20 YEARS FLOYD | SNIDER
strategy ▪ science ▪ engineering

Two Union Square
601 Union Street, Suite 600
Seattle, WA 98101
tel: 206.292.2078 fax: 206.682.7867

February 13, 2017

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

**SUBJECT: 2016 ANNUAL SUMMARY REPORT FOR GROUNDWATER COMPLIANCE MONITORING**
**Former Olympia Dry Cleaners Site**
**601 Union Avenue SE**
**Olympia, Washington**

Dear Mr. Teel:

This groundwater compliance monitoring report is the fourth quarterly report and the 2016 annual summary 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 (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 groundwater compliance monitoring report is to document the results of the fourth post-remediation quarterly groundwater monitoring completed in December 2016 and to provide a summary of the groundwater quality trends from 2016. Source removal areas and compliance monitoring locations are shown on Figure 2.

## 1.0 FOURTH QUARTER COMPLIANCE MONITORING SAMPLE COLLECTION

This section describes the groundwater and seep water sampling performed during the December 2016 monitoring event. There were no significant deviations from the CMP during this monitoring event; the field methods used were in substantive accordance with the CMP. The compliance monitoring locations are shown on Figure 2.

The water 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.

The analytical results from the December 2016 groundwater monitoring are provided in Table 1, along with data from the 2016 quarterly monitoring events and the pre-remediation monitoring well sampling in August 2013 (SES 2013) for comparison. The analytical data for surface water, including the seep, are summarized in Table 2. All four quarters of groundwater and surface water monitoring results are shown on Figure 3. A copy of the laboratory report is included in Attachment 1.

### 1.1 Monitoring Well Groundwater Sample Collection and Results

Groundwater samples were collected from the five compliance wells (MW-06, MW-09, MW-11, MW-13, and MW-14) on December 20, 2016, using standard low-flow sampling methods described in the CMP. Monitoring well MW-14 (artesian) was still flowing, but at a slow enough rate that a low-flow sample was collected. Results from this sampling even are presented in Table 1. The groundwater sample collection forms are included in Attachment 2.

Groundwater collected from monitoring well MW-14 contained TCE, PCE, and vinyl chloride at concentrations greater than their respective cleanup levels. The concentration of vinyl chloride has slightly increased in groundwater from MW-14 since the last sampling event. Aside from this minor increase in vinyl chloride concentrations, the concentrations of TCE, PCE, and *cis*-1,2-DCE are all less than the results from previous quarters. The concentration of *cis*-1,2-DCE has decreased to less than the cleanup levels of 16 µg/L. 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 also showed a decrease of *cis*-1,2-DCE concentrations to less than the cleanup level. The December 2016 sampling results show that the only COC exceeding cleanup levels at MW-09 is vinyl chloride; however, vinyl chloride concentrations have also decreased since the previous quarter. 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 all previous monitoring data.

### 1.2 French Drain Water Sample Collection and Results

The French drain was also sampled during the quarterly monitoring event; the standpipe that collects artesian water downgradient of the excavated area was found to have approximately

1 foot of accumulated water during the December event. The volume of the entire drain pipe, approximately 20 gallons of water, was purged using a 3-gallon-per-minute (gpm) submersible pump. The water level in the stand pipe showed minimal drawdown during purging, suggesting a recharge rate of about 2 to 3 gpm. In accordance with the CMP, a water sample (FD-01) was collected from the standpipe after purging. Results from the sampling event are presented in Table 1.

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. Although still elevated, these concentrations have decreased since the previous monitoring results. Similar to MW-14, the French drain collects water from the artesian aquifer south of the primary excavation area.

### 1.3 Seep Treatment

As discussed in the previous quarterly compliance monitoring report, a carbon filter sock was installed at the point of the seep expression and directly downgradient on September 29, 2016. A sample of filtered seep water was collected during the third quarter and demonstrated that the filter sock is effective at reducing PCE, TCE, and vinyl chloride concentrations in runoff water. During the fourth quarter of sampling, the sock was rotated over and lengthwise, then re-bolted to the curb on either end of the sock.

The original berm made out of halved, 2-inch-diameter acrylonitrile-butadiene-styrene (ABS) pipe was observed to be detached from the asphalt after being overridden by vehicles. As such, a hydraulic cement barrier was formed around the upslope edges of the sock in an attempt to redirect stormwater in the absence of the ABS pipe.

### 1.4 Seep Water Sample Collection and Results

The groundwater seep monitored during each 2016 sampling event 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, and 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. A grab sample was collected from the seep (SEEP) on December 20, 2016, while the filter sock was removed for repositioning. An additional seep grab sample (SEEP-POST) was collected from the discharge of the filter sock a few hours after rotating and re-installing the activated carbon filter sock. These results are presented in Table 2.

The unfiltered seep water sample collected from the curb line (SEEP) had PCE, TCE, and vinyl chloride concentrations exceeding their respective cleanup levels. The concentrations of PCE and TCE have increased and were greater than in the groundwater samples collected from MW-14 and FD-01. Concentrations of *cis*-1,2-DCE and vinyl chloride have decreased since the previous monitoring period in September 2016.

The water sample taken at the seep immediately downstream of the carbon filter sock (SEEP-POST) demonstrated a significant improvement in water quality with low-level detections of PCE, TCE, *cis*-1,2-DCE, and vinyl chloride. These results confirm that the carbon filter sock is providing treatment of seep water at the point of discharge. However, the detected PCE concentration was greater than the cleanup level after treatment, but at significantly reduced concentrations. All other analytes in seep water are being reduced by the filter sock sufficiently to meet the cleanup levels.

### 1.5 Data Validation

A Compliance Screening (Stages 1 & 2A) data quality review was performed on volatile organic compound data resulting from laboratory analysis by U.S. Environmental Protection Agency (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 six groundwater samples were submitted in one sample delivery group (FA1612230) to Fremont Analytical, Inc., of Seattle, Washington, for chemical analysis. For all analyses, the analytical holding times were met and the method blanks had no detections. The surrogate, matrix spike, matrix spike duplicate, and laboratory control sample recoveries 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.

## 2.0 2016 ANNUAL SUMMARY AND TRENDS

Groundwater and seep samples were collected on a quarterly basis in 2016, in March, June, September, and December. Water samples were analyzed for the site COCs, which are PCE, TCE, *cis*- and *trans*-1,2-DCE, 1,1-DCE, and vinyl chloride. A summary of the 2016 groundwater analytical results along with data from the pre-remediation sampling event in August 2013 (SES 2013) are provided in Table 1. The analytical data for surface water, including the seep, are summarized in Table 2. The compliance monitoring locations are shown on Figure 2 and the 2016 groundwater and surface water monitoring results are shown on Figure 3.

### 2.1 Groundwater Elevation Measurements

During each monitoring event, the depth to water was recorded with an electronic water level meter prior to sample collection at all monitoring wells. Groundwater elevations were determined using top-of-casing survey information from SoundEarth Strategies. Groundwater elevations for all quarters of 2016 are summarized in Table 3.

The primary groundwater flow direction at the Site during all events was to the north. During first and second quarter monitoring, potential secondary flow directions to the north-northwest were

also observed. Groundwater was generally found to be overtopping the well casing at MW-11 and MW-14, indicating that the shallow aquifer is artesian in the vicinity of these two wells. Groundwater elevations and overall flow directions are shown on Figure 4.

## 2.2 Groundwater Analytical Summary

The first year of groundwater sampling has shown that there is an overall decline in groundwater contaminant concentrations at the Site. Site COCs have not historically been reported in groundwater samples collected from monitoring wells MW-06, MW-11, and MW-13, and continued to remain non-detect through the four quarters of 2016, suggesting that contaminant migration is not occurring.

Wells MW-09 and MW-14, as well as the French drain, had increased TCE, PCE, *cis*-1,2-DCE, and/or vinyl chloride concentrations during the second or third quarter of sampling. These increases in COC concentrations were likely due to disturbed subsurface soil conditions following the remedial excavation in 2015 and localized alterations of shallow groundwater flow patterns caused by placement of controlled density fill as backfill in the main excavation area. This disturbance is likely to have caused temporary remobilization of residual low-level contamination in soils surrounding the excavation areas and underlying the adjacent Cherry Street Q-Tip Trust Building. *trans*-1,2-DCE and 1,1-DCE were not detected in groundwater at these monitoring wells during 2016.

At MW-09, located downgradient of the secondary excavation area, concentrations of lighter and more mobile breakdown products of PCE including *cis*-1,1-DCE and vinyl chloride had the most significant increases following the 2015 excavation. During fourth quarter sampling, however, both concentrations decreased and *cis*-1,2-DCE was less than the cleanup level. Fourth quarter TCE results were also less than the most recent pre-remediation sampling concentrations. These findings are consistent with post-excavation soil sampling, which confirmed that the contaminated soil source was effectively removed from this area. The historically low TCE concentration and decreasing concentrations of lighter PCE breakdown products indicate that the remaining groundwater plume is attenuating. Without further input from a soil source, this plume is expected to continue to attenuate.

At MW-14 and FD-01, located downgradient of the main excavation area and the Cherry Street Q-Tip Trust Building, concentrations of PCE and its breakdown products all increased following the 2015 excavation. PCE increased most sharply at MW-14, with a peak concentration observed during second quarter 2016 sampling. At both FD-01 and MW-14, TCE had peak concentrations during the third quarter event. *cis*-1,2-DCE also peak concentrations at FD-01 and MW-14 during the second quarter and third quarter events, respectively. Vinyl chloride at FD-01 also peaked following 2015 construction and subsequently decreased, and vinyl chloride concentrations at MW-14 have fluctuated but generally remained greater than the cleanup level at these locations. The fourth quarter of sampling resulted in significantly decreased PCE concentrations as well as TCE and *cis*-1,2-DCE concentrations at both MW-14 and FD-01. These results are also consistent

with post-excavation sampling, which showed greater levels of residual PCE in soil in the northern part of the main excavation and likely underlying the Cherry Street Q-Tip Trust Building. The increase in PCE concentrations, followed by decreases in PCE and its breakdown product concentrations, indicate that the remobilized soil contamination is attenuating. With a limited amount of residual soil contamination left in place after excavation, these concentrations are also expected to continue to attenuate.

### 2.3 Seep Analytical Summary and Treatment

The concentrations of site COCs at the seep were significantly reduced during 2016 monitoring as compared to pre-excavation concentrations. However, the seep still contained concentrations of PCE and vinyl chloride at concentrations greater than the cleanup levels during all four quarters. TCE was detected at a concentration greater than the cleanup level in the fourth quarter only. An additional seep grab sample was collected during the second quarter, 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 water sample taken at the seep discharge location at the catch basin (SEEP-CB) had no exceedances for the site COCs, confirming that the water quality at the point of discharge meets the 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) were evaluated and an activated carbon filter sock was installed on September 29, 2016. In accordance with permit requirements, a catch basin filter was also installed in the downgradient catch basin as an added protection measure.

The seep, which showed increased TCE and PCE concentrations in the fourth quarter, does not show the same short-term trends as the monitoring wells. This monitoring location had significantly greater PCE and TCE concentrations during the first and fourth quarter wet-weather sampling events relative to the second and third quarter dry weather events. This suggests that infiltrating rain water may be continuing to remobilize shallow contaminants in the vicinity of the seep. Given the limited amount of residual contamination, however, long-term trends for the seep are expected to be similar to groundwater trends, which show overall decreasing concentrations.

Third quarter results confirmed that the carbon filter is providing adequate treatment for seep water at the point of discharge, sufficient to meet the cleanup levels. Fourth quarter results, which showed a significant increase in PCE and TCE concentrations, showed breakthrough of PCE. Concentrations of the treated water in the fourth quarter were less than in June 2016, when a sample was collected at the catch basin to demonstrate compliance at the discharge point.

### 2.4 Trend Analysis

Contaminant concentration trends for the monitoring wells with concentrations exceeding any cleanup level (i.e., MW-09 and MW-14) and the seep (pre-treatment) are shown on Figure 5. Overall concentration trends for contaminants that exceeded the cleanup level (i.e., PCE, TCE, *cis*-1,2-DCE, and vinyl chloride) are shown on Figure 6.

## 3.0 COMPLIANCE MONITORING PLAN MODIFICATIONS

Per the CMP, the monitoring frequency will be reduced to semi-annual after the first year of quarterly monitoring. In addition to a reduced monitoring frequency, a reduced monitoring well network is also recommended. Monitoring wells MW-06, MW-11, and MW-13 have not had detectable concentrations of site COCs both historically (pre-remediation) and through all four quarters of monitoring in 2016. Monitoring well MW-6, which is located more than 150 feet downgradient of well MW-14, will be removed from the compliance well network. MW-11, which is located approximately 20 feet downgradient of MW-14, will be sampled on an annual basis to show compliance at a downgradient location. If site COCs are detected in groundwater collected from MW-11, then monitoring well MW-6 will be included in the next monitoring event. Monitoring well MW-13, which is located cross-gradient from MW-14, will also be removed from the routine monitoring well network, but will be monitored once every 5 years. Sampling of the French drain is also no longer necessary because the downgradient seep and MW-14 locations will continue to be monitored.

Quarterly monitoring of the seep will continue in 2017. In addition, a SEEP-POST sample will be collected on a quarterly basis until treatment of the seep is no longer required. The carbon sock will be replaced during the next quarterly sampling event. If COCs are not detected in a seep sample or are detected at concentrations less than the cleanup levels for four quarters, additional monitoring of that seep will not be warranted.

The modified CMP for groundwater and the seep in 2017 includes quarterly sampling of the seep (pre- and post-treatment), semi-annual sampling of MW-09 and MW-14, and annual sampling of MW-11. Monitoring well MW-13 will be monitored once every 5 years.

### 3.1 Compliance Monitoring Schedule

The next compliance monitoring event will be completed in March 2017 and will consist of the collection of groundwater samples from the two compliance wells (MW-09 and MW-14) and surface water samples from the seep and the discharge of the filter sock to continue documenting the treatment efficiency of the filter sock. The results of the March 2017 compliance monitoring will be documented in the first quarterly monitoring report for 2017, which will be submitted to Ecology no later than 90 days following the groundwater sampling event.

Quarterly monitoring of the seep is anticipated to occur in March, June, September, and December 2017, and semi-annual monitoring of groundwater is anticipated to occur in March and September 2017. Monitoring well MW-11, which will be monitored on an annual basis, will be sampled in September 2017. An annual summary report for 2017 will be submitted to Ecology by February 15, 2018. The modified CMP, including the compliance monitoring network and schedule, is summarized in Table 4.

### 3.2 Continued Seep Treatment

The right-of-way obstruction permit acquired from the City of Olympia in September 2016 in order to install the activated carbon filter sock expires 6 months after the installation of the sock. Therefore, an extension of the right-of-way permit will be requested prior to permit expiration in March 2017. A new filter sock was ordered after a review of the fourth quarter data, which indicated a breakthrough of PCE and will be replaced as soon as possible, but no later than March 2017. A backup filter sock will be ordered prior to the second quarterly monitoring event in the event breakthrough is observed. A routine change-out will be established to ensure that breakthrough at concentrations greater than the cleanup level does not occur. The filter sock is monitored by the owner on a weekly basis per the right-of-way obstruction permit requirements.

## 4.0 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.

SoundEarth 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
Table 2 Surface Water Monitoring Data
Table 3 Groundwater Elevation Data
Table 4 Modified Compliance Monitoring Plan
Figure 1 Site Vicinity Map
Figure 2 Source Removal Areas and Compliance Monitoring Locations
Figure 3 2016 Quarterly Groundwater and Surface Water Monitoring Results
Figure 4 Groundwater Elevation Maps
Figure 5 Contaminant Concentration Trends by Location
Figure 6 Contaminant Concentration Trends by Analyte
Attachment 1 Laboratory Data
Attachment 2 Field Forms

# Tables

**Table 1**
**Groundwater Monitoring Data**

| Sample Location | Status[1] | 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 | 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 |
| | | 9/29/2016 | 1.0 U | 0.50 U | 1.0 U | 1.0 U | 1.0 U | 0.20 U |
| | | 12/20/2016 | 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** |
| | | 9/29/2016 | 1.0 U | 2.8 | **27** | 1.0 U | 1.0 U | **11** |
| | | 12/20/2016 | 1.0 U | 0.69 | 10 | 1.0 U | 1.0 U | **6.9** |
| 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 |
| | | 9/29/2016 | 1.0 U | 0.50 U | 1.0 U | 1.0 U | 1.0 U | 0.20 U |
| | | 12/20/2016 | 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 |
| | | 9/29/2016 | 1.0 U | 0.50 U | 1.0 U | 1.0 U | 1.0 U | 0.20 U |
| | | 12/20/2016 | 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** |
| | | 9/29/2016 | **96** | **40** | **42** | 1.0 U | 1.0 U | 0.20 U |
| | | 12/20/2016[2] | **23** | **11** | 7.3 | 1.0 U | 1.0 U | **0.79** |
| FD-01 | Post-remediation | 3/12/2016 | **46** | **26** | **160** | 1.0 | 1.0 U | **36** |
| | | 6/9/2016 | **31** | **34** | **430** | 2.4 | 1.2 | **87** |
| | | 9/29/2016 | **33** | **48** | **310** | 2.0 | 1.0 U | **73** |
| | | 12/20/2016 | **15** | **14** | **54** | 1.0 U | 1.0 U | **5.5** |
| Groundwater Cleanup Level (µg/L) | | | 5.0 | 5.0 | 16 | 100 | 7.0 | 0.20 |

Notes:

**BOLD** Indicates a concentration that exceeds the site cleanup level.

1 Pre-remediation groundwater monitoring data collected by SoundEarth 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.

## Table 2
## Surface Water Monitoring Data

| 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) |
|---|---|---|---|---|---|---|---|---|
| SEEP | Pre-remediation[1] | 7/10/2008 | **390** | **580** | 2,500 | 12 | 2.6 | **190** |
| | 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** |
| | | 9/29/2016 | **16** | 30 | 180 | 1.0 U | 1.0 U | **16** |
| | | 12/20/2016 | **56** | **44** | 110 | 1.0 U | 1.0 U | **10** |
| SEEP-CB[2] | Pre-remediation | 10/15/2008 | 2.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| | Post-remediation | 6/9/2016 | 1.0 U | 0.50 U | 1.8 | 1.0 U | 1.0 U | 0.20 U |
| SEEP-POST[3] | Post-remediation | 9/29/2016 | 1.0 U | 0.55 | 2.3 | 1.0 U | 1.0 U | 0.62 |
| | | 12/20/2016 | **10** | 8.0 | 19 | 1.0 U | 1.0 U | 2.2 |
| 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 seep samples were collected approximately 16 feet south of the current seep sampling location; however, both pre- and post-remediation samples are representative of the same source of seep water.

2 Sample collected at the downstream catch basin. Pre-remediation sample was collected by the Wasington State Department of Ecology from approximately the same location and named "Street - 2."

3 Sample collected downstream of the carbon filter sock to demonstrate treatment efficiency.

Abbreviations:

µg/L Micrograms per liter

NA Not applicable

Qualifier:

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

## Table 3
## Groundwater Elevation Data

| Well ID | Top of Casing Elevation (feet)[1,2] | Date | Depth to Water (feet) | Groundwater Elevation (feet)[2] |
|---|---|---|---|---|
| MW-06 | 20.12 | 03/12/2016 | 1.46 | 18.66 |
| | | 06/09/2016 | 0.86 | 19.26 |
| | | 09/29/2016 | 0.20 | 19.92 |
| | | 12/20/2016 | 1.38 | 18.74 |
| MW-09 | 30.56 | 03/12/2016 | 2.32 | 28.24 |
| | | 06/09/2016 | 3.41 | 27.15 |
| | | 09/29/2016 | 3.44 | 27.12 |
| | | 12/20/2016 | 3.40 | 27.16 |
| MW-11[3] | 24.66 | 03/12/2016 | 0.00 | 24.66 |
| | | 06/09/2016 | 0.00 | 24.66 |
| | | 09/29/2016 | 0.00 | 24.66 |
| | | 12/20/2016 | 0.50 | 24.16 |
| MW-13 | 26.38 | 03/12/2016 | 0.07 | 26.31 |
| | | 06/09/2016 | 0.17 | 26.21 |
| | | 09/29/2016 | 0.42 | 25.96 |
| | | 12/20/2016 | 0.20 | 26.18 |
| MW-14[3] | 26.00 | 03/12/2016 | 0.00 | 26.00 |
| | | 06/09/2016 | 0.00 | 26.00 |
| | | 09/29/2016 | 0.00 | 26.00 |
| | | 12/20/2016 | 0.00 | 26.00 |

Notes:

1 Top of well casing survey information from SoundEarth Strategies.

2 Elevations reported in North American Vertical Datum of 1988.

3 Depth to water values of 0.00 feet indicate a location with artesian groundwater; reported groundwater elevations are considered estimates.

**Table 4**
**Modified Compliance Monitoring Plan**

| Location | Monitoring Frequency |
|---|---|
| **Compliance Monitoring Wells** | |
| MW-09 | Semiannually: Q1 and Q3 |
| MW-14 | Semiannually: Q1 and Q3 |
| MW-11 | Annually: Q3 |
| MW-13 | Quinquennially: next scheduled Q3 2021 |
| MW-06 | Contingency location, sample only if contaminants of concern are detected at MW-11 |
| **Seep Monitoring** | |
| SEEP | Quarterly until four consecutive quarters have results less than cleanup levels |
| SEEP-POST | Quarterly until SEEP results are less than cleanup levels and treatment is no longer warranted |

# Figures


FLOYD | SNIDER
strategy ▪ science ▪ engineering

**2016 Annual Summary Report for 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
2/10/2017

## 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

FORMER SEEP AREA

SEEP

CATCHBASIN

MANHOLE

MANHOLE

MANHOLE

CHERRY STREET SOUTHEAST

MW-13

N

0 12.5 25 50

Scale in Feet

FLOYD | SNIDER

strategy ▪ science ▪ engineering

**2016 Annual Summary Report for Groundwater Compliance Monitoring Former Olympia Dry Cleaners Site Olympia, Washington**

Figure 2
Source Removal Areas and Compliance Monitoring Locations

I:\GIS\Projects\GTH-Olympia_Dry_Cleaners\MXD\QuarterlyGroundwaterComplianceMonitoring\Figure 2 Source Removal Areas and Compliance Monitoring Locations-Q4.mxd
2/13/2017

## Legend

- Compliance Monitoring Well
- Compliance Monitoring Point
- Seep
- Sidewalk
- Concrete Pad
- Building Outline
- Property Boundary
- Building Awning
- Soil Excavation Limits (2015)
- Carbon Filter Sock
- 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.

ASPHALT LOT

GRASSY AREA

ASPHALT LOT

UNION AVE SOUTHEAST

| MW-09 | | | | |
|---|---|---|---|---|
| Analyte | 3/8/16 | 6/9/16 | 9/29/16 | 12/20/16 |
| PCE | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| TCE | 2.2 | 3.2 | 2.8 | 0.69 |
| cis-1,2-DCE | 11 | **26** | **27** | 10 |
| trans-1,2-DCE | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,1-DCE | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Vinyl Chloride | **5.0** | **9.8** | **11** | **6.9** |

| MW-06 | Analytes tested for during each event, but not detected. |
|---|---|

Cherry Street Q-Tip Trust Building

| MW-14 | | | | |
|---|---|---|---|---|
| Analyte | 3/8/16 | 6/9/16 | 9/29/16 | 12/20/16 |
| PCE | **52** | **99** | **96** | **23** |
| TCE | **17** | **34** | **40** | **11** |
| cis-1,2-DCE | **23** | **33** | **42** | 7.3 |
| trans-1,2-DCE | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| 1,1-DCE | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Vinyl Chloride | **2.4** | **2.8** | 0.20 U | **0.79** |

Boiler Room

Dry Cleaner Machine

**Former Olympia Dry Cleaners Building**

Roof Line

| MW-11 | Analytes tested for during each event, but not detected. |
|---|---|

CATCHBASIN

FORMER SEEP AREA

| FD-01 | | | | |
|---|---|---|---|---|
| Analyte | 3/8/16 | 6/9/16 | 9/29/16 | 12/20/16 |
| PCE | **46** | **31** | **33** | **15** |
| TCE | **26** | **34** | **48** | **14** |
| cis-1,2-DCE | **160** | **430** | **310** | **54** |
| trans-1,2-DCE | 1.0 | 2.4 | 2 | 1.0 U |
| 1,1-DCE | 1.0 U | 1.2 | 1.0 U | 1.0 U |
| Vinyl Chloride | **36** | **87** | **73** | **5.5** |

| SEEP-CB | |
|---|---|
| Analyte | 6/9/16 |
| 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-POST | | |
|---|---|---|
| Analyte | 9/29/16 | 12/20/16 |
| PCE | 1.0 U | **10** |
| TCE | 0.55 | 8.03 |
| cis-1,2-DCE | 2.3 | 19 |
| trans-1,2-DCE | 1.0 U | 1.0 U |
| 1,1-DCE | 1.0 U | 1.0 U |
| Vinyl Chloride | 0.62 | 2.2 |

MANHOLE

CHERRY STREET SOUTHEAST

| SEEP | | | | |
|---|---|---|---|---|
| Analyte | 3/8/16 | 6/9/16 | 9/29/16 | 12/20/16 |
| PCE | **23** | **16** | **16** | **56** |
| TCE | 17 | 18 | 30 | **44** |
| cis-1,2-DCE | 160 | 170 | 180 | 112 |
| trans-1,2-DCE | 1.0 U | 1.3 | 1.0 U | 1.0 U |
| 1,1-DCE | 1.0 U | 1.0 U | 1.0 U | 1.0 U |
| Vinyl Chloride | **22** | **20** | **16** | **10** |

| MW-13 | Analytes tested for during each event, but not detected. |
|---|---|

N

0 12.5 25 50

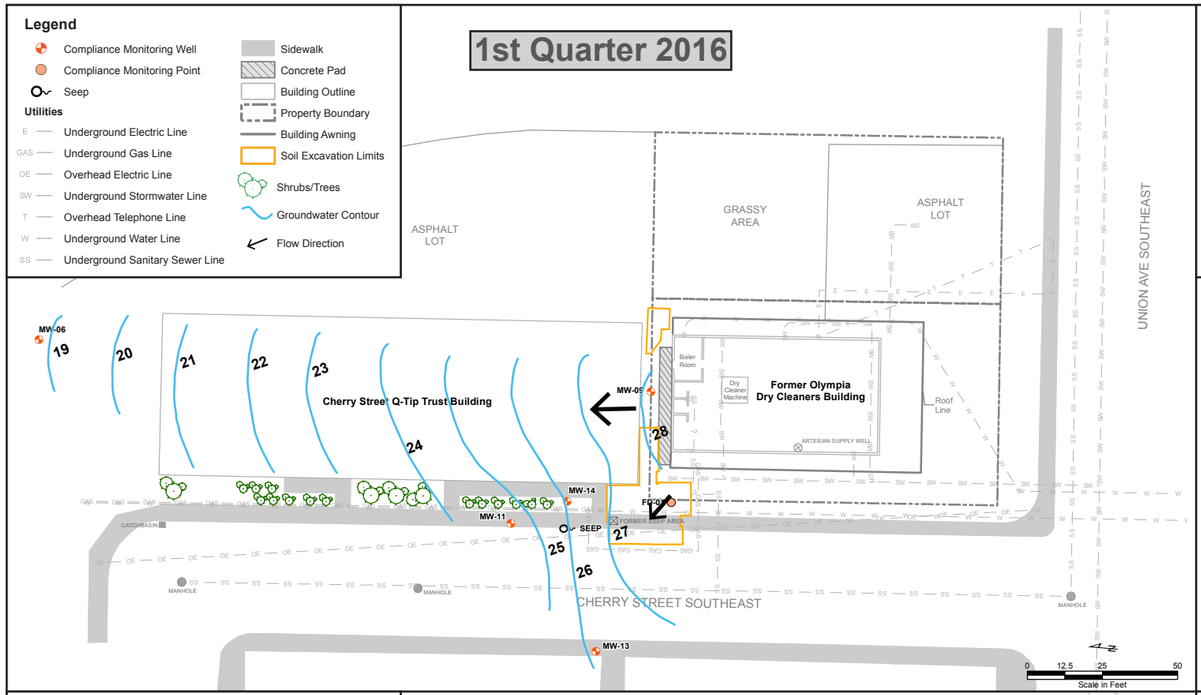
Scale in Feet

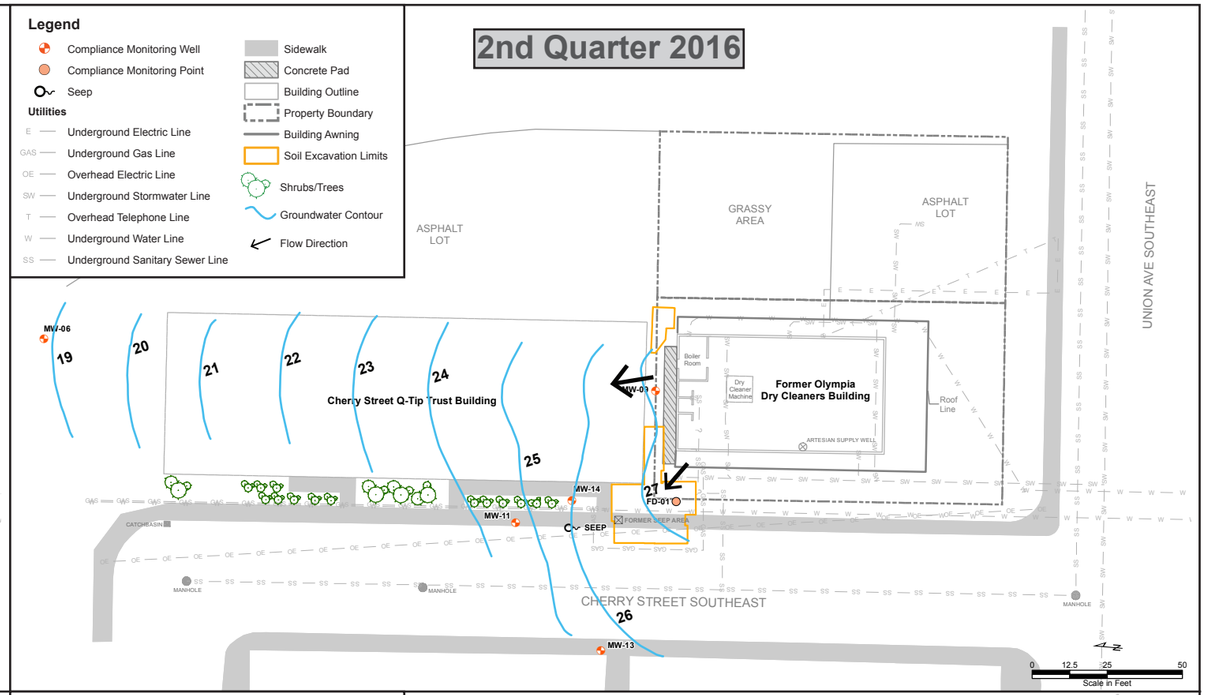
FLOYD | SNIDER
strategy • science • engineering

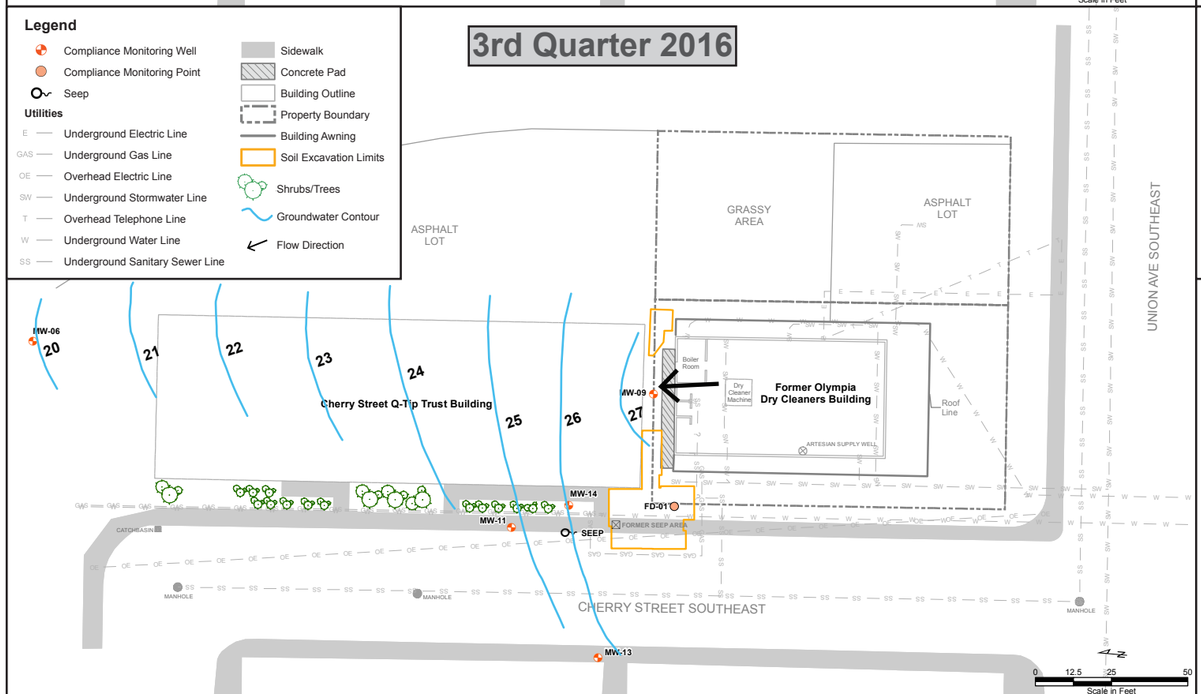
**2016 Annual Summary Report for Groundwater Compliance Monitoring Former Olympia Dry Cleaners Site Olympia, Washington**

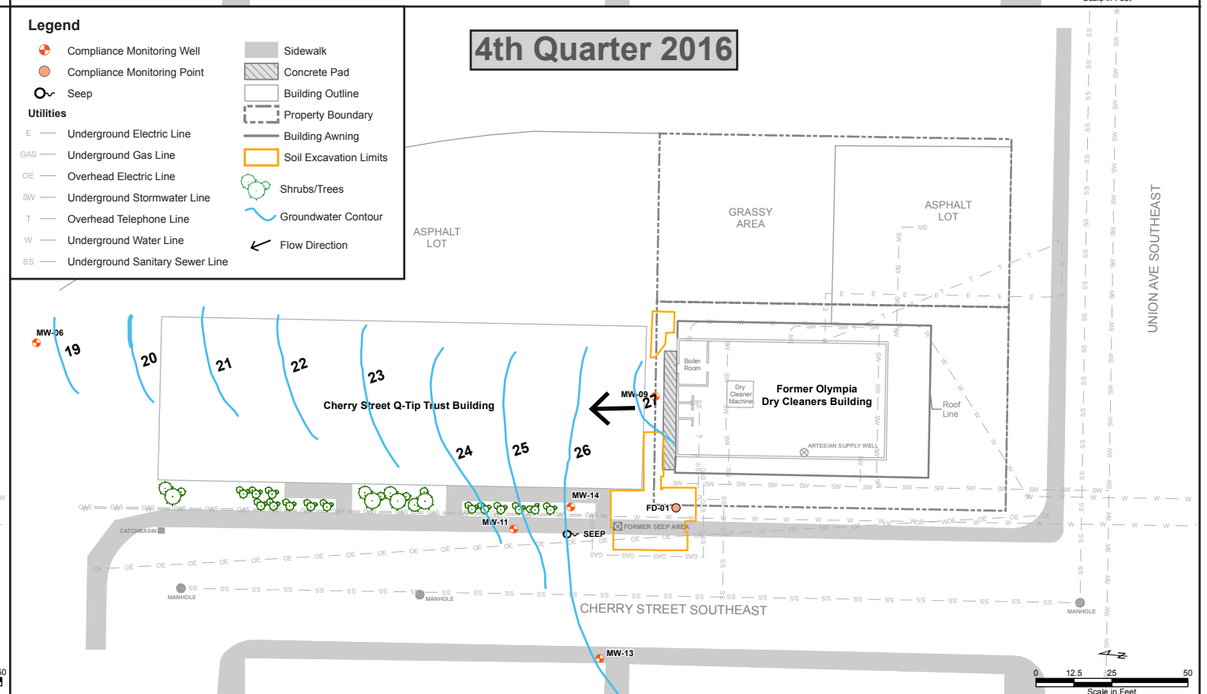
Figure 3
2016 Quarterly Groundwater and Surface Water Monitoring Results

I:\GIS\Projects\GTH-Olympia_Dry_Cleaners\MXD\QuarterlyGroundwaterComplianceMonitoring\Figure 3 2016 Quarterly Groundwater and Surface Water Monitoring Results-Q4.mxd
2/13/2017



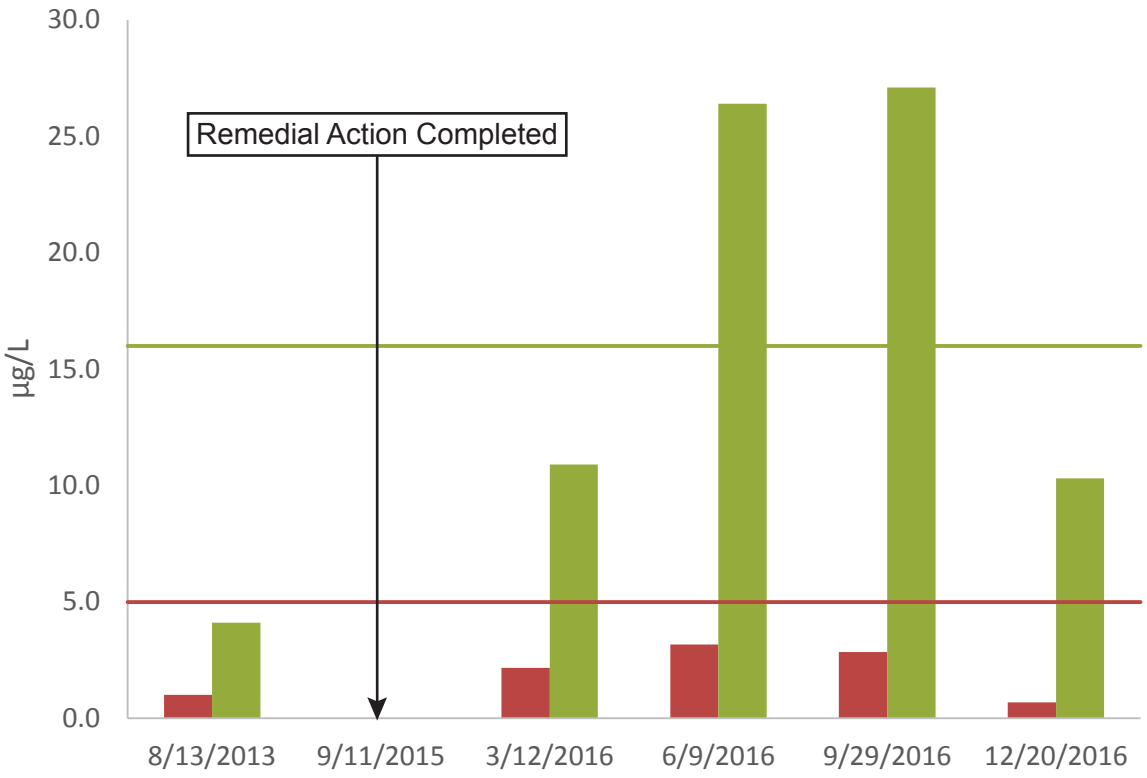

FLOYD | SNIDER
strategy • science • engineering

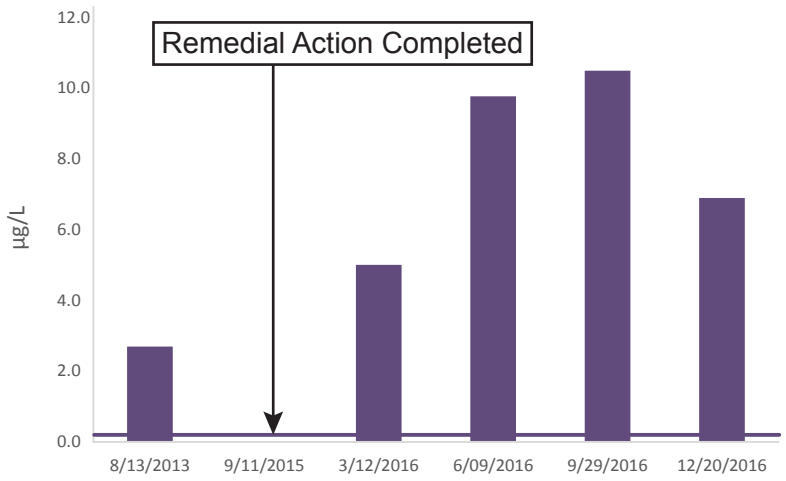
**2016 Annual Summary Report for Groundwater Compliance Monitoring Former Olympia Dry Cleaners Site Olympia, Washington**

Figure 4
Groundwater Elevation Maps

I:\GIS\Projects\GTH-Olympia_Dry_Cleaners\AI\2016 Annual Report\Figure 4 Groundwater Elevation Maps.ai
02/07/2017

## MW-09

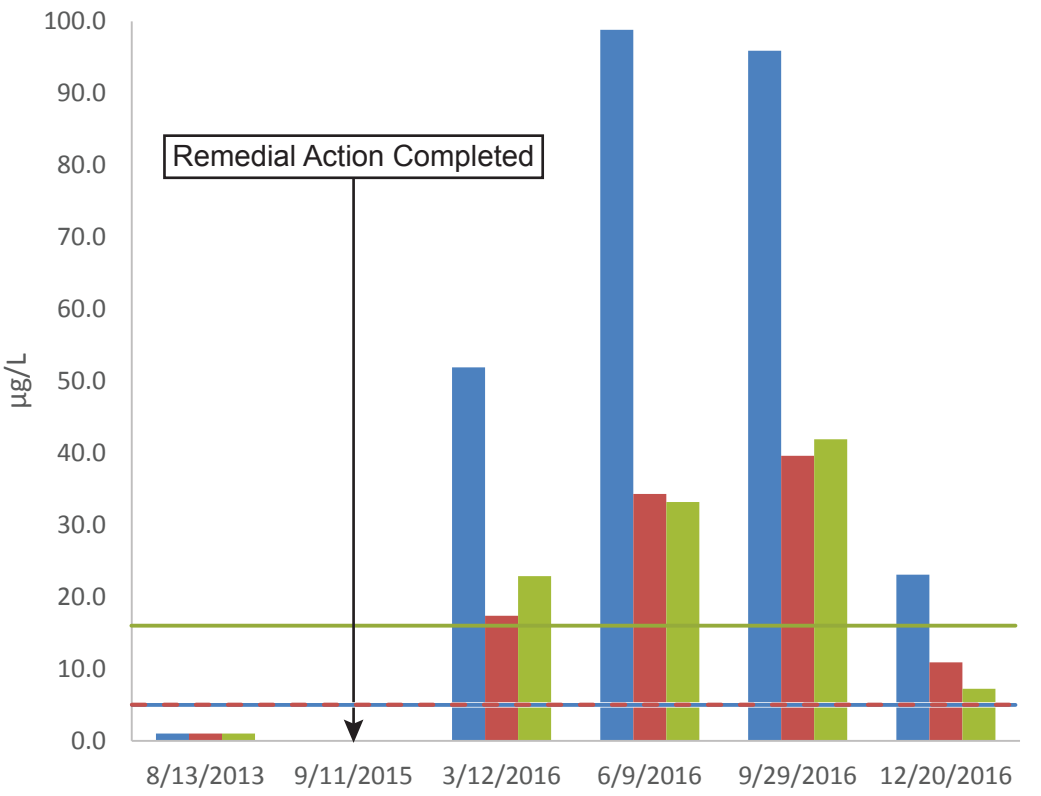


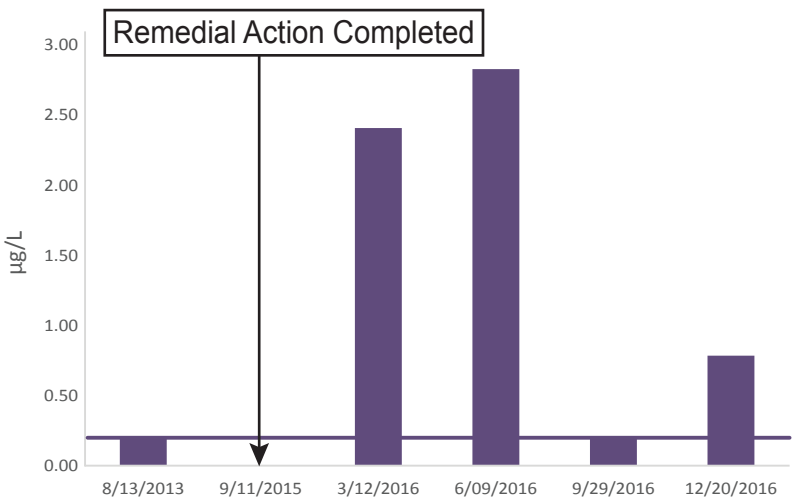




Trichloroethene
*cis*-1,2-DCE
Vinyl Chloride
Trichloroethene Cleanup Level
*cis*-1,2-DCE Cleanup Level
Vinyl Chloride Cleanup Level

Note:
- Vinyl chloride results shown separately for clarity

## MW-14

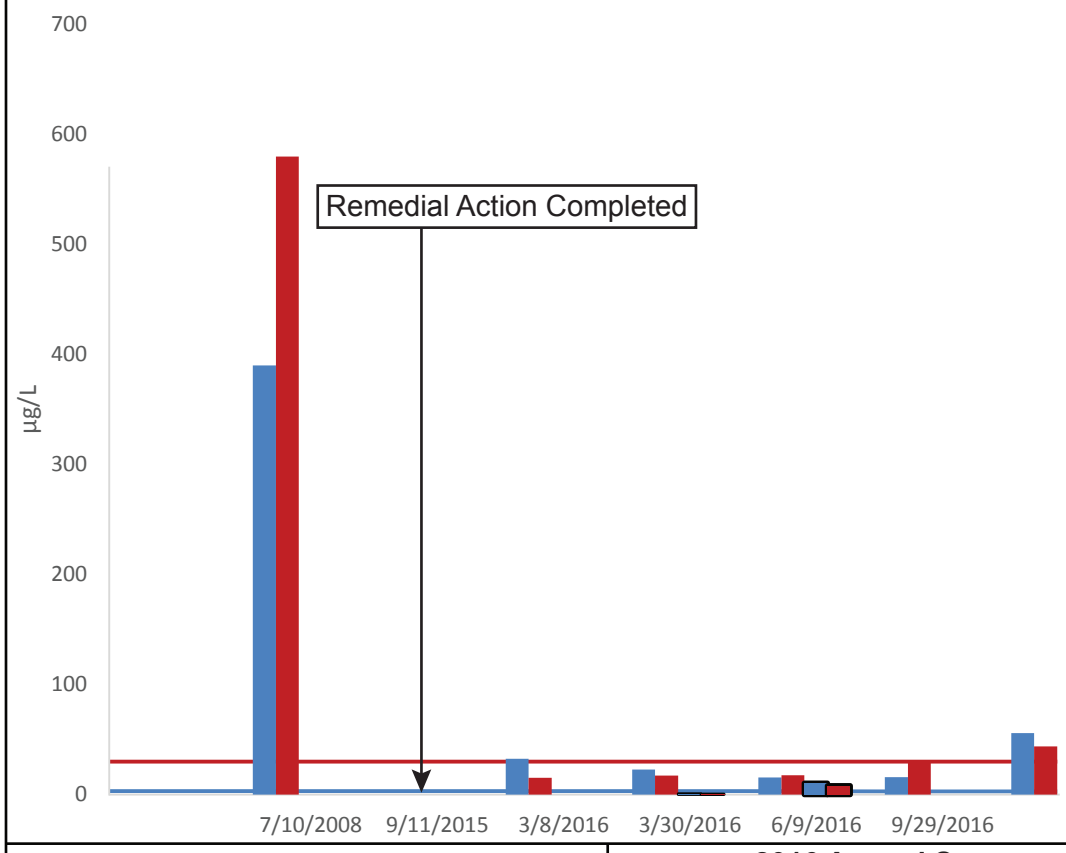


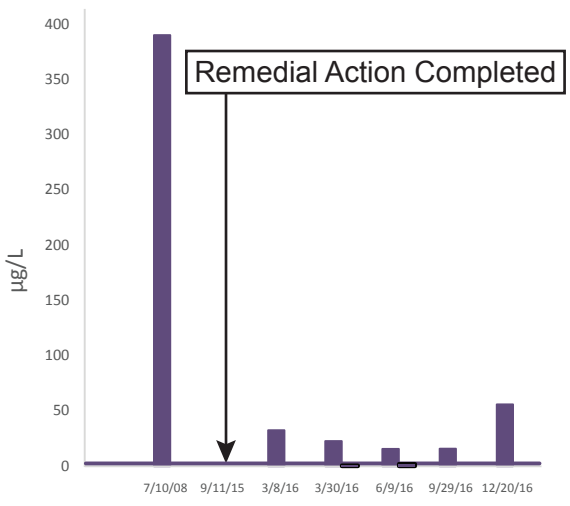




Tetrachloroethene Cleanup Level
Trichloroethene Cleanup Level
*cis*-1,2-DCE Cleanup Level
Vinyl Chloride Cleanup Level
Tetrachloroethene
Trichloroethene
*cis*-1,2-DCE
Vinyl Chloride

Note:
- Vinyl chloride results shown separately for clarity

## SEEP




Tetrachloroethene
Trichloroethene
Vinyl Chloride
Tetrachloroethene Cleanup Level
Trichloroethene Cleanup Level
Vinyl Chloride Cleanup Level
Tetrachloroethene (post-treatment)
Trichloroethene (post-treatment)
Vinyl Chloride (post-treatment)

Notes:
- Vinyl chloride results shown separately for clarity.
- Pre-remediation seep samples were collected approximately 16 feet south of the current seep sampling location; however, both pre- and post-remediation samples are representative of the same source of seep water.

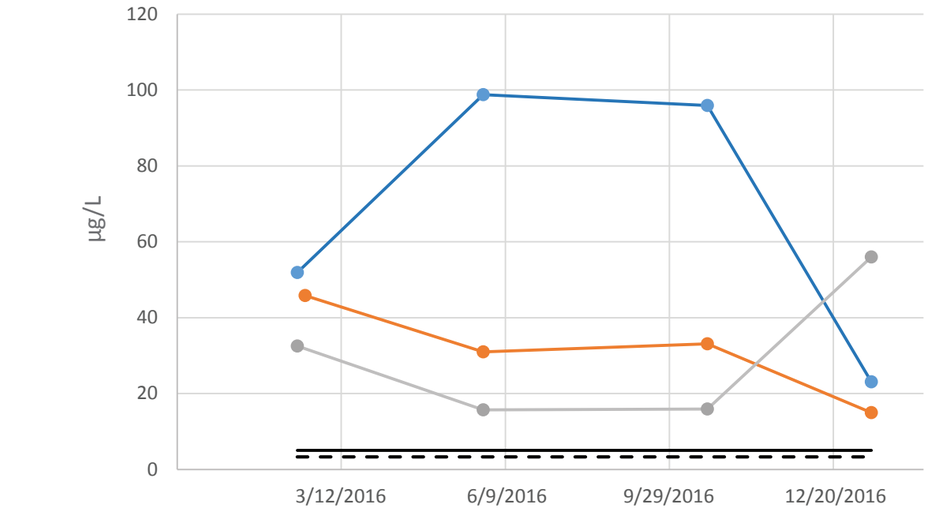
FLOYD | SNIDER
strategy • science • engineering

**2016 Annual Summary Report for Groundwater Compliance Monitoring Former Olympia Dry Cleaners Site Olympia, Washington**

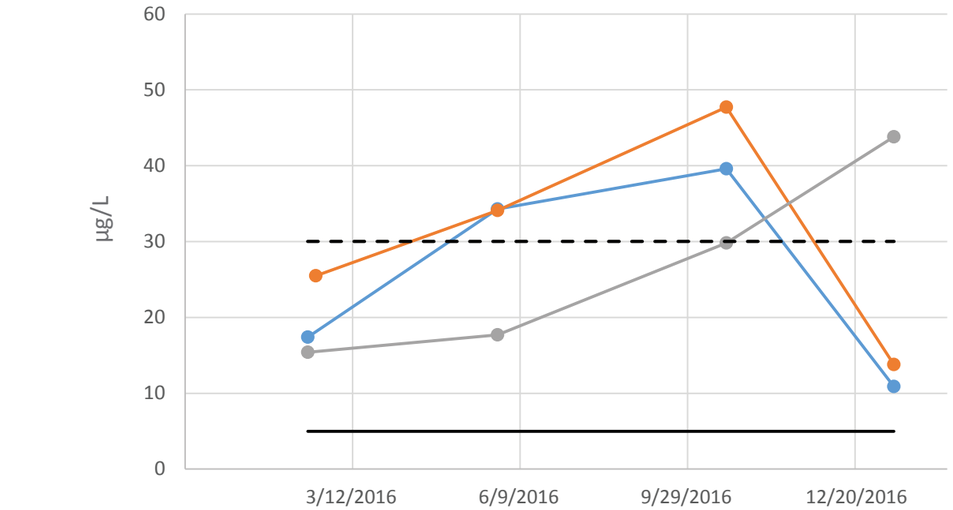
Figure 5
Contaminant Concentration Trends by Location

I:\GIS\Projects\GTH-Olympia_Dry_Cleaners\AI\2016 Annual Report\Figure 5 Contaminant Concentration Trends by Location.ai
02/07/2017

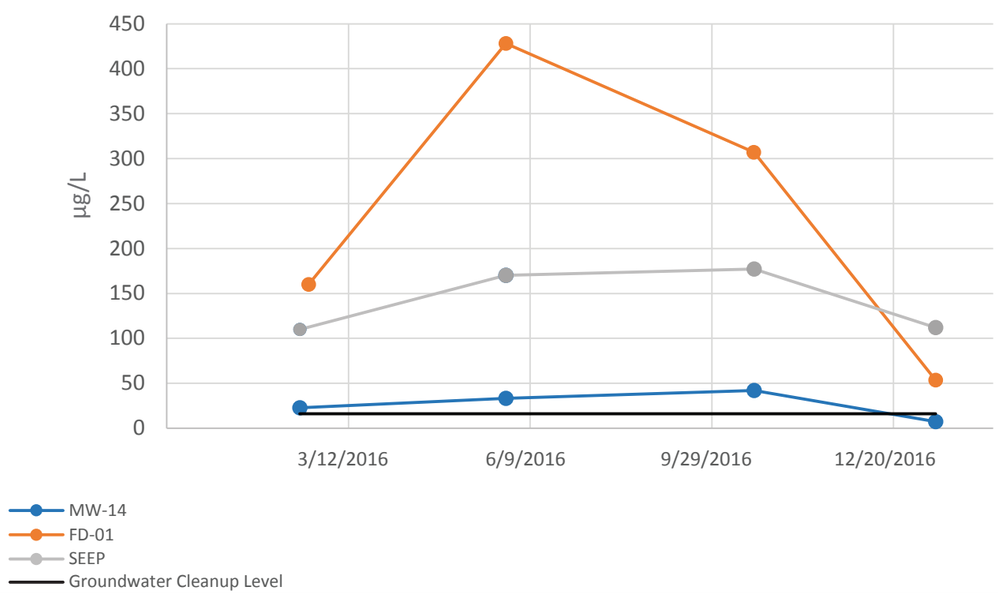
## Tetrachloroethene



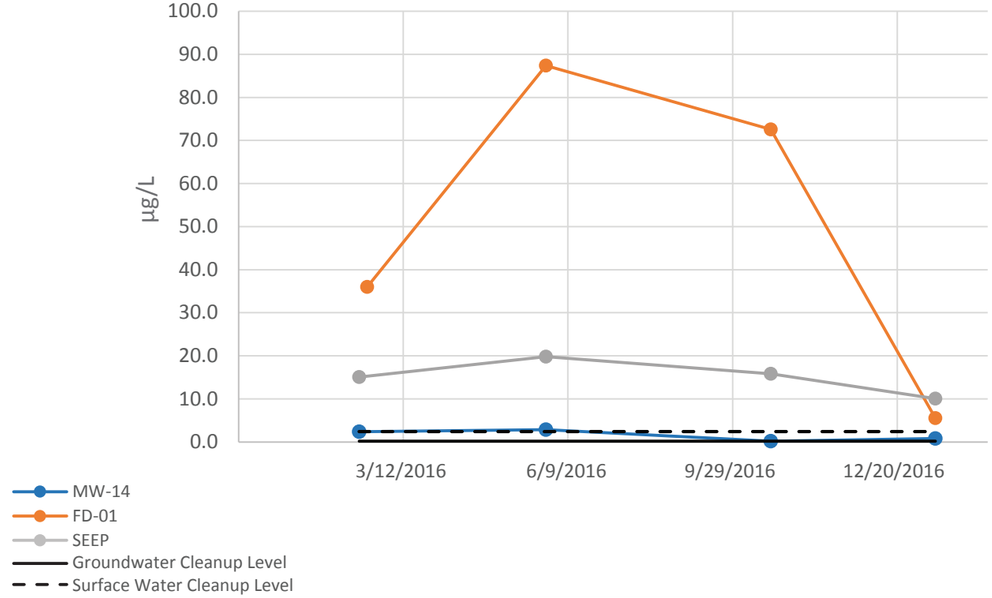

## Trichloroethene




## *cis*-1,2-Dichloroethene




## Vinyl Chloride




FLOYD | SNIDER
strategy • science • engineering

**2016 Annual Summary Report for Groundwater Compliance Monitoring Former Olympia Dry Cleaners Site Olympia, Washington**

Figure 6
Contaminant Concentration Trends by Analyte

I:\GIS\Projects\GTH-Olympia_Dry_Cleaners\AI\2016 Annual Report\Figure 6 Contaminant Concentration Trends by Analyte.ai
02/08/2017

**Attachment 1**
**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 Dry Cleaner**
**Work Order Number: 1612230**

December 28, 2016

**Attention Lynn Grochala:**

Fremont Analytical, Inc. received 10 sample(s) on 12/21/2016 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
Laboratory Director

**Date:** *12/28/2016*

**CLIENT:** Floyd | Snider
**Project:** GTH - Olympia Dry Cleaner
**Work Order:** 1612230

# Work Order Sample Summary

| Lab Sample ID | Client Sample ID | Date/Time Collected | Date/Time Received |
|---|---|---|---|
| 1612230-001 | MW-14-122016 | 12/20/2016 10:29 AM | 12/21/2016 3:10 PM |
| 1612230-002 | MW-14-122016-D | 12/20/2016 10:30 AM | 12/21/2016 3:10 PM |
| 1612230-003 | MW-11-122016 | 12/20/2016 11:07 AM | 12/21/2016 3:10 PM |
| 1612230-004 | MW-13-122016 | 12/20/2016 11:46 AM | 12/21/2016 3:10 PM |
| 1612230-005 | SEEP-122016 | 12/20/2016 9:28 AM | 12/21/2016 3:10 PM |
| 1612230-006 | SEEP-POST-122016 | 12/20/2016 12:05 PM | 12/21/2016 3:10 PM |
| 1612230-007 | MW-09-122016 | 12/20/2016 12:47 PM | 12/21/2016 3:10 PM |
| 1612230-008 | FD-01-122016 | 12/20/2016 1:15 PM | 12/21/2016 3:10 PM |
| 1612230-009 | MW-06-122016 | 12/20/2016 2:27 PM | 12/21/2016 3:10 PM |
| 1612230-010 | Trip Blank | 12/01/2016 4:22 PM | 12/21/2016 3:10 PM |

# Case Narrative

WO#: **1612230**

Date: **12/28/2016**

**CLIENT:** Floyd | Snider

**Project:** GTH - Olympia Dry Cleaner

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

Work Order: **1612230**
Date Reported: **12/28/2016**

**CLIENT:** Floyd | Snider
**Project:** GTH - Olympia Dry Cleaner

**Lab ID:** 1612230-001 **Collection Date:** 12/20/2016 10:29:00 AM
**Client Sample ID:** **MW-14-122016** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15752 | | Analyst: NG |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 12/23/2016 12:23:31 AM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 12:23:31 AM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 12:23:31 AM |
| cis-1,2-Dichloroethene | 7.25 | 1.00 | | µg/L | 1 | 12/23/2016 12:23:31 AM |
| Trichloroethene (TCE) | 10.9 | 0.500 | | µg/L | 1 | 12/23/2016 12:23:31 AM |
| Tetrachloroethylene(PCE) | 23.1 | 1.00 | | µg/L | 1 | 12/23/2016 12:23:31 AM |
| Surr: Dibromofluoromethane | 101 | 45.4-152 | | %Rec | 1 | 12/23/2016 12:23:31 AM |
| Surr: Toluene-d8 | 99.3 | 40.1-139 | | %Rec | 1 | 12/23/2016 12:23:31 AM |
| Surr: 1-Bromo-4-fluorobenzene | 98.2 | 64.2-128 | | %Rec | 1 | 12/23/2016 12:23:31 AM |

**Lab ID:** 1612230-002 **Collection Date:** 12/20/2016 10:30:00 AM
**Client Sample ID:** **MW-14-122016-D** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15752 | | Analyst: NG |
| Vinyl chloride | 0.785 | 0.200 | | µg/L | 1 | 12/23/2016 12:52:36 AM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 12:52:36 AM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 12:52:36 AM |
| cis-1,2-Dichloroethene | 6.65 | 1.00 | | µg/L | 1 | 12/23/2016 12:52:36 AM |
| Trichloroethene (TCE) | 9.93 | 0.500 | | µg/L | 1 | 12/23/2016 12:52:36 AM |
| Tetrachloroethylene(PCE) | 21.0 | 1.00 | | µg/L | 1 | 12/23/2016 12:52:36 AM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 12/23/2016 12:52:36 AM |
| Surr: Toluene-d8 | 100 | 40.1-139 | | %Rec | 1 | 12/23/2016 12:52:36 AM |
| Surr: 1-Bromo-4-fluorobenzene | 98.5 | 64.2-128 | | %Rec | 1 | 12/23/2016 12:52:36 AM |

**CLIENT:** Floyd | Snider
**Project:** GTH - Olympia Dry Cleaner

**Lab ID:** 1612230-003 **Collection Date:** 12/20/2016 11:07:00 AM
**Client Sample ID:** **MW-11-122016** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | Batch ID: 15752 | | | Analyst: NG |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 12/23/2016 1:21:45 AM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 1:21:45 AM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 1:21:45 AM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 1:21:45 AM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 12/23/2016 1:21:45 AM |
| Tetrachloroethylene(PCE) | ND | 1.00 | | µg/L | 1 | 12/23/2016 1:21:45 AM |
| Surr: Dibromofluoromethane | 102 | 45.4-152 | | %Rec | 1 | 12/23/2016 1:21:45 AM |
| Surr: Toluene-d8 | 98.7 | 40.1-139 | | %Rec | 1 | 12/23/2016 1:21:45 AM |
| Surr: 1-Bromo-4-fluorobenzene | 97.6 | 64.2-128 | | %Rec | 1 | 12/23/2016 1:21:45 AM |

**Lab ID:** 1612230-004 **Collection Date:** 12/20/2016 11:46:00 AM
**Client Sample ID:** **MW-13-122016** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | Batch ID: 15752 | | | Analyst: NG |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 12/23/2016 1:50:51 AM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 1:50:51 AM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 1:50:51 AM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 1:50:51 AM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 12/23/2016 1:50:51 AM |
| Tetrachloroethylene(PCE) | ND | 1.00 | | µg/L | 1 | 12/23/2016 1:50:51 AM |
| Surr: Dibromofluoromethane | 102 | 45.4-152 | | %Rec | 1 | 12/23/2016 1:50:51 AM |
| Surr: Toluene-d8 | 99.7 | 40.1-139 | | %Rec | 1 | 12/23/2016 1:50:51 AM |
| Surr: 1-Bromo-4-fluorobenzene | 97.6 | 64.2-128 | | %Rec | 1 | 12/23/2016 1:50:51 AM |

**CLIENT:** Floyd | Snider
**Project:** GTH - Olympia Dry Cleaner

**Lab ID:** 1612230-005 **Collection Date:** 12/20/2016 9:28:00 AM
**Client Sample ID:** **SEEP-122016** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | Batch ID: 15752 | | | Analyst: NG |
| Vinyl chloride | 10.1 | 0.200 | | µg/L | 1 | 12/23/2016 2:20:02 AM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 2:20:02 AM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 2:20:02 AM |
| cis-1,2-Dichloroethene | 112 | 10.0 | D | µg/L | 10 | 12/24/2016 1:10:48 AM |
| Trichloroethene (TCE) | 43.8 | 5.00 | D | µg/L | 10 | 12/24/2016 1:10:48 AM |
| Tetrachloroethylene(PCE) | 56.0 | 10.0 | D | µg/L | 10 | 12/24/2016 1:10:48 AM |
| Surr: Dibromofluoromethane | 101 | 45.4-152 | | %Rec | 1 | 12/23/2016 2:20:02 AM |
| Surr: Toluene-d8 | 97.0 | 40.1-139 | | %Rec | 1 | 12/23/2016 2:20:02 AM |
| Surr: 1-Bromo-4-fluorobenzene | 96.8 | 64.2-128 | | %Rec | 1 | 12/23/2016 2:20:02 AM |

**Lab ID:** 1612230-006 **Collection Date:** 12/20/2016 12:05:00 PM
**Client Sample ID:** **SEEP-POST-122016** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | Batch ID: 15752 | | | Analyst: NG |
| Vinyl chloride | 2.15 | 0.200 | | µg/L | 1 | 12/23/2016 2:48:59 AM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 2:48:59 AM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 2:48:59 AM |
| cis-1,2-Dichloroethene | 18.9 | 1.00 | | µg/L | 1 | 12/24/2016 12:13:12 AM |
| Trichloroethene (TCE) | 8.03 | 0.500 | | µg/L | 1 | 12/24/2016 12:13:12 AM |
| Tetrachloroethylene(PCE) | 10.4 | 1.00 | | µg/L | 1 | 12/24/2016 12:13:12 AM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 12/23/2016 2:48:59 AM |
| Surr: Toluene-d8 | 97.2 | 40.1-139 | | %Rec | 1 | 12/23/2016 2:48:59 AM |
| Surr: 1-Bromo-4-fluorobenzene | 96.5 | 64.2-128 | | %Rec | 1 | 12/23/2016 2:48:59 AM |

**CLIENT:** Floyd | Snider
**Project:** GTH - Olympia Dry Cleaner

**Lab ID:** 1612230-007 **Collection Date:** 12/20/2016 12:47:00 PM
**Client Sample ID:** **MW-09-122016** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15752 | | Analyst: NG |
| Vinyl chloride | 6.90 | 0.200 | | µg/L | 1 | 12/23/2016 3:18:00 AM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 3:18:00 AM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 3:18:00 AM |
| cis-1,2-Dichloroethene | 10.3 | 1.00 | | µg/L | 1 | 12/23/2016 3:18:00 AM |
| Trichloroethene (TCE) | 0.687 | 0.500 | | µg/L | 1 | 12/23/2016 3:18:00 AM |
| Tetrachloroethylene(PCE) | ND | 1.00 | | µg/L | 1 | 12/23/2016 3:18:00 AM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 12/23/2016 3:18:00 AM |
| Surr: Toluene-d8 | 99.2 | 40.1-139 | | %Rec | 1 | 12/23/2016 3:18:00 AM |
| Surr: 1-Bromo-4-fluorobenzene | 97.2 | 64.2-128 | | %Rec | 1 | 12/23/2016 3:18:00 AM |

**Lab ID:** 1612230-008 **Collection Date:** 12/20/2016 1:15:00 PM
**Client Sample ID:** **FD-01-122016** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15752 | | Analyst: NG |
| Vinyl chloride | 5.54 | 0.200 | | µg/L | 1 | 12/23/2016 3:47:02 AM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 3:47:02 AM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 3:47:02 AM |
| cis-1,2-Dichloroethene | 53.7 | 10.0 | D | µg/L | 10 | 12/24/2016 1:39:31 AM |
| Trichloroethene (TCE) | 13.8 | 0.500 | | µg/L | 1 | 12/23/2016 3:47:02 AM |
| Tetrachloroethylene(PCE) | 15.0 | 1.00 | | µg/L | 1 | 12/23/2016 3:47:02 AM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 12/23/2016 3:47:02 AM |
| Surr: Toluene-d8 | 98.9 | 40.1-139 | | %Rec | 1 | 12/23/2016 3:47:02 AM |
| Surr: 1-Bromo-4-fluorobenzene | 97.8 | 64.2-128 | | %Rec | 1 | 12/23/2016 3:47:02 AM |

# Analytical Report

Work Order: **1612230**
Date Reported: **12/28/2016**

**CLIENT:** Floyd | Snider
**Project:** GTH - Olympia Dry Cleaner

**Lab ID:** 1612230-009 **Collection Date:** 12/20/2016 2:27:00 PM
**Client Sample ID:** **MW-06-122016** **Matrix:** Water

| Analyses | Result | RL | Qual | Units | DF | Date Analyzed |
|---|---|---|---|---|---|---|
| **Volatile Organic Compounds by EPA Method 8260C** | | | | Batch ID: 15752 | | Analyst: NG |
| Vinyl chloride | ND | 0.200 | | µg/L | 1 | 12/23/2016 4:16:03 AM |
| 1,1-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 4:16:03 AM |
| trans-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 4:16:03 AM |
| cis-1,2-Dichloroethene | ND | 1.00 | | µg/L | 1 | 12/23/2016 4:16:03 AM |
| Trichloroethene (TCE) | ND | 0.500 | | µg/L | 1 | 12/23/2016 4:16:03 AM |
| Tetrachloroethylene(PCE) | ND | 1.00 | | µg/L | 1 | 12/23/2016 4:16:03 AM |
| Surr: Dibromofluoromethane | 103 | 45.4-152 | | %Rec | 1 | 12/23/2016 4:16:03 AM |
| Surr: Toluene-d8 | 98.2 | 40.1-139 | | %Rec | 1 | 12/23/2016 4:16:03 AM |
| Surr: 1-Bromo-4-fluorobenzene | 96.2 | 64.2-128 | | %Rec | 1 | 12/23/2016 4:16:03 AM |

**Work Order:** 1612230
**CLIENT:** Floyd | Snider
**Project:** GTH - Olympia Dry Cleaner

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **LCS-15752** SampType: **LCS** Units: **µg/L** Prep Date: **12/22/2016** RunNo: **33582**
Client ID: **LCSW** Batch ID: **15752** Analysis Date: **12/22/2016** SeqNo: **637197**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vinyl chloride | 18.3 | 0.200 | 20.00 | 0 | 91.5 | 53.6 | 139 | | | | |
| 1,1-Dichloroethene | 20.6 | 1.00 | 20.00 | 0 | 103 | 65.6 | 136 | | | | |
| trans-1,2-Dichloroethene | 21.0 | 1.00 | 20.00 | 0 | 105 | 71.7 | 129 | | | | |
| cis-1,2-Dichloroethene | 21.8 | 1.00 | 20.00 | 0 | 109 | 70.2 | 139 | | | | |
| Trichloroethene (TCE) | 21.4 | 0.500 | 20.00 | 0 | 107 | 65.2 | 136 | | | | |
| Tetrachloroethylene(PCE) | 22.7 | 1.00 | 20.00 | 0 | 113 | 47.5 | 147 | | | | |
| Surr: Dibromofluoromethane | 25.6 | | 25.00 | | 103 | 45.4 | 152 | | | | |
| Surr: Toluene-d8 | 25.4 | | 25.00 | | 102 | 40.1 | 139 | | | | |
| Surr: 1-Bromo-4-fluorobenzene | 25.6 | | 25.00 | | 103 | 64.2 | 128 | | | | |

Sample ID **MB-15752** SampType: **MBLK** Units: **µg/L** Prep Date: **12/22/2016** RunNo: **33582**
Client ID: **MBLKW** Batch ID: **15752** Analysis Date: **12/22/2016** SeqNo: **637198**

| 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 | | | | | | | | | |
| Tetrachloroethylene(PCE) | ND | 1.00 | | | | | | | | | |
| Surr: Dibromofluoromethane | 25.2 | | 25.00 | | 101 | 45.4 | 152 | | | | |
| Surr: Toluene-d8 | 24.2 | | 25.00 | | 96.8 | 40.1 | 139 | | | | |
| Surr: 1-Bromo-4-fluorobenzene | 24.5 | | 25.00 | | 98.0 | 64.2 | 128 | | | | |

Sample ID **1612213-001ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **12/22/2016** RunNo: **33582**
Client ID: **BATCH** Batch ID: **15752** Analysis Date: **12/22/2016** SeqNo: **637200**

| 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:** 1612230
**CLIENT:** Floyd | Snider
**Project:** GTH - Olympia Dry Cleaner

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **1612213-001ADUP** SampType: **DUP** Units: **µg/L** Prep Date: **12/22/2016** RunNo: **33582**
Client ID: **BATCH** Batch ID: **15752** Analysis Date: **12/22/2016** SeqNo: **637200**

| 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 | |
| Tetrachloroethylene(PCE) | ND | 1.00 | | | | | | 0 | | 30 | |
| Surr: Dibromofluoromethane | 25.6 | | 25.00 | | 102 | 45.4 | 152 | | 0 | | |
| Surr: Toluene-d8 | 24.2 | | 25.00 | | 96.6 | 40.1 | 139 | | 0 | | |
| Surr: 1-Bromo-4-fluorobenzene | 24.3 | | 25.00 | | 97.1 | 64.2 | 128 | | 0 | | |

Sample ID **1612219-001BMS** SampType: **MS** Units: **µg/L** Prep Date: **12/22/2016** RunNo: **33582**
Client ID: **BATCH** Batch ID: **15752** Analysis Date: **12/22/2016** SeqNo: **637205**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vinyl chloride | 17.9 | 0.200 | 20.00 | 0 | 89.5 | 58.1 | 158 | | | | |
| 1,1-Dichloroethene | 21.2 | 1.00 | 20.00 | 0 | 106 | 51.6 | 164 | | | | |
| trans-1,2-Dichloroethene | 20.7 | 1.00 | 20.00 | 0 | 104 | 63.5 | 138 | | | | |
| cis-1,2-Dichloroethene | 20.8 | 1.00 | 20.00 | 0 | 104 | 67.1 | 123 | | | | |
| Trichloroethene (TCE) | 21.4 | 0.500 | 20.00 | 0 | 107 | 60.4 | 134 | | | | |
| Tetrachloroethylene(PCE) | 23.7 | 1.00 | 20.00 | 0 | 119 | 50.3 | 133 | | | | |
| Surr: Dibromofluoromethane | 25.3 | | 25.00 | | 101 | 45.4 | 152 | | | | |
| Surr: Toluene-d8 | 25.5 | | 25.00 | | 102 | 40.1 | 139 | | | | |
| Surr: 1-Bromo-4-fluorobenzene | 26.5 | | 25.00 | | 106 | 64.2 | 128 | | | | |

Sample ID **1612219-001BMSD** SampType: **MSD** Units: **µg/L** Prep Date: **12/22/2016** RunNo: **33582**
Client ID: **BATCH** Batch ID: **15752** Analysis Date: **12/22/2016** SeqNo: **637206**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Vinyl chloride | 18.9 | 0.200 | 20.00 | 0 | 94.4 | 58.1 | 158 | 17.90 | 5.33 | 30 | |
| 1,1-Dichloroethene | 21.9 | 1.00 | 20.00 | 0 | 110 | 51.6 | 164 | 21.15 | 3.67 | 30 | |
| trans-1,2-Dichloroethene | 21.4 | 1.00 | 20.00 | 0 | 107 | 63.5 | 138 | 20.71 | 3.48 | 30 | |
| cis-1,2-Dichloroethene | 21.5 | 1.00 | 20.00 | 0 | 107 | 67.1 | 123 | 20.79 | 3.20 | 30 | |

**Work Order:** 1612230
**CLIENT:** Floyd | Snider
**Project:** GTH - Olympia Dry Cleaner

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **1612219-001BMSD** SampType: **MSD** Units: **µg/L** Prep Date: **12/22/2016** RunNo: **33582**
Client ID: **BATCH** Batch ID: **15752** Analysis Date: **12/22/2016** SeqNo: **637206**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Trichloroethene (TCE) | 22.7 | 0.500 | 20.00 | 0 | 114 | 60.4 | 134 | 21.40 | 6.10 | 30 | |
| Tetrachloroethylene(PCE) | 23.8 | 1.00 | 20.00 | 0 | 119 | 50.3 | 133 | 23.75 | 0.0434 | 30 | |
| Surr: Dibromofluoromethane | 25.3 | | 25.00 | | 101 | 45.4 | 152 | | 0 | | |
| Surr: Toluene-d8 | 25.8 | | 25.00 | | 103 | 40.1 | 139 | | 0 | | |
| Surr: 1-Bromo-4-fluorobenzene | 25.4 | | 25.00 | | 102 | 64.2 | 128 | | 0 | | |

Sample ID **1612232-018DDUP** SampType: **DUP** Units: **µg/L** Prep Date: **12/22/2016** RunNo: **33582**
Client ID: **BATCH** Batch ID: **15752** Analysis Date: **12/23/2016** SeqNo: **637218**

| 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 | |
| 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 | |
| Tetrachloroethylene(PCE) | ND | 1.00 | | | | | | 0 | | 30 | |
| Surr: Dibromofluoromethane | 25.1 | | 25.00 | | 100 | 45.4 | 152 | | 0 | | |
| Surr: Toluene-d8 | 24.8 | | 25.00 | | 99.2 | 40.1 | 139 | | 0 | | |
| Surr: 1-Bromo-4-fluorobenzene | 25.2 | | 25.00 | | 101 | 64.2 | 128 | | 0 | | |

Sample ID **CCV-E-15752** SampType: **CCV** Units: **µg/L** Prep Date: **12/23/2016** RunNo: **33582**
Client ID: **CCV** Batch ID: **15752** Analysis Date: **12/23/2016** SeqNo: **637264**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|
| cis-1,2-Dichloroethene | 19.9 | 1.00 | 20.00 | 0 | 99.3 | 80 | 120 | | | | |
| Trichloroethene (TCE) | 19.5 | 0.500 | 20.00 | 0 | 97.4 | 80 | 120 | | | | |
| Tetrachloroethylene(PCE) | 19.6 | 1.00 | 20.00 | 0 | 98.0 | 80 | 120 | | | | |
| Surr: Dibromofluoromethane | 25.5 | | 25.00 | | 102 | 72.1 | 122 | | | | |
| Surr: Toluene-d8 | 25.5 | | 25.00 | | 102 | 62.1 | 129 | | | | |
| Surr: 1-Bromo-4-fluorobenzene | 25.6 | | 25.00 | | 102 | 63.3 | 132 | | | | |

**Work Order:** 1612230
**CLIENT:** Floyd | Snider
**Project:** GTH - Olympia Dry Cleaner

# QC SUMMARY REPORT

## Volatile Organic Compounds by EPA Method 8260C

Sample ID **CCV-E-15752** SampType: **CCV** Units: **µg/L** Prep Date: **12/23/2016** RunNo: **33582**
Client ID: **CCV** Batch ID: **15752** Analysis Date: **12/23/2016** SeqNo: **637264**

| Analyte | Result | RL | SPK value | SPK Ref Val | %REC | LowLimit | HighLimit | RPD Ref Val | %RPD | RPDLimit | Qual |
|---|---|---|---|---|---|---|---|---|---|---|---|

# Sample Log-In Check List

| | | | |
|---|---|---|---|
| Client Name: | **FS** | Work Order Number: | **1612230** |
| Logged by: | **Clare Griggs** | Date Received: | **12/21/2016 3:10:00 PM** |

## 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 | 2.4 |

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

# Fremont Analytical

# Chain of Custody Record and Laboratory Services Agreement

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

Date: 12/20/16

Laboratory Project No (internal): 1612230

Page: 1 of: 1



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

Project Name: GTH-Olympia Dry Cleaner
Project No:
Collected by: Pamela Osterhout
Location: Olympia, WA
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 / 625) | PCBs (EPA 8082 / 608) | Metals** (EPA 6020 / 200.8) Total (T) \| Dissolved (D) | Anions (IC)*** | EDB (8011) | cVOCs 8260B | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-14-122016 | 12/20 | 1029 | W | | | | | | | | | | | | X | | PCE, TCE, cis-1,2-dichloroethene, trans-1,2-dichloroethene, 1,1-dichloroethene, vinyl chloride |
| 2 | MW-14-122016-D | | 1030 | | | | | | | | | | | | | X | | |
| 3 | MW-11-122016 | | 1107 | | | | | | | | | | | | | X | | |
| 4 | MW-13-122016 | | 1146 | | | | | | | | | | | | | X | | |
| 5 | SEEP-122016 | | 0928 | | | | | | | | | | | | | X | | |
| 6 | SEEP-POST-122016 | | 1205 | | | | | | | | | | | | | X | | |
| 7 | MW-09-122016 | | 1247 | | | | | | | | | | | | | X | | |
| 8 | FD-01-122016 | | 1315 | | | | | | | | | | | | | X | | |
| 9 | MW-06-122016 | | 1427 | | | | | | | | | | | | | X | | |
| 10 | | | | | | | | | | | | | | | | | | |

**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 [signature] | 12/21/2016 1300 | x | 12/21/16 1510 |
| x | | x | |

TAT → SameDay^ NextDay^ 2 Day 3 Day STD

^Please coordinate with the lab in advance

**Attachment 2**
**Field Forms**

# GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH-Olympia
Project Number: T-9
Date of Collection: 12/20/16
Field Personnel: P. Osterhout

## Purge Data

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

Depth Sounder decontaminated Prior to Placement in Well: ☐ Yes ☐ No N/A One Casing Volume (gal): 3 gal

Depth of water (from top of well casing): artesian Well Casing Type/Diameter/Screened Interval: 2" PVC, 10-15'

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

Begin purge (time): 1000

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 | pH | DO mg/L | Conductivity mS/cm | Turbidity NTU | Temp °C | ORP mV | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1005 | N/A | ½ gal | 6.88 | 0.0 | 0.219 | 24.6 | 11.29 | 3 | |
| 1010 | N/A | 1.5 gal | 7.19 | 0.0 | 0.200 | 19.8 | 11.20 | -40 | barbed well case |
| 1015 | N/A | 2 gal | 7.28 | 0.0 | 0.197 | 16.8 | 11.33 | -61 | |
| 1020 | N/A | 2.8 gal | 7.37 | 0.0 | 0.196 | 11.3 | 11.45 | -82 | |
| 1025 | N/A | 3.5 gal | 7.41 | 0.0 | 0.197 | 10.16 | 11.51 | -90 | |
| | | | | | | | | | |
| | | | | | | | | | |

## Sampling Data

Sample No: MW-14-122016 Location and Depth: MW-14, 12.5 ft

Date Collected (mo/dy/yr): 12/20/2016 Time Collected: 1029 Weather: overcast / showers 45°F

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, mild 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) ☐ | VOCs | (HCl) ☒ |

## Additional Information

| Types of Sample Containers: | Quantity: | Duplicate Sample Numbers: | Comments: |
|---|---|---|---|
| 40 mL glass VOA w/HCl | 3 | MW-14-122016-D @ 1030 | |

Signature: Paula Osterhout Date: 12/20/16

# GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH-Olympia
Project Number: T-9
Date of Collection: 12/20/16
Field Personnel: P. Osterhout

## Purge Data

Well ID: MW-11
Secure: ☒ Yes ☐ No
Well Condition/Damage Description: Fine, filled w/ water

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No
One Casing Volume (gal):
Depth of water (from top of well casing): 0.5'
Well Casing Type/Diameter/Screened Interval: 2" PVC / 5-10'
After 5 minutes of purging (from top of casing): —
Begin purge (time): 1048
End purge (time):
Volume purged: 2.5 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 (Ft) | Vol. Purged (gal) | pH | DO (mg/L) | Conductivity (mS/cm) | Turbidity (NTU) | Temp (°C) | ORP (MV) | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1050 | 0.90' | ½ gal | 7.39 | 2.74 | 0.188 | 6.5 | 9.84 | -52 | |
| 1055 | 1.21' | 1 gal | 7.36 | 0.00 | 0.184 | 4.6 | 10.26 | -70 | |
| 1100 | 1.36' | 1.5 | 7.36 | 0.00 | 0.180 | 3.6 | 10.33 | -79 | |
| 1105 | 1.40' | 2 | 7.37 | 0.00 | 0.178 | 3.5 | 10.42 | -85 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

## Sampling Data

Sample No: MW-11-122016
Location and Depth: MW-12, 7.5'
Date Collected (mo/dy/yr): 12/20/16
Time Collected: 1107
Weather: Sunny, 45°F
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, v. Slight 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 | 3 | N/A | |

Signature: [signature]
Date: 12/20/16

# GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH-Olympia
Project Number: T-9
Date of Collection: 12/20/16
Field Personnel: P. Osterhout

## Purge Data

Well ID: MW-13
Secure: ☒ Yes ☐ No
Well Condition/Damage Description: fine - filled w/ water

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No
One Casing Volume (gal):
Depth of water (from top of well casing): 0.2'
Well Casing Type/Diameter/Screened Interval: 2" PVC / 4.5-9.5'
After 5 minutes of purging (from top of casing): 2.00'
Begin purge (time): 1125
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 | pH | DO mg/L | Conductivity mS/cm | Turbidity NTU | Temp °C | ORP mV | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1130 | 2.00' | 1 gal | 7.85 | 0.58 | 0.206 | 3.4 | 11.14 | -77 | |
| 1135 | 2.71' | 1.5 | 8.03 | 0.00 | 0.205 | 3.2 | 11.35 | -94 | |
| 1140 | 3.13' | 2 | 8.12 | 0.00 | 0.204 | 1.9 | 11.46 | -104 | |
| 1145 | 3.25' | 2.5 | 8.15 | 0.00 | 0.204 | 1.9 | 11.50 | -108 | |
| | | | | | | | | | |
| | | | | | | | | | |
| | | | | | | | | | |

## Sampling Data

Sample No: MW-13-122016
Location and Depth: MW-13, 7'
Date Collected (mo/dy/yr): 12/20/16
Time Collected: 1146
Weather: partly cloudy, 45° F
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 glass VOA w/ HCl | 3 | N/A | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

Signature: Paula Osterhout
Date: 12/20/16

# GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH-Olympia
Project Number: Task 9
Date of Collection: 12/20/16
Field Personnel: P. Osterhout

## Purge Data

Well ID: MW-09 APE-262
Secure: ☒ Yes ☐ No
Well Condition/Damage Description: good
↳ Replaced broken lock w/ new master lock
Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No
One Casing Volume (gal):
Depth of water (from top of well casing): 3.40'
Well Casing Type/Diameter/Screened Interval: 2" PVC, 3-6'
After 5 minutes of purging (from top of casing): 3.56
Begin purge (time): 1220
End purge (time): 1249
Gallons purged: 2
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 | pH | DO mg/L | Conductivity mS/cm | Turbidity NTU | Temp °C | ORP mV | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1225 | 3.56 | 1 L | 7.49 | 3.07 | 0.243 | 50.6 | 11.22 | -40 | |
| 1230 | 3.61 | 2 L | 7.35 | 7.04 | 0.251 | 64.0 | 11.46 | -62 | |
| 1235 | 3.64 | 3 L | 7.25 | 7.69 | 0.281 | 29.6 | 11.49 | -72 | |
| 1240 | 3.66 | 4 L | 7.21 | 7.25 | 0.294 | 12.9 | 11.71 | -77 | |
| 1245 | | 5 L | 7.17 | 6.64 | 0.305 | 9.5 | 11.91 | -79 | |
| | | | | | | | | | |
| | | | | | | | | | |

## Sampling Data

Sample No: MW-09-122016
Location and Depth: MW-09, 4.5'
Date Collected (mo/dy/yr): 12/20/16
Time Collected: 1247 ☐ AM ☒ PM
Weather: Overcast/showers, 45°F
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): some suspended particles, otherwise 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: |
|---|---|---|---|
| 40mL glass VOA w/ HCl | 3 | N/A | |

Signature: Paula Osterhout
Date: 12/20/16

# GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH - Olympia
Project Number: T-9
Date of Collection: 12/20/16
Field Personnel: D. Osterhout

## Purge Data

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

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No
One Casing Volume (gal): ~20 gal
Depth of water (from top of well casing): 0.92'
Well Casing Type/Diameter/Screened Interval: 4" PVC, french drain
After 5 minutes of purging (from top of casing): 1.42'
Begin purge (time): 1302
End purge (time):
Volume purged: 20 gallons
Purge water disposal method: ground / back in drain

**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 | pH | DO mg/L | Conductivity mS/cm | Turbidity NTU | Temp °C | ORP mV | Comments |
|---|---|---|---|---|---|---|---|---|---|
| 1315 | | 20 gal | 10.18 | 4.81 | 0.280 | 1.2 | 5.91 | -189 | measured in bucket after 20 gal purged |

## Sampling Data

Sample No: FD-01-122016
Location and Depth: FD-01
Date Collected (mo/dy/yr): 12/20/16
Time Collected: 1315
Weather: Partly Cloudy, 45°F
Type: ☒ Ground Water ☐ Surface Water Other:
Sample: ☐ Filtered ☒ Unfiltered Other:
Sample Collected with: ☐ Bailer ☒ Pump Other:
Type: whale (2 gpm)
Water Quality Instrument Data Collected with: Type: ☐ Horiba U-22 ☒ Horiba U-50 Other: collected reading 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) ☐ | VOCs | (HCl) ☒ |

## Additional Information

| Types of Sample Containers: | Quantity: | Duplicate Sample Numbers: | Comments: |
|---|---|---|---|
| 40 mL glass VOA w/ HCl | 3 | N/A | |

Signature: Donna Osterhout
Date: 12/20/16

# GROUNDWATER OR SURFACE WATER SAMPLE COLLECTION FORM

Project Name: GTH-Olympia
Project Number: Task 9
Date of Collection: 12/20/16
Field Personnel: P. Osterhout

## Purge Data

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

Depth Sounder decontaminated Prior to Placement in Well: ☒ Yes ☐ No One Casing Volume (gal): ~~3/4" PVC~~

Depth of water (from top of well casing): 1.38' Well Casing Type/Diameter/Screened Interval: 3/4" PVC / 10-20'

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

Begin purge (time): 1354

End purge (time):

Volume purged: 2 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 |
|---|---|---|---|---|---|---|---|---|---|
| 1400 | Not | 1/2 | 6.87 | 0.00 | 0.293 | 648 | 10.66 | -26 | High NTUs b/c of bubbles |
| 1405 | able | 1.0 L | 6.55 | 0.00 | 0.329 | 3666 | 11.70 | -12 | |
| 1406 | to | – pause pump to allow well to recover, purge water so far is clear. – Resume @ 1413 | | | | | | | |
| 1413 | measure | 1.25 L | 6.56 | 0.74 | 0.371 | 302 | 11.24 | -34 | |
| P.O. 1417 | b/c pipe | 1.5 L | 6.55 | 0.00 | 0.495 | 643 | 11.90 | -43 | NTU = bubbles |
| 1420 | diameter | 1.75L | 6.59 | 0.00 | 0.484 | 444 | 12.34 | -51 | |
| 1421 | — | too small | pause | pump | again – | Resume @ 1425 | | | |

## Sampling Data

Sample No: MW-06-122016 Location and Depth: MW-06, 15'

Date Collected (mo/dy/yr): 12/20/16 Time Collected: 1427 Weather: partly cloudy, 45° F

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): ~~P.O.~~, no odor, "foggy" turbidity

## 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 glass VOA w/ HCl | 3 | N/A | |

Signature: Date: 12/20/16