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Two Union Square
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Memorandum

To: Sunny Becker, Washington State Department of Ecology
Copies: Scott Adamek, City of Bothell
From: Kristin Anderson, Floyd|Snider
Date: January 3, 2025
Project ID: CoB-OnCall Ultra
Re: **Ultra Custom Care Cleaners Site Supplemental Groundwater Monitoring**

This memorandum presents the results of recent supplemental groundwater monitoring performed at the Ultra Custom Care Cleaners Site (Site) to evaluate groundwater contaminant conditions during implementation of the Site cleanup action and provide recommendations to optimize the remaining cleanup action components.

BACKGROUND

The Site encompasses the Source Property where former dry cleaning operations caused releases of the dry cleaning solvent tetrachloroethene (PCE) in soil, as well as downgradient properties where groundwater is impacted by PCE and its chlorinated volatile organic compound (CVOC) breakdown products including vinyl chloride. The cleanup action for the Site, as described in the Cleanup Action Plan (CAP; Floyd|Snider 2022) and Engineering Design Report (EDR; Floyd|Snider 2023) utilizes two primary treatment technologies to address contamination resulting from former dry cleaning operations at the Site:

- Soil excavation in three areas at the Source Property, with supplemental mixing of zero-valent iron (ZVI) in the saturated zone to approximately 15 feet below ground surface (bgs) within the deepest excavation area
- Treatment of downgradient shallow and deep groundwater using in situ treatment barriers composed of colloidal activated carbon (Plumestop), ZVI and *Dehalococcoides* bacterial cultures (Bio-Dechlor Inoculum [BDI Plus]), supplemented with targeted treatment zones using soluble organic carbon and BDI Plus

The excavation scope, including ZVI soil mixing, was completed in December 2023 on the Source Property, which is owned by the City of Bothell (City). However, the implementation of downgradient in situ treatment barriers has been delayed while the City secures easements to access two privately owned properties where in situ treatment barriers will be installed per the CAP.

In October 2024, additional groundwater samples were collected at key monitoring well locations at the Site in coordination with Ecology to assess groundwater PCE, vinyl chloride, and geochemical conditions after excavation and ZVI soil mixing. ZVI was expected to cause rapid and complete abiotic degradation of source PCE contamination, with less pronounced effects on vinyl chloride, which is less effectively degraded by ZVI. The addition of ZVI was also expected to produce reducing conditions (i.e., a tendency toward accepting electrons) in groundwater. The effects of soil mixing were also expected to be localized because ZVI is relatively immobile and does not have a tendency to migrate with groundwater.

GROUNDWATER SAMPLE COLLECTION

Groundwater sampling was conducted in accordance with a sampling plan approved by Ecology via email on August 26, 2024.

Groundwater samples were collected from key wells within the groundwater CVOC Areas of Concern at the Site, based on their proximity to the planned in situ treatment barriers:

- BB-2
- UCCMW-7
- UCCMW-18
- UCCMW-29
- UCCMW-31D
- UCCMW-34D
- UCCMW-36D

The locations of the wells, planned locations of in situ treatment barriers, and groundwater key CVOC and geochemical conditions are shown on Figure 4.2 of the EDR, which is provided as Attachment 1 to this memorandum.

Wells were sampled and analyzed for targeted CVOCs and natural attenuation parameters using low-flow sampling methodology and approved laboratory methods provided in the EDR Quality Assurance Project Plan (QAPP). Field samples and field quality control samples collected per the QAPP were analyzed for the following:

- CVOCs PCE, trichloroethene, *cis*-1,2-dichloroethene (DCE), and *trans*-1,2-DCE by USEPA Method 8260D and vinyl chloride by USEPA Method 8260D SIM
- Sulfate by ASTM D516-11
- Nitrate and nitrite by USEPA Method 353.2
- Sulfide by SM 4500-52
- Dissolved gases (ethene, ethane, and methane) by RSK 175

Additionally, samples were collected and analyzed for the following:

- Total iron by USEPA Method 200.7
- Dissolved iron by USEPA Method 6010D

Key groundwater stabilization and geochemical field parameters were also monitored and recorded during sampling including pH, dissolved oxygen (DO), oxidation–reduction potential (ORP), conductivity, and temperature.

A Stage 2A Data Quality Review was performed on the laboratory analytical data in accordance with the QAPP. All data, as qualified, were determined to be acceptable for use. Laboratory analytical reports are provided in Attachment 2.

GROUNDWATER ANALYTICAL RESULTS

The results of groundwater sampling were overall consistent with the effects expected due to ZVI soil mixing on the Source Property, which included reductions of PCE concentrations and more strongly reducing geochemical conditions in a localized area surrounding the soil mixing. A comparison of analytical results from the 2024 supplemental groundwater monitoring with the most recent prior sampling event completed in 2020 is presented in Table 1. Results for key parameters including PCE and vinyl chloride concentrations, iron, and geochemical field parameters (DO and ORP) are discussed in further detail in the following sections.

Tetrachloroethene

PCE decreased most significantly at shallow well UCCMW-18, which is immediately downgradient of the ZVI soil mixing area. In this area, PCE decreased from 130 micrograms per liter (µg/L; 26 times the cleanup level [CUL] of 5 µg/L) to 1.8 µg/L (less than the CUL). PCE also decreased from 9.2 µg/L to non-detect at shallow well UCCMW-29, which was the closest downgradient-adjacent well where PCE previously exceeded the CUL in 2020. The decrease at UCCMW-29 is also attributable to upgradient degradation of PCE. PCE was previously addressed by interim measures for groundwater treatment at UCCMW-7; however, a slight decrease from 1.4 µg/L (less than the CUL) to non-detect was also observed at this location.

Farther downgradient, more modest decreases in PCE concentrations occurred at shallow-to-deep transition zone and deep wells. This observed decrease may be influenced by degradation of some PCE source upgradient but may also be reflective of the overall variability of groundwater PCE conditions.

Vinyl Chloride

Vinyl chloride remained relatively stable compared to 2020 sampling. A decrease of vinyl chloride at UCCMW-18, where the detected concentration of 2.8 µg/L in 2020 was reduced to 0.55 µg/L in 2024, is likely due to ZVI soil mixing immediately upgradient resulting in decreases of PCE

source contamination through abiotic destruction, which does not produce CVOC breakdown products. However, the changes at other wells are most likely indicative of the overall variability of groundwater vinyl chloride conditions and the distribution of vinyl chloride CUL exceedances was unchanged from 2020.

Iron

The distribution of total and dissolved iron provide a general indication of the distribution of ZVI. Iron data were not collected in 2020; however, iron concentrations are expected to be relatively consistent across the Site, and large deviations from the average can, therefore, be used to determine locations that may be influenced by ZVI.

Iron was most elevated relative to average concentrations (ranging from not detected to less than 200 µg/L) at UCCMW-18, where total and dissolved iron were 20,000 and 18,000 µg/L, respectively. Lesser iron concentrations that were still elevated relative to other Site wells, indicating minor potential ZVI influence, were also observed at UCCMW-7 and UCCMW-29.

Geochemistry

Geochemical indicators of reducing conditions include relatively little DO (generally less than approximately 0.5 milligrams per liter [mg/L]) and generally negative ORP (measured in millivolts [mV]). The most significant change in geochemistry occurred at UCCMW-29, where in 2024 DO decreased from 7.29 mg/L in 2020 to 0.53 µg/L and a corresponding decrease in ORP from 118.7 to -122.3 mV also occurred. These effects are attributed to the influence of upgradient ZVI soil mixing. More modest decreases in DO were also measured at BB-2 and UCCMW-34D; however, these were not accompanied by corresponding decreases in ORP and are likely indicative of natural variability in groundwater rather than effects of ZVI.

RECOMMENDATIONS FOR IN SITU TREATMENT IMPLEMENTATION

The effects of ZVI soil mixing, as described in previous sections, were observed in the vicinity of in situ treatment Barrier 1 and Barrier 2 and supplemental treatment zones TZ 1 and TZ 2. Recommendations for each of these treatment components are presented in the following sections. A summary of key groundwater condition changes and recommendations for in situ treatment implementation are additionally presented in Figure 1.

Barrier 1

The primary treatment components for Barrier 1, as detailed in the EDR, include PlumeStop, sulfidated micro ZVI (S-mZVI), and BDI Plus applied over a treatment depth of 9 to 22 feet bgs. This barrier was designed to trap, or sorb, dissolved source PCE using PlumeStop and allow rapid abiotic degradation by S-mZVI. BDI Plus was added with the goal of supplementing existing bacterial colonies Site-wide.

Although ZVI soil mixing was highly effective in decreasing PCE, it is expected that diffusion of sorbed contamination to groundwater will continue to occur in this area of the plume that was historically most contaminated by PCE. Additionally, the depth of the soil mixing was limited to approximately 15 feet, and PCE flux was measured in deeper intervals to 22 feet bgs during pre-engineering design sampling. Therefore, application of PlumeStop with S-mZVI and BDI Plus as described in the EDR is still recommended to provide ongoing sorption and treatment of PCE.

TZ 1 and TZ 2

The primary treatment components for TZ 1 and TZ 2, as detailed in the EDR, are soluble organic carbon and BDI Plus applied over a treatment depth of 6 or 7 to 18 feet bgs. These supplemental treatment zones were originally located immediately upgradient of the Ranch Drive-In and Speedy Glass buildings within the Ranch Drive-In property, where monitoring results indicated that groundwater underlying the buildings had cleanup level exceedances for PCE or vinyl chloride. Organic carbon provides donor electrons to promote biotic degradation by reductive dechlorination, which is accomplished most efficiently by *Dehalococcoides* bacteria.

After ZVI soil mixing, PCE concentrations declined to less than the cleanup level or not detected at UCCMW-7 and UCCMW-29 upgradient of the buildings and vinyl chloride also decreased. Based on these results, relocation of TZ 1 and TZ 2 farther upgradient is recommended to increase dispersion of the mobile treatment material into the remaining vinyl chloride plume, which is present at relatively low concentrations.

Barrier 2

The primary treatment components for Barrier 2, as detailed in the EDR, include PlumeStop, S-mZVI, and BDI Plus applied over a treatment depth of 7 to 27 feet bgs.

As described above for TZ 1 and TZ 2, PCE concentrations declined to less than cleanup levels in the area upgradient of Barrier 2, and only vinyl chloride remains at concentrations exceeding the cleanup level. Given the absence of PCE, abiotic degradation of remaining contamination by S-mZVI is expected to be slow, and biotic reductive dechlorination is the preferred mechanism for treatment of vinyl chloride. Therefore, soluble organic carbon (Aquifix) is proposed in Barrier 2 to promote biotic degradation and a lesser amount of S-mZVI is proposed for the purposes of maintaining reducing geochemical conditions. PlumeStop and BDI Plus are proposed as described in the EDR to allow for sorption and treatment of the remaining vinyl chloride.

REFERENCES

Floyd|Snider. 2022. *Ultra Custom Care Cleaners Site Cleanup Action Plan.* Prepared for City of Bothell. November.

_____. 2023. *Ultra Custom Care Cleaners Site Engineering Design Report.* Prepared for City of Bothell. July.

LIST OF ATTACHMENTS

Table 1	Summary of Groundwater Quality Data 2020–2024
Figure 1	Summary of Groundwater Data and In Situ Treatment Recommendations
Attachment 1	Engineering Design Report Figure 4.2
Attachment 2	Laboratory Analytical Report

Table

Table 1
Summary of Groundwater Quality Data 2020–2024

	Analyte Class	CVOCs					Conventionals			
	Analyte	Tetrachloroethene	Trichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl chloride	Nitrate	Nitrite	Sulfate	Sulfide
	CAS No.	127-18-4	79-01-6	156-59-2	156-60-5	75-01-4	14797-55-8	14797-65-0	14808-79-8	18496-25-8
	CUL	5	5	70	100	0.2	--	--	--	--
	Unit	µg/L	µg/L	µg/L	µg/L	µg/L	mg-N/L	mg-N/L	mg/L	mg/L
Sample Name	Sample Date									
BB-2										
BB-2-031120	3/11/2020	**80**	0.97	0.60	0.40 U	0.046				
BB-2-092024	9/20/2024	**64**	2.4	1.7	0.40 U	0.15	0.32	0.020 U	10	0.050 UJ
UCCMW-7										
UCCMW-7-031020	3/10/2020	1.4	1.3	13	0.20 U	**1.9**				
UCCMW-7-092024	9/20/2024	0.20 U	0.20 U	4.2	0.20 U	**1.3**	0.15	0.020 U	18	0.050 UJ
UCCMW-18										
UCCMW-18-031120	3/11/2020	**130**	1.7	19	1.0 U	**2.8**				
UCCMW-99-031120	3/11/2020	**130**	1.9	19	1.0 U	**2.5**				
UCCMW-18-092024	9/20/2024	1.8	1.0	2.1	0.20 U	**0.55**	0.36	0.020 U	54	0.050 UJ
UCCMW-29										
UCCMW-29-071320	7/13/2020	**9.2**	0.20 U	0.20 U	0.20 U	0.020 U				
UCCMW-29-092024	9/20/2024	0.20 U	0.20 U	0.20 U	0.20 U	0.020 U	0.099	0.020 U	5.0 U	0.050 UJ
UCCMW-31D										
UCCMW-31D-071320	7/13/2020	**25**	0.20 U	6.6	0.20 U	**0.24**				
UCCMW-31D-092024	9/20/2024	**21**	0.27	12	0.20 U	**1.8**	0.31	0.020 U	25	0.050 UJ
UCCMW-34D										
UCCMW-34D-072120	7/21/2020	**18**	0.20 U	0.20 U	0.20 U	0.020 U				
UCCMW-34D-092024	9/20/2024	**13**	0.20 U	0.20 U	0.20 U	0.020 U	1.4	0.020 U	26	0.050 UJ
UCCMW-36D										
UCCMW-36D-071320	7/13/2020	**24**	0.20 U	19	0.20 U	**0.93**				
UCCMW-99-071320	7/13/2020	**24**	0.20 U	20	0.20 U	**0.92**				
UCCMW-36D-092024	9/20/2024	**21**	1.7	11	0.20 U	**0.27**	0.052	0.020 U	23	0.050 UJ

Notes:

Analytical results and CULs are rounded to two significant figures; field parameter measurements are values presented by the instrument.

Blank cells are intentional.

-- Not available.

RED/BOLD Analyte was detected at a concentration the exceeds the CUL.

Abbreviations:

°C Degrees Celsius
CAS Chemical Abstracts Service
CUL Cleanup level
CVOC Chlorinated volatile organic compound
µg/L Micrograms per liter
µS/cm Microsiemens per centimeter
mg/L Milligrams per liter
mg-N/L Milligrams of nitrogen per liter
mV Millivolts
NTU Nephelometric turbidity units
ORP Oxidation–reduction potential

Qualifiers:

J Analyte was detected; concentration is an estimate.
U Analyte was not detected at the associated reporting limit.
UJ Analyte was not detected at the associated reporting limit, which is an estimate.

Table 1
Summary of Groundwater Quality Data 2020–2024

	Analyte Class	Dissolved Gases			Total Metals	Dissolved Metals	Field Parameters					
	Analyte	Ethane	Ethene	Methane	Iron	Iron	Dissolved Oxygen	ORP	pH	Specific Conductance	Temperature	Turbidity
	CAS No.	74-84-0	74-85-1	74-82-8	7439-89-6	7439-89-6	--	--	pH	--	--	--
	CUL	--	--	--	--	--	--	--	--	--	--	--
	Unit	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	mV	pH	µS/cm	°C	NTU
Sample Name	**Sample Date**											
BB-2												
BB-2-031120	3/11/2020	0.22 UJ	0.29 UJ	2.0 J			2.84	97.8	6.49			3.24
BB-2-092024	9/20/2024	0.56 U	0.58 U	90	58	56 U	0.31	80.7	6.22	295.3	18.6	0.98
UCCMW-7												
UCCMW-7-031020	3/10/2020	0.22 UJ	0.29 UJ	1,000 J			0.53	-42.9	6.23			2.7
UCCMW-7-092024	9/20/2024	0.56 U	0.58 U	590	6,700	6,900	0.28	-9.1	6.39	345.4	18.2	1.18
UCCMW-18												
UCCMW-18-031120	3/11/2020	0.22 UJ	2.3 J	1,300 J								
UCCMW-99-031120	3/11/2020	0.22 UJ	2.2 J	1,400 J			0.55	-48.3	6.21			5.7
UCCMW-18-092024	9/20/2024	0.56 U	0.68	1,800	20,000	18,000	0.42	-75.9	6.24	331.3	19.3	3.66
UCCMW-29												
UCCMW-29-071320	7/13/2020	0.22 U	0.29 U	83			7.29	118.7	6.55			9.74
UCCMW-29-092024	9/20/2024	0.56 U	0.58 U	330	670	230	0.53	-122.3	7.47	258.8	16.9	11.07
UCCMW-31D												
UCCMW-31D-071320	7/13/2020	3.3 U	4.3 U	1,200			0.28	90.1	6.21			15.98
UCCMW-31D-092024	9/20/2024	0.56 U	0.58 U	68	50 U	56 U	0.42	101.1	6.28	308.7	17.3	1.26
UCCMW-34D												
UCCMW-34D-072120	7/21/2020	6.7 U	8.7 U	2,600			2.02 JS	57.5	6.18			2.2
UCCMW-34D-092024	9/20/2024	0.56 U	0.58 U	59	50 U	56 U	0.32	84.3	6.13	284.4	16.2	1.45
UCCMW-36D												
UCCMW-36D-071320	7/13/2020	2.2 U	2.9 U	840			0.44	74.9	6.17			2.22
UCCMW-99-071320	7/13/2020	2.2 U	2.9 U	860								
UCCMW-36D-092024	9/20/2024	0.56 U	0.58 U	61	180	150	0.39	67.2	6.25	342.2	17	1.15

Notes:

Analytical results and CULs are rounded to two significant figures; field parameter measurements are values presented by the instrument.

Blank cells are intentional.

-- Not available.

RED/BOLD Analyte was detected at a concentration the exceeds the CUL.

Abbreviations:

°C Degrees Celsius
CAS Chemical Abstracts Service
CUL Cleanup level
CVOC Chlorinated volatile organic compound
µg/L Micrograms per liter
µS/cm Microsiemens per centimeter
mg/L Milligrams per liter
mg-N/L Milligrams of nitrogen per liter
mV Millivolts
NTU Nephelometric turbidity units
ORP Oxidation–reduction potential

Qualifiers:

J Analyte was detected; concentration is an estimate.
U Analyte was not detected at the associated reporting limit.
UJ Analyte was not detected at the associated reporting limit, which is an estimate.

Figure

Legend

- Ultra Custom Care Cleaners Source Property
- Parcel Boundary

Cleanup Action Components
(Proposed Adjustment in Red)

- Source Area Soil Excavation
- Source Property Treatment Zone ZVI Soil Mixing
- Supplemental Treatment Zone Injection Point
- In Situ Treatment Barrier

Sample Location

- Monitoring Well Analyzed in 2024

Exceedance Factor

- >1x–2x CUL
- >2x–10x CUL
- >10x CUL

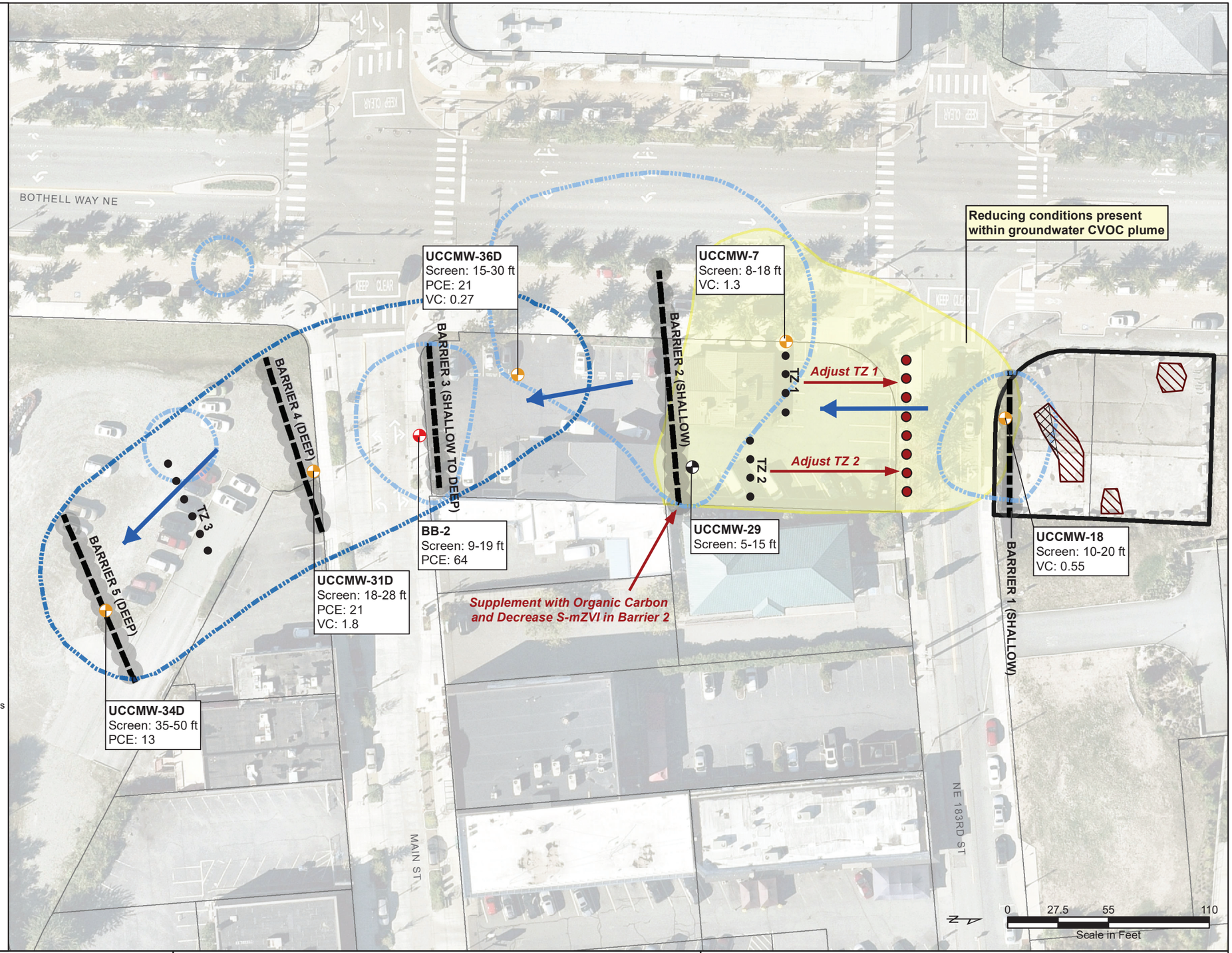
Groundwater CVOC Plumes

- Shallow Groundwater Plume
- Deep Groundwater Plume
- Groundwater Flow Direction

Groundwater Cleanup Levels
PCE: 5.0 µg/L
TCE: 5.0 µg/L
cis-1,2-DCE: 70 µg/L
trans-1,2-DCE: 100 µg/L
VC: 0.20 µg/L

Notes:
- All results shown are the most recent concentrations and are in µg/L. Qualifiers are omitted.
- Location color is determined using the maximum exceedance factor of the most recent event.
- Well screen intervals are shown in ft bgs for locations with CVOCs exceeding the CULs.
- Well locations were surveyed by Floyd|Snider in 2020.
- Aerial imagery obtained from Nearmap, 2020.

Abbreviations:
bgs = Below ground surface
CUL = Cleanup level
CVOC = Chlorinated volatile organic compound
DCE = Dichloroethene
ft = Feet
µg/L = Micrograms per liter
PCE = Tetrachloroethene
S-mZVI = Sulfidated micro zero-valent iron
TCE = Trichloroethene
TZ = Treatment zone
VC = Vinyl chloride
ZVI = Zero-valent iron



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Supplemental Groundwater Monitoring
Ultra Custom Care Cleaners Site
Bothell, Washington

Figure 1
Summary of Groundwater Data and
In Situ Treatment Recommendations

I:\GIS\Projects\COBothell-Ultra\MXD\2024_GWMonitoring_Memo\01-MapDocuments\Figure 1 Summary of Groundwater Data and In Situ Treatment Recommendations.mxd
1/3/2025

Attachment 1
Engineering Design Report Figure 4.2

Legend

- Ultra Custom Care Cleaners Source Property
- Parcel Boundary

Cleanup Action Components

- Source Area Soil Excavation
- Source Property Treatment Zone ZVI Soil Mixing
- Supplemental Treatment Zone Injection Point
- In Situ Treatment Barrier

Sample Location

- Monitoring Well Analyzed in 2020

Exceedance Factor

- >1x–2 CUL
- >2x CUL
- >10x CUL

MIP Locations

- Low-Level
- High-Level

MIP Response

- Small Response
- Moderate/Large Response

Groundwater CVOC Plumes

- Shallow Groundwater Plume
- Deep Groundwater Plume
- Groundwater Flow Velocity and Direction
- Previous IM Injection Location

Notes:

- All results shown are the most recent concentrations and are in µg/L. CVOC flux rates are in µg/m^2/day. Qualifiers are omitted.
- Location color is determined using the maximum exceedance factor of the most recent event.
- Well screen intervals are shown in ft bgs for locations with CVOCs exceeding the CULs.
- Peak response intervals are shown in ft bgs for MIP locations with small or moderate/large response.
- Well locations were surveyed by Floyd|Snider in 2020.
- Aerial imagery obtained from Nearmap, 2020.

Abbreviations:

bgs = Below ground surface
CUL = Cleanup level
CVOC = Chlorinated volatile organic compound
DCE = Dichloroethene
ft = Feet
IM = Interim measure
µg/L = Micrograms per liter
µg/m^2 = micrograms per square meter
MIP = Membrane interface probe
PCE = Tetrachloroethene
TCE = Trichloroethene
TZ = Treatment zone
VC = Vinyl chloride
ZVI = Zero-valent iron

BOTHELL WAY NE

UCCMW-32
Screen: 15-25 ft
PCE: 8.6

MIP-05
15-32 ft

UCCMW-36D
Screen: 15-30 ft
PCE: 24
VC: 0.92

BI-3
Screen: 5-10 ft
VC: 0.52

MIP-08
15-18 ft

UCCMW-25
Screen: 8-18 ft
VC: 0.75

UCCMW-7
Screen: 8-18 ft
VC: 1.9

MIP-10
15-18 ft

Reducing conditions present within groundwater CVOC plume

UCCMW-17
Screen: 10-20 ft
PCE: 21

MIP-12
10-35 ft

MIP-13
15-32ft

BARRIER 4 (DEEP)

BARRIER 3 (SHALLOW TO DEEP)

BARRIER 2 (SHALLOW)

100-200 ft/year

75-100 ft/year

300-500 ft/year

TZ 1

TZ 2

TZ 3

MIP-02
30-50 ft

BARRIER 5 (DEEP)

MIP-07
8-13 ft

BB-2
Screen: 9-19 ft
PCE: 80
Flux: 1.42-6.07

UCCMW-21
Screen: 12-22 ft
VC: 0.25

UCCMW-18
Screen: 10-20 ft
PCE: 130
VC: 2.8

BARRIER 1 (SHALLOW)

UCCMW-29
Screen: 5-15 ft
PCE: 9.2
Flux: 0.23-0.82

UCCMW-31D
Screen: 18-28 ft
PCE: 25
VC: 0.24

UCCMW-34D
Screen: 35-50 ft
PCE: 18
Flux: 1.51-4.42

MAIN ST

NE 183RD ST

Groundwater Cleanup Levels
PCE: 5.0 µg/L
TCE: 5.0 µg/L
cis-1,2-DCE: 70 µg/L
VC: 0.20 µg/L

0 27.5 55 110
Scale in Feet

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Engineering Design Report
Ultra Custom Care Cleaners Site
Bothell, Washington

Figure 4.2
Groundwater Design Data for CVOC Distribution, Geochemistry and Flow Velocity

I:\GIS\Projects\COBothell-Ultra\MXD\Engineering Design Report\Figure 4.2 Groundwater Design Data for CVOC Distribution, Geochemistry and Flow Velocity.mxd
7/12/2023

Attachment 2
Laboratory Analytical Report

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

October 8, 2024

Kristin Anderson
Floyd & Snider
601 Union Street, Suite 600
Seattle, WA 98101

Re: Analytical Data for Project COB Ultra
Laboratory Reference No. 2409-264

Dear Kristin:

Enclosed are the analytical results and associated quality control data for samples submitted on September 20, 2024.

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 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

Case Narrative

Samples were collected on September 20, 2024 and received by the laboratory on September 20, 2024. 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. However the soil results for the QA/QC samples are reported on a wet-weight basis.

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 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

VOLATILE ORGANICS EPA 8260D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-36D-092024**					
Laboratory ID:	09-264-01					
Vinyl Chloride	0.27	0.20	EPA 8260D	9-24-24	9-24-24	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
(cis) 1,2-Dichloroethene	11	0.20	EPA 8260D	9-24-24	9-24-24	
Trichloroethene	1.7	0.20	EPA 8260D	9-24-24	9-24-24	
Tetrachloroethene	21	0.20	EPA 8260D	9-24-24	9-24-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*68-133*				
Toluene-d8	*99*	*79-123*				
4-Bromofluorobenzene	*100*	*78-117*				
Client ID:	**BB-2-092024**					
Laboratory ID:	09-264-02					
Vinyl Chloride (SIM)	0.15	0.040	EPA 8260D/SIM	9-24-24	9-24-24	
(trans) 1,2-Dichloroethene	ND	0.40	EPA 8260D	9-24-24	9-24-24	
(cis) 1,2-Dichloroethene	1.7	0.40	EPA 8260D	9-24-24	9-24-24	
Trichloroethene	2.4	0.40	EPA 8260D	9-24-24	9-24-24	
Tetrachloroethene	64	0.40	EPA 8260D	9-24-24	9-24-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*68-133*				
Toluene-d8	*100*	*79-123*				
4-Bromofluorobenzene	*100*	*78-117*				
Client ID:	**UCCMW-29-092024**					
Laboratory ID:	09-264-03					
Vinyl Chloride (SIM)	ND	0.020	EPA 8260D/SIM	9-24-24	9-24-24	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
Trichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
Tetrachloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*95*	*68-133*				
Toluene-d8	*100*	*79-123*				
4-Bromofluorobenzene	*100*	*78-117*				

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Project: COB Ultra

VOLATILE ORGANICS EPA 8260D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-7-092024**					
Laboratory ID:	09-264-04					
Vinyl Chloride	1.3	0.20	EPA 8260D	9-24-24	9-24-24	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
(cis) 1,2-Dichloroethene	4.2	0.20	EPA 8260D	9-24-24	9-24-24	
Trichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
Tetrachloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*99*	*68-133*				
Toluene-d8	*99*	*79-123*				
4-Bromofluorobenzene	*101*	*78-117*				
Client ID:	**UCCMW-31D-092024**					
Laboratory ID:	09-264-05					
Vinyl Chloride	1.8	0.20	EPA 8260D	9-24-24	9-24-24	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
(cis) 1,2-Dichloroethene	12	0.20	EPA 8260D	9-24-24	9-24-24	
Trichloroethene	0.27	0.20	EPA 8260D	9-24-24	9-24-24	
Tetrachloroethene	21	0.20	EPA 8260D	9-24-24	9-24-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*98*	*68-133*				
Toluene-d8	*100*	*79-123*				
4-Bromofluorobenzene	*100*	*78-117*				
Client ID:	**UCCMW-34D-092024**					
Laboratory ID:	09-264-06					
Vinyl Chloride (SIM)	ND	0.020	EPA 8260D/SIM	9-24-24	9-24-24	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
Trichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
Tetrachloroethene	13	0.20	EPA 8260D	9-24-24	9-24-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*93*	*68-133*				
Toluene-d8	*99*	*79-123*				
4-Bromofluorobenzene	*100*	*78-117*				

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Project: COB Ultra

VOLATILE ORGANICS EPA 8260D/SIM

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-18-092024**					
Laboratory ID:	09-264-07					
Vinyl Chloride	0.55	0.20	EPA 8260D	9-24-24	9-24-24	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
(cis) 1,2-Dichloroethene	2.1	0.20	EPA 8260D	9-24-24	9-24-24	
Trichloroethene	1.0	0.20	EPA 8260D	9-24-24	9-24-24	
Tetrachloroethene	1.8	0.20	EPA 8260D	9-24-24	9-24-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*99*	*68-133*				
Toluene-d8	*99*	*79-123*				
4-Bromofluorobenzene	*101*	*78-117*				

Date of Report: October 8, 2024
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Project: COB Ultra

VOLATILE ORGANICS EPA 8260D/SIM
QUALITY CONTROL

Matrix: Water
Units: ug/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0924W1					
Vinyl Chloride (SIM)	ND	0.020	EPA 8260D/SIM	9-24-24	9-24-24	
(trans) 1,2-Dichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
(cis) 1,2-Dichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
Trichloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
Tetrachloroethene	ND	0.20	EPA 8260D	9-24-24	9-24-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
Dibromofluoromethane	*97*	*68-133*				
Toluene-d8	*100*	*79-123*				
4-Bromofluorobenzene	*98*	*78-117*				

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANKS										
Laboratory ID:	SB0924W1									
	SB	SBD	SB	SBD	SB	SBD				
Vinyl Chloride	**10.2**	**9.52**	10.0	10.0	102	95	67-130	7	15	
(trans) 1,2-Dichloroethene	**11.0**	**10.6**	10.0	10.0	110	106	77-125	4	15	
(cis) 1,2-Dichloroethene	**11.2**	**10.7**	10.0	10.0	112	107	78-130	5	15	
Trichloroethene	**11.4**	**11.2**	10.0	10.0	114	112	80-126	2	15	
Tetrachloroethene	**11.7**	**11.4**	10.0	10.0	117	114	80-125	3	15	
Surrogate:										
Dibromofluoromethane					*99*	*96*	*68-133*			
Toluene-d8					*100*	*100*	*79-123*			
4-Bromofluorobenzene					*103*	*100*	*78-117*			

Date of Report: October 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

TOTAL IRON
EPA 200.7

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-36D-092024**					
Laboratory ID:	09-264-01					
Iron	**180**	50	EPA 200.7	9-27-27	9-27-24	
Client ID:	**BB-2-092024**					
Laboratory ID:	09-264-02					
Iron	**58**	50	EPA 200.7	9-27-27	9-27-24	
Client ID:	**UCCMW-29-092024**					
Laboratory ID:	09-264-03					
Iron	**670**	50	EPA 200.7	9-27-27	9-27-24	
Client ID:	**UCCMW-7-092024**					
Laboratory ID:	09-264-04					
Iron	**6700**	50	EPA 200.7	9-27-27	9-27-24	
Client ID:	**UCCMW-31D-092024**					
Laboratory ID:	09-264-05					
Iron	**ND**	50	EPA 200.7	9-27-27	9-27-24	
Client ID:	**UCCMW-34D-092024**					
Laboratory ID:	09-264-06					
Iron	**ND**	50	EPA 200.7	9-27-27	9-27-24	
Client ID:	**UCCMW-18-092024**					
Laboratory ID:	09-264-07					
Iron	**20000**	50	EPA 200.7	9-27-27	9-27-24	

Date of Report: October 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

TOTAL IRON
EPA 200.7
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0927WH1					
Iron	**ND**	50	EPA 200.7	9-27-27	9-27-24	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-215-05										
	ORIG	DUP									
Iron	**71.4**	**65.4**	NA	NA		NA		NA	9	20	
MATRIX SPIKES											
Laboratory ID:	09-215-05										
	MS	MSD	MS	MSD		MS	MSD				
Iron	**20700**	**20100**	20000	20000	71.4	**103**	**100**	75-125	3	20	
SPIKE BLANK											
Laboratory ID:	SB0927WH1										
Iron	**21000**		20000		N/A	**105**		85-115			

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Laboratory Reference: 2409-264
Project: COB Ultra

DISSOLVED GASES
RSK 175

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-36D-092024**					
Laboratory ID:	09-264-01					
Methane	**61**	0.55	RSK 175	9-23-24	9-23-24	
Ethane	**ND**	0.56	RSK 175	9-23-24	9-23-24	
Ethene	**ND**	0.58	RSK 175	9-23-24	9-23-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
1-Butene	*102*	*50-150*				
Client ID:	**BB-2-092024**					
Laboratory ID:	09-264-02					
Methane	**90**	0.55	RSK 175	9-23-24	9-23-24	
Ethane	**ND**	0.56	RSK 175	9-23-24	9-23-24	
Ethene	**ND**	0.58	RSK 175	9-23-24	9-23-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
1-Butene	*124*	*50-150*				
Client ID:	**UCCMW-29-092024**					
Laboratory ID:	09-264-03					
Methane	**330**	5.5	RSK 175	9-23-24	9-23-24	
Ethane	**ND**	0.56	RSK 175	9-23-24	9-23-24	
Ethene	**ND**	0.58	RSK 175	9-23-24	9-23-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
1-Butene	*111*	*50-150*				
Client ID:	**UCCMW-7-092024**					
Laboratory ID:	09-264-04					
Methane	**590**	5.5	RSK 175	9-23-24	9-23-24	
Ethane	**ND**	0.56	RSK 175	9-23-24	9-23-24	
Ethene	**ND**	0.58	RSK 175	9-23-24	9-23-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
1-Butene	*100*	*50-150*				
Client ID:	**UCCMW-31D-092024**					
Laboratory ID:	09-264-05					
Methane	**68**	0.55	RSK 175	9-23-24	9-23-24	
Ethane	**ND**	0.56	RSK 175	9-23-24	9-23-24	
Ethene	**ND**	0.58	RSK 175	9-23-24	9-23-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
1-Butene	*106*	*50-150*				

Date of Report: October 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

DISSOLVED GASES
RSK 175

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-34D-092024**					
Laboratory ID:	09-264-06					
Methane	**59**	0.55	RSK 175	9-23-24	9-23-24	
Ethane	**ND**	0.56	RSK 175	9-23-24	9-23-24	
Ethene	**ND**	0.58	RSK 175	9-23-24	9-23-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
1-Butene	*100*	*50-150*				
Client ID:	**UCCMW-18-092024**					
Laboratory ID:	09-264-07					
Methane	**1800**	17	RSK 175	9-23-24	9-23-24	
Ethane	**ND**	0.56	RSK 175	9-23-24	9-23-24	
Ethene	**0.68**	0.58	RSK 175	9-23-24	9-23-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
1-Butene	*110*	*50-150*				

Date of Report: October 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

DISSOLVED GASES
RSK 175
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0923W1					
Methane	**ND**	0.55	RSK 175	9-23-24	9-23-24	
Ethane	**ND**	0.56	RSK 175	9-23-24	9-23-24	
Ethene	**ND**	0.58	RSK 175	9-23-24	9-23-24	
Surrogate:	*Percent Recovery*	*Control Limits*				
1-Butene	*99*	*50-150*				

Analyte	Result		Spike Level		Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
SPIKE BLANK										
Laboratory ID:	SB0923W1									
	SB	SBD	SB	SBD	SB	SBD				
Methane	**44.6**	**41.0**	44.2	44.2	101	93	75-125	8	25	
Ethane	**82.8**	**74.9**	83.2	83.2	100	90	75-125	10	25	
Ethene	**84.4**	**72.9**	77.7	77.7	109	94	75-125	15	25	
Surrogate:										
1-Butene					*108*	*91*	*50-150*			

Date of Report: October 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

NITRITE (as Nitrogen)
EPA 353.2

Matrix: Water
Units: mg/L-N

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-36D-092024**					
Laboratory ID:	09-264-01					
Nitrite	**ND**	0.020	EPA 353.2	9-20-24	9-20-24	
Client ID:	**BB-2-092024**					
Laboratory ID:	09-264-02					
Nitrite	**ND**	0.020	EPA 353.2	9-20-24	9-20-24	
Client ID:	**UCCMW-29-092024**					
Laboratory ID:	09-264-03					
Nitrite	**ND**	0.020	EPA 353.2	9-20-24	9-20-24	
Client ID:	**UCCMW-7-092024**					
Laboratory ID:	09-264-04					
Nitrite	**ND**	0.020	EPA 353.2	9-20-24	9-20-24	
Client ID:	**UCCMW-31D-092024**					
Laboratory ID:	09-264-05					
Nitrite	**ND**	0.020	EPA 353.2	9-20-24	9-20-24	
Client ID:	**UCCMW-34D-092024**					
Laboratory ID:	09-264-06					
Nitrite	**ND**	0.020	EPA 353.2	9-20-24	9-20-24	
Client ID:	**UCCMW-18-092024**					
Laboratory ID:	09-264-07					
Nitrite	**ND**	0.020	EPA 353.2	9-20-24	9-20-24	

Date of Report: October 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

NITRITE (as Nitrogen)
EPA 353.2
QUALITY CONTROL

Matrix: Water
Units: mg/L-N

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920W1					
Nitrite	**ND**	0.020	EPA 353.2	9-20-24	9-20-24	

Analyte	Result	Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE								
Laboratory ID:	09-255-01							
	ORIG DUP							
Nitrite	**ND** **ND**	NA	NA	NA	NA	NA	11	
MATRIX SPIKE								
Laboratory ID:	09-255-01							
	MS	MS		MS				
Nitrite	**0.260**	0.250	ND	104	85-121	NA	NA	
SPIKE BLANK								
Laboratory ID:	SB0920W1							
	SB	SB		SB				
Nitrite	**0.268**	0.250	NA	107	91-116	NA	NA	

Date of Report: October 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

NITRATE (as Nitrogen)
EPA 353.2

Matrix: Water
Units: mg/L-N

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-36D-092024**					
Laboratory ID:	09-264-01					
Nitrate	**0.052**	0.050	EPA 353.2	9-20-24	9-20-24	
Client ID:	**BB-2-092024**					
Laboratory ID:	09-264-02					
Nitrate	**0.32**	0.050	EPA 353.2	9-20-24	9-20-24	
Client ID:	**UCCMW-29-092024**					
Laboratory ID:	09-264-03					
Nitrate	**0.099**	0.050	EPA 353.2	9-20-24	9-20-24	
Client ID:	**UCCMW-7-092024**					
Laboratory ID:	09-264-04					
Nitrate	**0.15**	0.050	EPA 353.2	9-20-24	9-20-24	
Client ID:	**UCCMW-31D-092024**					
Laboratory ID:	09-264-05					
Nitrate	**0.31**	0.050	EPA 353.2	9-20-24	9-20-24	
Client ID:	**UCCMW-34D-092024**					
Laboratory ID:	09-264-06					
Nitrate	**1.4**	0.050	EPA 353.2	9-20-24	9-20-24	
Client ID:	**UCCMW-18-092024**					
Laboratory ID:	09-264-07					
Nitrate	**0.36**	0.050	EPA 353.2	9-20-24	9-20-24	

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Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

NITRATE (as Nitrogen)
EPA 353.2
QUALITY CONTROL

Matrix: Water
Units: mg/L-N

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0920W1					
Nitrate	**ND**	0.050	EPA 353.2	9-20-24	9-20-24	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	09-255-01								
	ORIG	DUP							
Nitrate	**ND**	**ND**	NA	NA	NA	NA	NA	22	
MATRIX SPIKE									
Laboratory ID:	09-255-01								
	MS		MS		MS				
Nitrate	**2.03**		2.00	ND	102	86-119	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB0920W1								
	SB		SB		SB				
Nitrate	**1.84**		2.00	NA	92	85-117	NA	NA	

Date of Report: October 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

SULFATE
ASTM D516-11

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-36D-092024**					
Laboratory ID:	09-264-01					
Sulfate	**23**	5.0	ASTM D516-11	10-7-24	10-7-24	
Client ID:	**BB-2-092024**					
Laboratory ID:	09-264-02					
Sulfate	**10**	5.0	ASTM D516-11	10-7-24	10-7-24	
Client ID:	**UCCMW-29-092024**					
Laboratory ID:	09-264-03					
Sulfate	**ND**	5.0	ASTM D516-11	10-7-24	10-7-24	
Client ID:	**UCCMW-7-092024**					
Laboratory ID:	09-264-04					
Sulfate	**18**	10	ASTM D516-11	10-7-24	10-7-24	
Client ID:	**UCCMW-31D-092024**					
Laboratory ID:	09-264-05					
Sulfate	**25**	10	ASTM D516-11	10-7-24	10-7-24	
Client ID:	**UCCMW-34D-092024**					
Laboratory ID:	09-264-06					
Sulfate	**26**	10	ASTM D516-11	10-7-24	10-7-24	
Client ID:	**UCCMW-18-092024**					
Laboratory ID:	09-264-07					
Sulfate	**54**	20	ASTM D516-11	10-7-24	10-7-24	

Date of Report: October 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

SULFATE
ASTM D516-11
QUALITY CONTROL

Matrix: Water
Units: mg/L

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB1007W1					
Sulfate	**ND**	5.0	ASTM D516-11	10-7-24	10-7-24	

Analyte	Result		Spike Level	Source Result	Percent Recovery	Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE									
Laboratory ID:	09-264-02								
	ORIG	DUP							
Sulfate	**10.1**	**10.2**	NA	NA	NA	NA	1	11	
MATRIX SPIKE									
Laboratory ID:	09-264-02								
	MS		MS		MS				
Sulfate	**22.3**		10.0	10.1	122	69-134	NA	NA	
SPIKE BLANK									
Laboratory ID:	SB1007W1								
	SB		SB		SB				
Sulfate	**9.36**		10.0	NA	94	81-106	NA	NA	

Date of Report: October 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

DISSOLVED IRON
EPA 6010D

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
Client ID:	**UCCMW-36D-092024**					
Laboratory ID:	09-264-01					
Iron	**150**	56	EPA 6010D		9-30-24	
Client ID:	**BB-2-092024**					
Laboratory ID:	09-264-02					
Iron	**ND**	56	EPA 6010D		9-30-24	
Client ID:	**UCCMW-29-092024**					
Laboratory ID:	09-264-03					
Iron	**230**	56	EPA 6010D		9-30-24	
Client ID:	**UCCMW-7-092024**					
Laboratory ID:	09-264-04					
Iron	**6900**	56	EPA 6010D		9-30-24	
Client ID:	**UCCMW-31D-092024**					
Laboratory ID:	09-264-05					
Iron	**ND**	56	EPA 6010D		9-30-24	
Client ID:	**UCCMW-34D-092024**					
Laboratory ID:	09-264-06					
Iron	**ND**	56	EPA 6010D		9-30-24	
Client ID:	**UCCMW-18-092024**					
Laboratory ID:	09-264-07					
Iron	**18000**	56	EPA 6010D		9-30-24	

Date of Report: October 8, 2024
Samples Submitted: September 20, 2024
Laboratory Reference: 2409-264
Project: COB Ultra

DISSOLVED IRON
EPA 6010D
QUALITY CONTROL

Matrix: Water
Units: ug/L (ppb)

Analyte	Result	PQL	Method	Date Prepared	Date Analyzed	Flags
METHOD BLANK						
Laboratory ID:	MB0930D1					
Iron	**ND**	56	EPA 6010D		9-30-24	

Analyte	Result		Spike Level		Source Result	Percent Recovery		Recovery Limits	RPD	RPD Limit	Flags
DUPLICATE											
Laboratory ID:	09-264-05										
	ORIG	DUP									
Iron	**ND**	**ND**	NA	NA		NA		NA	NA	20	
MATRIX SPIKES											
Laboratory ID:	09-264-05										
	MS	MSD	MS	MSD		MS	MSD				
Iron	**25200**	**25200**	22200	22200	ND	**113**	**114**	75-125	0	20	
SPIKE BLANK											
Laboratory ID:	SB0930D1										
Iron	**24200**		22200		N/A	**109**		80-120			

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.

X2 - Sample extract treated with a 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.

Y1 - Negative effects of the matrix from this sample on the instrument caused values for this analyte in the bracketing continuing calibration verification standard (CCVs) to be outside of 20% acceptance criteria. Because of this, quantitation limits and sample concentrations should be considered estimates.

Z -

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

Am Test Inc.
13600 NE 126th Place Suite C
Kirkland, WA
(425) 885-1664
www.amtestlab.com

Professional Analytical Services

October 07, 2024

David Baumeister
14648 NE 95th ST
Redmond, WA 98052

Project: Onsite (Chem)
Project Number: COB Ultra
Project Manager: David Baumeister
RE: Onsite (Chem)

Enclosed are the results of analyses for samples received by our laboratory on 9/23/2024.
Please feel free to contact me with any questions or considerations regarding this report.

Sincerely,

ElementStationManager For Aaron Young
President

Am Test Inc.
13600 NE 126th Place Suite C
Kirkland, WA
(425) 885-1664
www.amtestlab.com

ANALYSIS REPORT

Professional Analytical Services

Date Received: 09/23/24
Date Reported: 10/07/24

OnSite Environmental Inc.
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: Onsite (Chem)
Project #: COB Ultra

Reported Samples

Lab ID	Sample	Matrix	Qualifiers	Date Sampled	Date Received
A24I0402-01	UCCMW-36D-092024	Water		09/20/2024	09/23/2024
A24I0402-02	BB-2-092024	Water		09/20/2024	09/23/2024
A24I0402-03	UCCMW-29-092024	Water		09/20/2024	09/23/2024
A24I0402-04	UCCMW-7-092024	Water		09/20/2024	09/23/2024
A24I0402-05	UCCMW-31-092024	Water		09/20/2024	09/23/2024
A24I0402-06	UCCMW-34D-092024	Water		09/20/2024	09/23/2024
A24I0402-07	UCCMW-18-092024	Water		09/20/2024	09/23/2024

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AMTEST LABORATORIES

Professional Analytical Services

ANALYSIS REPORT

Date Received: 09/23/24
Date Reported: 10/07/24

OnSite Environmental Inc.
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: Onsite (Chem)
Project #: COB Ultra

AMTEST Identification Number: A24I0402-01
Client Identification: UCCMW-36D-092024
Sampling Date: 09/20/24 08:18

Conventional Chemistry Parameters by APHA/EPA Methods

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Sulfide	ND	mg/L	U	0.05	SM 4500-S2-D_2011	BV	10/04/2024

AMTEST Identification Number: A24I0402-02
Client Identification: BB-2-092024
Sampling Date: 09/20/24 08:18

Conventional Chemistry Parameters by APHA/EPA Methods

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Sulfide	ND	mg/L	U	0.05	SM 4500-S2-D_2011	BV	10/04/2024

AMTEST Identification Number: A24I0402-03
Client Identification: UCCMW-29-092024
Sampling Date: 09/20/24 08:18

Conventional Chemistry Parameters by APHA/EPA Methods

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Sulfide	ND	mg/L	U	0.05	SM 4500-S2-D_2011	BV	10/04/2024

AMTEST Identification Number: A24I0402-04
Client Identification: UCCMW-7-092024
Sampling Date: 09/20/24 08:18

Conventional Chemistry Parameters by APHA/EPA Methods

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Sulfide	ND	mg/L	U	0.05	SM 4500-S2-D_2011	BV	10/04/2024

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ANALYSIS REPORT

Professional Analytical Services

Date Received: 09/23/24
Date Reported: 10/07/24

OnSite Environmental Inc.
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: Onsite (Chem)
Project #: COB Ultra

AMTEST Identification Number: A24I0402-05
Client Identification: UCCMW-31-092024
Sampling Date: 09/20/24 08:18

Conventional Chemistry Parameters by APHA/EPA Methods

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Sulfide	ND	mg/L	U	0.05	SM 4500-S2-D_2011	BV	10/04/2024

AMTEST Identification Number: A24I0402-06
Client Identification: UCCMW-34D-092024
Sampling Date: 09/20/24 08:18

Conventional Chemistry Parameters by APHA/EPA Methods

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Sulfide	ND	mg/L	U	0.05	SM 4500-S2-D_2011	BV	10/04/2024

AMTEST Identification Number: A24I0402-07
Client Identification: UCCMW-18-092024
Sampling Date: 09/20/24 08:18

Conventional Chemistry Parameters by APHA/EPA Methods

PARAMETER	RESULT	UNITS	Q	D.L.	METHOD	ANALYST	DATE
Sulfide	ND	mg/L	U	0.05	SM 4500-S2-D_2011	BV	10/04/2024

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AMTEST LABORATORIES

Professional Analytical Services

ANALYSIS REPORT

Date Received: 09/23/24
Date Reported: 10/07/24

OnSite Environmental Inc.
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: Onsite (Chem)
Project #: COB Ultra

Quality Control

Conventional Chemistry Parameters by APHA/EPA Methods

Analyte	Result	Qual	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit
Batch: BBJ0061 - No Prep - WetChem										
LCS (BBJ0061-BS1)					Prepared: 10/03/24 Analyzed: 10/04/24					
Sulfide	0.25		0.05	mg/L	0.2500		99%	80-120%		
Calibration Blank (BBJ0061-CCB1)					Prepared: 10/03/24 Analyzed: 10/04/24					
Sulfide	0	U		mg/L						
Calibration Check (BBJ0061-CCV1)					Prepared: 10/03/24 Analyzed: 10/04/24					
Sulfide	0.50		0.05	mg/L	0.5000		101%	85-115%		

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ANALYSIS REPORT

Professional Analytical Services

OnSite Environmental Inc.
14648 NE 95th ST
Redmond, WA 98052
Attention: David Baumeister
Project Name: Onsite (Chem)
Project #: COB Ultra

Date Received: 09/23/24
Date Reported: 10/07/24

Notes and Definitions

Item	Definition
U	The compound was analyzed for but was not detected (Non-detect) at or above the MRL/MDL.
Dry	Sample results reported on a dry weight basis.
ND	Analyte NOT DETECTED at or above the reporting limit.
RPD	Relative Percent Difference
%REC	Percent Recovery
Source	Sample that was matrix spiked or duplicated.

A24T0402

OnSite Environmental Inc.

14648 NE 95th Street, Redmond, WA 98052 · (425) 883-3881

Laboratory Reference #: 09-264

Laboratory: AmTest Laboratories

Attention: Aaron Young

13600 NE 126th Pl Kirkland, WA 98034

Phone Number: (425) 885-1664

Turnaround Request

1 Day | 2 Day | 3 Day

Standard

Other: _____

Project Manager: David Baumeister

email: dbaumeister@onsite-env.com

Project Number: COB Ultra

Project Name: _____

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	# of Cont.	Requested Analyses
01	UCCMW-36D-092024	9/20/24	8:18	W	1	Sulfide
02	BB-2-092024	9/20/24	8:30	W	1	Sulfide
03	UCCMW-29-092024	9/20/24	10:02	W	1	Sulfide
04	UCCMW-7-092024	9/20/24	10:05	W	1	Sulfide
05	UCCMW-31D-092024	9/20/24	11:50	W	1	Sulfide
06	UCCMW-34D-092024	9/20/24	12:00	W	1	Sulfide
07	UCCMW-18-092024	9/20/24	13:20	W	1	Sulfide

	Company	Date	Time	Comments/Special Instructions
Relinquished by: Nicholas Fino IL	OSE	9/23/24	1220	
Received by:	AmTest	9/23/24	12 20	8.2°C
Relinquished by:				**EIM & EDD**
Received by:				
Relinquished by:				
Received by:				

Chain of Custody

(3) - only Iron
(4) - only Methane, Ethene, & Ethane

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: Floyd | Snider
Project Number:
Project Name: COB Ultra
Project Manager: Kristin Anderson
Sampled by: Jake Lamb & Gillian Sweeney

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

Laboratory Number: 09-264

Lab ID	Sample Identification	Date Sampled	Time Sampled	Matrix	Number of Containers
1	UCCMW-36D-092024	9/20/24	8:18	Water	9
2	BB-2-092024		8:30		
3	UCCMW-29-092024		10:02		
4	UCCMW-7-092024		10:05		
5	UCCMW-31D-092024		11:50		
6	UCCMW-34D-092024		12:00		
7	UCCMW-16-092024		13:20		

Analysis	Lab ID 1	2	3	4	5	6	7
NWTPH-HCID							
NWTPH-Gx/BTEX (8021☐ 8260☐)							
NWTPH-Gx							
NWTPH-Dx (SG Clean-up ☐)							
Volatiles 8260D (1)	X	X	X	X	X	X	X
Halogenated Volatiles 8260							
EDB EPA 8011 (Waters Only)							
Semivolatiles 8270/SIM (with low-level PAHs)							
PAHs 8270/SIM (low-level)							
PCBs 8082							
Organochlorine Pesticides 8081							
Organophosphorus Pesticides 8270/SIM							
Chlorinated Acid Herbicides 8151							
Total RCRA Metals EPA 200.8 (3)	X	X	X	X	X	X	X
Total MTCA Metals							
TCLP Metals							
HEM (oil and grease) 1664							
Sulfide SM 4500-S2	X	X	X	X	X	X	X
Dissolved Gases RSK 175 (4)	X	X	X	X	X	X	X
Nitrite, Nitrate, & Sulfate (2)	X	X	X	X	X	X	X
Dissolved Metals EPA 200.8 (3)	X	X	X	X	X	X	X
% Moisture							

	Signature	Company	Date	Time
Relinquished		Floyd/Snider	9/20/24	14:45
Received		ESS	9/20/24	1445
Relinquished				
Received				
Relinquished				
Received				
Reviewed/Date		Reviewed/Date		

Comments/Special Instructions

Please send data to labdata@floydsnider.com & kristin.anderson@floydsnider.com

(1) cVOCs EPA 8260D only PCE, TCE, VC, cis-1,2-DCE, and trans-1,2-DCE

(2) EPA 353.2 / ASTM D516-11

Data Package: Standard ☒ Level III ☐ Level IV ☐

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

Sample/Cooler Receipt and Acceptance Checklist

Client: FLS

Client Project Name/Number: COB Ultra

OnSite Project Number: 09-264

Initiated by: MV

Date Initiated: 9/20/24

1.0 Cooler Verification

1.1 Were there custody seals on the outside of the cooler?	Yes	(No)	N/A	1 2 3 4	
1.2 Were the custody seals intact?	Yes	No	(N/A)	1 2 3 4	
1.3 Were the custody seals signed and dated by last custodian?	Yes	No	(N/A)	1 2 3 4	
1.4 Were the samples delivered on ice or blue ice?	(Yes)	No	N/A	1 2 3 4	
1.5 Were samples received between 0-6 degrees Celsius?	(Yes)	No	N/A	Temperature: 6	
1.6 Have shipping bills (if any) been attached to the back of this form?	Yes	(N/A)			
1.7 How were the samples delivered?	(Client)	Courier	UPS/FedEx	OSE Pickup	Other

2.0 Chain of Custody Verification

2.1 Was a Chain of Custody submitted with the samples?	(Yes)	No	1 2 3 4
2.2 Was the COC legible and written in permanent ink?	(Yes)	No	1 2 3 4
2.3 Have samples been relinquished and accepted by each custodian?	(Yes)	No	1 2 3 4
2.4 Did the sample labels (ID, date, time, preservative) agree with COC?	(Yes)	No	1 2 3 4
2.5 Were all of the samples listed on the COC submitted?	(Yes)	No	1 2 3 4
2.6 Were any of the samples submitted omitted from the COC?	Yes	(No)	1 2 3 4

3.0 Sample Verification

3.1 Were any sample containers broken or compromised?	Yes	(No)		1 2 3 4
3.2 Were any sample labels missing or illegible?	Yes	(No)		1 2 3 4
3.3 Have the correct containers been used for each analysis requested?	(Yes)	No		1 2 3 4
3.4 Have the samples been correctly preserved?	(Yes)	No	N/A	1 2 3 4
3.5 Are volatiles samples free from headspace and bubbles greater than 6mm?	(Yes)	No	N/A	1 2 3 4
3.6 Is there sufficient sample submitted to perform requested analyses?	(Yes)	No		1 2 3 4
3.7 Have any holding times already expired or will expire in 24 hours?	Yes	(No)		1 2 3 4
3.8 Was method 5035A used?	Yes	No	(N/A)	1 2 3 4
3.9 If 5035A was used, which sampling option was used (#1, 2, or 3).	#		(N/A)	1 2 3 4

Explain any discrepancies:

1 - Discuss issue in Case Narrative

2 - Process Sample As-Is

3 - Client contacted to discuss problem

4 - Sample cannot be analyzed or client does not wish to proceed