Associated Environmental Group, LLC

July 2, 2020

Mr. Steve Teel
Washington State Department of Ecology
Toxics Cleanup Program, Southwest Regional Office
P.O. Box 47775
Olympia, Washington 98504-7775
stee461@ecy.wa.gov

RE: ***June 2020 Groundwater Sampling Results Report***
*Former Olympia Dry Cleaners*
606 Union Avenue SE
Olympia, Washington 98501-1430
AEG Project No. 19-222

Dear Mr. Teel:

Associated Environmental Group, LLC (AEG) has prepared the enclosed ***Groundwater Sampling Results Report*** presenting results of seep sampling and analysis activities conducted on June 2, 2020, and groundwater sampling and analysis activities conducted on June 11, 2020, at the above-referenced site in Olympia, Washington (Site). Currently, on-Site monitoring wells are sampled on a semi-annual frequency, and two locations at the seep are sampled quarterly. Locations of Site features, monitoring wells, seep, and groundwater gradients determined at the time of this sampling event are detailed in Figure 1, *Site Map.*

**WORK PERFORMED [June 2020]:**

- Obtained depth to groundwater data in three groundwater wells (MW-09, MW-11, and MW-14).
- Purged and sampled three groundwater monitoring wells (MW-09, MW-11, and MW-14).
- Sampled the seep at the source (SEEP) and downgradient of the filter sock (SEEP-POST).

**WORK PROPOSED FOR NEXT QUARTER (if required by Ecology) [September 2020]:**

- Obtain depth to groundwater data in five groundwater wells (MW-06, MW-09, MW-11, MW-13, and MW-14).
- Purge and sample three groundwater monitoring wells (MW-09, MW-11, and MW-14).
- Sample the seep at the source (SEEP) and downgradient of the filter sock (SEEP-POST).

**SUMMARY:**

| Sampling Event: | June 2020 | Values |
|---|---|---|
| **Range of Depths to Groundwater:** | 0.00 to 4.28 | Feet below top of well casing (Table 1, *Summary of Groundwater Elevations*) |
| **Range of Groundwater Elevations:** | 24.66 to 26.28 | Feet above Mean Sea Level (Table 1, *Summary of Groundwater Elevations*) |
| **Measureable NAPL Detected:** | No | |
| **Measureable NAPL Thickness:** | N/A | |
| **Current Remedial Action:** | Compliance Monitoring | |

**DISCUSSION:**

COCs were detected in MW-09 above and below MTCA Method A cleanup levels for groundwater. COCs were detected in seep samples SEEP and SEEP-POST above and below MTCA cleanup levels for surface water, which have been established for comparison of seep data. Detected concentrations are summarized below. Analytical results for this sampling event, and historical analytical results, are presented in the attached Table 2, *Summary of Groundwater Monitoring Analytical Results*, and Table 3, *Summary of Groundwater Seep Analytical Results*.

| | June 2020 | | | | |
|---|---|---|---|---|---|
| **Sample ID** | PCE | TCE | cis-1,2-DCE | trans-1,2-DCE | Vinyl chloride |
| MW-09 | <1.0 | <0.4 | **3.9** | <1.0 | **4.8** |
| **Method A Groundwater Cleanup Levels** | 5 | 5 | 16* | 160* | 0.2 |
| SEEP | **0.63 J** | **1.3** | **26** | <1.0 | **4.8** |
| SEEP-POST | <1.0 | **0.41** | **12** | <1.0 | **1.3** |
| **Surface Water Cleanup Levels** | 3.3 | 30 | NA | 10,000 | 2.4 |

µg/L = micrograms per liter
PCE = Tetrachloroethylene
TCE = Trichloroethylene
DCE = Dichloroethylene
* MTCA Method B cleanup level; Method A cleanup level not established.
J = The analyte was detected; the concentration is considered to be an estimate.
NA = Not Applicable; no cleanup level has been established for this constituent.

**MW-09:** Vinyl chloride was detected **above** the MTCA Method A cleanup level. Cis-1,2-DCE was detected **below** the MTCA Method B cleanup level.

**SEEP:** PCE, TCE, and cis-1-2-DCE were detected **below** their respective surface water cleanup levels. Vinyl chloride was detected **above** the surface water cleanup level.

**SEEP-POST:** TCE, cis-1-2-DCE, and vinyl chloride were detected **below** their respective surface water cleanup levels.

No COCs were detected above the laboratory detection limits for monitoring wells MW-11 or MW-14.

**RECOMMENDATIONS:**

Based on an evaluation of the compliance monitoring data collected to date, AEG recommends the following changes to the current monitoring frequency:

- Groundwater monitoring well data has shown that only vinyl chloride remains present at the Site, and is localized to MW-09, which is located within the former source area. Surrounding and downgradient wells show no other impacts above MTCA Method A cleanup levels. With the anticipated filing of Environmental Covenants for both the former dry cleaner property and the adjacent Q-Tip property to the north, **AEG recommends the sampling frequency of these wells be reduced from semi-annual to every 18 months**. This change continues to account for any seasonal variation in the data while also reducing the financial burden of continued monitoring for our client. With an Environmental Covenant in place, any remaining exposure pathways would be incomplete.
- Seep data has shown a gradual reduction in concentrations since 2018, particularly the seep source data, with the exception of the most recent vinyl chloride results. The downgradient seep data (SEEP-POST) has been below cleanup levels since March 2017, except for a single exceedance of PCE and vinyl chloride. As such, **AEG recommends reducing the frequency of the compliance seep sampling at the Site from quarterly to every 18 months (consistent with the proposed groundwater sampling frequency noted above)**. This change continues to account for any seasonal variation in the data while also reducing the financial burden of continued monitoring for our client.

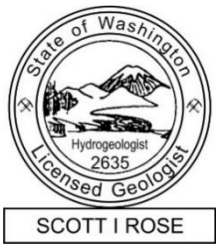
**CLOSING:**

AEG would appreciate the opportunity to discuss the above recommendations with Ecology at your convenience. Should you have questions or require additional information, please contact our office at 360-352-9835.

Sincerely,

**Associated Environmental Group, LLC**

Scott Rose, L.H.G.
Senior Hydrogeologist




Attachments: Figure 1 – *Site Map*

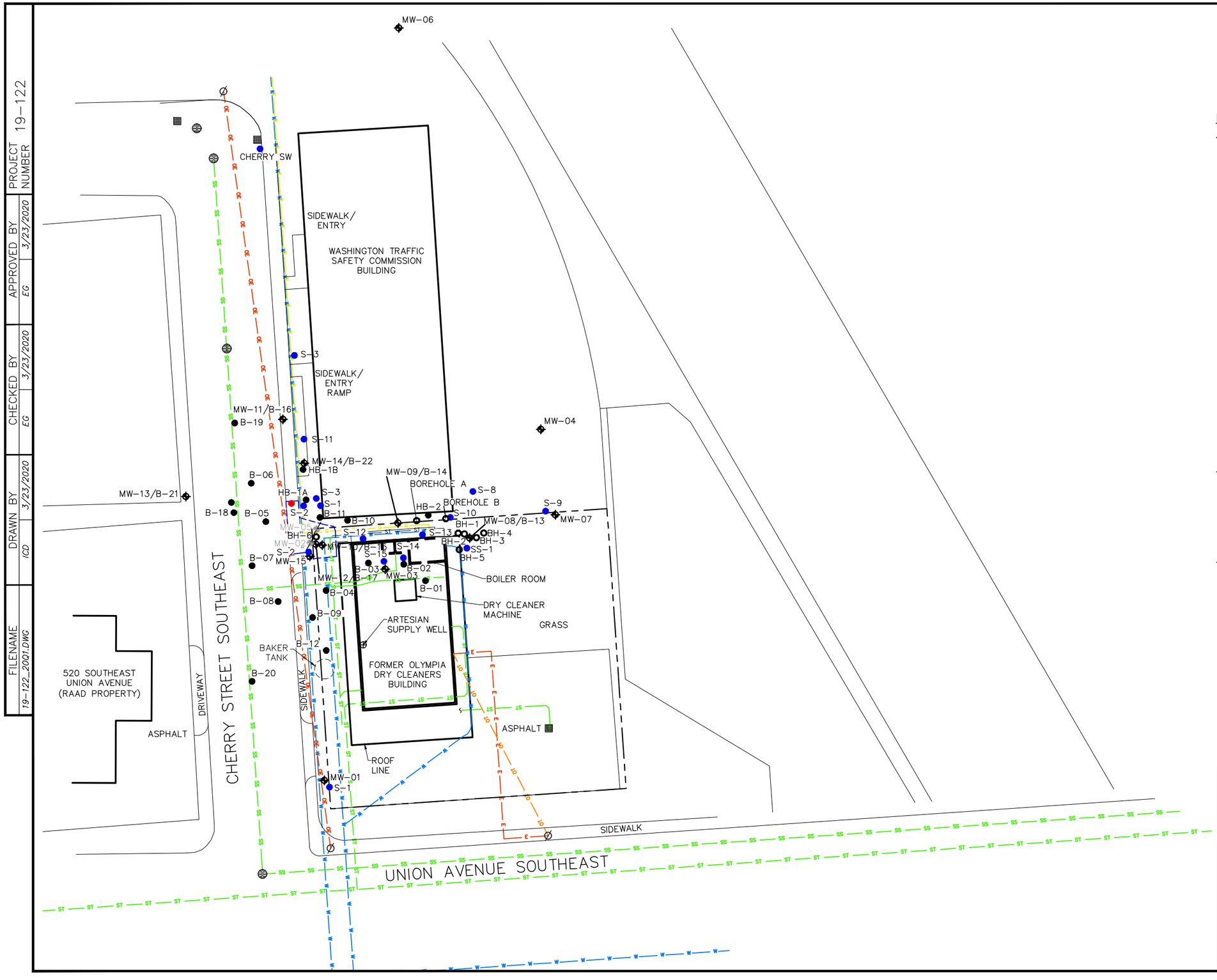
Table 1 – *Summary of Groundwater Elevations*
Table 2 – *Summary of Groundwater Monitoring Analytical Results*
Table 3 – *Summary of Groundwater Seep Analytical Results*

Appendix A – Laboratory Datasheets

# FIGURES

2633 Parkmont Lane SW, Suite A • Olympia, WA • 98502
Phone: 360-352-9835 • Fax: 360-352-8164 • Email: admin@aegwa.com

| | |
|---|---|
| PROJECT NUMBER | 19-122 |
| APPROVED BY | EG 3/23/2020 |
| CHECKED BY | EG 3/23/2020 |
| DRAWN BY | ICD 3/23/2020 |
| FILENAME | 19-122_2001.DWG |

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## LEGEND

- PROPERTY BOUNDARY
- MW-08/B-13 — MONITORING WELL LOCATION
- MW-02 — FORMER MONITORING WELL LOCATION (ABANDONED SEPTEMBER 2006)
- B-11 — SOIL BORING LOCATION (SES, 2008)
- BH-1 — SOIL BORING LOCATION (CONREX, 1995)
- S-1 — BORING OR SURFACE SAMPLE LOCATION (STEMEN, 2001-2002)
- SEEP LOCATION
- W — WATER LINE
- E — ELECTRIC LINE
- SS — SANITARY SEWER
- ST — STORM SEWER
- OE — OVERHEAD ELECTRIC LINE
- G — GAS LINE
- OT — OVERHEAD TELEPHONE LINE
- EXCAVATION
- STORM SEWER MANHOLE
- STORM DRAIN/CATCH BASIN
- POWER/UTILITY POLE

## NOTES

1. THE LOCATIONS OF ALL FEATURES SHOWN ARE APPROXIMATE
2. THIS DRAWING IS FOR INFORMATION PURPOSES. IT INTENDED TO ASSIST IN SHOWING FEATURES DISCUSSED IN AN ATTACHED DOCUMENT.

## REFERENCE

DRAWING CREATED FROM AERIAL PHOTOGRAPH AND NOTES PROVIDED BY AEG, LLC.

0 20 40
SCALE IN FEET

AEG Associated Environmental Group, LLC

**FIGURE 2**

**SITE MAP**

OLYMPIA DRY CLEANERS
606 UNION AVE
OLYMPIA, WASHINGTON

# TABLES

2633 Parkmont Lane SW, Suite A • Olympia, WA • 98502
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**Table 1 - Summary of Groundwater Elevations**
Olympia Dry Cleaners
Olympia, Washington

| Well No./ TOC Elevation[1],[2] | Date | Depth to Water | Actual Groundwater Elevation | Change in Elevation |
|---|---|---|---|---|
| MW-06* | 3/12/2016 | 1.46 | 18.66 | -- |
| **20.12** | 6/9/2016 | 0.86 | 19.26 | 0.60 |
| | 9/29/2016 | 0.20 | 19.92 | 0.66 |
| | 12/20/2016 | 1.38 | 18.74 | -1.18 |
| | 3/10/2017 | 0.65 | 19.47 | 0.73 |
| | 10/31/2017 | 3.83 | 16.29 | -3.18 |
| | 3/30/2018 | 1.62 | 18.50 | 2.21 |
| | 3/3/2020 | 0.76 | 19.36 | 0.86 |
| MW-09 | 3/12/2016 | 2.32 | 17.80 | -- |
| **30.56** | 6/9/2016 | 3.41 | 27.15 | 9.35 |
| | 9/29/2016 | 3.44 | 27.12 | -0.03 |
| | 12/20/2016 | 3.40 | 27.16 | 0.04 |
| | 3/10/2017 | 3.22 | 27.34 | 0.18 |
| | 10/31/2017 | 3.34 | 27.22 | -0.12 |
| | 3/30/2018 | 3.31 | 27.25 | 0.03 |
| | 3/3/2020 | 3.31 | 27.25 | 0.00 |
| | 6/11/2020 | 4.28 | 26.28 | -0.97 |
| MW-11[3] | 3/12/2016 | 0.00 | 20.12 | -- |
| **24.66** | 6/9/2016 | 0.00 | 20.12 | 0.00 |
| | 9/29/2016 | 0.00 | 24.66 | 4.54 |
| | 12/20/2016 | 0.50 | 24.16 | -0.50 |
| | 3/10/2017 | 0.38 | 24.28 | 0.12 |
| | 10/31/2017 | 0.34 | 24.32 | 0.04 |
| | 3/30/2018 | 0.39 | 24.27 | -0.05 |
| | 3/3/2020 | 0.00 | 24.66 | 0.39 |
| | 6/11/2020 | 0.00 | 24.66 | 0.00 |
| MW-13* | 3/12/2016 | 0.07 | 20.05 | -- |
| **26.38** | 6/9/2016 | 0.17 | 19.95 | -0.10 |
| | 9/29/2016 | 0.42 | 25.96 | 6.01 |
| | 12/20/2016 | 0.20 | 26.18 | 0.22 |
| | 3/10/2017 | 0.16 | 26.22 | 0.04 |
| | 10/31/2017 | 1.33 | 25.05 | -1.17 |
| | 3/30/2018 | 0.18 | 26.20 | 1.15 |
| | 3/3/2020 | 0.10 | 26.28 | 0.08 |
| MW-14[3] | 3/12/2016 | 0.00 | 26.00 | -- |
| **26.00** | 6/9/2016 | 0.00 | 26.00 | 0.00 |
| | 9/29/2016 | 0.00 | 26.00 | 0.00 |
| | 12/20/2016 | 0.00 | 26.00 | 0.00 |
| | 3/10/2017 | 0.00 | 26.00 | 0.00 |
| | 10/31/2017 | 0.00 | 26.00 | 0.00 |
| | 3/30/2018 | 0.00 | 26.00 | 0.00 |
| | 3/3/2020 | 0.00 | 26.00 | 0.00 |
| | 6/11/2020 | 0.00 | 26.00 | 0.00 |

Notes:

All values reported in feet

TOC = Top of casing elevation relative to assigned benchmark.

-- = Not measured, not available, or not applicable

* Ceased monitoring of this well as of 6/2/20.

[1] Top of well casing survey information from SoundEarth Strategies, Inc.

[2] Elevations reported in North American Vertical Datum of 1988.

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

**Table 2 - Summary of Groundwater Monitoring Analytical Results**
Olympia Dry Cleaners
Olympia, Washington

| Sample Location | Status[1] | Date Collected | PCE | TCE | cis-1,2-DCE | trans-1,2-DCE | 1,1-DCE | Vinyl Chloride |
|---|---|---|---|---|---|---|---|---|
| MW-06[3] | Pre-Remediation[1] | 8/13/2013 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <0.20 |
| | Post-Remediation | 3/12/2016 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 6/9/2016 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 9/29/2016 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 12/20/2016 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 3/10/2017 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 10/31/2017 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 3/30/2018 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 3/3/2020 | <1.0 | <0.4 | <1.0 | <1.0 | <0.5 | <0.20 |
| MW-09 | Pre-Remediation | 8/13/2013 | <1.0 | <1.0 | **4.1** | <1.0 | <1.0 | **2.7** |
| | Post-Remediation | 3/12/2016 | <1.0 | **2.2** | **11** | <1.0 | <1.0 | **5.0** |
| | | 6/9/2016 | <1.0 | **3.2** | **26** | <1.0 | <1.0 | **9.8** |
| | | 9/29/2016 | <1.0 | **2.8** | **27** | <1.0 | <1.0 | **11** |
| | | 12/20/2016 | <1.0 | **0.69** | **10** | <1.0 | <1.0 | **6.9** |
| | | 3/10/2017 | <1.0 | **0.61** | **6.2** | <1.0 | <1.0 | **2.6** |
| | | 10/31/2017 | <1.0 | **1.7** | **12** | <1.0 | <1.0 | **6.0** |
| | | 3/30/2018 | <1.0 | **2.1** | **6.2** | <1.0 | <1.0 | <0.20 |
| | | 3/3/2020 | <1.0 | **1.8** | **15.0** | <1.0 | <1.0 | **6.7** |
| | | 6/11/2020 | <1.0 | <0.4 | **3.9** | <1.0 | <0.5 | **4.8** |
| | | | | | | | | |
| MW-11 | Pre-Remediation | 8/13/2013 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <0.20 |
| | Post-Remediation | 3/12/2016 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 6/9/2016 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 9/29/2016 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 12/20/2016 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 3/10/2017 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 10/31/2017 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 3/30/2018 | <1.0 | **0.60** | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 3/3/2020 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 6/11/2020 | <1.0 | <0.4 | <1.0 | <1.0 | <0.5 | <0.2 |
| | | | | | | | | |
| MW-13[3] | Pre-Remediation | 8/13/2013 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <0.20 |
| | Post-Remediation | 3/12/2016 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 6/9/2016 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 9/29/2016 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 12/20/2016 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 3/10/2017 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 10/31/2017 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 3/30/2018 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 3/3/2020 | <1.0 | <0.4 | <1.0 | <1.0 | <0.5 | <0.20 |

**Table 2 - Summary of Groundwater Monitoring Analytical Results**
Olympia Dry Cleaners
Olympia, Washington

| Sample Location | Status[1] | Date Collected | PCE | TCE | cis-1,2-DCE | trans-1,2-DCE | 1,1-DCE | Vinyl Chloride |
|---|---|---|---|---|---|---|---|---|
| MW-14 | Pre-Remediation | 8/13/2013 | <1.0 | <1.0 | <1.0 | <1.0 | <1.0 | <0.20 |
| | Post-Remediation | 3/8/2016 | **52** | **17** | **23** | <1.0 | <1.0 | **2.4** |
| | | 6/9/2016[2] | **99** | **34** | **33** | <1.0 | <1.0 | **2.8** |
| | | 9/29/2016 | **96** | **40** | **42** | <1.0 | <1.0 | <0.20 |
| | | 12/20/2016[2] | **23** | **11** | **7.3** | <1.0 | <1.0 | **0.79** |
| | | 3/10/2017 | **38** | **24** | **14** | <1.0 | <1.0 | <0.20 |
| | | 10/31/2017 | **32** | **24** | **15** | <1.0 | <1.0 | **2.2** |
| | | 3/30/2018 | **1.2** | **2.0** | **2.2** | <1.0 | <1.0 | <0.20 |
| | | 3/3/2020 | <1.0 | <0.50 | <1.0 | <1.0 | <1.0 | <0.20 |
| | | 6/11/2020 | <1.0 | <0.4 | <1.0 | <1.0 | <0.5 | <0.2 |
| | | | | | | | | |
| PQL | | | 1.0 | 0.4/0.5 | 1.0 | 1.0 | 0.5/1.0 | 0.20 |
| MTCA Method A Cleanup Level | | | 5 | 5 | 16* | 160* | 7.7* | 0.2 |

Notes:

All values reported in micrograms per liter (µg/L)

-- = Not analyzed for constituent

< = Not detected at the listed laboratory detection limits

PQL = Practical Quantification Limit (laboratory detection limit)

PCE = Tetrachloroethylene

TCE = Trichloroethylene

DCE = Dichloroethylene

**Red Bold** indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

**Bold** indicates the detected concentration is below Ecology MTCA Method A cleanup levels

* MTCA Method B cleanup level; Method A cleanup level not established

[1]Pre-remediation groundwater monitoring data collected by SoundEarth Strategies, Inc.

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

[3]Ceased monitoring of this well as of 6/2/20.

Data collected between 2016-2018 collected by Floyd Snider.

**Table 3 - Summary of Groundwater Seep Analytical Results**
Olympia Dry Cleaners
Olympia, Washington

| Sample Location | Status | Date Collected | Halogenated Volatile Organic Compounds | | | | |
|---|---|---|---|---|---|---|---|
| | | | PCE | TCE | cis-1,2-DCE | trans-1,2-DCE | Vinyl Chloride |
| SEEP | Pre-Remediation[1] | 7/10/2008 | **390** | **580** | **2,500** | **12** | **190** |
| | Post-Remediation | 3/8/2016 | **33** | **15** | **110** | <1.0 | **15** |
| | | 3/30/2016 | **23** | **17** | **160** | <1.0 | **22** |
| | | 6/9/2016 | **16** | **18** | **170** | **1.3** | **20** |
| | | 9/29/2016 | **16** | **30** | **180** | <1.0 | **16** |
| | | 12/20/2016 | **56** | **44** | **110** | <1.0 | **10** |
| | | 3/10/2017 | **13** | **7.6** | **19** | <1.0 | **1.8 J** |
| | | 6/21/2017 | **12** | **8.5** | **57** | <1.0 | **6.2** |
| | | 10/31/2017 | **14** | **19** | **74** | <1.0 | **12** |
| | | 1/4/2018 | **20** | **34** | **138** | <1.0 | **7.6** |
| | | 3/22/2018 | **23** | **17** | **52** | <1.0 | **2.45** |
| | | 3/30/2018 | **19** | **16** | **60** | <1.0 | **1.9** |
| | | 6/23/2018 | **5.4** | **5.4** | **34** | <1.0 | **4.7** |
| | | 9/30/2018 | **1.7** | **5.3** | **45.7** | <1.0 | **3.6** |
| | | 3/20/2019 | **0.96 J** | **3.4** | **48** | <1.0 | **1.4** |
| | | 7/3/2019 | <1.0 | **0.68** | **8.5** | <1.0 | **0.89** |
| | | 12/7/2019 | **2.8** | **4.0** | **49.3** | <1.0 | **1.6** |
| | | 3/3/2020 | **2.6** | **2.8** | **37.1** | <1.0 | **1.2** |
| | | 6/2/2020 | **0.63 J** | **1.3** | **26** | <1.0 | **4.8** |
| SEEP-CB[2] | Pre-Remediation | 10/15/2008 | <2.0 | <1.0 | <1.0 | <1.0 | <1.0 |
| | Post-Remediation | 6/9/2016 | <1.0 | <0.50 | **1.8** | <1.0 | <0.20 |
| | | 3/22/2017 | <1.0 | **0.72** | **1.3** | <1.0 | <0.20 |
| | | 3/30/2018 | <1.0 | <0.50 | <1.0 | <1.0 | <0.20 |
| | | | | | | | |
| SEEP-POST[3] | Post-Remediation | 9/29/2016 | <1.0 | **0.55** | **2.3** | <1.0 | **0.62** |
| | | 12/20/2016 | **10** | **8.0** | **19** | <1.0 | **2.2** |
| | | 3/10/2017 | **3.4 J** | **2.5** | **6.3** | <1.0 | **1.3** |
| | | 3/22/2017 | **4.8** | **4.1** | **10** | <1.0 | **1.3** |
| | | 3/30/2017 | <1.0 | <0.50 | <1.0 | <1.0 | <0.20 |
| | | 6/21/2017 | <1.0 | <0.50 | <1.0 | <1.0 | <0.20 |
| | | 10/31/2017 | <1.0 | **0.58** | **2.5** | <1.0 | <0.20 |
| | | 1/8/2018 | <1.0 | **0.76** | **2.8** | <1.0 | <0.20 |
| | | 3/22/2018 | <1.0 | **0.6** | **2.6** | <1.0 | <0.20 |
| | | 3/30/2018 | <1.0 | <0.50 | <1.0 | <1.0 | <0.20 |
| | | 6/23/2018 | <1.0 | <0.50 | **2.0** | <1.0 | <0.20 |
| | | 9/30/2018 | <1.0 | **1.6** | **14.4** | <1.0 | **1.5** |
| | | 3/20/2019 | **4.8** | **12** | **112.0** | <1.0 | **3.6** |
| | | 7/3/2019 | <1.0 | **0.45** | **6.8** | <1.0 | **0.61** |
| | | 12/7/2019 | **0.55 J** | **1.1** | **14.5** | <1.0 | **0.43** |
| | | 3/3/2020 | <1.0 | **0.77** | **12.1** | <1.0 | **0.48** |
| | | 6/2/2020 | <1.0 | **0.41** | **12** | <1.0 | **1.3** |
| PQL | | | 1.0 | 1.0 | 1.0 | 1.0 | 0.2 |
| Surface Water Cleanup Levels | | | 3.3 | 30 | NA | 10,000 | 2.4 |

Notes:

All values reported in micrograms per liter (µg/L)

-- = Not analyzed for constituent

< = Not detected at the listed laboratory detection limits

PQL = Practical Quantification Limit (laboratory detection limit)

**Red Bold** indicates the detected concentration exceeds Ecology MTCA Method A cleanup level

**Bold** indicates the detected concentration is below Ecology MTCA Method A cleanup levels

* MTCA Method B cleanup level; Method A cleanup level not established

PCE = Tetrachloroethylene

TCE = Trichloroethylene

DCE = Dichloroethylene

[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 Washington 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.

J = The analyte was detected; the concentration is considered to be an estimate.

NA = Not Applicable; no cleanup level has been established for this constituent.

# APPENDIX A

LABORATORY DATASHEETS

2633 Parkmont Lane SW, Suite A • Olympia, WA • 98502
Phone: 360-352-9835 • Fax: 360-352-8164 • Email: admin@aegwa.com

Libby Environmental, Inc.
3322 South Bay Road NE • Olympia, WA 98506-2957

June 8, 2020

Scott Rose
Associated Environmental Group, LLC
2633 Parkmont Lane SW, Suite A
Olympia, WA 98502

Dear Mr. Rose:

Please find enclosed the analytical data report for the Former Olympia Dry Cleaners Project located in Olympia, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of in 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
*Senior Chemist*
*Libby Environmental, Inc.*

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@gmail.com

# Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

FORMER OLYMPIA DRY CLEANERS PROJECT
AEG, LLC
Olympia, Washington
Libby Project # L200602-3
Client Project # 19-222

**Volatile Organic Compounds by EPA Method 8260D in Water**

| Sample Description | | Method Blank | SEEP-1 | SEEP-Post |
|---|---|---|---|---|
| Date Sampled | | N/A | 6/2/2020 | 6/2/2020 |
| Date Analyzed | PQL (µg/L) | 6/4/2020 (µg/L) | 6/4/2020 (µg/L) | 6/4/2020 (µg/L) |
| Vinyl Chloride (VC) | 0.2 | nd | 4.8 | 1.3 |
| 1,1-Dichloroethene | 0.5 | nd | nd | nd |
| trans-1,2-Dichloroethene | 1.0 | nd | nd | nd |
| *cis* -1,2-Dichloroethene | 1.0 | nd | 26 | 12 |
| Trichloroethene (TCE) | 0.4 | nd | 1.3 | 0.41 |
| Tetrachloroethene (PCE) | 1.0 | nd | 0.63 J | nd |
| Surrogate Recovery | | | | |
| Dibromofluoromethane | | 103 | 100 | 100 |
| 1,2-Dichloroethane-d4 | | 102 | 99 | 99 |
| Toluene-d8 | | 101 | 102 | 102 |
| 4-Bromofluorobenzene | | 88 | 86 | 86 |

"nd" Indicates not detected at listed detection limit.
“J” Result is less than the PQL but greater than the MDL. Reported value is approximate.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

# Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com


FORMER OLYMPIA DRY CLEANERS PROJECT
AEG, LLC
Olympia, Washington
Libby Project # L200602-3
Client Project # 19-222

**QA/QC for Volatile Organic Compounds by EPA Method 8260D in Water**

Matrix Spike Sample Identification: L200603-7

| | Spiked Conc. (µg/L) | MS Response (µg/L) | MSD Response (µg/L) | MS Recovery (%) | MSD Recovery (%) | RPD (%) | Limits Recovery (%) | Data Flag |
|---|---|---|---|---|---|---|---|---|
| Vinyl Chloride (VC) | 5.0 | 5.5 | 5.0 | 110 | 100 | 9.5 | 65-135 | |
| 1,1-Dichloroethene | 5.0 | 6.3 | 6.4 | 126 | 128 | 1.6 | 65-135 | |
| trans-1,2-Dichloroethene | 5.0 | 5.9 | 6.7 | 118 | 134 | 12.7 | 65-135 | |
| *cis*-1,2-Dichloroethene | 5.0 | 4.1 | 4.1 | 82 | 82 | 0.0 | 65-135 | |
| Trichloroethene (TCE) | 5.0 | 4.7 | 4.6 | 94 | 92 | 2.2 | 65-135 | |
| Tetrachloroethene (PCE) | 5.0 | 4.4 | 4.2 | 88 | 84 | 4.7 | 65-135 | |

| Surrogate Recovery (%) | MS | MSD | |
|---|---|---|---|
| Dibromofluoromethane | 102 | 99 | 65-135 |
| 1,2-Dichloroethane-d4 | 109 | 98 | 65-135 |
| Toluene-d8 | 99 | 103 | 65-135 |
| 4-Bromofluorobenzene | 85 | 86 | 65-135 |

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

**Laboratory Control Sample**

| | Spiked Conc. (µg/L) | LCS Response (µg/L) | LCS Recovery (%) | LCS Recovery Limits (%) | Data Flag |
|---|---|---|---|---|---|
| Vinyl Chloride (VC) | 5.0 | 5.0 | 99 | 80-120 | |
| 1,1-Dichloroethene | 5.0 | 5.9 | 117 | 80-120 | |
| trans-1,2-Dichloroethene | 5.0 | 5.9 | 118 | 80-120 | |
| *cis*-1,2-Dichloroethene | 5.0 | 4.1 | 82 | 80-120 | |
| Trichloroethene (TCE) | 5.0 | 4.6 | 92 | 80-120 | |
| Tetrachloroethene (PCE) | 5.0 | 5.0 | 101 | 80-120 | |

| Surrogate Recovery | | | |
|---|---|---|---|
| Dibromofluoromethane | 92 | 65-135 | |
| 1,2-Dichloroethane-d4 | 100 | 65-135 | |
| Toluene-d8 | 101 | 65-135 | |
| 4-Bromofluorobenzene | 102 | 65-135 | |

ANALYSES PERFORMED BY: Sherry Chilcutt

# Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

FORMER OLYMPIA DRY CLEANERS PROJECT
AEG, LLC
Libby Project # L200602-3
Date Received 6/2/2020
Time Received 4:32 PM

Received By KD

## Sample Receipt Checklist

### Chain of Custody

| | | | |
|---|---|---|---|
| 1. Is the Chain of Custody complete? | ☑ Yes | ☐ No | |
| 2. How was the sample delivered? | ☑ Hand Delivered | ☐ Picked Up | ☐ Shipped |

### Log In

| | | | |
|---|---|---|---|
| 3. Cooler or Shipping Container is present. | ☑ Yes | ☐ No | ☐ N/A |
| 4. Cooler or Shipping Container is in good condition. | ☑ Yes | ☐ No | ☐ N/A |
| 5. Cooler or Shipping Container has Custody Seals present. | ☐ Yes | ☑ No | ☐ N/A |
| 6. Was an attempt made to cool the samples? | ☑ Yes | ☐ No | ☐ N/A |
| 7. Temperature of cooler (0°C to 8°C recommended) | 0.1 °C | | |
| 8. Temperature of sample(s) (0°C to 8°C recommended) | 1.2 °C | | |
| 9. Did all containers arrive in good condition (unbroken)? | ☑ Yes | ☐ No | |
| 10. Is it clear what analyses were requested? | ☑ Yes | ☐ No | |
| 11. Did container labels match Chain of Custody? | ☑ Yes | ☐ No | |
| 12. Are matrices correctly identified on Chain of Custody? | ☑ Yes | ☐ No | |
| 13. Are correct containers used for the analysis indicated? | ☑ Yes | ☐ No | |
| 14. Is there sufficient sample volume for indicated analysis? | ☑ Yes | ☐ No | |
| 15. Were all containers properly preserved per each analysis? | ☑ Yes | ☐ No | |
| 16. Were VOA vials collected correctly (no headspace)? | ☑ Yes | ☐ No | ☐ N/A |
| 17. Were all holding times able to be met? | ☑ Yes | ☐ No | |

### Discrepancies/ Notes

18. Was client notified of all discrepancies? ☐ Yes ☐ No ☑ N/A

Person Notified: _____ Date: _____

By Whom: _____ Via: _____

Regarding: _____

19. Comments. _____

# Libby Environmental, Inc.

# Chain of Custody Record

www.LibbyEnvironmental.com

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

Date: 6/2/20 Page: 1 of 1

Client: AEG

Project Manager: Scott Rose

Address: 2633 Parkmont Ln SW, Suite A

Project Name: Former Olympia Dry Cleaners

City: Olympia State: WA Zip: 98502

Location: 606 Union Ave SE City, State: Olympia, WA

Phone: (360) 352-9835 Fax: (360) 352-8164

Collector: Patrick Ho Date of Collection: 6/2/20

Client Project # 19-222

Email: SRose@AEGWA.com

| | Sample Number | Depth | Time | Sample Type | Container Type | VOC 8260 | PCE & Daughter Prod. | NWTPH-Gx | BTEX (8260) / (8021) | NWTPH-HCID | NWTPH-Dx / Dx | PCB 8082 | MTCA 5 Metals | RCRA 8 Metals | c PAH 8270 | PAH 8270 | Semi Vol 8270 | | | Field Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | SEEP-1 | | 0845 | W | VOA's | | X | | | | | | | | | | | | | |
| 2 | SEEP-Post | | 0830 | W | VOA's | | X | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | |
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| 16 | | | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | | |

| Relinquished by: | Date / Time | Received by: | Date / Time |
|---|---|---|---|
| Patrick Ho | 6/2/20 1632 | [signature] | 6/2/20 1632 |
| Relinquished by: | Date / Time | Received by: | Date / Time |
| Relinquished by: | Date / Time | Received by: | Date / Time |

**Sample Receipt**

| | |
|---|---|
| Good Condition? | Y N |
| Cooler Temp. | °C |
| Sample Temp. | °C |
| Total Number of Containers | |

Remarks:

TAT: 24HR 48HR 5-DAY



Distribution: White - Lab, Yellow - Originator

Libby Environmental, Inc.
3322 South Bay Road NE • Olympia, WA 98506-2957

June 16, 2020

Scott Rose
Associated Environmental Group, LLC
2633 Parkmont Lane SW, Suite A
Olympia, WA 98502

Dear Mr. Rose:

Please find enclosed the analytical data report for the Former Olympia Dry Cleaners Project located in Olympia, Washington.

The results of the analyses are summarized in the attached tables. Applicable detection limits and QA/QC data are included. The sample(s) will be disposed of in 30 days unless we are contacted to arrange long term storage.

Libby Environmental, Inc. appreciates the opportunity to have provided analytical services for this project. If you have any further questions about the data report, please give me a call. It was a pleasure working with you on this project, and we are looking forward to the next opportunity to work together.

Sincerely,

Sherry L. Chilcutt
*Senior Chemist*
*Libby Environmental, Inc.*

Phone (360) 352-2110 • Fax (360) 352-4154 • libbyenv@gmail.com

# Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

FORMER OLYMPIA DRY CLEANERS PROJECT
AEG, LLC
Olympia, Washington
Libby Project # L200611-2
Client Project # 19-222

**Volatile Organic Compounds by EPA Method 8260D in Water**

| Sample Description | | Method Blank | MW-09 | MW-09 Dup | MW-14 | MW-11 |
|---|---|---|---|---|---|---|
| Date Sampled | | N/A | 6/11/2020 | 6/11/2020 | 6/11/2020 | 6/11/2020 |
| Date Analyzed | PQL (µg/L) | 6/13/2020 (µg/L) | 6/14/2020 (µg/L) | 6/14/2020 (µg/L) | 6/14/2020 (µg/L) | 6/13/2020 (µg/L) |
| Vinyl Chloride (VC) | 0.2 | nd | 3.6 | 4.8 | nd | nd |
| 1,1-Dichloroethene | 0.5 | nd | nd | nd | nd | nd |
| trans-1,2-Dichloroethene | 1.0 | nd | nd | nd | nd | nd |
| *cis* -1,2-Dichloroethene | 1.0 | nd | 2.6 | 3.9 | nd | nd |
| Trichloroethene (TCE) | 0.4 | nd | nd | nd | nd | nd |
| Tetrachloroethene (PCE) | 1.0 | nd | nd | nd | nd | nd |
| Surrogate Recovery | | | | | | |
| Dibromofluoromethane | | 94 | 94 | 98 | 99 | 82 |
| 1,2-Dichloroethane-d4 | | 95 | 96 | 112 | 105 | 70 |
| Toluene-d8 | | 99 | 105 | 101 | 104 | 99 |
| 4-Bromofluorobenzene | | 83 | 81 | 82 | 84 | 76 |

"nd" Indicates not detected at listed detection limit.
"int" Indicates that interference prevents determination.

ACCEPTABLE RECOVERY LIMITS FOR SURROGATE : 65% TO 135%

ANALYSES PERFORMED BY: Sherry Chilcutt

# Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com


FORMER OLYMPIA DRY CLEANERS PROJECT
AEG, LLC
Olympia, Washington
Libby Project # L200611-2
Client Project # 19-222

**QA/QC for Volatile Organic Compounds by EPA Method 8260D in Water**

Matrix Spike Sample Identification: MW-09

| | Spiked Conc. (µg/L) | MS Response (µg/L) | MSD Response (µg/L) | MS Recovery (%) | MSD Recovery (%) | RPD (%) | Limits Recovery (%) | Data Flag |
|---|---|---|---|---|---|---|---|---|
| Vinyl Chloride (VC) | 5.0 | 5.7 | 6.6 | 114 | 132 | 14.3 | 65-135 | |
| 1,1-Dichloroethene | 5.0 | 6.4 | 6.2 | 128 | 124 | 3.2 | 65-135 | |
| trans-1,2-Dichloroethene | 5.0 | 4.5 | 5.0 | 90 | 100 | 10.5 | 65-135 | |
| *cis*-1,2-Dichloroethene | 5.0 | 3.8 | 5.0 | 76 | 100 | 27.3 | 65-135 | |
| Trichloroethene (TCE) | 5.0 | 5.3 | 5.6 | 106 | 112 | 5.5 | 65-135 | |
| Tetrachloroethene (PCE) | 5.0 | 5.1 | 5.3 | 102 | 106 | 3.8 | 65-135 | |

| Surrogate Recovery (%) | MS | MSD | |
|---|---|---|---|
| Dibromofluoromethane | 85 | 86 | 65-135 |
| 1,2-Dichloroethane-d4 | 85 | 85 | 65-135 |
| Toluene-d8 | 106 | 104 | 65-135 |
| 4-Bromofluorobenzene | 89 | 85 | 65-135 |

ACCEPTABLE RPD IS 35%

ANALYSES PERFORMED BY: Sherry Chilcutt

**Laboratory Control Sample**

| | Spiked Conc. (µg/L) | LCS Response (µg/L) | LCS Recovery (%) | LCS Recovery Limits (%) | Data Flag |
|---|---|---|---|---|---|
| Vinyl Chloride (VC) | 5.0 | 5.9 | 118 | 80-120 | |
| 1,1-Dichloroethene | 5.0 | 5.5 | 111 | 80-120 | |
| trans-1,2-Dichloroethene | 5.0 | 5.1 | 102 | 80-120 | |
| *cis*-1,2-Dichloroethene | 5.0 | 4.1 | 81 | 80-120 | |
| Trichloroethene (TCE) | 5.0 | 4.7 | 94 | 80-120 | |
| Tetrachloroethene (PCE) | 5.0 | 4.5 | 90 | 80-120 | |

| Surrogate Recovery | | | |
|---|---|---|---|
| Dibromofluoromethane | 93 | 65-135 | |
| 1,2-Dichloroethane-d4 | 100 | 65-135 | |
| Toluene-d8 | 103 | 65-135 | |
| 4-Bromofluorobenzene | 93 | 65-135 | |

ANALYSES PERFORMED BY: Sherry Chilcutt

# Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Phone: (360) 352-2110
FAX: (360) 352-4154
Email: libbyenv@gmail.com

FORMER OLYMPIA DRY CLEANERS PROJECT
AEG, LLC
Libby Project # L200611-2
Date Received 6/11/2020
Time Received 11:18 AM

Received By MH

## Sample Receipt Checklist

### Chain of Custody

| | | | |
|---|---|---|---|
| 1. Is the Chain of Custody complete? | ☑ Yes | ☐ No | |
| 2. How was the sample delivered? | ☑ Hand Delivered | ☐ Picked Up | ☐ Shipped |

### Log In

| | | | |
|---|---|---|---|
| 3. Cooler or Shipping Container is present. | ☐ Yes | ☑ No | ☐ N/A |
| 4. Cooler or Shipping Container is in good condition. | ☐ Yes | ☐ No | ☑ N/A |
| 5. Cooler or Shipping Container has Custody Seals present. | ☐ Yes | ☐ No | ☑ N/A |
| 6. Was an attempt made to cool the samples? | ☐ Yes | ☑ No | ☐ N/A |
| 7. Temperature of cooler (0°C to 8°C recommended) | N/A °C | | |
| 8. Temperature of sample(s) (0°C to 8°C recommended) | 19.4 °C | | |
| 9. Did all containers arrive in good condition (unbroken)? | ☑ Yes | ☐ No | |
| 10. Is it clear what analyses were requested? | ☑ Yes | ☐ No | |
| 11. Did container labels match Chain of Custody? | ☑ Yes | ☐ No | |
| 12. Are matrices correctly identified on Chain of Custody? | ☑ Yes | ☐ No | |
| 13. Are correct containers used for the analysis indicated? | ☑ Yes | ☐ No | |
| 14. Is there sufficient sample volume for indicated analysis? | ☑ Yes | ☐ No | |
| 15. Were all containers properly preserved per each analysis? | ☑ Yes | ☐ No | |
| 16. Were VOA vials collected correctly (no headspace)? | ☑ Yes | ☐ No | ☐ N/A |
| 17. Were all holding times able to be met? | ☑ Yes | ☐ No | |

### Discrepancies/ Notes

| | | | |
|---|---|---|---|
| 18. Was client notified of all discrepancies? | ☐ Yes | ☐ No | ☑ N/A |

Person Notified: _____ Date: _____

By Whom: _____ Via: _____

Regarding: _____

19. Comments. _____

# Libby Environmental, Inc.

3322 South Bay Road NE
Olympia, WA 98506
Ph: 360-352-2110
Fax: 360-352-4154

# Chain of Custody Record

www.LibbyEnvironmental.com

Date: 6/11/2020 Page: 1 of 1

Client: AEG
Project Manager: S. Rose
Address:
Project Name: former Olympia Dry Cleaners
City: State: Zip:
Location: City, State: Olympia, WA
Phone: Fax:
Collector: B. Dilba Date of Collection: 6/11/2020
Client Project # 19-222
Email: bdilba@aegwa.com

| | Sample Number | Depth | Time | Sample Type | Container Type | VOC 8260 | PCE & Daughter Prod. | NWTPH-Gx | BTEX (8260) / (8021) | NWTPH-HCID | NWTPH-Dx / Dx | PCB 8082 | MTCA 5 Metals | RCRA 8 Metals | c PAH 8270 | PAH 8270 | Semi Vol 8270 | | | Field Notes |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | MW-09 | - | 1002 | H2O | VOA x3 | | X | | | | | | | | | | | | | |
| 2 | MW-14 | - | 1016 | " | | | X | | | | | | | | | | | | | |
| 3 | MW-11 | - | 1024 | " | | | X | | | | | | | | | | | | | |
| 4 | | | | | | | | | | | | | | | | | | | | |
| 5 | | | | | | | | | | | | | | | | | | | | |
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| 16 | | | | | | | | | | | | | | | | | | | | |
| 17 | | | | | | | | | | | | | | | | | | | | |

| Relinquished by: | Date / Time | Received by: | Date / Time |
|---|---|---|---|
| [signature] | 6/11/2020 1118 | Melissa Hyt | 6/11/20 11:18 |
| Relinquished by: | Date / Time | Received by: | Date / Time |
| Relinquished by: | Date / Time | Received by: | Date / Time |

**Sample Receipt**

| | |
|---|---|
| Good Condition? | (Y) N |
| Cooler Temp. | °C |
| Sample Temp. | °C |
| Total Number of Containers | 9 |

Remarks:

TAT: 24HR 48HR (5-DAY)

LEGAL ACTION CLAUSE: *In the event of default of payment and/or failure to pay, Client agrees to pay the costs of collection including court costs and reasonable attorney fees to be determined by a court of law.*

Distribution: White - Lab, Yellow - Originator