 1:31:37 PM
Trichloroethene (TCE)	17.7	0.500		µg/L	1	6/15/2016 11:56:25 AM
Tetrachloroethene (PCE)	15.7	1.00		µg/L	1	6/15/2016 11:56:25 AM
Surr: Dibromofluoromethane	99.6	45.4-152		%Rec	1	6/15/2016 11:56:25 AM
Surr: Toluene-d8	98.4	40.1-139		%Rec	1	6/15/2016 11:56:25 AM
Surr: 1-Bromo-4-fluorobenzene	95.4	64.2-128		%Rec	1	6/15/2016 11:56:25 AM

Analytical Report

WO#: **1606154**

Date Reported: **6/17/2016**

Client: Floyd | Snider

Collection Date: 6/9/2016 12:05:00 PM

Project: GTH - Olympia

Lab ID: 1606154-008

Matrix: Water

Client Sample ID: **SEEP-CB-060916**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: R29987		Analyst: EM
Vinyl chloride	ND	0.200		µg/L	1	6/15/2016 12:26:57 PM
1,1-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 12:26:57 PM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 12:26:57 PM
cis-1,2-Dichloroethene	1.75	1.00		µg/L	1	6/15/2016 12:26:57 PM
Trichloroethene (TCE)	ND	0.500		µg/L	1	6/15/2016 12:26:57 PM
Tetrachloroethene (PCE)	ND	1.00		µg/L	1	6/15/2016 12:26:57 PM
Surr: Dibromofluoromethane	98.0	45.4-152		%Rec	1	6/15/2016 12:26:57 PM
Surr: Toluene-d8	97.2	40.1-139		%Rec	1	6/15/2016 12:26:57 PM
Surr: 1-Bromo-4-fluorobenzene	94.4	64.2-128		%Rec	1	6/15/2016 12:26:57 PM

Analytical Report

WO#: **1606154**
Date Reported: **6/17/2016**

Client: Floyd | Snider
Collection Date: 6/9/2016 11:55:00 AM
Project: GTH - Olympia
Lab ID: 1606154-009
Matrix: Water
Client Sample ID: **MW-14-060916-D**

Analyses	Result	RL	Qual	Units	DF	Date Analyzed
Volatile Organic Compounds by EPA Method 8260C				Batch ID: R29987		Analyst: EM
Vinyl chloride	2.83	0.200		µg/L	1	6/15/2016 12:57:33 PM
1,1-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 12:57:33 PM
trans-1,2-Dichloroethene	ND	1.00		µg/L	1	6/15/2016 12:57:33 PM
cis-1,2-Dichloroethene	33.2	1.00		µg/L	1	6/15/2016 12:57:33 PM
Trichloroethene (TCE)	34.3	0.500		µg/L	1	6/15/2016 12:57:33 PM
Tetrachloroethene (PCE)	93.8	10.0	D	µg/L	10	6/16/2016 2:02:19 PM
Surr: Dibromofluoromethane	99.0	45.4-152		%Rec	1	6/15/2016 12:57:33 PM
Surr: Toluene-d8	97.4	40.1-139		%Rec	1	6/15/2016 12:57:33 PM
Surr: 1-Bromo-4-fluorobenzene	95.6	64.2-128		%Rec	1	6/15/2016 12:57:33 PM

Work Order: 1606154
CLIENT: Floyd | Snider
Project: GTH - Olympia

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-R29987** SampType: **LCS** Units: **µg/L** Prep Date: **6/15/2016** RunNo: **29987**
Client ID: **LCSW** Batch ID: **R29987** Analysis Date: **6/15/2016** SeqNo: **566668**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	16.7	0.200	20.00	0	83.4	53.6	139				
1,1-Dichloroethene	18.3	1.00	20.00	0	91.4	65.6	136				
trans-1,2-Dichloroethene	18.5	1.00	20.00	0	92.6	71.7	129				
cis-1,2-Dichloroethene	18.4	1.00	20.00	0	91.9	71.1	130				
Trichloroethene (TCE)	19.0	0.500	20.00	0	94.8	65.2	136				
Tetrachloroethene (PCE)	18.5	1.00	20.00	0	92.3	47.5	147				
Surr: Dibromofluoromethane	24.4		25.00		97.8	45.4	152				
Surr: Toluene-d8	25.0		25.00		99.8	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	25.1		25.00		100	64.2	128				

Sample ID **MB-R29987** SampType: **MBLK** Units: **µg/L** Prep Date: **6/15/2016** RunNo: **29987**
Client ID: **MBLKW** Batch ID: **R29987** Analysis Date: **6/15/2016** SeqNo: **566669**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.200									
1,1-Dichloroethene	ND	1.00									
trans-1,2-Dichloroethene	ND	1.00									
cis-1,2-Dichloroethene	ND	1.00									
Trichloroethene (TCE)	ND	0.500									
Tetrachloroethene (PCE)	ND	1.00									
Surr: Dibromofluoromethane	23.6		25.00		94.5	45.4	152				
Surr: Toluene-d8	24.2		25.00		96.9	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	23.7		25.00		94.8	64.2	128				

Sample ID **1606136-001ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **6/15/2016** RunNo: **29987**
Client ID: **BATCH** Batch ID: **R29987** Analysis Date: **6/15/2016** SeqNo: **566652**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	ND	0.200						0		30	
1,1-Dichloroethene	ND	1.00						0		30	

Work Order: 1606154
CLIENT: Floyd | Snider
Project: GTH - Olympia

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1606136-001ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **6/15/2016** RunNo: **29987**
Client ID: **BATCH** Batch ID: **R29987** Analysis Date: **6/15/2016** SeqNo: **566652**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
trans-1,2-Dichloroethene	ND	1.00						0		30	
cis-1,2-Dichloroethene	ND	1.00						0		30	
Trichloroethene (TCE)	ND	0.500						0		30	
Tetrachloroethene (PCE)	ND	1.00						0		30	
Surr: Dibromofluoromethane	23.9		25.00		95.4	45.4	152		0		
Surr: Toluene-d8	24.1		25.00		96.5	40.1	139		0		
Surr: 1-Bromo-4-fluorobenzene	23.8		25.00		95.2	64.2	128		0		

Sample ID **1606153-001AMS** SampType: **MS** Units: **µg/L** Prep Date: **6/15/2016** RunNo: **29987**
Client ID: **BATCH** Batch ID: **R29987** Analysis Date: **6/15/2016** SeqNo: **566654**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	19.6	0.200	20.00	0	97.9	58.1	158				
1,1-Dichloroethene	22.7	1.00	20.00	0	113	63	141				
trans-1,2-Dichloroethene	20.8	1.00	20.00	0	104	63.5	138				
cis-1,2-Dichloroethene	20.0	1.00	20.00	0	100	67.1	123				
Trichloroethene (TCE)	21.1	0.500	20.00	0	106	60.4	134				
Tetrachloroethene (PCE)	20.9	1.00	20.00	0	105	50.3	133				
Surr: Dibromofluoromethane	24.5		25.00		98.1	45.4	152				
Surr: Toluene-d8	25.0		25.00		100	40.1	139				
Surr: 1-Bromo-4-fluorobenzene	25.4		25.00		102	64.2	128				

Sample ID **1606153-001AMSD** SampType: **MSD** Units: **µg/L** Prep Date: **6/15/2016** RunNo: **29987**
Client ID: **BATCH** Batch ID: **R29987** Analysis Date: **6/15/2016** SeqNo: **566655**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	19.2	0.200	20.00	0	95.9	58.1	158	19.57	2.07	30	
1,1-Dichloroethene	21.2	1.00	20.00	0	106	63	141	22.69	6.65	30	
trans-1,2-Dichloroethene	20.3	1.00	20.00	0	102	63.5	138	20.80	2.29	30	
cis-1,2-Dichloroethene	20.4	1.00	20.00	0	102	67.1	123	19.99	2.08	30	

Work Order: 1606154
CLIENT: Floyd | Snider
Project: GTH - Olympia

QC SUMMARY REPORT

Volatile Organic Compounds by EPA Method 8260C

Sample ID **1606153-001AMSD** SampType: **MSD** Units: **µg/L** Prep Date: **6/15/2016** RunNo: **29987**
Client ID: **BATCH** Batch ID: **R29987** Analysis Date: **6/15/2016** SeqNo: **566655**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Trichloroethene (TCE)	20.8	0.500	20.00	0	104	60.4	134	21.11	1.72	30	
Tetrachloroethene (PCE)	20.6	1.00	20.00	0	103	50.3	133	20.93	1.59	30	
Surr: Dibromofluoromethane	24.8		25.00		99.3	45.4	152		0	0	
Surr: Toluene-d8	24.9		25.00		99.6	40.1	139		0	0	
Surr: 1-Bromo-4-fluorobenzene	24.9		25.00		99.7	64.2	128		0	0	

Sample ID **CCV-D-R29987** SampType: **CCV** Units: **µg/L** Prep Date: **6/16/2016** RunNo: **29987**
Client ID: **CCV** Batch ID: **R29987** Analysis Date: **6/16/2016** SeqNo: **567026**

Analyte	Result	RL	SPK value	SPK Ref Val	%REC	LowLimit	HighLimit	RPD Ref Val	%RPD	RPDLimit	Qual
Vinyl chloride	20.2	0.200	20.00	0	101	80	120				
cis-1,2-Dichloroethene	20.1	1.00	20.00	0	101	80	120				
Tetrachloroethene (PCE)	20.8	1.00	20.00	0	104	80	120				
Surr: Dibromofluoromethane	24.5		25.00		97.9	72.1	122				
Surr: Toluene-d8	24.7		25.00		99.0	62.1	129				
Surr: 1-Bromo-4-fluorobenzene	25.3		25.00		101	63.3	132				

Sample Log-In Check List

Client Name:	**FS**	Work Order Number:	**1606154**
Logged by:	**Erica Silva**	Date Received:	**6/10/2016 11:12:00 AM**

Chain of Custody

1.	Is Chain of Custody complete?	Yes ☑	No ☐	Not Present ☐
2.	How was the sample delivered?	Courier		

Log In

3.	Coolers are present?	Yes ☑	No ☐	NA ☐
4.	Shipping container/cooler in good condition?	Yes ☑	No ☐	
5.	Custody Seals present on shipping container/cooler? (Refer to comments for Custody Seals not intact)	Yes ☑	No ☐	Not Required ☐
6.	Was an attempt made to cool the samples?	Yes ☑	No ☐	NA ☐
7.	Were all items received at a temperature of >0°C to 10.0°C*	Yes ☑	No ☐	NA ☐
8.	Sample(s) in proper container(s)?	Yes ☑	No ☐	
9.	Sufficient sample volume for indicated test(s)?	Yes ☑	No ☐	
10.	Are samples properly preserved?	Yes ☑	No ☐	
11.	Was preservative added to bottles?	Yes ☐	No ☑	NA ☐
12.	Is there headspace in the VOA vials?	Yes ☐	No ☑	NA ☐
13.	Did all samples containers arrive in good condition(unbroken)?	Yes ☑	No ☐	
14.	Does paperwork match bottle labels?	Yes ☑	No ☐	
15.	Are matrices correctly identified on Chain of Custody?	Yes ☑	No ☐	
16.	Is it clear what analyses were requested?	Yes ☑	No ☐	
17.	Were all holding times able to be met?	Yes ☑	No ☐	

Special Handling (if applicable)

18. Was client notified of all discrepancies with this order? Yes ☐ No ☐ NA ☑

Person Notified:		Date	
By Whom:		Via:	☐ eMail ☐ Phone ☐ Fax ☐ In Person
Regarding:			
Client Instructions:			

19. Additional remarks:

Item Information

Item #	Temp ºC
Cooler	2.6
Sample	2.3
Temp Blank	6.3

* Note: DoD/ELAP and TNI require items to be received at 4°C +/- 2°C

Chain of Custody Record and Laboratory Services Agreement

Fremont Analytical
3600 Fremont Ave N.
Seattle, WA 98103
Tel: 206-352-3790
Fax: 206-352-7178

Date: 6/9/16

Laboratory Project No (internal): 1606154

Page: 1 of: 1

Client: Floyd | Snider
Address: 601 Union St, Ste 600
City, State, Zip: Seattle, WA 98101
Telephone: 206-292-2078 Fax:

Project Name: GTH - Olympia
Project No: task 9
Collected by: KA
Location: Olympia Dry Cleaner
Report To (PM): Lynn Grochala
PM Email: lynn.grochala@floydsnider.com

*Matrix Codes: A = Air, AQ = Aqueous, B = Bulk, O = Other, P = Product, S = Soil, SD = Sediment, SL = Solid, W = Water, DW = Drinking Water, GW = Ground Water, SW = Storm Water, WW = Waste Water

	Sample Name	Sample Date	Sample Time	Sample Type (Matrix)*	VOCs (EPA 8260 / 624)	GX/BTEX	BTEX	Gasoline Range Organics (GX)	Hydrocarbon Identification (HCID)	Diesel/Heavy Oil Range Organics (DX)	SVOCs (EPA 8270 / 625)	PAHs (EPA 8270 - SIM)	PCBs (EPA 8082 / 608)	Metals** (EPA 6020 / 200.8) Total (T) | Dissolved (D)	Anions (IC)***	EDB (8011)	cVOCs			Comments
1	MW-13-060916	6/9/16	0935	W												X	X			
2	MW-11-060916		1020													X				
3	MW-14-060916		1150													X				
4	MW-09-060916		1305													X				
5	MW-06-060916		1400													X				
6	FD-01-060916		1110													X				
7	SEEP-060916		1010													X				
8	SEEP-CB-060916		~~1305~~ 1010	"												X				
9	MW-14-060916-D		1155													X				
10																				

cVOCs = PCE, TCE, cis-1,2-DCE, trans-1,2-DCE, 1,1-DCE, vinyl chloride

**Metals Analysis (Circle): MTCA-5 RCRA-8 Priority Pollutants TAL *Individual:* Ag Al As B Ba Be Ca Cd Co Cr Cu Fe Hg K Mg Mn Mo Na Ni Pb Sb Se Sr Sn Ti Tl U V Zn

***Anions (Circle): Nitrate Nitrite Chloride Sulfate Bromide O-Phosphate Fluoride Nitrate+Nitrite

Sample Disposal: Return to Client ☒ Disposal by Lab (Samples will be held for 30 days unless otherwise noted. A fee may be assessed if samples are retained after 30 days.)

Turn-around times for samples received after 4:00pm will begin on the following business day.

Special Remarks:

I represent that I am authorized to enter into this Agreement with Fremont Analytical on behalf of the Client named above, that I have verified Client's agreement to each of the terms on the front and backside of this Agreement.

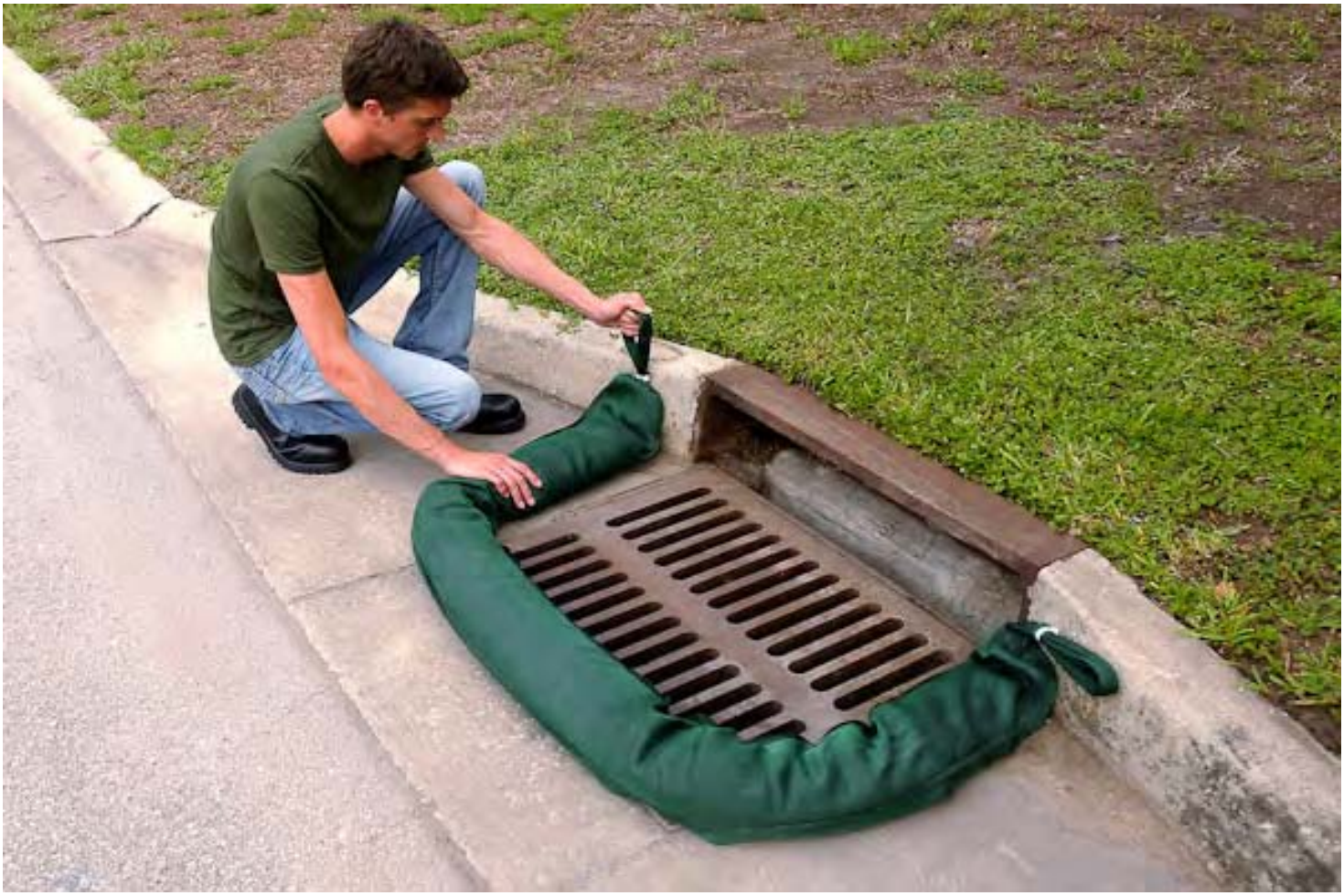
Relinquished	Date/Time	Received	Date/Time
x	6/10/16 0905	x	6/10/16 1112
Relinquished	Date/Time	Received	Date/Time
x		x	

TAT → SameDay^ NextDay^ 2 Day 3 Day STD

^Please coordinate with the lab in advance

Attachment 3
Filter Sock Specification

Part#: 37BFS3



Part #	Description
37BFS3	9453 ACTIVATED CARBON FILTER SOCK FOR STORMWATER 108” X 7” X 4”

Supplied By: **The Cary Company**
Ph: 630-629-6600
www.thecarycompany.com

ULTRA-FILTER SOCK SPECIFICATIONS

MATERIAL SPECIFICATIONS		
Properties	**ASTM Test**	**Value**
Material: High Density Polyethylene (HDPE), Woven Geotextile	----	----
Grab Tensile (MD/TD)	D 4632	326 / 216 lbs
Trapezoid Tear (MD/TD)	D 4533	141 / 70 lbs
Puncture	D 4833	109 lbs
Mullen Burst	D 3786	376 psi
UV Resistance (2000 hours)	D 4355	> 70%

MEDIA SPECIFICATIONS	
Media Type	**Capacity Information***
Activated Carbon	• Each Filter Sock is filled with granular activated carbon. This media is an excellent polishing filter, due to its immense surface area and the wide range of components it is capable of absorbing. Helps with removing odors. • Dry Filter Sock Weight of approximately 36 lbs
Heavy Metal Removal Media	• Each Filter Sock can remove up to 1145 grams of heavy metals • Removal rates up to 50% per Filter Sock • See Heavy Metal Removal Data Sheet for more information • Dry Filter Sock Weight is approximately 32.5 lbs
Sorb 44	• Each Filter Sock can absorb up to 5.33 gallons (20 liters) of hydrocarbon • Dry Filter Sock Weight is approximately 9 lbs
PhosFilter	• Each Filter Sock can remove up to 26 lbs of phosphorus with up to 95% efficiency • Dry Filter Sock Weight is approximately 50 lbs
Sediment Removal Media	• Recycled rubber material keeps unit in place and allows for maximum water flow • Dry Filter Sock Weight is approximately 40 lbs

* Note – All information is based on a standard 9-foot long Ultra-Filter Sock

07/12/2011

11542 Davis Creek Court • Jacksonville, FL 32256 • 904.292.1611 • 800.353.1611 • Fax 904.292.1325
E-mail: info@stormwaterproducts.com • www.stormwaterproducts.com