# Interim Action Report

## Riverside HVOC Site
## Bothell, Washington 98011

**Prepared For:**

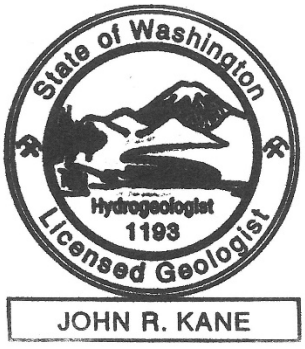
**City of Bothell**
**18415 101st Avenue NE**
**Bothell, WA 98011**

## December 31, 2019

Project No. 82306

Prepared By:

**Kane Environmental, Inc.**
4015 13th Avenue West
Seattle, Washington 98119




Jeffrey Jensen
Project Geologist

John Kane, LHG
President, Principal

## INTRODUCTION

Kane Environmental, Inc. (Kane Environmental) has completed several interim action tasks associated with the Riverside HVOC Site in Bothell, Washington. Interim action tasks included review of historical property records, review of previous environmental reports, a round of groundwater sampling, as well as the continued monitoring, reporting, and coordination with King County regarding the existing sanitary sewer discharge permit. The scope of work was conducted in accordance with the HWA GeoSciences (HWA) *Interim Action Work Plan* dated January 7, 2013 (HWA, 2013), and the scope of work in Amendment 2 of the Agreed Order (AO) DE 6295 dated April 19, 2013 between the City of Bothell (City) and the Washington State Department of Ecology (Ecology). This Interim Action Report has been prepared to satisfy the requirements of the Riverside HVOC Site AO DE 16541 dated December 5, 2019, per Exhibit C "Schedule of Deliverables (see Item 3 of Attachment A).

Per Exhibit B of the AO DE 16541 "Scope of Work" (see Attachment B) this report addresses the following:

- Present, summarize, and evaluate quarterly groundwater data collected between 2014 and 2017;
- Present and evaluate soil and groundwater data collected in October 2018;
- Incorporate Ecology's comments, dated May 16, 2018;
- Evaluate effectiveness of the current pump and treat system; and,
- Recommend final cleanup actions to be presented in supplemental RI/FS report.

See Figure 1 showing the Area Site Plan showing the historic Riverside property and the approximate Riverside TPH Site and Riverside HVOC Site boundaries. For the purposes of this report, the Riverside property refers to the area shown in blue on Figure 1, and the HVOC Site is shown in red in Figure 1, and in more detail in Figure 2.

## INTRODUCTION

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## BACKGROUND

### Years 1990-2009

The City acquired a two-acre property (Riverside property; Figure 1) in 1990 which included King County Assessor tax parcels 082605-9120, 082605-0284, and 082605-0031. Following the relocation of SR 522, the area was re-parceled and now consists of a portion of parcel 082605-9120 and is currently utilized as a vacant gravel parking lot and City of Bothell park.

During initial investigations on the Riverside property conducted in the early 1990s, petroleum contamination was discovered in the northwestern portions of the Riverside property, reportedly associated with historical gas station operations in this area (SEACOR, 1990; SEACOR 1991). Remedial excavations were conducted throughout the early 1990s which removed approximately 4,700 cubic yards of petroleum contaminated soil (RZA AGRA, 1992; GTI, 1993a; GTI, 1993b). Petroleum contaminated soils were treated on property using a bioremediation cell, and post-treatment soils were used to backfill the remedial excavation.

During 2008 site investigation activities, HWA discovered the presence of halogenated volatile organic compounds (HVOCs), specifically tetrachloroethylene (PCE), trichloroethylene (TCE), (cis) 1,2-dichloroethylene ((cis) 1,2-DCE), and vinyl chloride (VC) in groundwater above their respective Model Toxics Control Act (MTCA) Method A or Method B cleanup levels (HWA, 2008).

PCE was also detected in soils from location BC-3 at a concentration of 5.9 parts per million (ppm) and at location R-4 at a concentration of 9 ppm. The MTCA Method A cleanup level for PCE in soil is 0.05 ppm. HWA noted that these detections were collected from saturated soils and attributed the detections to groundwater contamination. HWA also stated that the HVOC contaminated groundwater was most likely migrating from an upgradient source.

An investigation was conducted by CDM in 2009 to assess soil and groundwater conditions along the former State Route (SR) 522, which at the time, bounded the Riverside property to the north-northeast. Groundwater samples collected north and northwest of the Riverside property along the former SR 522 reported concentrations of HVOCs in groundwater above their respective state cleanup levels. However, the CDM report noted that these detections were several orders of magnitude less than the HVOC contamination. CDM determined that the source of the HVOC contamination was associated with an unknown source located on-property and not associated with upgradient sources (CDM, 2009). Supplemental groundwater sampling confirmed the presence of HVOC contamination in groundwater (Parametrix, 2009).

**Years 2013-2018**

A groundwater extraction/treatment system was installed and activated in January of 2013. The system originally consisted of four groundwater extraction wells (EW-1 through EW-4), screened over intervals ranging from 11 to 35 feet bgs. Two additional extraction wells were added in December 2016 (EW-5 and EW-6). Extraction wells were installed with approximately 40 foot spacing, dedicated submersible pumps, and connected to an enclosure via sub-grade piping within the Riverside HVOC Site. The extracted groundwater was then discharged to sanitary sewer. HWA noted that the total discharge is sampled quarterly prior to entering the sanitary sewer system to ensure that the effluent meets the King County sanitary sewer discharge limits for HVOCs and settleable solids.

Quarterly groundwater monitoring on the Riverside HVOC Site was resumed in 2014 following the installation of the groundwater treatment system and included sampling of the extraction wells in addition to the monitoring wells. Groundwater HVOC concentrations reportedly decreased over time although there were seasonal fluctuations noted as well.

HWA performed a *Remedial Investigation (RI)* report for the Riverside HVOC Site dated December 18, 2017 (HWA, 2017b) in which the original “Riverside Site”, which encompassed the Riverside property, was delineated into two areas: the Riverside TPH Site and the Riverside HVOC Site. The report detailed the supplemental groundwater sampling as well as the implementation of a groundwater extraction system acting as an interim measure to prevent HVOC contaminated groundwater from entering the Sammamish River to the southeast. RI groundwater results are shown in Table 1. HWA also reportedly conducted a passive soil gas survey (HWA, 2016) in which a concentrated area of PCE was detected in the vicinity of RMW-12. The results suggested that there was potentially a source located near RMW-12.

HWA conducted a reconnaissance groundwater sampling study in 2017 to delineate the extent of the Ultra Custom Cleaners (an up-gradient cleanup site) HVOC groundwater plume (HWA, 2017a). One of the goals of the study was to determine if the Ultra Custom Cleaners site was a potential source for HVOC groundwater contamination on the Riverside HVOC Site. Ten borings were reportedly advanced to depths ranging between 40 and 45.5 feet bgs. Groundwater samples were collected from shallow (1-20 feet bgs), intermediate (18-34 feet bgs), and deep (35-45 feet bgs) intervals from each boring. Results indicated that the Ultra Custom Cleaners groundwater HVOC plume extended further southeast than expected, but concluded that it was unlikely to be the source of the HVOC groundwater contamination on the Riverside HVOC Site. The RI concluded that due to the absence of HVOCs detected above their respective cleanup levels in unsaturated soils, that there were no contaminants of concern (COCs) for Riverside HVOC Site soils.

However, the RI report confirmed the presence of PCE, TCE, (cis) 1,2-DCE, and vinyl chloride as COCs in groundwater, and stated that the "*impacts are being addressed by the on-going second interim action (pump and treat)".* While not explicitly explained in the text, the groundwater analytical tables listed Riverside HVOC Site specific cleanup levels for the groundwater COCs. The cleanup levels used were 0.69 parts per billion (ppb) for PCE, 2.5 ppb for TCE, 16 ppb for (cis) 1,2-DCE, and 0.2 for vinyl chloride.

HWA completed a *Draft Feasibility Study Report* (dFS) for the Riverside HVOC Site dated February 7, 2018 (HWA, 2018a). The report outlined the primary source of contamination as a *"small release of PCE to the ground somewhere at the north (upgradient) end of the Riverside HVOC area".* The report stated that the primary exposure route was HVOC contaminated groundwater migrating into the Sammamish River (surface water), where pathways included dermal contact and ingestion of water or ingestion of aquatic species by both human (recreational users) and ecological (aquatic species) receptors. Soil was not considered as a potential exposure pathway due to the absence of any soils detected above applicable cleanup levels and vapor was not considered due to the absence of present or planned buildings in the area.

According to the dFS report, due to the proximity of the HVOC contaminated groundwater to the Sammamish River, surface water cleanup levels were proposed by HWA. The dFS report also noted that the surface water MTCA Method B cleanup level for human health of 0.69 micrograms per liter (ug/L) was listed for PCE, per the U.S. EPA Clean Water Act §304 Federal Ambient Water Quality Criteria applicable or relevant and appropriate requirements (ARARs). For TCE, the surface water MTCA Method B cleanup level for human health – fresh water of 2.5 ug/L was listed, also per the U.S. EPA Clean Water Act §304 Federal Ambient Water Quality Criteria ARARs. The groundwater MTCA Method B non-carcinogen cleanup level of 16 ug/L was listed for (cis) 1,2-DCE. For vinyl chloride, HWA selected 0.2 ug/L as the cleanup level due to the value being the *"practical quantitation limit / reporting limits achievable by local accredited labs".* These Riverside HVOC Site specific cleanup levels will be further discussed later in this Interim Action Report.

The dFS report also evaluated several remedial alternatives. In-situ groundwater treatment technologies evaluated included chemical oxidation, chemical reduction, bioremediation, air sparging, and soil vapor extraction. Pump and treat alternatives were also considered with various treatment methods including carbon adsorption, air stripping, and discharge to sanitary sewer, and the concepts of recirculating extracted groundwater versus discharge were also considered. Permeable reactive barriers were considered as was monitored natural attenuation. Ultimately, HWA determined that the recommended remedial alternative was to pump and treat groundwater with discharge to sanitary sewer. The proposed final cleanup action would be to continue the interim action which began in 2014.

**Additional Soil and Groundwater Sampling - HWA November 9, 2018**

Following the RI and dFS, HWA completed an *Additional Soil and Groundwater Sampling* report dated November 9, 2018 (HWA, 2018b). In October of 2018, HWA advanced eight borings on the Riverside HVOC Site for collection of soil and groundwater samples. Each boring location was also surveyed so that groundwater elevation could be calculated, and hydraulic control of the groundwater treatment system could be assessed across the Site.

At boring location RB-25, PCE and TCE were detected in a soil sample collected at 13 feet bgs at concentrations (0.46 ppm and 0.052, respectively) above their respective MTCA Method A cleanup levels (0.05 ppm and 0.03 ppm, respectively). The sample was reportedly collected in unsaturated soils which were identified as *"fill material".* Temporary groundwater samples collected from the boring locations reported relatively high concentrations of HVOCs in groundwater with PCE detections ranging between 200 ug/L to 0.56 ug/L. The currently proposed PCE groundwater cleanup level is 0.16 ug/L and the TCE groundwater cleanup level is 2.5 ug/L.

The highest concentration of PCE in groundwater was collected from RB-25 (where soil exceedances were noted) with a reported concentration of 200 ppb. Elevated concentrations of PCE in groundwater were also noted at RB-32 (110 ppb) and the highest concentration of vinyl chloride was reported at RB-31 (13 ppb) both located just down gradient (southeast) of EW-2. Groundwater results are included in Table 1. Boring locations were surveyed, and a groundwater gradient was calculated to flow generally to the southeast.

The water elevation survey also noted groundwater drawdown around the extraction wells EW-1 through EW-4, and EW-6. The report stated that this suggested that *"from somewhere east of EW-1 to RMW-6 (west of EW-4), which encompasses the east-west extents of the HVOC plume is effectively captured by pumping wells."*

## HISTORICAL PROPERTY RECORDS REVIEW

Kane Environmental conducted supplemental due diligence tasks and reviewed historical records for the Riverside HVOC Site and immediate vicinity at the Puget Sound Regional Branch of the Washington State Archives (Attachment C), Central Branch of the Seattle Public Library (Attachment D), and historical aerial photographs provided by EDR (Attachment E).

According to King County Assessor records, the Riverside HVOC Site is currently located on the eastern end of one tax parcel, 082605-9120. However, according to tax lot maps reviewed at the Washington State Archives Puget Sound Regional Branch, the Riverside property historically consisted of portions of three parcels, 082605-9120, 082605-0284, and 082605-0031.

In reviewing historical assessment cards for parcel 082605-0284, a relatively small rectangular structure was constructed on the parcel in 1944 for use as a *"fixit shop".* An attached photograph with a noted date of June 1945 depicted the rectangular structure labeled *"Highway Machine Shop", "All Makes Water Pump Repair*", and *"Fixit Shop".* According to aerial photographs this structure remained on the Riverside HVOC Site through at least 1973, approximately 29 years. Cross referencing these historic aerial photographs with the 1954 *Kroll Atlas of Seattle, East Side Supplement*, the structure on the Riverside HVOC Site was addressed as 10031 Woodinville Drive.

According to the 1958 *West Coast Telephone Company Yellow Pages, "Lans Water Pump Shop" or "Lans A Pump Repair"* was located on the Riverside HVOC Site at 10031 Woodinville Drive. By 1960, the *West Coast Telephone Company Yellow Pages, "George's Fixit Shop"* was located on the Riverside HVOC Site at 10031 Woodinville Drive. Additionally, a January 14, 1960 copy of the *Bothell Citizen* newspaper contains an advertisement for *"George's Fixit Shop",* located at 10031 ½ Woodinville Drive, noting expertise in *"pumps, bicycles, lawn mowers, and tool sharpening".* The 1969 *Cole's Metropolitan Seattle Directory* contained residential listings for 10031 Woodinville Drive.

Based on the available information, a structure was constructed on the eastern end of Riverside HVOC Site in 1944 for use as a machine shop, pump repair, and *"fixit"* shop, and operated through at least 1960. Due to the operations conducted during that time period, it is possible that halogenated solvents were used on the Riverside HVOC Site and over time, releases may have occurred, adversely impacting the subsurface. The historical presence of a machine shop on the Riverside HVOC Site represents a potential source for the HVOC contamination in both soil and groundwater at the Riverside HVOC Site.

## GROUNDWATER SAMPLING METHODS

On September 26 and 27, 2019, Kane Environmental conducted a round of groundwater sampling on the Riverside HVOC Site. The following groundwater monitoring wells were sampled:

- RMW-4
- RMW-5
- RMW-6
- RMW-7
- RMW-8
- RMW-9R
- RMW-10
- RMW-12
- BC-3

The following groundwater extraction wells were sampled:

- EW-2
- EW-6

Kane Environmental attempted to sample groundwater extraction well EW-3, however the designated pump was in rest cycle during all sampling attempts and a collectable sample was not feasible. As of June 21, 2019, extraction wells EW-1, EW-3, and EW-5 were no longer functioning.

Prior to collecting groundwater samples from the monitoring wells, depth to groundwater in each well was measured with a decontaminated electric water interface probe. The probe was cleaned with Alconox® detergent and rinsed with distilled water between sampling activities. Groundwater monitoring wells were sampled using a peristaltic pump with disposable polyethylene tubing. Field parameters were measured during purging, and included: pH, temperature, oxygen reduction potential, dissolved oxygen, specific conductivity, and depth-to-water. Field parameter measurements were recorded on Kane Environmental field forms. Unfiltered groundwater was placed into appropriate laboratory-supplied, pre-cleaned and preserved containers for analysis.

Groundwater samples collected from extraction wells were collected using previously installed and dedicated submersible pumps with associated piping. Piping from each well is directed below grade to a remediation enclosure located on the eastern portion of the Riverside HVOC Site. Individual sample ports are located on the outflow from each well prior to discharge to sanitary sewer. Disposable polyethylene tubing was connected to each individual sample port for sample collection. Field parameters were measured during pumping, and included: pH, temperature, oxygen reduction potential, dissolved oxygen,

and specific conductivity. Field parameter measurements were recorded on Kane Environmental field forms. Unfiltered groundwater was placed into appropriate laboratory-supplied, pre-cleaned and preserved containers for analysis.

All groundwater samples were immediately placed into ice-filled coolers and subsequently transported to OnSite Environmental under standard chain-of-custody procedures.

Based on the Riverside HVOC Site COCs established in the 2017 RI (HWA, 2017), groundwater samples were submitted to OnSite Environmental and analyzed for the following:

- Halogenated Volatile Organic Compounds (HVOCs), by EPA Method 8260

All analyses were performed in accordance with the OnSite Environmental's in-house Quality Assurance/Quality Control Plan. Sample analyses were performed in compliance with EPA analytical methods and Ecology guidelines. Samples were analyzed within specified holding times. All detection limits were within method requirements and no factors appeared to adversely affect data quality. Copies of the laboratory analytical reports are included as Attachment F.

## GROUNDWATER ANALYTICAL RESULTS

The laboratory analytical results are listed in Table 1. Groundwater analytical results for detectable PCE ranged from 16 ug/L to 0.51 ug/L , with PCE not detected above the laboratory reporting limit in five monitoring wells (RMW-6, RMW-8, RMW-9R, RMW-10, and RMW-13). PCE was detected at concentrations 2.5 ug/L and 2.1 ug/L at RMW-4 and RMW-5, respectively. Near the presumed source area, at RMW-12, PCE was detected at a concentration of 15 ug/L . At BC-3, PCE was detected at a concentration of 4.3 ug/L and at RMW-7, PCE was detected at a concentration of 0.51 ug/L . As noted above, only two extraction wells were sampled, EW-2 and EW-6, and detected concentrations of PCE of 16 ug/L and 4.7 ug/L , respectively.

Detectable concentrations of TCE ranged between 4.7 ug/L to 0.39 p ug/L , with TCE not detected above the laboratory reporting limit in four monitoring wells (RMW-8, RMW-9R, RMW-10, and RMW-13). TCE was detected at concentrations of 0.45 ug/L , 0.39 ug/L, and 1.7 ug/L at RMW-4, RMW-5, and RMW-6, respectively. Near the presumed source area, at RMW-12, TCE was detected at a concentration of 3.1 ug/L. Slightly downgradient, at BC-3 and EW-2, TCE was detected concentrations of 1.0 ug/L and 4.7 ug/L, respectively. At EW-6 and RMW-7, TCE was detected concentrations of 1.4 ug/L and 4.1 ug/L, respectively.

Detectable concentrations of (cis) 1,2-DCE ranged between 33 ug/L to 0.22 ug/L, with (cis) 1,2-DCE not detected above the laboratory reporting limit in four monitoring wells (RMW-4, RMW-8, RMW-9R, and

RMW-10). (cis) 1,2-DCE was detected at concentrations of 0.22 ug/L and 3.8 ug/L at RMW-5 and RMW-6, respectively. Near the presumed source area, at RMW-12, (cis) 1,2-DCE was detected at a concentration of 6.5 ug/L. Slightly downgradient, at BC-3 and EW-2, (cis) 1,2-DCE was detected concentrations of 0.34 ug/L and 3.2 ug/L, respectively. At EW-6 and RMW-7, (cis) 1,2-DCE was detected concentrations of 4.2 ug/L and 33 ug/L, respectively.

Vinyl chloride was only detected at three wells on the Riverside HVOC Site, at concentrations ranging between 27 ppb and 0.57. Vinyl chloride was not detected at concentrations above the laboratory limit in wells, RMW-4, RMW-5, RMW-8, RMW-9R, RMW-10, RMW-13, BC-3, EW-2 and EW-6. At RMW-12 and RMW-6, vinyl chloride was detected at concentrations of 0.57 ug/L and 0.87 ug/L, respectively. The highest concentration was collected from RMW-7 at 27 ug/L.

Figure 3 depicts the results of September 2019 groundwater sampling with respect to the Riverside HVOC Site specific cleanup levels established in the 2018 dFS (HWA, 2018a). See the “Discussion and Conclusions” section for further discussion of the Site specific cleanup levels.

## GROUNDWATER TREATMENT SYSTEM

As of December 10, 2019, the groundwater treatment system had extracted approximately 17,762,481 gallons of groundwater since startup in January of 2013. Currently only three of the original six extraction wells are functioning (EW-2, EW-4, and EW-6).

## DISCUSSION AND CONCLUSIONS

Based on the results of the 2018 *Additional Soil and Groundwater Sampling* report (HWA, 2018b) the data results indicate that a source for groundwater contamination on the Riverside HVOC Site was identified in soil near location RB-25. PCE and TCE were both detected at concentrations above their respective MTCA Method A cleanup levels in a soil sample collected from 13 feet bgs at RB-25.

The groundwater sample collected from RB-25 also yielded the highest concentration of PCE, and the location is located proximally to RMW-12, the monitoring well where the highest concentrations of PCE have historically been detected. The area near RB-25 and RMW-12 is also where the passive soil gas survey found the highest relative concentration of PCE.

All of these results suggest that the potential source for HVOC contamination in groundwater is located on the Riverside HVOC Site, in the vicinity of RB-25. Furthermore, according to historical aerial photographs, this soil sample location is located adjacent to the approximate historical location of the former machine shop. The historical presence of a machine shop represents a potential source for the HVOC contamination in both soil and groundwater.

However, the full extent of soil contamination has yet to be fully characterized, both vertically and laterally. Kane Environmental recommends additional soil sampling in the vicinity of RB-25 as well as the footprint of the former machine shop to gain a better understanding of the extent of soil contamination on the Riverside HVOC Site. These results would be presented in a Supplemental Remedial Investigation, and will also provide additional site data for evaluating remedial alternatives for the supplemental Feasibility Study.

Overall, PCE concentrations in groundwater were the highest near RMW-12 and EW-2, which are located within the vicinity (or immediately down-gradient) of the presumed source area. Concentrations of PCE appear to be generally decreasing across the Riverside HVOC Site (with the exception of RMW-5 and EW-2), however, given the historical tendency of PCE concentrations to fluctuate, it is unknown whether this decrease will continue. Vinyl chloride was detected at the highest concentration at RMW-7, the furthest down-gradient well on the Riverside HVOC Site, and closest to the Sammamish River. This suggests that breakdown/dechlorination of PCE is occurring. However, RMW-7 has consistently contained the highest concentrations of vinyl chloride in groundwater dating back to 2009 when a concentration of 22 ppb was detected. This suggests that while the groundwater pump and treat system may be contributing to the remediation of PCE in groundwater (in addition to the dechlorination apparently occurring), it is not effectively reducing vinyl chloride concentrations in groundwater. Due to these results, it is the opinion of Kane Environmental that the pump and treat system is not an effective remedial

strategy to consider moving forward. Alternative remedial strategies will be evaluated by Kane Environmental in a supplemental dFS for the Site.

In response to the HWA dFS, Ecology Site Manager Ms. Sunny Becker, in correspondence with City and HWA officials dated May 16, 2018 (Attachment G), raised several concerns with the evaluation of ARARs during the selection of Riverside HVOC Site specific cleanup levels. As discussed in the "Background" section of this report, HWA completed a dFS which Riverside HVOC Site specific cleanup levels were proposed for groundwater (HWA, 2018a). The report cited the U.S. EPA Clean Water Act §304 Federal Ambient Water Quality Criteria ARARs as the rationale for selection the surface water cleanup levels for PCE and TCE in groundwater (0.69 ppb and 2.5 ppb, respectively). However, in 2015 the EPA updated the recommended ambient water quality criteria for the protection of human health, resulting in new screening levels for both PCE and TCE (10 ppb and 0.6 ppb, respectively). Additionally, in 2016 Ecology updated their Water Quality Standards in WAC 173-201A which resulted in new cleanup levels for PCE and TCE in surface water protective of human health (4.9 ppb and 0.38 ppb, respectively). Also in 2016, the EPA created the 40 CFR 131.45 *Revision of Certain Federal Water Quality Criteria Applicable to Washington*, which rendered the original 40 CFR 131.36 National Toxics Rule (included as an ARAR in the HWA dFS) as no longer applicable in Washington. These updates to the federal and state ARARs were not evaluated in the dFS, and thus the Riverside HVOC Site specific cleanup levels proposed in the dFS do not appear to be valid. Kane Environmental proposes to re-evaluate the state and federal ARARs and address the comments from Ms. Becker noted in the May 2018 correspondence in a supplemental dFS for the site.

## REFERENCES

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**ENCLOSURES**

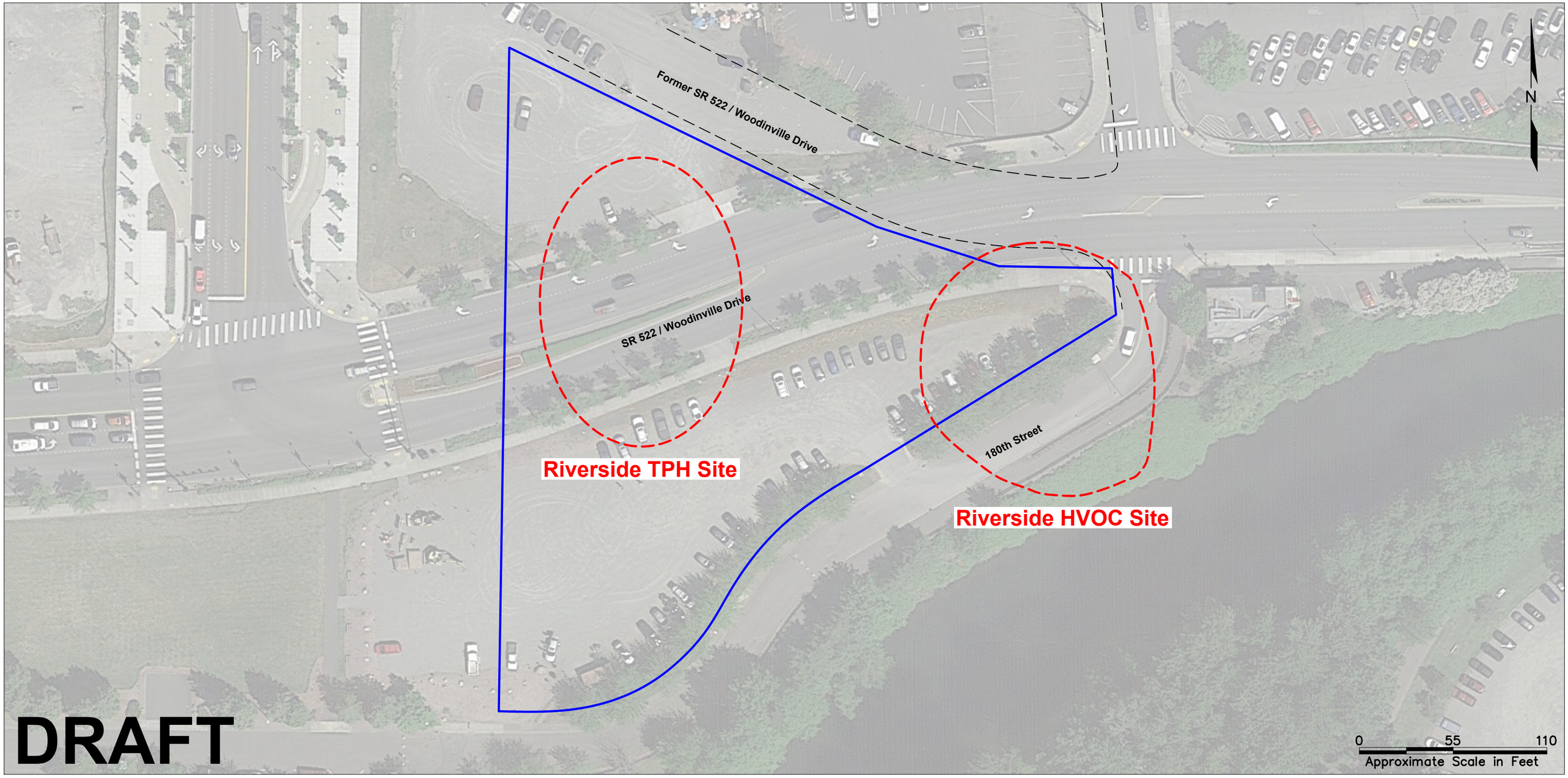
**FIGURES**
Figure 1 – Area Site Plan
Figure 2 – Riverside HVOC Site – Site Plan
Figure 3 – Groundwater Results HVOCs September 2019

**TABLES**
Table 1 – Groundwater Analytical Results

**ATTACHMENTS**
A – AO DE 16541 Exhibit C – Schedule of Deliverables
B – AO DE 16541 Exhibit B – Scope of Work
C – Washington State Archives - Puget Sound Regional Branch
D – Central Branch of the Seattle Public Library
E – Historical Aerial Photographs
F – Analytical Reports – Kane Environmental Sampling Results
G – Ecology Comments

KANE ENVIRONMENTAL INC

# FIGURES




*LEGEND*

- Approximate location of historical Riverside property
- Approximate location of HWA Riverside Site Boundaries

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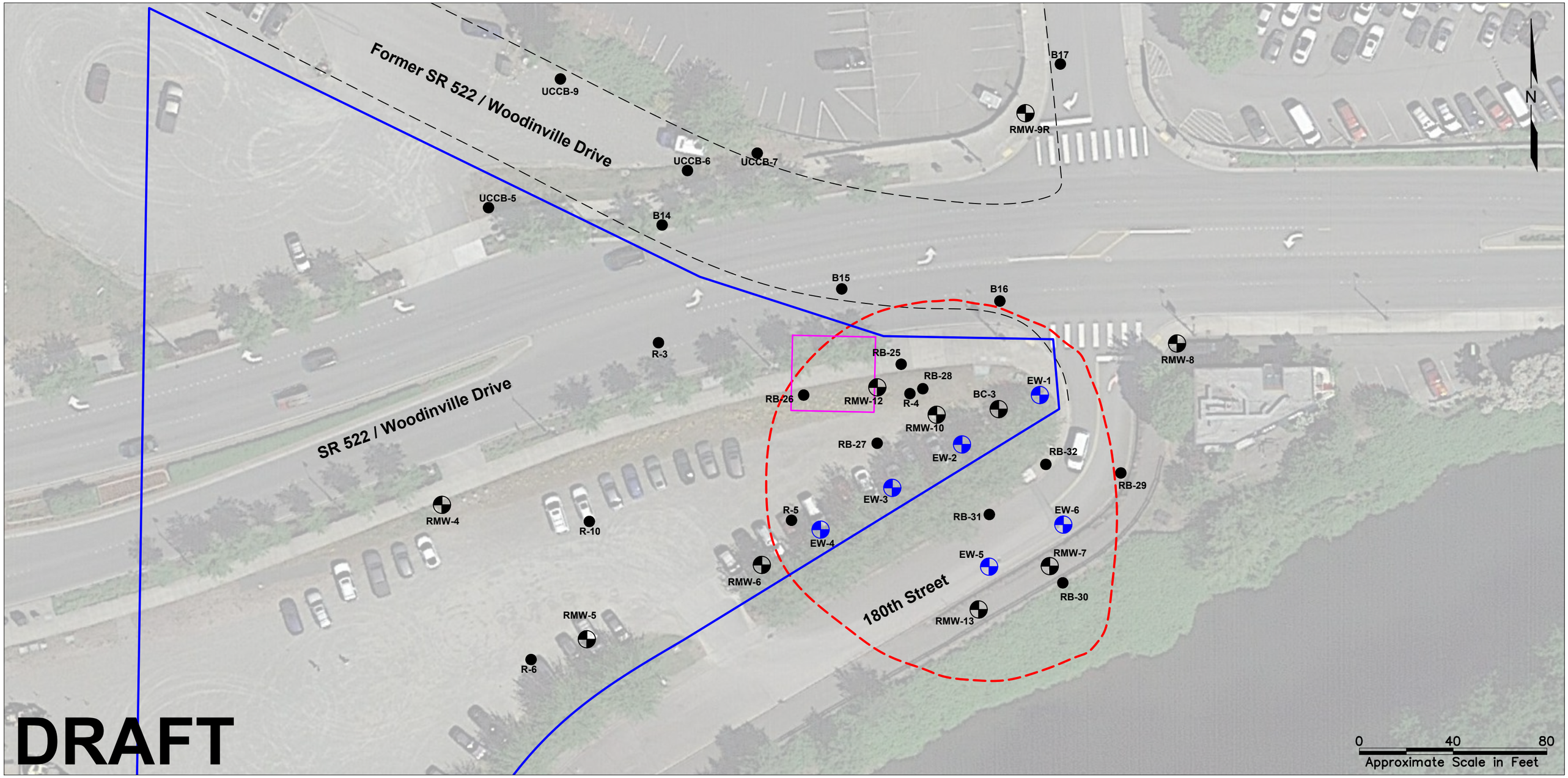
**Riverside HVOC Site**
Bothell, Washington

**Figure 1**
Area Site Plan




*LEGEND*

- Approximate location of monitoring well
- Approximate location of extraction well
- Approximate location of soil boring
- Approximate location of historical machine shop
- Approximate location of historical Riverside property
- Approximate location of HWA Riverside HVOC Site Boundary

KANE ENVIRONMENTAL INC

**Riverside HVOC Site**
Bothell, Washington

**Figure 2**
Site Plan

Former SR 522 / Woodinville Drive

SR 522 / Woodinville Drive

UCCB-9

UCCB-6

UCCB-7

UCCB-5

B14

B15

B16

B17

R-10

R-6

R-5

R-4

RB-25

RB-26

RB-27

RB-28

RB-29

RB-30

RB-31

RB-32

EW-1

EW-2

EW-3

EW-4

EW-5

N

| RMW-9R | | | | |
|---|---|---|---|---|
| Date | PCE | TCE | (cis) 1,2-DCE | VC |
| 9/27/19 | ND | ND | ND | ND |

| RMW-8 | | | | |
|---|---|---|---|---|
| Date | PCE | TCE | (cis) 1,2-DCE | VC |
| 9/27/19 | ND | ND | ND | ND |

| RMW-12 | | | | |
|---|---|---|---|---|
| Date | PCE | TCE | (cis) 1,2-DCE | VC |
| 9/27/19 | 15 | 3.1 | 6.5 | 0.87 |

| RMW-10 | | | | |
|---|---|---|---|---|
| Date | PCE | TCE | (cis) 1,2-DCE | VC |
| 9/27/19 | ND | ND | ND | ND |

| BC-3 | | | | |
|---|---|---|---|---|
| Date | PCE | TCE | (cis) 1,2-DCE | VC |
| 9/27/19 | 4.3 | 1.0 | 0.34 | ND |

| RMW-4 | | | | |
|---|---|---|---|---|
| Date | PCE | TCE | (cis) 1,2-DCE | VC |
| 9/26/19 | 2.5 | 0.45 | ND | ND |

| RMW-6 | | | | |
|---|---|---|---|---|
| Date | PCE | TCE | (cis) 1,2-DCE | VC |
| 9/26/19 | ND | 1.7 | 3.8 | 0.57 |

| EW-6 | | | | |
|---|---|---|---|---|
| Date | PCE | TCE | (cis) 1,2-DCE | VC |
| 9/27/19 | 4.7 | 1.4 | 4.2 | ND |

| RMW-7 | | | | |
|---|---|---|---|---|
| Date | PCE | TCE | (cis) 1,2-DCE | VC |
| 9/27/19 | 0.51 | 4.1 | 33 | 27 |

| EW-2 | | | | |
|---|---|---|---|---|
| Date | PCE | TCE | (cis) 1,2-DCE | VC |
| 9/27/19 | 16 | 4.7 | 3.2 | ND |

| RMW-13 | | | | |
|---|---|---|---|---|
| Date | PCE | TCE | (cis) 1,2-DCE | VC |
| 9/27/19 | ND | ND | 0.97 | ND |

| RMW-5 | | | | |
|---|---|---|---|---|
| Date | PCE | TCE | (cis) 1,2-DCE | VC |
| 9/26/19 | 2.1 | 0.39 | 0.22 | ND |

DRAFT

0 40 80

Approximate Scale in Feet

## LEGEND

- Approximate location of monitoring well
- Approximate location of extraction well
- Approximate location of soil boring
- Approximate location of historical machine shop
- Approximate location of HWA Riverside HVOC Site Boundary

**Red** concentrations are above the Site specific cleanup levels proposed by HWA

**Blue** concentrations are below the Site specific cleanup levels proposed by HWA

All concentrations reported in ug/L, equivalent to parts per million (ppb)
ND = No analytes detected above laboratory reporting limit. See Attachment XXX for laboratory reporting limit

| Site Specific Cleanup Levels* |
|---|
| "PCE" = Tetrachloroethylene (0.69 ppb) |
| "TCE" = Trichloroethylene (2.5 ppb) |
| "(cis) 1,2-DCE" = (cis) 1,2-Dichloroethylene (16 ppb) |
| "VC" = Vinyl chloride (0.2 ppb) |

* = Site specific cleanup levels proposed by HWA per the Draft Feasibility Study dated February 7, 2018

KANE ENVIRONMENTAL INC

**Riverside HVOC Site**
Bothell, Washington

**Figure 3**
Groundwater Results - HVOCs
September 2019

KANE ENVIRONMENTAL INC

# TABLES

**Table 1**
**Riverside HVOC**
**Groundwater Analytical Results**

| Well | Screened Interval, (ft bgs) | Date Sampled | Depth to Water (ft below TOC) | Sampled By | PCE (µg/L) | TCE (µg/L) | (cis) 1,2-DCE (µg/L) | Vinyl Chloride (µg/L) | pH (units) | Temp (° C) | Conductivity (µS/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (mV) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| RMW-4 | 15 to 25 | 12/19/14 | 12.20 | HWA | **0.79** | **0.33** | <0.20 | <0.20 | 6.59 | 14.6 | 1183 | 1.70 | | |
| | | 6/23/15 | 13.09 | HWA | **0.52** | **0.72** | <0.20 | <0.20 | 5.76 | 17.67 | 987 | 0.00 | -125.7 | |
| | | 12/8/15 | 11.95 | HWA | **2.2** | **0.56** | <0.20 | <0.20 | 5.99 | 14.90 | 510 | 0.00 | -69.9 | |
| | | 6/29/16 | 12.22 | HWA | **3.6** | **0.46** | <0.20 | <0.20 | 5.17 | 15.31 | 400 | 4.22 | 91.5 | |
| | | 12/21/16 | 11.48 | HWA | **4.3** | **0.51** | <0.20 | <0.20 | 6.20 | 14.5 | 293.5 | 0.43 | 0 | |
| | | 6/28/17 | 11.48 | HWA | **3.9** | **0.49** | <0.20 | <0.20 | 6.41 | 14.65 | 225 | 1.57 | 65.3 | |
| | | 9/26/19 | 12.24 | Kane | **2.5** | **0.45** | <0.20 | <0.20 | 5.71 | 16.0 | 365.2 | 0.29 | 67.4 | |
| RMW-5 | 12 to 22 | 5/24/13 | 11.51 | HWA | **1.7** | <0.20 | <0.20 | <0.20 | 6.70 | 13.9 | 932 | 1.00 | | |
| | | 6/24/14 | 14.51 | HWA | **1.4** | **0.40** | <0.20 | <0.20 | 6.48 | 14.5 | 740 | 0.15 | | |
| | | 12/19/14 | 13.61 | HWA | **1.3** | **0.32** | **0.22** | <0.20 | 6.28 | 13.3 | 1226 | 0.55 | | |
| | | 6/23/15 | 14.26 | HWA | **0.66** | **0.36** | <0.20 | <0.20 | 6.28 | 16.1 | 953 | 0.00 | -127.1 | |
| | | 12/8/15 | 13.29 | HWA | **1.6** | <0.20 | <0.20 | <0.20 | 5.83 | 14.54 | 318 | 18.61 | -90.4 | |
| | | 6/29/16 | 13.41 | HWA | **1.1** | **0.31** | <0.20 | <0.20 | 6.18 | 14.43 | 356 | 1.71 | -2.0 | |
| | | 12/22/16 | 13.01 | HWA | **1.0** | <0.20 | **0.23** | <0.20 | 6.48 | 13.7 | 483.9 | 0.27 | -106.2 | |
| | | 6/29/17 | 13.26 | HWA | **2.0** | <0.20 | <0.20 | <0.20 | 6.65 | 13.85 | 438 | 0.46 | -89.3 | |
| | | 9/26/19 | 13.53 | Kane | **2.1** | **0.39** | **0.22** | <0.20 | 6.10 | 15.5 | 450.1 | 0.14 | -29.2 | |
| RMW-6 | 15 to 25 | 9/14/09 | | HWA | <0.20 | **0.27** | **3.6** | **5.3** | | | | | | |
| | | 5/24/13 | 10.42 | HWA | <0.20 | <0.20 | **2.7** | **3.4** | 6.68 | 14.3 | 467 | 1.40 | | |
| | | 6/24/14 | 14.79 | HWA | **0.34** | **0.60** | **0.42** | <0.20 | 6.47 | 14.2 | 407 | 0.13 | | |
| | | 12/19/14 | 13.31 | HWA | **0.47** | <0.20 | <0.20 | <0.20 | 6.09 | 14.3 | 294 | 0.82 | | |
| | | 6/23/15 | 13.65 | HWA | <0.20 | **1.4** | **0.88** | <0.20 | 6.12 | 15.2 | 283 | 0.00 | 8.0 | |
| | | 12/8/15 | 12.46 | HWA | <0.20 | **2.7** | **1.0** | <0.20 | 6.00 | 14.99 | 232 | 0.00 | -40.1 | |
| | | 6/29/16 | 13.14 | HWA | <0.20 | **2.5** | **1.3** | <0.20 | 6.39 | 15.34 | 194 | 1.64 | 35.5 | |
| | | 12/21/16 | 12.21 | HWA | <0.20 | **0.39** | **0.5** | <0.20 | 6.47 | 14.8 | 179.8 | 0.57 | 88.2 | |
| | | 6/29/17 | 12.68 | HWA | <0.20 | **0.41** | **0.3** | <0.20 | 6.60 | 14.21 | 171 | 1.11 | 140.5 | |
| | | 9/26/19 | 12.67 | Kane | <0.20 | **1.7** | **3.8** | **0.57** | 6.07 | 15.4 | 412.9 | 0.16 | 28.8 | |
| RMW-7 | 15 to 25 | 9/14/09 | | HWA | **50** | **120** | **190** | **22** | | | | | | |
| | | 5/24/13 | 16.31 | HWA | **9.0** | **33** | **65** | **9.3** | 6.80 | 16.2 | 447 | 0.30 | | |
| | | 4/4/14 | 16.65 | HWA | **0.75** | **3.8** | **35** | **8.3** | 6.50 | 12.9 | 1969 | 0.55 | | |
| | | 6/25/14 | 16.55 | HWA | **5.2** | **24** | **80** | **9.9** | 6.48 | 15.2 | 865 | 0.03 | | |
| | | 9/22/14 | 17.54 | HWA | *<1.0* | **3.2** | **170** | **47** | 6.96 | 18.2 | 386 | 5.25 | | |
| | | 12/19/14 | 17.49 | HWA | **2.9** | **8.9** | **150** | **34** | 6.06 | 15.4 | 683 | 0.73 | | |
| | | 3/18/15 | 16.66 | HWA | <0.40 | **1.5** | **57** | **20** | 6.35 | 14.9 | 1127 | 1.87 | | |
| | | 6/23/15 | 17.41 | HWA | <0.40 | **3.1** | **95** | **9.6** | 5.97 | 17.96 | 508 | 0.00 | -70.3 | |
| | | 9/11/15 | 18.50 | HWA | **4.2** | **23** | **110** | **14** | 6.22 | 21.54 | 464 | 3.23 | | |
| | | 12/8/15 | 15.97 | HWA | **3.5** | **8.7** | **85** | **9.0** | 5.96 | 15.92 | 274 | 0.00 | -12.3 | |
| | | 3/31/16 | 16.94 | HWA | **1.5** | **6.8** | **84** | **35** | 6.40 | 14.63 | 403 | 2.00 | 38.9 | |
| | | 6/29/16 | 17.11 | HWA | **2.3** | **14** | **65** | **12** | 6.28 | 16.57 | 297 | 1.20 | 30.3 | |
| | | 9/30/16 | 18.28 | HWA | **2.4** | **7.8** | **89** | **13** | 6.12 | 16.81 | 419 | 0.69 | 31.3 | |
| | | 12/22/16 | 15.89 | HWA | **1.1** | **4.1** | **88** | **24** | 6.34 | 15.8 | 368.4 | 0.19 | -34.1 | |
| | | 4/5/17 | 16.43 | HWA | **1.2** | **2.4** | **12** | **0.86** | 6.26 | 13.00 | 318.9 | 0.30 | 19.5 | |
| | | 6/28/17 | 16.65 | HWA | **1.3** | **1.9** | **33** | **1.9** | 6.50 | 15.49 | 283 | 0.78 | 5.9 | |
| | | 10/10/17 | 18.26 | HWA | **1.0** | **2.3** | **47** | **25** | 6.33 | 17.38 | 438 | 3.18 | 176.6 | |
| | | 9/27/19 | 17.60 | Kane | **0.51** | **4.1** | **33** | **27** | 6.29 | 16.6 | 579.2 | 0.09 | -17.7 | |
| RMW-8 | 20 to 30 | 9/15/09 | | HWA | **0.46** | **2.6** | **1.3** | <0.20 | | | | | | |
| | | 5/24/13 | 18.81 | HWA | **0.50** | **0.85** | **0.44** | <0.20 | 6.42 | 16.4 | 494 | 0.10 | | |
| | | 6/24/14 | 19.62 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.27 | 15.7 | 650 | 0.20 | | |
| | | 12/19/14 | 20.63 | HWA | **0.70** | <0.20 | <0.20 | <0.20 | 6.18 | 14.5 | 431 | 0.84 | | |
| | | 6/23/15 | 20.87 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 5.74 | 26.9 | 333 | 0.27 | -61.2 | |
| | | 12/8/15 | 19.42 | HWA | <0.20 | **0.39** | **0.47** | <0.20 | 5.83 | 15.15 | 344 | 1.51 | 44.3 | |
| | | 6/29/16 | 20.50 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.27 | 17.47 | 216 | 2.05 | 32.0 | |
| | | 12/22/16 | 20.58 | HWA | **0.31** | **0.66** | **0.37** | <0.20 | 6.13 | 14.6 | 297.3 | 0.31 | 32.8 | |
| | | 6/28/17 | 19.73 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.21 | 16.03 | 213 | 0.84 | 120.9 | |
| | | 9/27/19 | 21.10 | Kane | <0.20 | <0.20 | <0.20 | <0.20 | 6.01 | 16.1 | 433.7 | 0.33 | -18.4 | |
| RMW-9 / RMW-9R | 20 to 30 | 9/15/09 | | HWA | <0.20 | <0.20 | <0.20 | <0.20 | | | | | | |
| | | 5/24/13 | 13.65 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.38 | 15.7 | 247 | 4.00 | | |
| | | 12/19/14 | 15.31 | HWA | **0.79** | <0.20 | <0.20 | <0.20 | 6.16 | 15.7 | 182 | 2.92 | | |
| | | 6/23/15 | 4.00 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 5.93 | 18.7 | 139 | 4.20 | 70.4 | |
| | | 12/8/15 | 15.92 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 5.75 | 15.61 | 163 | 3.29 | 94.3 | |
| | | 6/29/16 | 15.31 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.53 | 15.91 | 132 | 11.20 | 94.9 | |
| | | 12/22/16 | 14.78 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.19 | 16.0 | 151 | 7.68 | 85.3 | |
| | | 6/29/17 | 13.55 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.06 | 16.75 | 103 | 7.95 | 122.1 | |
| | | 9/27/19 | 16.61 | Kane | <0.20 | <0.20 | <0.20 | <0.20 | 5.75 | 15.9 | 225.9 | 3.91 | 126.1 | |
| RMW-10 | 32 to 42 | 5/24/13 | 11.85 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.52 | 13.3 | 247 | 6.60 | | |
| | | 6/24/14 | 15.00 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.19 | 15.4 | 361 | 1.08 | | |
| | | 12/19/14 | 14.80 | HWA | **0.69** | <0.20 | <0.20 | <0.20 | 6.08 | 15.0 | 284 | 2.03 | | |
| | | 6/23/15 | 20.40 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.43 | 17.3 | 233 | 7.28 | 37.0 | |
| | | 12/8/15 | 19.69 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 5.94 | 14.69 | 134 | 5.41 | 50.0 | |
| | | 6/29/16 | 13.60 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.68 | 15.83 | 166 | 8.35 | 29.2 | |
| | | 12/21/16 | 13.63 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.31 | 14.3 | 152.4 | 3.25 | 133.8 | |
| | | 6/28/17 | 14.05 | HWA | <0.20 | <0.20 | <0.20 | <0.20 | 6.60 | 15.4 | 207 | 2.83 | 112.6 | |
| | | 9/27/19 | 15.99 | Kane | <0.20 | <0.20 | <0.20 | <0.20 | 5.66 | 14.8 | 261.5 | 2.86 | 132.2 | |
| RMW-12 | 15 to 25 | 7/25/16 | 16.25 | HWA | **120** | **19** | **14** | *<1.0* | 6.30 | 17.68 | 442 | 1.53 | 21.7 | |
| | | 12/21/16 | 13.10 | HWA | **61** | **14** | **21** | **1.6** | 5.90 | 15.0 | 305 | 0.25 | 103.3 | |
| | | 6/28/17 | 13.10 | HWA | **130** | **27** | **29** | *<1.0* | 6.09 | 14.54 | 368 | 1.87 | 144.8 | |
| | | 9/27/19 | 14.52 | Kane | **15** | **3.1** | **6.5** | **0.87** | 5.69 | 15.8 | 418.4 | 0.31 | 76.4 | |
| RMW-13 | 15 to 25 | 7/25/16 | 14.95 | HWA | <0.20 | <0.20 | 1.8 | **0.24** | 5.19 | 17.4 | 333.0 | 2.50 | 183.5 | |
| | | 12/22/16 | 16.61 | HWA | <0.20 | <0.20 | 1.2 | <0.20 | 6.36 | 16.0 | 351.4 | 0.16 | -8.2 | |
| | | 6/28/17 | 15.23 | HWA | <0.20 | <0.20 | 0.50 | <0.20 | 6.42 | 14.7 | 448.0 | 0.71 | 25.3 | |
| | | 9/27/19 | 16.20 | Kane | <0.20 | <0.20 | **0.97** | <0.20 | 6.30 | 18.9 | 525.3 | 0.11 | 17.3 | |
| BC-3 | 15 to 25 | 9/5/08 | | HWA | **110** | **120** | **46** | *<1.0* | | | | | | |
| | | 5/24/13 | 12.95 | HWA | **25** | **11** | **4.0** | <0.20 | 6.55 | 15.1 | 342 | 4.00 | | |
| | | 6/24/14 | 14.41 | HWA | **11** | **4.0** | **0.75** | <0.20 | 6.06 | 14.8 | 426 | 2.40 | | |
| | | 12/19/14 | 15.61 | HWA | **7.7** | **2.1** | **0.44** | <0.20 | 6.07 | 14.8 | 298 | 1.82 | | |
| | | 6/23/15 | 18.30 | HWA | **3.8** | **0.90** | <0.20 | <0.20 | 5.68 | 21.2 | 161 | 364 | 123.4 | |
| | | 12/8/15 | 15.30 | HWA | **5.3** | **1.3** | **0.29** | <0.20 | 5.59 | 15.17 | 248 | 6.05 | 120.8 | |
| | | 6/29/16 | 16.95 | HWA | **3.7** | **0.93** | <0.20 | <0.20 | 5.90 | 15.84 | 167 | 6.97 | 52.2 | |
| | | 12/21/16 | 14.25 | HWA | **5.9** | **1.5** | **0.57** | <0.20 | 5.90 | 14.6 | 245.6 | 1.48 | 175.8 | |
| | | 6/28/17 | 16.43 | HWA | **6.8** | **1.9** | **0.80** | <0.20 | 6.04 | 14.86 | 265 | 3.67 | 147.6 | |
| | | 9/27/19 | 16.08 | Kane | **4.3** | **1.0** | **0.34** | <0.20 | 5.73 | 14.6 | 279.7 | 3.15 | 94.2 | |
| RB-25 | 15 to 25 | 10/24/18 | 17.50 | HWA | **200** | **88** | **92** | **1.0** | | | | | | |
| RB-26 | 15 to 25 | 10/24/18 | 16.60 | HWA | **2.4** | **1.6** | **3.5** | <0.02 | | | | | | |
| RB-27 | 15 to 25 | 10/24/18 | 14.80 | HWA | **29** | **19** | **7.1** | **1.0** | | | | | | |
| RB-28 | 10 to 20 | 10/24/18 | 15.30 | HWA | **15** | **6.4** | **4.7** | **0.34** | | | | | | |
| RB-29 | 15 to 25 | 10/24/18 | 19.70 | HWA | **2.6** | **1.0** | **1.4** | <0.02 | | | | | | |
| RB-30 | 15 to 25 | 10/24/18 | 18.80 | HWA | **0.56** | **1.3** | **8.1** | **0.28** | | | | | | |
| RB-31 | 15 to 25 | 10/25/18 | 15.60 | HWA | **63** | **11** | **43** | **13** | | | | | | |
| RB-32 | 15 to 25 | 10/25/18 | 17.90 | HWA | **110** | **44** | **76** | <0.02 | | | | | | |

**Table 1**
**Riverside HVOC**
**Groundwater Analytical Results**

| Well | Screened Interval, (ft bgs) | Date Sampled | Depth to Water (ft below TOC) | Sampled By | PCE (µg/L) | TCE (µg/L) | (cis) 1,2-DCE (µg/L) | Vinyl Chloride (µg/L) | pH (units) | Temp (° C) | Conductivity (µS/cm) | Dissolved Oxygen (mg/L) | Oxidation Reduction Potential (mV) | Comments |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EW-1 | 12.5 to 32.5 | 4/4/14 | 27.90 | HWA | **17** | **3.0** | **1.2** | <0.20 | | | | | | |
| | | 6/25/14 | 14.78 | HWA | **27** | **8.1** | **6.5** | <0.20 | 6.61 | 18.3 | 100 | 5.68 | | |
| | | 9/22/14 | | HWA | | | | | | | | | | Pump not working |
| | | 12/19/14 | | HWA | **21** | **2.6** | **0.82** | <0.20 | 6.42 | 17.3 | 107 | 4.99 | | |
| | | 3/18/15 | | HWA | **2.8** | **0.27** | <0.20 | <0.20 | 7.01 | 15.9 | 167 | 3.65 | | |
| | | 6/23/15 | | HWA | **22** | **2.0** | **0.95** | <0.20 | | | | | | |
| | | 9/11/15 | 15.86 | HWA | **41** | **2.2** | **0.79** | <0.20 | 6.01 | 19.54 | 160 | 2.99 | -49.88 | |
| | | 12/8/15 | | HWA | | | | | | | | | | Pump not working |
| | | 3/31/16 | | HWA | **22** | **2.8** | **2.5** | <0.20 | 6.27 | 15.94 | 227 | 6.55 | 80.2 | |
| | | 6/29/16 | | HWA | **24** | **4.2** | **4.5** | <0.20 | 6.37 | 16.7 | 192 | 8.10 | 47.5 | |
| | | 9/30/16 | | HWA | **20** | **2.0** | **2.3** | <0.20 | 5.63 | 14.21 | 193 | 4.10 | 90.1 | |
| | | 1/5/17 | | HWA | **1.1** | <0.20 | <0.20 | <0.20 | 6.64 | 12.05 | 315 | 4.60 | 47.3 | |
| | | 4/5/17 | | HWA | **13** | **1.2** | **0.85** | <0.20 | 5.89 | 15.9 | 368.2 | 2.34 | 136 | |
| | | 6/29/17 | | HWA | **8.9** | **0.77** | **0.70** | <0.20 | 6.44 | 18.11 | 192 | 3.17 | 128.3 | |
| | | 10/10/17 | | HWA | **15** | **0.81** | **0.50** | <0.20 | 6.49 | 15.28 | 226 | 7.34 | 298.8 | |
| | | 9/27/19 | | Kane | | | | | | | | | | Pump not working |
| EW-2 | 15 to 35 | 4/4/14 | 23.70 | HWA | **13** | **2.8** | **1.5** | | | | | | | |
| | | 6/25/14 | 17.10 | HWA | **28** | **3.8** | **1.5** | <0.20 | 6.58 | 16.5 | 143 | 2.21 | | |
| | | 9/22/14 | | HWA | **66** | **16** | **12** | *<0.40* | | | | | | |
| | | 12/19/14 | | HWA | **44** | **12** | **12** | *<0.40* | 7.01 | 15.8 | 204 | 2.31 | | |
| | | 3/18/15 | | HWA | **22** | **6.5** | **4.3** | <0.20 | 6.87 | 15.0 | 251 | 2.16 | | |
| | | 6/23/15 | | HWA | **8.6** | **2.4** | **1.8** | <0.20 | | | | | | |
| | | 9/11/15 | 19.89 | HWA | **6.5** | **0.62** | <0.20 | <0.20 | 6.11 | 19.9 | 235 | 2.84 | -56.8 | |
| | | 12/8/15 | | HWA | **16** | **2.6** | **2.4** | <0.20 | 5.92 | 15.12 | 201 | 2.43 | 595.1 | |
| | | 3/31/16 | | HWA | **16** | **4.0** | **3.7** | <0.20 | 5.75 | 15.21 | 218 | 8.58 | 129.9 | |
| | | 6/29/16 | | HWA | **17** | **4.1** | **3.2** | <0.20 | 6.46 | 15.75 | 185 | 6.85 | 48.3 | |
| | | 9/30/16 | | HWA | **21** | **6.2** | **5.6** | <0.20 | 5.94 | 14.24 | 191 | 3.97 | 73.9 | |
| | | 1/5/17 | | HWA | **24** | **3.6** | **1.7** | <0.20 | 6.67 | 12.08 | 192 | 3.80 | 31.3 | |
| | | 4/5/17 | | HWA | **11** | **3.2** | **2.2** | <0.20 | 6.38 | 16.2 | 258.7 | 5.08 | 123.4 | |
| | | 6/29/17 | | HWA | **16** | **4.8** | **3.6** | <0.20 | 6.51 | 19.5 | 185 | 2.50 | 125.6 | |
| | | 10/10/17 | | HWA | **3.0** | **0.45** | **0.23** | <0.20 | 6.73 | 16.35 | 215 | 6.20 | 300.9 | |
| | | 9/27/19 | | Kane | **16** | **4.7** | **3.2** | <0.20 | 6.04 | 15.2 | 263.1 | 1.42 | 188.2 | |
| EW-3 | 14 to 34 | 4/4/14 | 23.80 | HWA | **49** | **14.0** | **7.2** | **0.61** | | | | | | |
| | | 6/25/14 | 19.00 | HWA | **41** | **14.0** | **12** | *<0.40* | 6.58 | 16.4 | 182 | 6.34 | | |
| | | 9/22/14 | | HWA | **190** | **59** | **33** | **1.1** | | | | | | |
| | | 12/19/14 | | HWA | **21** | **6.4** | **6.0** | <0.20 | 6.82 | 15.9 | 275 | 6.02 | | |
| | | 3/18/15 | | HWA | **140** | **46** | **29** | *<1.0* | 6.78 | 15.4 | 322 | 5.47 | | |
| | | 6/23/15 | | HWA | **87** | **24** | **9.0** | | | | | | | |
| | | 9/11/15 | 20.86 | HWA | **81** | **28** | 14 | *<0.40* | 6.56 | 19.89 | 354 | 2.53 | -65.78 | |
| | | 12/8/15 | | HWA | **33** | **11** | **7.8** | **0.38** | 5.82 | 16.59 | 247 | 2.36 | 160 | |
| | | 3/31/16 | | HWA | **72** | **21** | **16** | **0.64** | 6.20 | 19.57 | 358 | 2.28 | 87.5 | |
| | | 6/29/16 | | HWA | **79** | **24** | **14** | **0.43** | 6.28 | 19.37 | 304 | 6.51 | 45.9 | |
| | | 9/30/16 | | HWA | **50** | **18** | **10** | **0.63** | 5.84 | 18.59 | 386 | 1.11 | 51.7 | |
| | | 1/5/17 | | HWA | **95** | **30** | **20** | **0.46** | 6.37 | 13.32 | 319 | 2.60 | 27.5 | |
| | | 4/5/17 | | HWA | **150** | **57** | **30** | **1.3** | 5.99 | 18.7 | 434.8 | 1.21 | 105.6 | |
| | | 6/29/17 | | HWA | **270** | **79** | **59** | **1.4** | 6.27 | 26.59 | 330 | 2.65 | 133 | |
| | | 10/10/17 | | HWA | **69** | **25** | **16** | **0.41** | 6.38 | 18.4 | 305 | 6.17 | 221.5 | |
| | | 9/27/19 | | Kane | | | | | | | | | | Pump not working |
| EW-4 | 11 to 31 | 4/4/14 | 12.50 | HWA | | | | | | | | | | Pump not working |
| | | 6/25/14 | 17.30 | HWA | **1.7** | **1.8** | **1.1** | **0.38** | 6.46 | 16.0 | 220 | 1.73 | | |
| | | 9/22/14 | | HWA | **45** | **10** | **7.4** | **0.87** | | | | | | |
| | | 12/19/14 | | HWA | **1.2** | **1.6** | **1.1** | **0.27** | 6.68 | 16.6 | 105 | 1.99 | | |
| | | 3/18/15 | | HWA | **15** | **4.8** | **3.2** | <0.20 | | | | | | |
| | | 6/23/15 | | HWA | **0.85** | **2.8** | **1.7** | **0.37** | | | | | | |
| | | 9/11/15 | 18.84 | HWA | **1.8** | **2.1** | **0.92** | **0.28** | 6.23 | 19.22 | 125 | 2.55 | -65.32 | |
| | | 12/8/15 | | HWA | <0.20 | **1.6** | **2.9** | **0.85** | 5.84 | 22.04 | 424 | 0.00 | 214 | |
| | | 3/31/16 | | HWA | <0.20 | **2.5** | **2.0** | **0.31** | 6.61 | 15.91 | 354 | 1.47 | 2.0 | |
| | | 6/29/16 | | HWA | <0.20 | **1.2** | **3.5** | **0.61** | 6.54 | 19.19 | 344 | 6.99 | 33.0 | |
| | | 9/30/16 | | HWA | <0.20 | **0.88** | **4.0** | **0.75** | 8.14 | 17.05 | 373 | 0.95 | 12.0 | |
| | | 1/5/17 | | HWA | **0.33** | **3.2** | **1.8** | **0.29** | 6.67 | 12.21 | 325 | 1.80 | -67.9 | |
| | | 4/5/17 | | HWA | **0.20** | **3.0** | **1.7** | **0.25** | 6.37 | 15.9 | 409.2 | 0.82 | -12.2 | |
| | | 6/29/17 | | HWA | <0.20 | **0.9** | **2.6** | **0.24** | 6.73 | 19.88 | 343 | 1.12 | -47.6 | |
| | | 9/27/19 | | Kane | | | | | | | | | | Pump not working |
| EW-5 | 15 to 35 | 1/5/17 | | HWA | **5.0** | **4.0** | **9.4** | **2.5** | 6.61 | 12.71 | 270 | 1.29 | -45.1 | |
| | | 4/5/17 | | HWA | **6.9** | **5.2** | **15** | **3.8** | 6.27 | 14.8 | 511.9 | 1.22 | 23.9 | |
| | | 6/29/17 | | HWA | **8.6** | **3.8** | **10** | **0.49** | 6.58 | 18.98 | 239 | 4.41 | 66.7 | |
| | | 10/10/17 | | HWA | **0.36** | **0.94** | **8.6** | **1.8** | 6.58 | 18.81 | 350 | 2.65 | 262.6 | |
| | | 9/27/19 | | Kane | | | | | | | | | | Pump not working |
| EW-6 | 15 to 35 | 1/5/17 | | HWA | **2.4** | **0.54** | <0.20 | <0.20 | 6.62 | 4.13 | 166 | 5.65 | -17.8 | |
| | | 4/5/17 | | HWA | **2.1** | **0.94** | **1.2** | <0.20 | 6.20 | 15.2 | 252.7 | 2.47 | 60.2 | |
| | | 6/29/17 | | HWA | **0.56** | **0.63** | **2.0** | **0.31** | 6.67 | 20.23 | 280 | 4.05 | 29.5 | |
| | | 10/10/17 | | HWA | **20** | **7.2** | **18** | **0.46** | 6.56 | 17.42 | 274 | 2.68 | 289.3 | |
| | | 9/27/19 | | Kane | **4.7** | **1.4** | **4.2** | <0.20 | 6.03 | 16.8 | 273.0 | 0.01 | 200.6 | |
| **HWA Site Specific Cleanup Levels*** | | | | | **0.69** | **2.5** | **16** | **0.2** | | | | | | |
| **MTCA Method A/B Cleanup Level - Groundwater** | | | | | **5.0** | **5.0** | **16 (B)** | **0.2** | | | | | | |
| **MTCA Method B Cleanup Level - Surface Water - Standard - Carcinogen** | | | | | **100** | **13** | **-** | **3.7** | | | | | | |
| **MTCA Method B Cleanup Level - Surface Water - Human Health - Fresh Water[a]** | | | | | **4.9** | **0.38** | **-** | **0.02** | | | | | | |
| **MTCA Method B Cleanup Level - Surface Water - Human Health - Fresh Water[b]** | | | | | **2.4** | **0.30** | **-** | **-** | | | | | | |
| **MTCA Method B Cleanup Level - Surface Water - Human Health - Fresh Water[c]** | | | | | **10** | **0.60** | **-** | **0.022** | | | | | | |

**Notes:**
PCE – Tetrachloroethene
TCE – Trichloroethene
(cis) 1,2-DCE - (cis) 1,2-Dichloroethene
Blank – Not analyzed or not available
**Bold** – Analyte detected
**Bold / highlighted**– Analyte exceeds HWA Site Specific Cleanup Leve
*Italicized* - Detection limit exceeds respective cleanup leve
< – Analyte not detected at listed reporting limit
NA – Not Applicable
* - HWA Cleanup Levels from RI/dFS:
PCE: Surface Water Applicable or Relevant and Appropriate Requirements (ARARs) - Human Health - Fresh Water - Clean Water Act§ 304 (No longer valid)
TCE: Surface Water ARARs - Human Health - Fresh Water - Clean Water Act § 304 (No longer valid)
(cis) 1,2-DCE: Groundwater - Model Toxics Control Act (MTCA) Method B cleanup level, Non-carcinogen, Standard Formula Value
Vinyl chloride: Groundwater - MTCA Method A cleanup level - Table 720-1, WAC 173-340-900
a - Surface Water ARARs - Human Health - Fresh Water - WAC 173-201A
b - Surface Water ARARs - Human Health - Fresh Water - 40 CFR 131.45
c - Surface Water ARARs - Human Health - Fresh Water - Consumption of Water and Organism - Clean Water Act § 304

# ATTACHMENT A

# AO DE 16541 EXHIBIT C - SCHEDULE OF DELIVERABLES

**EXHIBIT C**
**Schedule of Deliverables**

| **Deliverables.** Refer to Exhibit B (Scope of Work) for Key Components. | **Date Due** |
|---|---|
| 1. Continue implementing the Interim Action under the Interim Action Work Plan (Jan. 7, 2013) as amended (see Exhibits D and F) to address chlorinated solvents/halogenated volatile organic compounds (HVOCs) | Effective Date of Order |
| 2. Progress Reports and groundwater sampling reports | Quarterly |
| 3. Interim Action Report | 1 month after the Effective Date of this Order<br><br>Delivery of these reports does not relieve PLP of its ongoing duty to implement the interim action under this Agreed Order. |
| 4. PLP to submit Agency Review Draft Supplemental RI and FS Report | 3 months after the Effective Date of this Order |
| 5. PLP to submit Public Review Supplemental RI and FS Report | 3 months after PLP receives the final round of Ecology comments/modifications on the Agency Review Draft Supplemental RI and FS Report |
| 6. PLP to submit Agency Review preliminary draft Cleanup Action Plan for Ecology review and approval | 30 days after completion of Public Review Supplemental RI and FS Report |
| 7. PLP to submit Public Review preliminary draft Cleanup Action Plan for Ecology review and approval | 30 days after PLP receives the final round of Ecology comments/modifications on the Agency Review preliminary draft Cleanup Action Plan |

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# ATTACHMENT B

# AO DE 16541 EXHIBIT B – SCOPE OF WORK

# EXHIBIT B

## Scope of Work

## Bothell Riverside Site - HVOC Area

The Potentially Liable Persons (PLPs) shall take the following remedial actions per the Schedule detailed in Exhibit C of this Agreed Order (Order): conduct interim remedial actions, produce a supplemental remedial investigation (RI) report and a feasibility study (FS), and prepare a preliminary draft cleanup action plan (CAP). The PLPs will work cooperatively with Ecology to support public participation in the scoping and implementation of the work performed under this Agreed Order in accordance with Section VIII.F of the Agreed Order. All deliverables will adhere to Ecology Executive Policy 1-81 (Establishing Plain Talk at Ecology).

This Scope of Work is to evaluate alternatives to address contamination at the Bothell Riverside Site - HVOC Area (Site) located at Woodinville Drive (SR 522) and NE 180th Street, Bothell, Washington. This Scope of Work is to be used by the potentially liable person (PLP) to complete a Supplemental RI Report and a FS at the Site as required by the Model Toxics Control Act Cleanup Regulation (Chapter 173-340 WAC).

The Supplemental RI Report is to supplement existing reports on the nature and extent of contamination at the Site. The FS will evaluate remedial alternatives that are applicable for the Site. The information and data reported in the Supplemental RI will be used to identify if additional data need to be collected and determine an appropriate remedial action. The PLP will furnish all personnel, materials, and services necessary for, or incidental to, completing the Supplemental RI Report, FS Report, and preliminary draft CAP for the Site.

### Task I: Interim Action and Reporting

A. Implement Approved Interim Action

Continue implementing approved interim action(s) per Exhibits D and F.

B. Interim Action Report

An Interim Action Report shall be prepared as a separate deliverable. The Interim Action Report shall:

- Present, summarize, and evaluate quarterly groundwater data collected between 2014 and 2017;
- Present and evaluate soil and groundwater data collected in October 2018;
- Incorporate Ecology's comments, dated May 16, 2018;
- Evaluate effectiveness of the current pump and treat system;

- Recommend final cleanup actions to be presented in the supplemental RI/FS report.

The Interim Action Report shall be submitted in word (.doc) and adobe (.pdf) formats electronically.

C. Report groundwater sampling conducted under the interim action to Ecology quarterly.

The Supplemental RI/FS work must include the following tasks:

**Task II: Supplemental Remedial Investigation**

The purpose of the RI is to obtain the information necessary to understand site conditions in relationship to known or suspected releases of contaminants. The City has previously collected data, as summarized in the following reports: HWA Geosciences, *Final Remedial Investigation Report, Bothell Riverside Site, Bothell, WA* (Oct. 9, 2015) and HWA Geosciences, *Ground Water Monitoring Results Year 4, Quarter 1 - April 2017, Riverside HVOC Site, Bothell, WA* (May 8, 2017). During the Supplemental RI, the City will review its existing data and may collect additional data and/or conduct additional analysis related to site characterization. All of the data and analysis will be presented in the Supplemental RI and FS Report (see Task IV).

Specifically, new and existing information will be used to characterize the Site, identify known and potential contaminant sources, and establish the nature and extent of contamination present to sufficiently complete a FS and select an appropriate remedial action. The RI data must be of sufficient quality to support the development of an appropriate remedial action for the Site. The investigation will meet the requirements stated in WAC 173-340-350.

**Task III: Feasibility Study**

The purpose of the FS is to evaluate potential remedial technologies and approaches to enable selection of an appropriate remedial action for the Site. The selected remedy will be established by Ecology with the Draft Cleanup Action Plan (DCAP), to be developed following completion and approval of the final RI/FS Report. Ecology will provide an evaluation of preliminary cleanup standards for the Site, as appropriate, to guide cleanup alternatives development. The FS must meet the requirements stated in WAC 173-340-350(8).

**Task IV: Supplemental RI and FS Report**

The PLP will complete a report documenting the Supplemental RI and FS as required by WAC 173-340-350(7) and (8). This report will evaluate remedial alternatives for site cleanup, consistent with MTCA to ensure protection of human health and the environment by eliminating, reducing, or otherwise controlling risk posed through each exposure pathway and migration route. This report will include the following elements:

# ATTACHMENT C

# WASHINGTON STATE ARCHIVES – PUGET SOUND REGIONAL BRANCH

DISTRICT 7742 ADDITION TAX LOT
Section 8 Twp. 26 Range 5 E or W (156) Block
PERMIT No.
DATE

Legal on back 7742
S 60' of W 315' of NW¼ of NW¼ ly S of Bothell Woodinville Road & N of Sammamish River & a 30' rd Subdivision S of Sd River (Por of 120) less St Hiway

Bldg. "B"

Fee Owner
Condition of Exterior Good Interior Good Foundation Good

USE EXIT. SHOP

| | |
|---|---|
| 1 | No. Stories |
| 1 | No. Stores |
| | No. Rooms |
| | Basement |
| | No. Offices |
| | No. Apartments |
| | 1 rm. 2 rm. 3 rm. |
| | 4 rm. 5 rm. 6 rm. |

ROOF CONSTRUCTION
X Frame Lam.
Mill Construction
Rein. Concrete
No. Trusses
Wood Steel

ROOFING MATERIAL
Tar and Gravel
Or. SHINGLE

FLOOR FINISH
Fir Maple
Oak 2" x 6" T&G
Linn. 3" x 6" T&G
Cement
Terrazzo
Rasselith
Tile
Or. PAINT

Tile Total
Linn. Total
Baths Fl. Walls
Sq. Ft. Floors
Sq. Ft. Walls
Lin. Ft. Dr. Bds.
Sq. Ft. Floors
Sq. Ft. Walls
Lin. Ft. Dr. Bds.
Kit's. Fl. Walls

PLUMBING
No. Fixtures
Toilets
Tubs, Leg or Pem.
Basins, Ped.
N Sinks
1 Urinals
1 Showers (Tub) (Stall)
5 Laundry Trays
H. W. Tank Fl. Drains
Sprink. Sys. No. Hds.

TYPE OF CONSTRUCTION
X Frame
X Single Double
Ordinary Masonry
Mill Construction
Class A Rein. Con.
Stru. Steel and Con.
Tile Brick
Con. Rein. Con.
Good Med. X Cheap

Date Built 1944 X Finished Unfinished Remodeled
Effective Age Years Future Life Years
Dep. For Cond. Dep. For Ob. Dep. For Ec. Total 35

FOUNDATION
Mud Sills
X Post and Pier
Brick
Concrete
Pile

BASEMENT
Full %
Sub-Basement
N Size x
0 Garage No. Cars
N Floors
E Plastered
Living Rooms
Service Rooms

HEATING
Stove
Pipeless Furnace
Gravity H. A.
N Air Cond., Fan
4 Areola
N 1-Pipe Steam
P 2-Pipe St. or Vapor
Hot Water
Oil Burner
Coal Stoker

WIRING
Knob & Tube
Flex Cable
X Conduit OPEN
Power Wiring
Range Wiring
No. Outlets

ELEVATORS
Pass. Freight
Auto. Elec.
Man. Hyd.
Man.


Total $
Assessed Value 50% $
Sup. Building A. V. $
Total $

1300
650
65 BM.S
OK'66
450
350 X 47

EXTERIOR WALL CONSTR.
X Single Double
X 2" x 4" Stud Walls 16"
2" x 6" Stud Walls
Brick Walls
Brick With Pilasters
Concrete Walls
Con. With Pilasters
Tile Walls
Rein. Con. Skel.
Filler Walls
Laminated Walls

EXTERIOR FACING
X Siding Shingles
Shakes Stucco
Brick Veneer
Kind
Stone Cast S.
Terra Cotta
Struct. Glass
Trim

FLOOR CONSTRUCTION
Joist Con. Size 2 x 10
O. C. 16" In Bridg. X
Mill Construction
Rein. Con.

INTERIOR WALLS
Stud and Plaster
Lam. Plastered
Ply Wood
Ceiled
Plaster Board
Painted
Stain Varnish
Kalsomine
Whitewashed
Unfinished
X OPEN STUDS

INTERIOR TRIM
Fir
Mah. Oak
Metal
Doors
Windows
Stained
Varnished
Painted
Unfinished
X NONE

GAS STATIONS
Frame
Metal
Masonry
Plastered or Ceiled
Floors

SERVICE BUILDING
Frame
Metal
Masonry
Plastered or Ceiled
Floors

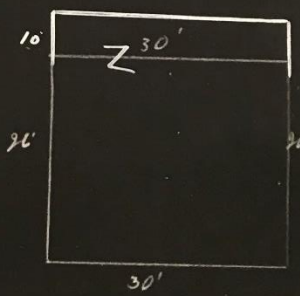
TANKS, ETC., LIST

Hoists: Elect. Hyd.

DOCKS AND PIERS
Treated Piles and Timbers
Untreated
Treated Piles only
Average Length
Paved

C. H.
S.B.
B
1 10
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
17
18
19
20
21
22

GROUND FLOOR AREA 780
TOTAL FLOOR AREA




| Other Buildings | Construction | Floor | Roof | Stories | Dimensions | S. F. Area | Factor | Value | % Dep. | Deprec. | Net Value |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Garage NONE | | | | | x | | | $ | | $ | $ |
| | | | | | x | | | $ | | $ | $ |
| | | | | | x | | | $ | | $ | $ |
| | | | | | x | | | $ | | $ | $ |

Years Future Life Years

p. For Cond. Dep. For Ob. Dep. For Es. Total 35

REPRODUCTION COST

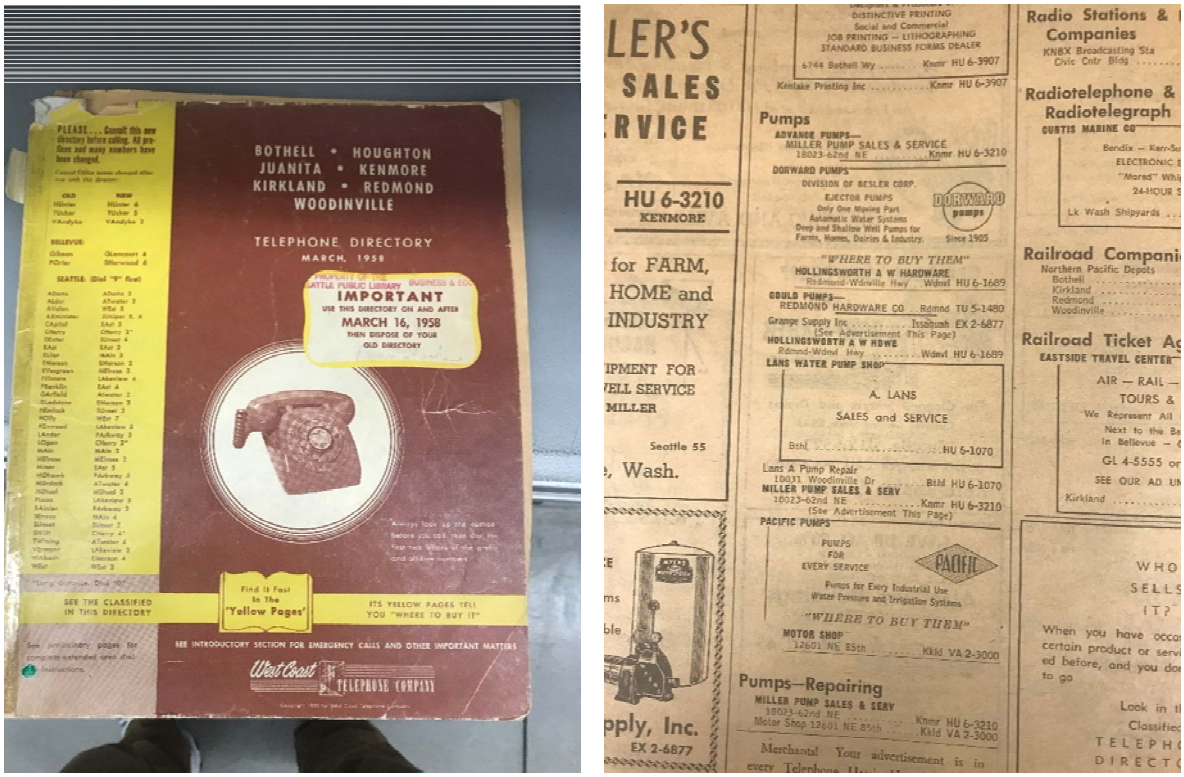

Mc
6-5-45
F-7742

8-26-5
T.L. 156

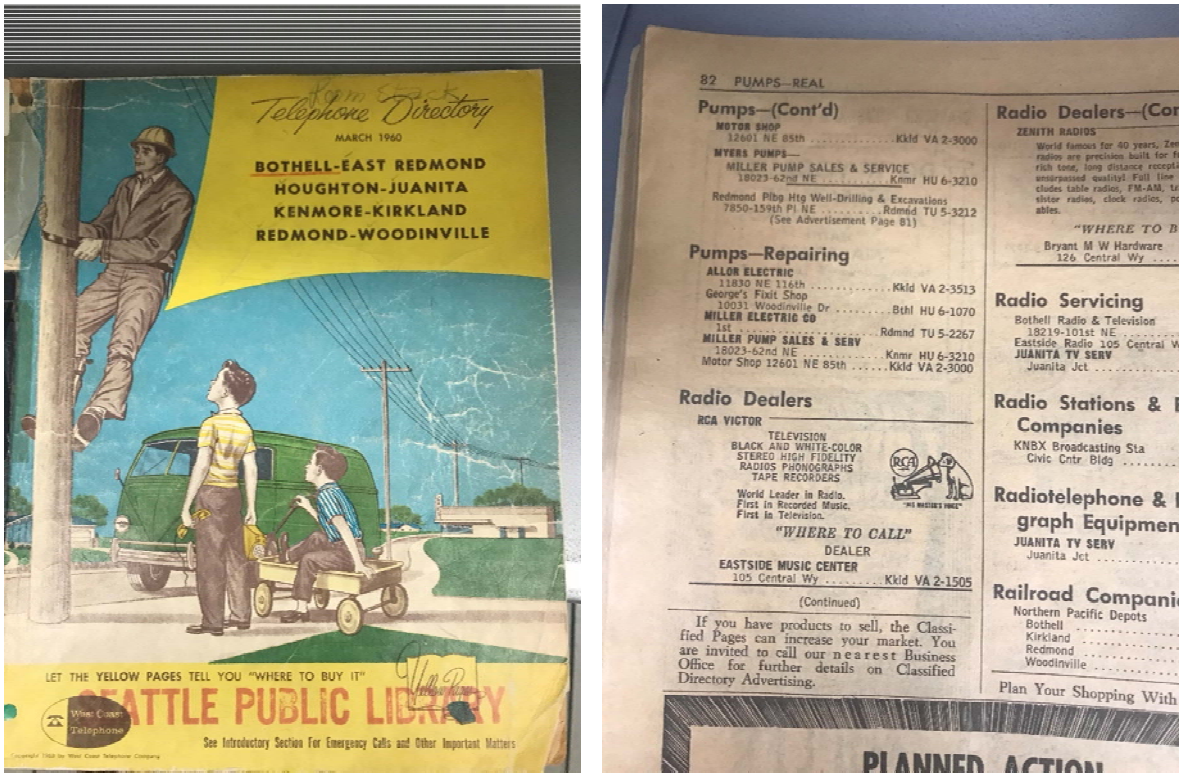
KANE ENVIRONMENTAL INC

# ATTACHMENT D

# CENTRAL BRANCH OF THE SEATTLE PUBLIC LIBRARY




Photograph of 1958 Yellow Pages depicting “Lans A Pump Repair” as located at 10031 Woodinville Dr.




Photograph of 1960 Yellow Pages depicting “George’s Fixit Shop” as located at 10031 Woodinville Dr.

# ATTACHMENT E

# HISTORICAL AERIAL PHOTOGRAPHS

**Bothell Riverside**

Not Reported

Bothell, WA 98011

Inquiry Number: 5776934.3

September 05, 2019

# The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

# EDR Aerial Photo Decade Package

09/05/19

**Site Name:**

Bothell Riverside
Not Reported
Bothell, WA 98011
EDR Inquiry # 5776934.3

**Client Name:**

Kane Environmental Inc.
4015 13th Avenue West
Seattle, WA 98119
Contact: Jeffrey Jensen

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

## *Search Results:*

| *Year* | *Scale* | *Details* | *Source* |
|---|---|---|---|
| 2017 | 1"=500' | Flight Year: 2017 | USDA/NAIP |
| 2013 | 1"=500' | Flight Year: 2013 | USDA/NAIP |
| 2009 | 1"=500' | Flight Year: 2009 | USDA/NAIP |
| 2006 | 1"=500' | Flight Year: 2006 | USDA/NAIP |
| 1990 | 1"=500' | Acquisition Date: July 10, 1990 | USGS/DOQQ |
| 1985 | 1"=500' | Flight Date: June 19, 1985 | NRWA |
| 1980 | 1"=500' | Flight Date: July 27, 1980 | USDA |
| 1977 | 1"=500' | Flight Date: September 13, 1977 | USGS |
| 1973 | 1"=500' | Flight Date: July 09, 1973 | NOAA |
| 1968 | 1"=500' | Flight Date: September 02, 1968 | USGS |
| 1965 | 1"=500' | Flight Date: July 06, 1965 | NRWA |
| 1952 | 1"=500' | Flight Date: July 01, 1952 | USGS |
| 1943 | 1"=500' | Flight Date: March 05, 1943 | DIA |
| 1941 | 1"=500' | Flight Date: June 11, 1941 | USDA |

**When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.**


INQUIRY #: 5776934.3
YEAR: 2017
= 500'
N
EDR

INQUIRY #: 5776934.3

YEAR: 2013

= 500'

N

EDR


INQUIRY #: 5776934.3
YEAR: 2009
= 500'
N
EDR


INQUIRY #: 5776934.3
YEAR: 2006
= 500'
N
EDR

INQUIRY #: 5776934.3

YEAR: 1990

= 500'

N

EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.


INQUIRY #: 5776934.3
YEAR: 1985
= 500'
N
EDR

INQUIRY #: 5776934.3

YEAR: 1980

= 500'

N

EDR

INQUIRY #: 5776934.3

YEAR: 1977

= 500'

N

EDR

Subject boundary not shown because it exceeds image extent or image is not georeferenced.

INQUIRY #: 5776934.3

YEAR: 1973

= 500'

N

EDR

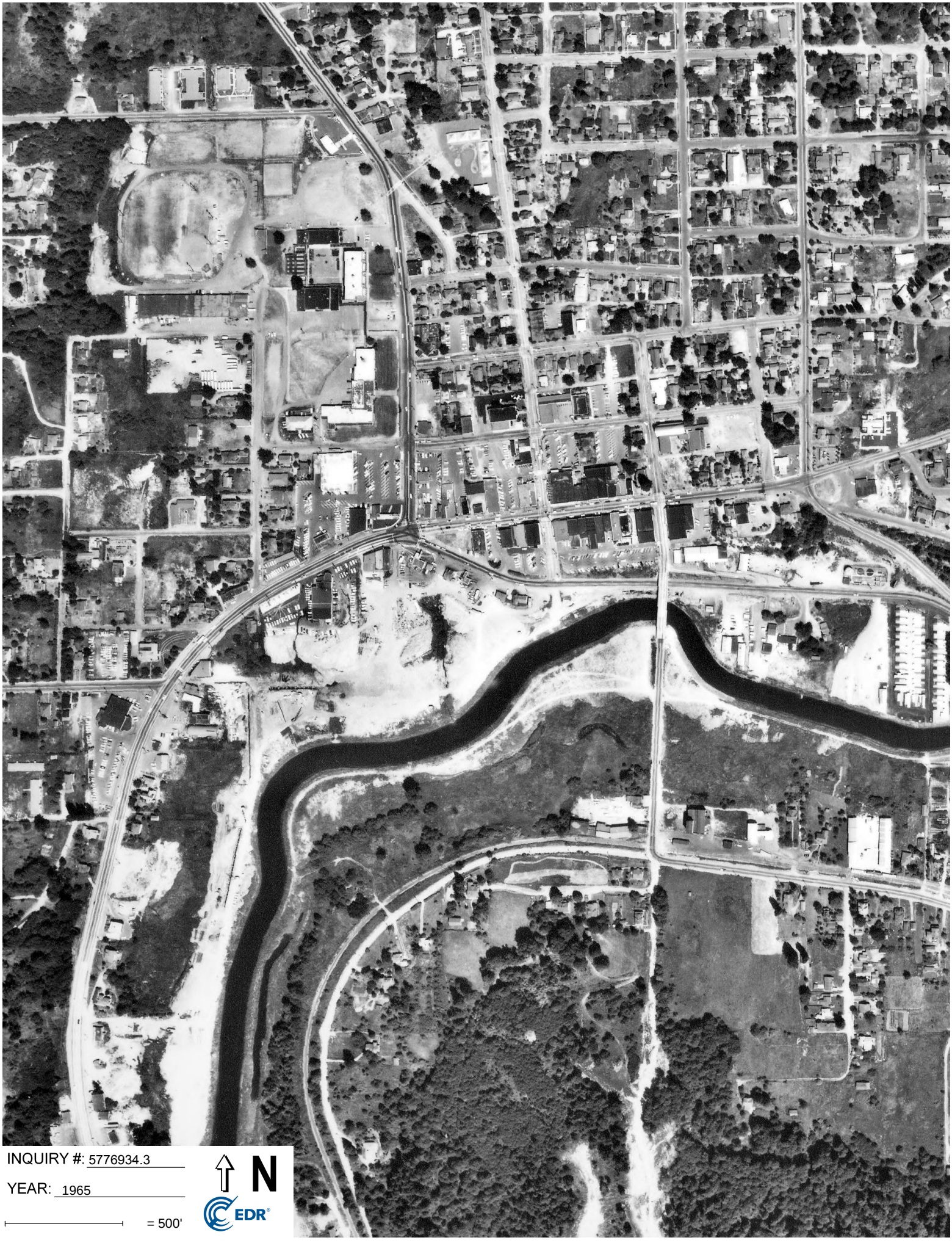
INQUIRY #: 5776934.3

YEAR: 1968

= 500'

N

EDR



INQUIRY #: 5776934.3

YEAR: 1965

= 500'

N

EDR


INQUIRY #: 5776934.3
YEAR: 1952
= 500'
N
EDR

INQUIRY #: 5776934.3

YEAR: 1943

= 500'

N

EDR

INQUIRY #: 5776934.3

YEAR: 1941

= 500'

N

EDR

# ATTACHMENT F

# ANALYTICAL REPORTS

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 3, 2019

Jeff Jensen
Kane Environmental, Inc.
4015 13th Avenue West
Seattle, WA 98119

Re: Analytical Data for Project 82306
Laboratory Reference No. 1909-297

Dear Jeff:

Enclosed are the analytical results and associated quality control data for samples submitted on September 26, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 3, 2019
Samples Submitted: September 26, 2019
Laboratory Reference: 1909-297
Project: 82306

**Case Narrative**

Samples were collected on September 26, 2019 and received by the laboratory on September 26, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: October 3, 2019
Samples Submitted: September 26, 2019
Laboratory Reference: 1909-297
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 1 of 2

Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-4:W** | | | | | |
| Laboratory ID: | 09-297-01 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Vinyl Chloride | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromomethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Iodomethane | ND | 1.4 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (cis) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Trichloroethene | 0.45 | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |

Date of Report: October 3, 2019
Samples Submitted: September 26, 2019
Laboratory Reference: 1909-297
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
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| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-4:W** | | | | | |
| Laboratory ID: | 09-297-01 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Tetrachloroethene | 2.5 | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *108* | *75-127* | | | | |
| *Toluene-d8* | *89* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *109* | *78-125* | | | | |

Date of Report: October 3, 2019
Samples Submitted: September 26, 2019
Laboratory Reference: 1909-297
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 1 of 2

Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-5:W** | | | | | |
| Laboratory ID: | 09-297-02 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Vinyl Chloride | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromomethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Iodomethane | ND | 1.4 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (cis) 1,2-Dichloroethene | 0.22 | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Trichloroethene | 0.39 | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |

Date of Report: October 3, 2019
Samples Submitted: September 26, 2019
Laboratory Reference: 1909-297
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
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| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-5:W** | | | | | |
| Laboratory ID: | 09-297-02 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Tetrachloroethene | 2.1 | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *106* | *75-127* | | | | |
| *Toluene-d8* | *98* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *94* | *78-125* | | | | |

Date of Report: October 3, 2019
Samples Submitted: September 26, 2019
Laboratory Reference: 1909-297
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 1 of 2

Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-6:W** | | | | | |
| Laboratory ID: | 09-297-03 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Vinyl Chloride | 0.57 | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromomethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Iodomethane | ND | 1.4 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (cis) 1,2-Dichloroethene | 3.8 | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Trichloroethene | 1.7 | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |

Date of Report: October 3, 2019
Samples Submitted: September 26, 2019
Laboratory Reference: 1909-297
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
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| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-6:W** | | | | | |
| Laboratory ID: | 09-297-03 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Tetrachloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *109* | *75-127* | | | | |
| *Toluene-d8* | *116* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *103* | *78-125* | | | | |

Date of Report: October 3, 2019
Samples Submitted: September 26, 2019
Laboratory Reference: 1909-297
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
**QUALITY CONTROL**
page 1 of 2

Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB0930W1 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Vinyl Chloride | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromomethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Iodomethane | ND | 1.4 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (cis) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Trichloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |

Date of Report: October 3, 2019
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Project: 82306

**VOLATILE ORGANICS EPA 8260D**
**QUALITY CONTROL**
page 2 of 2

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB0930W1 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Tetrachloroethene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 9-30-19 | 9-30-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 9-30-19 | 9-30-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *104* | *75-127* | | | | |
| *Toluene-d8* | *102* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *91* | *78-125* | | | | |

Date of Report: October 3, 2019
Samples Submitted: September 26, 2019
Laboratory Reference: 1909-297
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
**QUALITY CONTROL**

Matrix: Water
Units: ug/L

| Analyte | Result | | Spike Level | | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|
| **SPIKE BLANKS** | | | | | | | | | | |
| Laboratory ID: | SB0930W1 | | | | | | | | | |
| | SB | SBD | SB | SBD | SB | SBD | | | | |
| 1,1-Dichloroethene | **9.28** | **9.40** | 10.0 | 10.0 | 93 | 94 | 63-130 | 1 | 17 | |
| Benzene | **10.2** | **8.61** | 10.0 | 10.0 | 102 | 86 | 76-125 | 17 | 19 | |
| Trichloroethene | **9.52** | **9.80** | 10.0 | 10.0 | 95 | 98 | 76-121 | 3 | 18 | |
| Toluene | **9.55** | **8.82** | 10.0 | 10.0 | 96 | 88 | 80-124 | 8 | 18 | |
| Chlorobenzene | **10.3** | **10.1** | 10.0 | 10.0 | 103 | 101 | 75-120 | 2 | 19 | |
| *Surrogate:* | | | | | | | | | | |
| *Dibromofluoromethane* | | | | | *106* | *106* | *75-127* | | | |
| *Toluene-d8* | | | | | *104* | *96* | *80-127* | | | |
| *4-Bromofluorobenzene* | | | | | *104* | *95* | *78-125* | | | |

OnSite Environmental Inc.

**Data Qualifiers and Abbreviations**

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

# Chain of Custody

Page 1 of 1

**OnSite Environmental Inc.**
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Kane Environmental
Project Number: 82306
Project Name: Riverside HVOC
Project Manager: Jeff Jensen
Sampled by: Jeff Jensen

**Turnaround Request (in working days)**
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ _____ (other)

**Laboratory Number:** 09-297

| Lab ID | Sample Identification | Date Sampled | Time Sampled | Matrix | Number of Containers | NWTPH-HCID | NWTPH-Gx/BTEX | NWTPH-Gx | NWTPH-Dx (☐ Acid / SG Clean-up) | Volatiles 8260C | Halogenated Volatiles 8260C | EDB EPA 8011 (Waters Only) | Semivolatiles 8270D/SIM (with low-level PAHs) | PAHs 8270D/SIM (low-level) | PCBs 8082A | Organochlorine Pesticides 8081B | Organophosphorus Pesticides 8270D/SIM | Chlorinated Acid Herbicides 8151A | Total RCRA Metals | Total MTCA Metals | TCLP Metals | HEM (oil and grease) 1664A | | | | | % Moisture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RMW-4:W | 9/26/19 | 1207 | GW | 3 | | | | | | X | | | | | | | | | | | | | | | | |
| 2 | RMW-5:W | ↓ | 1345 | ↓ | ↓ | | | | | | X | | | | | | | | | | | | | | | | |
| 3 | RMW-6:W | ↓ | 1436 | ↓ | ↓ | | | | | | X | | | | | | | | | | | | | | | | |
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| | Signature | Company | Date | Time |
|---|---|---|---|---|
| Relinquished | | Kane | 9/26/19 | 1533 |
| Received | | GSE | 9/26/19 | 1533 |
| Relinquished | | | | |
| Received | | | | |
| Relinquished | | | | |
| Received | | | | |
| Reviewed/Date | | Reviewed/Date | | |

**Comments/Special Instructions**

Data Package: Standard ☑ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☑

OnSite Environmental Inc.
14648 NE 95th Street, Redmond, WA 98052 • (425) 883-3881

October 7, 2019

Jeff Jensen
Kane Environmental, Inc.
4015 13th Avenue West
Seattle, WA 98119

Re: Analytical Data for Project 82306
Laboratory Reference No. 1909-313

Dear Jeff:

Enclosed are the analytical results and associated quality control data for samples submitted on September 27, 2019.

The standard policy of OnSite Environmental, Inc. is to store your samples for 30 days from the date of receipt. If you require longer storage, please contact the laboratory.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning the data, or need additional information, please feel free to call me.

Sincerely,

David Baumeister
Project Manager

Enclosures

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**Case Narrative**

Samples were collected on September 27, 2019 and received by the laboratory on September 27, 2019. They were maintained at the laboratory at a temperature of 2°C to 6°C.

Please note that any and all soil sample results are reported on a dry-weight basis, unless otherwise noted below.

General QA/QC issues associated with the analytical data enclosed in this laboratory report will be indicated with a reference to a comment or explanation on the Data Qualifier page. More complex and involved QA/QC issues will be discussed in detail below.

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 1 of 2

Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-10:W** | | | | | |
| Laboratory ID: | 09-313-01 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Vinyl Chloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromomethane | ND | 0.31 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Iodomethane | ND | 2.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 2 of 2

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-10:W** | | | | | |
| Laboratory ID: | 09-313-01 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Tetrachloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *97* | *75-127* | | | | |
| *Toluene-d8* | *95* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *97* | *78-125* | | | | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 1 of 2

Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-12:W** | | | | | |
| Laboratory ID: | 09-313-02 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Vinyl Chloride | 0.87 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromomethane | ND | 0.31 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Iodomethane | ND | 2.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,2-Dichloroethene | 6.5 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichloroethene | 3.1 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 2 of 2

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-12:W** | | | | | |
| Laboratory ID: | 09-313-02 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Tetrachloroethene | 15 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *100* | *75-127* | | | | |
| *Toluene-d8* | *106* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *95* | *78-125* | | | | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 1 of 2

Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **EW-6:W** | | | | | |
| Laboratory ID: | 09-313-03 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Vinyl Chloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromomethane | ND | 0.31 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Iodomethane | ND | 2.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,2-Dichloroethene | 4.2 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichloroethene | 1.4 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 2 of 2

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **EW-6:W** | | | | | |
| Laboratory ID: | 09-313-03 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Tetrachloroethene | 4.7 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *103* | *75-127* | | | | |
| *Toluene-d8* | *88* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *102* | *78-125* | | | | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
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Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **EW-2:W** | | | | | |
| Laboratory ID: | 09-313-04 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Vinyl Chloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromomethane | ND | 0.31 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Iodomethane | ND | 2.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,2-Dichloroethene | 3.2 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichloroethene | 4.7 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
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| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **EW-2:W** | | | | | |
| Laboratory ID: | 09-313-04 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Tetrachloroethene | 16 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *99* | *75-127* | | | | |
| *Toluene-d8* | *103* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *81* | *78-125* | | | | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 1 of 2

Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **BC-3:W** | | | | | |
| Laboratory ID: | 09-313-05 | | | | | |
| Dichlorodifluoromethane | ND | 0.27 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Vinyl Chloride | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Bromomethane | ND | 0.37 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Iodomethane | ND | 2.3 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| (cis) 1,2-Dichloroethene | 0.34 | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Trichloroethene | 1.0 | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
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| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **BC-3:W** | | | | | |
| Laboratory ID: | 09-313-05 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Tetrachloroethene | 4.3 | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *100* | *75-127* | | | | |
| *Toluene-d8* | *95* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *100* | *78-125* | | | | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 1 of 2

Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-8:W** | | | | | |
| Laboratory ID: | 09-313-06 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Vinyl Chloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromomethane | ND | 0.31 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Iodomethane | ND | 2.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
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| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-8:W** | | | | | |
| Laboratory ID: | 09-313-06 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Tetrachloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *98* | *75-127* | | | | |
| *Toluene-d8* | *97* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *92* | *78-125* | | | | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 1 of 2

Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-13:W** | | | | | |
| Laboratory ID: | 09-313-07 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Vinyl Chloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromomethane | ND | 0.31 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Iodomethane | ND | 2.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,2-Dichloroethene | 0.97 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
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| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-13:W** | | | | | |
| Laboratory ID: | 09-313-07 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Tetrachloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *104* | *75-127* | | | | |
| *Toluene-d8* | *98* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *117* | *78-125* | | | | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
page 1 of 2

Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-7:W** | | | | | |
| Laboratory ID: | 09-313-08 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Vinyl Chloride | 27 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromomethane | ND | 0.31 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Iodomethane | ND | 2.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,2-Dichloroethene | 0.39 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,2-Dichloroethene | 33 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichloroethene | 4.1 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
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| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-7:W** | | | | | |
| Laboratory ID: | 09-313-08 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Tetrachloroethene | 0.51 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *100* | *75-127* | | | | |
| *Toluene-d8* | *101* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *102* | *78-125* | | | | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
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Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-9R:W** | | | | | |
| Laboratory ID: | 09-313-09 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Vinyl Chloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromomethane | ND | 0.31 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Iodomethane | ND | 2.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroform | 0.40 | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
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Project: 82306

**VOLATILE ORGANICS EPA 8260D**
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| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **Client ID:** | **RMW-9R:W** | | | | | |
| Laboratory ID: | 09-313-09 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Tetrachloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *98* | *75-127* | | | | |
| *Toluene-d8* | *94* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *103* | *78-125* | | | | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
**QUALITY CONTROL**
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Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB1002W1 | | | | | |
| Dichlorodifluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Vinyl Chloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromomethane | ND | 0.31 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Iodomethane | ND | 2.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Trichloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
**QUALITY CONTROL**
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| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB1002W1 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Tetrachloroethene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 10-2-19 | 10-2-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-2-19 | 10-2-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *104* | *75-127* | | | | |
| *Toluene-d8* | *100* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *105* | *78-125* | | | | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
**QUALITY CONTROL**
page 1 of 2

Matrix: Water
Units: ug/L

| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB1003W2 | | | | | |
| Dichlorodifluoromethane | ND | 0.27 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Chloromethane | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Vinyl Chloride | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Bromomethane | ND | 0.37 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Chloroethane | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Trichlorofluoromethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,1-Dichloroethene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Iodomethane | ND | 2.3 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Methylene Chloride | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| (trans) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,1-Dichloroethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 2,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| (cis) 1,2-Dichloroethene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Bromochloromethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Chloroform | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,1,1-Trichloroethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Carbon Tetrachloride | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,1-Dichloropropene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2-Dichloroethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Trichloroethene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2-Dichloropropane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Dibromomethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Bromodichloromethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 2-Chloroethyl Vinyl Ether | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| (cis) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| (trans) 1,3-Dichloropropene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
**QUALITY CONTROL**
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| Analyte | Result | PQL | Method | Date Prepared | Date Analyzed | Flags |
|---|---|---|---|---|---|---|
| **METHOD BLANK** | | | | | | |
| Laboratory ID: | MB1003W2 | | | | | |
| 1,1,2-Trichloroethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Tetrachloroethene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,3-Dichloropropane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Dibromochloromethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2-Dibromoethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Chlorobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,1,1,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Bromoform | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Bromobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,1,2,2-Tetrachloroethane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2,3-Trichloropropane | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 2-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 4-Chlorotoluene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,3-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,4-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2-Dichlorobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2-Dibromo-3-chloropropane | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2,4-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| Hexachlorobutadiene | ND | 1.0 | EPA 8260D | 10-3-19 | 10-3-19 | |
| 1,2,3-Trichlorobenzene | ND | 0.20 | EPA 8260D | 10-3-19 | 10-3-19 | |
| *Surrogate:* | *Percent Recovery* | *Control Limits* | | | | |
| *Dibromofluoromethane* | *102* | *75-127* | | | | |
| *Toluene-d8* | *104* | *80-127* | | | | |
| *4-Bromofluorobenzene* | *86* | *78-125* | | | | |

Date of Report: October 7, 2019
Samples Submitted: September 27, 2019
Laboratory Reference: 1909-313
Project: 82306

**VOLATILE ORGANICS EPA 8260D**
**QUALITY CONTROL**

Matrix: Water
Units: ug/L

| Analyte | Result | | Spike Level | | Source Result | Percent Recovery | | Recovery Limits | RPD | RPD Limit | Flags |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **MATRIX SPIKES** | | | | | | | | | | | |
| Laboratory ID: | 09-304-01 | | | | | | | | | | |
| | MS | MSD | MS | MSD | | MS | MSD | | | | |
| 1,1-Dichloroethene | **9.09** | **9.68** | 10.0 | 10.0 | ND | 91 | 97 | 57-135 | 6 | 15 | |
| Benzene | **9.48** | **9.77** | 10.0 | 10.0 | ND | 95 | 98 | 73-131 | 3 | 16 | |
| Trichloroethene | **10.2** | **9.01** | 10.0 | 10.0 | ND | 102 | 90 | 75-124 | 12 | 17 | |
| Toluene | **10.4** | **8.93** | 10.0 | 10.0 | ND | 104 | 89 | 84-123 | 15 | 19 | |
| Chlorobenzene | **10.1** | **10.0** | 10.0 | 10.0 | ND | 101 | 100 | 78-122 | 1 | 16 | |
| *Surrogate:* | | | | | | | | | | | |
| *Dibromofluoromethane* | | | | | | *104* | *105* | *75-127* | | | |
| *Toluene-d8* | | | | | | *111* | *96* | *80-127* | | | |
| *4-Bromofluorobenzene* | | | | | | *100* | *104* | *78-125* | | | |
| **SPIKE BLANKS** | | | | | | | | | | | |
| Laboratory ID: | SB1003W2 | | | | | | | | | | |
| | SB | SBD | SB | SBD | | SB | SBD | | | | |
| 1,1-Dichloroethene | **9.86** | **9.89** | 10.0 | 10.0 | | 99 | 99 | 63-130 | 0 | 17 | |
| Benzene | **9.87** | **9.75** | 10.0 | 10.0 | | 99 | 98 | 76-125 | 1 | 19 | |
| Trichloroethene | **9.82** | **9.72** | 10.0 | 10.0 | | 98 | 97 | 76-121 | 1 | 18 | |
| Toluene | **9.42** | **9.58** | 10.0 | 10.0 | | 94 | 96 | 80-124 | 2 | 18 | |
| Chlorobenzene | **10.1** | **10.1** | 10.0 | 10.0 | | 101 | 101 | 75-120 | 0 | 19 | |
| *Surrogate:* | | | | | | | | | | | |
| *Dibromofluoromethane* | | | | | | *102* | *100* | *75-127* | | | |
| *Toluene-d8* | | | | | | *96* | *97* | *80-127* | | | |
| *4-Bromofluorobenzene* | | | | | | *102* | *102* | *78-125* | | | |

OnSite Environmental Inc.

**Data Qualifiers and Abbreviations**

A - Due to a high sample concentration, the amount spiked is insufficient for meaningful MS/MSD recovery data.

B - The analyte indicated was also found in the blank sample.

C - The duplicate RPD is outside control limits due to high result variability when analyte concentrations are within five times the quantitation limit.

E - The value reported exceeds the quantitation range and is an estimate.

F - Surrogate recovery data is not available due to the high concentration of coeluting target compounds.

H - The analyte indicated is a common laboratory solvent and may have been introduced during sample preparation, and be impacting the sample result.

I - Compound recovery is outside of the control limits.

J - The value reported was below the practical quantitation limit. The value is an estimate.

K - Sample duplicate RPD is outside control limits due to sample inhomogeneity. The sample was re-extracted and re-analyzed with similar results.

L - The RPD is outside of the control limits.

M - Hydrocarbons in the gasoline range are impacting the diesel range result.

M1 - Hydrocarbons in the gasoline range (toluene-naphthalene) are present in the sample.

N - Hydrocarbons in the lube oil range are impacting the diesel range result.

N1 - Hydrocarbons in diesel range are impacting lube oil range results.

O - Hydrocarbons indicative of heavier fuels are present in the sample and are impacting the gasoline result.

P - The RPD of the detected concentrations between the two columns is greater than 40.

Q - Surrogate recovery is outside of the control limits.

S - Surrogate recovery data is not available due to the necessary dilution of the sample.

T - The sample chromatogram is not similar to a typical _____.

U - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

U1 - The practical quantitation limit is elevated due to interferences present in the sample.

V - Matrix Spike/Matrix Spike Duplicate recoveries are outside control limits due to matrix effects.

W - Matrix Spike/Matrix Spike Duplicate RPD are outside control limits due to matrix effects.

X - Sample extract treated with a mercury cleanup procedure.

X1- Sample extract treated with a sulfuric acid/silica gel cleanup procedure.

Y - The calibration verification for this analyte exceeded the 20% drift specified in methods 8260 & 8270, and therefore the reported result should be considered an estimate. The overall performance of the calibration verification standard met the acceptance criteria of the method.

Z -

ND - Not Detected at PQL
PQL - Practical Quantitation Limit
RPD - Relative Percent Difference

# Chain of Custody

Page 1 of 1

**OnSite Environmental Inc.**
Analytical Laboratory Testing Services
14648 NE 95th Street • Redmond, WA 98052
Phone: (425) 883-3881 • www.onsite-env.com

Company: Kane Environmental
Project Number: 82306
Project Name: Riverside HVOC
Project Manager: Jeff Jensen
Sampled by: JJ + IG

**Turnaround Request (in working days)**
(Check One)
☐ Same Day ☐ 1 Day
☐ 2 Days ☐ 3 Days
☒ Standard (7 Days)
☐ _____ (other)

**Laboratory Number:** 09-313

| Lab ID | Sample Identification | Date Sampled | Time Sampled | Matrix | Number of Containers | NWTPH-HCID | NWTPH-Gx/BTEX | NWTPH-Gx | NWTPH-Dx (☐ Acid / SG Clean-up) | Volatiles 8260C | Halogenated Volatiles 8260C | EDB EPA 8011 (Waters Only) | Semivolatiles 8270D/SIM (with low-level PAHs) | PAHs 8270D/SIM (low-level) | PCBs 8082A | Organochlorine Pesticides 8081B | Organophosphorus Pesticides 8270D/SIM | Chlorinated Acid Herbicides 8151A | Total RCRA Metals | Total MTCA Metals | TCLP Metals | HEM (oil and grease) 1664A | | | | | % Moisture |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | RMW-10:W | 9/27/19 | 0830 | GW | 3 | | | | | | X | | | | | | | | | | | | | | | | |
| 2 | RMW-12:W | | 0940 | | | | | | | | X | | | | | | | | | | | | | | | | |
| 3 | EW-6:W | | 1017 | | | | | | | | X | | | | | | | | | | | | | | | | |
| 4 | EW-2:W | | 1037 | | | | | | | | X | | | | | | | | | | | | | | | | |
| 5 | BC-3:W | | 1100 | | | | | | | | X | | | | | | | | | | | | | | | | |
| 6 | RMW-8:W | | 1240 | | | | | | | | X | | | | | | | | | | | | | | | | |
| 7 | RMW-13:W | | 1240 | | | | | | | | X | | | | | | | | | | | | | | | | |
| 8 | RMW-7:W | | 1412 | | | | | | | | X | | | | | | | | | | | | | | | | |
| 9 | RMW-9R:W | | 1440 | | | | | | | | X | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | |

| | Signature | Company | Date | Time |
|---|---|---|---|---|
| Relinquished | | Kane | 9/27/19 | 1543 |
| Received | | OnSite | 9-27-19 | 1543 |
| Relinquished | | | | |
| Received | | | | |
| Relinquished | | | | |
| Received | | | | |

**Comments/Special Instructions**

Data Package: Standard ☑ Level III ☐ Level IV ☐

Chromatograms with final report ☐ Electronic Data Deliverables (EDDs) ☑

Reviewed/Date

Reviewed/Date

# ATTACHMENT G

# ECOLOGY COMMENTS

**From:** Becker, Sunny (ECY)
**To:** Nduta Mbuthia; Arnie Sugar
**Cc:** Essko, Ann (ATG)
**Subject:** FW: Bothell Riverside HVOC - FS & dCAP
**Date:** Wednesday, May 16, 2018 2:09:18 PM

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Hi Nduta and Arnie,

Ecology is providing the following comments on the draft Feasibility Study Report Bothell Riverside Site HVOC Area" (FS), dated February 7, 2018. I would like the City provide written responses to the comments before we have a meeting, and before the City revise the FS report.

- The pump and treat system does not appear to be very effective, based on the data collected in the last nine years. The earliest groundwater data available was in 2009. Vinyl chloride concentration was 22ppb in monitoring well RMW7 located adjacent to the Sammamish River. Based on this data, Ecology requested an interim action be conducted to prevent vinyl chloride from discharging into the Snohomish River. The most recent groundwater data collected in January, 2018 showed vinyl chloride concentration of 20ppb at RMW7. Nine years later, vinyl chloride concentration in RMW7 appears to remain the same.

- Over the last nine years, vinyl chloride concentrations in monitoring well RMW7 varied quarterly. The concentration decreased, and then re-bounded. It does not appear to have a clear trend.

- The FS presented linear regression indicating vinyl chloride in RMW7 are decreasing over the time, and vinyl chloride would meet MTCA cleanup level in 15 years. However, the linear regression did not use 2009 and 2013 data. The regression appears to show a "decreasing trend" from the highest vinyl chloride concentration of 47 ppb to the current concentrations of 20ppb. The highest concentration of 47ppb was detected after pump and treat system had operated for nine months, and was higher than the concentrations of 22ppb in 2009 and 9.3ppb in 2013 before the system was turned on. The linear regression presented in the FS do not appear to have evaluated the effectiveness of the pump and treat system accurately.

- In addition, the concentration of vinyl chloride decreased from 22 ppb in 2009 to 9.3 ppb in May 2013 before the pump and treat system was installed and in operation in December 2013. This may indicate the pump and treat system has little effect or unknown effect on reducing solvent in the groundwater.

- It is also questionable if the extraction system has removed much of PCE, since the PCE concentration was substantially reduced from 50ppb in 2009 to 9ppb in May 2013 before the start of the pump and treat system in December 2013.

- Ecology acknowledges that the City made several attempts to locate a potential

source to the solvent plume at RiversideHVOC site, and no obvious source has been located. The highest solvent contamination in the groundwater at RiversideHVOC site appear to be located in the vicinity of monitoring well RMW12 and recovery well EW3.

- Ecology recommends the City evaluate and propose other cleanup measurement(s), in addition to continue operating the existing pump and treat system to expedite the cleanup process.

- The FS and dCAP should provide performance monitoring plan, separately from long term compliance monitoring plan. The FS should propose monitoring wells to be monitored, monitoring frequency and duration for evaluating performance of proposed cleanup actions, separately from monitoring wells, monitoring frequency and duration for long term compliance monitoring. The FS should also provide criteria to be used when transitioning from performance monitoring to compliance monitoring.

- Page 5 -6 and Table 2 – MTCA cleanup levels are not ARARs for soil, groundwater, surface water, or air so the County should redo Table 2 to omit things that aren't actually ARARs and to identify the specific rules that the City will apply as ARARs, rather than just citing to whole rule chapters. Note that there appears to be an inconstancy between Table 2's list of ARARs and Table 3's list of ARARs.

- Page 6 – If, as noted above, buildings are possible, then vapor issues might exist and, if they do, would have to be added to the risk assessment list.

- Pages 7-8 – The FS doesn't show how it complied with the specific applicable rules. In other words, I can't tell – and the public won't be able to tell – how the proposed CULs were derived. Here are some specific issues that I've identified but there could be more problems that I don't have the technical expertise to identify:

    - The FS states that GW isn't currently used for drinking water and that there are no water wells near the site but this doesn't seem to actually address the required analysis in WAC 173-340-720, which creates a presumption that GW shall be classified as potable unless the City demonstrates that the GW isn't a potential future source of drinking water. Where is this analysis?
    - The FS doesn't say whether the City set Method B cleanup levels for potable water under WAC 173-340-720(4) or for nonpotable water under WAC 173-340-720(6). Maybe this information can derived from working backwards from Table 3 but I can't tell and it seems like this point should be expressly stated in the FS
    - Where is the required statement of the highest present and future beneficial use for surface waters per WAC 173-340-730(1)(a) and WAC 173-201A?

- The City used surface water Standard Method B but its statement about what the CULs must be as stringent as is incomplete and inaccurate. If some of the sections of WAC 173-340-730(3)(b) don't apply for some reason, the FS should explain why.
- The City doesn't effectively explain or justify how the GW CULs it proposes are at least as stringent as SW standards as required by WAC 173-340-720(4)(b) and WAC 173-340-730(3), including HH criteria.
- Table 3 appears to be problematic for several reasons. First, it includes references to the National Toxics Rule, which I understand isn't applicable in Washington. Second, I don't see references to 40 CFR 131.45 or the standards it contains for vinyl chloride or other hazardous substances that may be included. Third, I'm unware of any authority for the City to unilaterally decide not to research some standards, i.e. why should it be able to say "NR" not researched." Fourth, what is the evidence to support the conclusion about PQL. Together, all of these issues makes me worry that the City hasn't adequately addressed the impact of surface water standards – including human health criteria – on the CULs.

- Page 8 – TEE. This section appears to be completely wrong – it looks like it was lifted verbatim from the Landing FS. According to the redevelopment map on the City's website, the south part of the Site will be part of the Park and the Park appears to meet the definition of contiguous undeveloped land in WAC 173-340-7491(c)(iii). Not only do the distances referenced in the section appear to be applicable to some other Site, but contrary to what this paragraph says, undeveloped land doesn't mean "wooded" land. It means land that isn't covered by buildings, roads, paved areas or other barriers that would prevent wildlife from feeding, etc. Contiguous undeveloped land means an area of undeveloped land that isn't divided into smaller areas by highways, extensive paving or similar structures. Roads and sidewalks that don't reduce potential use of the area by wildlife doesn't divide contiguous land. Thus, it appears to me that the City must do a proper TEE analysis and to adequately explain its reasoning.

- Pages 8-9 – Points of Compliance. The text in Section 2.10.2 on GW POC fails to comply with the requirement in WAC 173-340-720(6)(c) that conditional points of compliance can only be allowed where the PLP demonstrates that it is not practicable to meet a standard POC within a reasonable timeframe. The text also fails to demonstrate that the proposed conditional POC is as close as practicable to the source of the hazardous substances. The rule says that the text must demonstrate that the proposed conditional POC is as close as practical <u>to the source</u> of the hazardous substances.

- Pages 9-10 -- Remedial Action Objectives (RAOs). RAOs are a CERCLA concept and are not found in MTCA. I suggest deletion of this section.

- Pages 11-27 – Standard for screening alternatives. The text at page 11 misstates the standard for screening alternatives. The text says on page 11 the test for screening "technologies" is technical "feasibility" and the discussion from pages 12 – 27 appears to apply an "are there drawbacks" test. However, WAC 173-340-350(8)(c) says the test is whether the "alternatives" (defined as one or more CU action component that individually or in combination achieves the CU action; components go beyond just "technologies") either so clearly don't meet the minimum requirements of WAC 173-340-360 on selection of CU actions (including clearly disproportionate costs) that further analysis is unnecessary or are not technically possible at the site (which means capable of being designed, constructed and implemented regardless of cost). The text at pages 11 – 27 describes and discusses various alternatives but doesn't actually discuss or apply the standard that's in the rules. On page 27 it again fails to apply the proper standard for screening or explain how excluded alternatives meet the applicable standard for exclusion. Thus, it appears that alternatives may have been improperly excluded from further consideration. At a minimum, the text does not explain how the analysis complies with the rules.

- Page 28-30 – Evaluation of alternatives. Given the potential problems with the analysis on pages 11 – 27, Section 4 may be building on incorrect or incomplete information. Moreover, the text (including Table 4) isn't completely accurate or consistent.

    - Protect human health and the environment – Section 4.1.1 says this requires an alternative to provide a minimum acceptable level of protection, i.e., a sufficiently low residual risk to human and ecological receptors and that alternatives are to be compared by relative degree of protection. Section 4.1.1 also says that this comparison of the relative degree of protection may include consideration of compliance with cleanup standards as well as risks. Section 4.1.1 says that all of the alternatives will protect HHE but does not disclose the relative amounts of protection supplied by each alternative other than to say, without quantification, that air sparging's compliance with cleanup standards is "not as certain." Table 4 purports to summarize the text in Section 4 but doesn't actually do so – to the contrary, Table 4 appears to in places contradict what Section 4 says. For example, Table 4 seems to say that the standard for protecting HHE is "reducing HVOC discharge to the river" which is not what Section 4.1.1 says. Section 4.1.1 also says that the two pump and treat alternatives would "be more likely" to be protective of surface water quality when the pertinent issue seems to be whether the two pump and treat alternatives will actually protect surface water quality.

    - Compliance with cleanup standards. Section 4.1.2 establishes a hierarchy between the two pump and treat alternatives but Table 4 treats them as equally protective.

- Comply with ARARs – Since the ARARs are not completely correct, the conclusions in Section 4.1.4 are premature and probably also incorrect because they are based on an incorrect and inadequate list of ARARs.

- Provide for compliance monitoring – Section 4.1.4 only addresses the requirements of WAC 173-340-410 but is silent about the other WACs required by be addressed by WAC 173-340-360, i.e., WACs 173-340-720 through -760. In addition, Section 4.1.4 doesn't explain or justify its silence about protection monitoring.

- Permanent solutions to maximum extent practicable – Section 4.2 just recites some of the MTCA rule language but doesn't contain all of the requirements and doesn't apply those requirements regarding this site. There is no Disproportionate Cost Analysis. Table 4 contains some general statements about HVOCs discharged to the air but doesn't allow meaningful comparison among the alternatives – are some alternatives more permanent than others?

- Restoration timeframe – Section 4.2 does not discuss or apply the requirements in WAC 173-340-360(4) or explain the conclusion in Table 4 that the alternative would "have similar restoration timeframes." What are those timeframes and why are they acceptable? Section 5.1.2 says the restoration timeframe is 15 years based on current trends but still doesn't apply the analysis required in the rules.

- Page 30 – Evaluation of alternatives. Section 4.3 proposes pump and discharge to sanitary sewer as the preferred alternative. However, the justification that this alternative is "the most permanent, shortest timeframe, and most protective" doesn't address the threshold requirements at all and isn't well supported by the text on "other requirements." To the contrary, Table 4 concludes that the three alternatives are identical except that air sparging is less certain to comply with cleanup standards and that pump and discharge to the sewer may in some unquantified way release less HVOCs to the air and possibly cause less public concern.

- Pages 31-32 – To the degree that this text repeats concepts and conclusions from pages 1 – 30, the text in Section 5 needs to be modified to be consistent.

Sunny

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**From:** Nduta Mbuthia [mailto:Nduta.Mbuthia@bothellwa.gov]
**Sent:** Thursday, February 08, 2018 10:10 AM
**To:** Becker, Sunny (ECY) <HLIN461@ECY.WA.GOV>