

Parametrix No. 553-1550-067

Ryan Gardiner, Project Manager
Washington State Department of Ecology
Toxics Cleanup Program
15700 Dayton Ave. N.
Shoreline, Washington 98133

Re: South Park Landfill Third Quarter 2024 Progress Report

Dear Ryan:

This letter report provides an explanation of actions taken during the referenced period.

General Activities During the 2024 Third Quarter

SRDS Property

- The old South Transfer Station seep area (compactor shed) is fenced off and locked and all safeguards are still in place.
- Solid Waste Operations and Household Hazardous Waste Collection continues on the Seattle Public Utilities (SPU) old South Transfer Station property.
- An underground water leak approximately 3.5 feet below ground surface was discovered nearby the truck wash area and repaired. The excavation was backfilled with clean aggregate and pavement restored with 5-inches of concrete. Excavated soil was containerized for disposal pending analysis and profiling.

CenterPoint South Park LLC Property

- Ongoing remote monitoring of the landfill gas system blowers. The current tenant Amazon vehicle parking is active on CenterPoint property. First Student has vacated the property.
- Quarterly inspection of the methane alarms in the on-site buildings was not conducted as the buildings are vacant.
- Conducted quarterly operation and maintenance of the landfill gas system.
- Completed maintenance at several areas identified in the annual cap inspection removing blackberry bushes and other invasive species overgrowth.

Overall Settlement Parcels

- The 2024 third quarter compliance monitoring was completed. SPU staff conducted the gas monitoring and the Parametrix team conducted the groundwater monitoring.
- Parametrix reviewed field measurements and completed data management for the 2024 third quarter compliance monitoring events.
- The 2024 annual cap inspection report was finalized and submitted to Ecology.

Deviations from Samples, Required Tasks, CAP, or Schedule

There were no deviations to report this quarter.



Data Summary

The perimeter gas probes were monitored by SPU on July 30, 2024. The recorded monitoring data are included as an attachment. Methane was not detected at any of the gas probes.

The groundwater wells were monitored by the Site Coordinator between August 6 and 7, 2024. The monitoring samples were analyzed by Analytical Resources, LLC. Data validation is complete and a trend and concentration trigger assessment for vinyl chloride was performed. A draft data summary table, updated time-series plots, and the final lab reports for the 2024 third quarter are included as attachments to this progress report.

Data management is complete for the 2024 third quarter compliance monitoring event.

Upcoming Activities

SRDS Property

- SPU has added significant scope changes to the STS Phase II project including combining stormwater treatment from the STS property to the SRDS property, larger trailer canopy, a combined electrical building, and crew quarter changes. The final design is anticipated to be completed in the winter of 2025.
- SPU will temporarily sublease/permit a small portion of the SRDS property to Strategic Materials, Inc. for clean glass cullet storage. King County Public Health (KCPH) has been notified of the proposed temporary change to operational usage. Glass cullet storage will cease prior construction activities related to STS Phase II.
- SPU also plans to perform waste audits on a small portion of the SRDS property. KCPH is also aware of this proposed activity.
- Addition of metals adsorption media to filters in select catch basins.

CenterPoint Property

- Ongoing remote monitoring of the CenterPoint property landfill gas system blowers.
- Complete the fourth quarter 2024 operation and maintenance of the landfill gas system.
- Catch basin cleaning and sediment removal, plant removal and minor asphalt repairs as noted in the 2024 annual cap inspection.

Overall Settlement Parcels

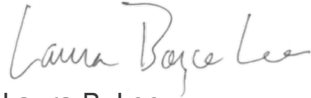
- SPU and the Site Coordinator will complete the fourth quarter 2024 compliance monitoring.
- Once permits are approved the Site Coordinator will work with a drilling subcontractor to install supplemental gas probes as described in the approved Supplemental Gas Probes Work Plan and repair damaged probe GP-28.
- The 2024 mid-year cap reinspection will be conducted in October.
- The Site Coordinator will inspect cap maintenance completed by property owners.



If you have any questions regarding this progress report, please do not hesitate to contact me.

Sincerely,

Parametrix



Laura B. Lee
Project Manager

cc: Mark Jusayan, SPU Solid Waste Capital Planning and Landfill Closure Program Manager
Min Soon Yim, SPU Landfill Manager
Ashley Piatek, CenterPoint Properties
Jeff Fowler, SPU, Solid Waste Line of Business Deputy Director
Susan Fife-Ferris, SPU, Solid Waste Line of Business/Solid Waste Planning Director
Megan J Joplin, SPU, Law Department, Attorney
Hui Yang, SPU, SRDS Redevelopment Project Manager
Suzanne Hildreth, SPU Solid Waste Transfer Station Manager
Lucie Harpster, SPU Solid Waste Transfer Station Manager



Attachments

- 1 – Landfill Gas and Groundwater Compliance Monitoring Field Sheets,
Third Quarter 2024
- 2 – Draft Groundwater Quality Data Summary, Third Quarter 2024
- 3 – Draft Groundwater Quality Time Series Plots
through Third Quarter 2024
- 4 – Draft Summary of Vinyl Chloride Trend Analyses for Wells that
Exceed the Cleanup Level, Third Quarter 2024
- 5 – Third Quarter 2024 Groundwater Laboratory Data

Attachment 1

Landfill Gas and Groundwater Compliance
Monitoring Field Sheets
Third Quarter 2024



South Park Landfill
Third Quarter 2024 Gas Probe Monitoring Data

Gas Probe	Date	Time	Rel. Press. inches H2O	CH4 %	CO2 %	O2 %	Balance %	Blocked (Y/N)	Baro. Press. inches Hg
SP00GP26	7/30/2024	8:39	0.05	0.0	2.1	19.1	78.8	N	29.98
SP00GP07	7/30/2024	8:58	0.05	0.0	3.0	18.1	78.9	N	29.98
SP00GP23	7/30/2024	9:15	0.02	0.0	8.3	13.1	78.6	N	29.98
SP00GP33	7/30/2024	9:29	0.02	0.0	1.9	18.4	79.7	N	29.98
SP00GP37	7/30/2024	9:46	0.07	0.0	10.6	10.5	78.9	N	29.97
SP00GP38	7/30/2024	9:54	0.06	0.0	18.7	2.2	79.1	N	29.99
SP00GP09	7/30/2024	10:02	0.01	0.0	4.7	17.3	78.0	N	30.00
SP00GP11	7/30/2024	10:17	-0.06	0.0	0.4	21.1	78.5	N	29.98
SP00GP03	7/30/2024	10:23	0.07	0.0	6.3	13.4	80.3	N	29.98
SP00GP31	7/30/2024	10:29	0.04	0.0	11.0	7.7	81.3	N	29.98
SP00GP16	7/30/2024	10:45	-0.06	0.0	12.6	6.0	81.4	N	29.99
SP00GP29	7/30/2024	10:54	-0.02	0.0	16.8	0.0	83.2	N	29.99
SP00GP28	7/30/2024	11:05	-0.01	0.0	0.0	21.1	78.9	N	29.99
SP00GP27	7/30/2024	11:16	0.05	0.0	11.0	0.6	88.4	N	29.99
SP00GP15	7/30/2024	11:35	-18.93	0.0	4.7	15.2	80.1	Y	30.00
SP00GP32	7/30/2024	11:42	-0.55	0.0	1.5	18.1	80.4	N	30.00
SP00GP13	7/30/2024	11:52	-2.55	0.0	3.4	17.9	78.7	Y	30.00

GEM™5000; G5 V1_15_12; LSGAM:6_0_20160627; {10895351023}

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 8/6/24 Well ID: MW-26

Sampling Organization: Parametrix Samplers: R. Anderson & Avril Fosbre

Purge Data Screened Interval (ft bgs): 15.0-25.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 10.25 Purge Water Disposal Method: O/WS

Purge Device dedicated bladder pump Pump Intake Depth: 20.0 ft

Begin Purge Time: 1239 End Purge Time: 1312

Time	Depth to Water (feet below MP)	PSI Pump Setting	mL/min Purge Rate	L Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	V.S. BROWN Comments
1245 1250	<u>10.25</u>	<u>16</u>	<u>275</u>		<u>12.5</u>	<u>1.16</u>	<u>318.3</u>	<u>6.03</u>	<u>55.9</u>	<u>37.1</u>	<u>V. FINE WHITE PACT</u>
<u>1255</u>	<u>10.25</u>			<u>4.7</u>	<u>12.4</u>	<u>0.69</u>	<u>298.9</u>	<u>6.05</u>	<u>50.1</u>	<u>11.7</u>	<u>N.O., N.S., CLR.</u>
<u>1300</u>	<u>10.25</u>			<u>5.3</u>	<u>12.3</u>	<u>0.52</u>	<u>310.0</u>	<u>6.05</u>	<u>45.7</u>	<u>4.46</u>	<u>CLR., N.O., N.S.</u>
<u>1305</u>	<u>10.25</u>			<u>6.8</u>	<u>12.3</u>	<u>0.37</u>	<u>312.5</u>	<u>6.05</u>	<u>42.8</u>	<u>2.44</u>	<u>" "</u>
<u>1310</u>	<u>10.25</u>			<u>8.4</u>	<u>12.3</u>	<u>0.32</u>	<u>313.6</u>	<u>6.04</u>	<u>41.3</u>	<u>1.88</u>	<u>" "</u>
				<u>9.6</u>	<u>12.3</u>	<u>0.28</u>	<u>315.8</u>	<u>6.04</u>	<u>39.9</u>	<u>1.71</u>	<u>" "</u>

Stabilization Criteria 3% 10% , or 3<0.5 3% ± 0.1 ± 10 mv 10% or 3 < 5 NTU

Sampling Data

Sample ID: SPL-GW-MW26-0824 Time Collected: 1315 Weather: 60s, OVERCAST

Sample Description (Color, Turbidity, Odor, Other): CLEAR, N.O., N.S.

Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese

Duplicate Sample Collected: Yes No If yes, ID: _____

MS/MSD Collected: Yes No

Additional Information/Comments

South Park Landfill

Project No.: 553-1550-067 Date: 8/6/21 Well ID: MW-33

Sampling Organization: Parametrix Samplers: R. Anderson & Avril Fosbre

Purge Data Screened Interval (ft bgs): 20.0-25.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 11.55 Purge Water Disposal Method: O/WS

Purge Device peristaltic pump Pump Intake Depth: 22.5ft

Begin Purge Time: 1441 End Purge Time: 1506

Time	Depth to Water (feet below MP)	Ticks ml Pump Setting	ml/min Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1450	11.55	2903.7	290	2.7	16.6	0.59	1325	6.85	-89.1	0.98	S. YELLOW, N.O., N.S.
1455				3.9	16.3	0.38	1318	6.83	-94.3	0.66	CLEAR, N.O., N.S.
1500				5.0	16.4	0.28	1307	6.83	-97.7	0.45	CLEAR, N.O., N.S.
1505	11.55			6.5	16.9	0.23	1299	6.80	-100.3	0.50	" "

MAY HAVE STARTED w/
V. FINE SULFUR OXIDE

Stabilization Criteria 3% 10% , or 3<0.5 3% ± 0.1 ± 10 mv 10% or 3 <5 NTU

Sampling Data

Sample ID: SPL-GW-MW33-0824 Time Collected: 1510 Weather: COs, OVERCAST

Sample Description (Color, Turbidity, Odor, Other): CLEAR, N.O., N.S.

Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese

Duplicate Sample Collected: Yes No If yes, ID: _____

MS/MSD Collected: Yes No

Additional Information/Comments

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 8/6/24 Well ID: MW-31

Sampling Organization: Parametrix Samplers: R. Anderson & Avril Fosbre

Purge Data Screened Interval (ft bgs): 18.0-23.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 11.56 Purge Water Disposal Method: O/WS

Purge Device dedicated bladder pump Pump Intake Depth: 20.5ft

Begin Purge Time: 0819 End Purge Time: 0858

Time	Depth to Water (feet below MP)	PSI Pump Setting	ml/min Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
0825	11.52	17.1	275	1.9	14.3	0.86	505	6.19	-41.6	40.1	S. BROWN, SULPHUROUS; ^W
0830	11.52			3.0	14.3	1.32	516	6.24	-56.4	19.0	S. WHT. PARTICULATE
0835	11.52			4.3	14.2	0.65	522	6.27	-64.9	9.14	CLEAR, N.O., S. PAR
0840	11.52			5.9	14.2	0.47	523	6.30	-69.7	6.08	CLEAR, N.O., N.S.
0845	11.52			7.3	14.2	0.47	524	6.33	-73.7	4.80	" "
0850	11.52			8.6	14.2	0.36	525	6.33	-75.5	4.52	" "
0855				10.1	14.2	0.32	524	6.33	-77.1	3.99	" "

* EACH DISAGREES

Stabilization Criteria 3% 10% , or 3<0.5 3% ± 0.1 ± 10 mv 10% or 3 < 5 NTU

Sampling Data

Sample ID: SPL-GW-MW31-0824 Time Collected: 0900 Weather: 60s, OVERCAST

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

Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese

Duplicate Sample Collected: Yes No If yes, ID: SPL-GW-MW61-0824

MS/MSD Collected: Yes No

Additional Information/Comments

South Park Landfill

Project No.: 553-1550-067

Date: 8/7/24

Well ID: MW-14

Sampling Organization: Parametrix

Samplers: R. Anderson & Avril Fosbre

Purge Data Screened Interval (ft bgs): 11.5-21.5

Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 2.43

Purge Water Disposal Method: O/WS

Purge Device: dedicated bladder pump

Pump Intake Depth: 16.5 ft

Begin Purge Time: 1012

End Purge Time: 1041

Time	Depth to Water (feet below MP)	PSI Pump Setting	Purge Rate	Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1020		15	290	1.3	15.8	1.00	591	6.81	-44.0	2.96	CLEAR, S. SULPHUR
1025	2.42			2.3	15.8	0.63	588	6.74	-38.8	1.72	"
1030				3.5	15.9	0.41	591	6.72	-37.7	1.34	V.S. ODOR
1035	2.42			4.6	15.8	0.30	592	6.72	-38.0	1.50	N.O.
1040				6.0	15.8	0.24	593	6.72	-39.0	1.13	"
1045	2.42										

Stabilization Criteria 3% 10%, or 3<0.5 3% ± 0.1 ± 10 mv 10% or 3 < 5 NTU

Sampling Data

Sample ID: SPL-GW-MW14-0824

Time Collected: 1045

Weather: 60s, CLEAR

Sample Description (Color, Turbidity, Odor, Other): CLEAR, N.O., N.S.

Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese

Duplicate Sample Collected: Yes No If yes, ID: _____

MS/MSD Collected: Yes No

Additional Information/Comments

GROUNDWATER SAMPLE COLLECTION FORM

South Park Landfill

Project No.: 553-1550-067 Date: 8/7/24 Well ID: MW-25

Sampling Organization: Parametrix Samplers: R. Anderson & Avril Fosbre

Purge Data Screened Interval (ft bgs): 22.0-27.0 Well Casing/Diameter: PVC/2 in

Initial Depth of Water (Ft below TOC): 14.37 Purge Water Disposal Method: O/WS

Purge Device dedicated bladder pump Pump Intake Depth: 24.5 ft

Begin Purge Time: 1255 End Purge Time: 1327

Time	Depth to Water (feet below MP)	PSI Pump Setting	ml/min Purge Rate	L Cum. Vol. Purged	Temp (°C)	DO (mg/L)	Specific Conductivity (µS/cm)	pH (units)	ORP (mv)	Turbidity (NTU)	Comments
1305	14.37	18	260	1.5	14.9	1.11	1155	6.58	-48.3	3.11	CLEAR, N.S., PHOSPHORUS
1310				2.8	14.8	0.60	1171	6.60	-60.2	2.41	N.S. V.S. N.H.T. PAR
1315	14.37			4.0	14.8	0.43	1176	6.61	-66.3	0.96	" "
1320				5.2	14.7	0.31	1180	6.62	-70.4	1.20	CLEAR, N.S., V.S.
1325	14.37			6.5	14.7	0.32	1182	6.64	-74.5	0.87	" "

Stabilization Criteria 3% 10% 3% ± 0.1 ± 10 mv 10% or 3 < 5 NTU

Sampling Data OR < 0.5

Sample ID: SPL-GW-MW25-0824 Time Collected: 1330 Weather: 60s, CLEAR

Sample Description (Color, Turbidity, Odor, Other): CLEAR, N.O., N.S.

Sample Analyses: cis-1,2-DCE, vinyl chloride, total iron, total manganese

Duplicate Sample Collected: Yes No If yes, ID: _____

MS/MSD Collected: Yes No

Additional Information/Comments

Water Level Measurement Field Report

DATE 8/6/24	JOB NO. 553-1550-067
PROJECT: South Park Landfill	CLIENT: Seattle Public Utilities
LOCATION: Seattle, WA	
WEATHER <i>Partly cloudy</i>	TEMP <i>low 50's</i> ° at <i>607</i> AM <i>low 50's</i> ° at <i>739</i> PM
PRESENT AT SITE: <i>Rudolf Anderson & April Forber</i>	

THE FOLLOWING WAS NOTED:

WELL NUMBER	Time	Measured Depth to Water (ft from TOC or SG level)	Total Measured Well Depth (ft from TOC)	Measuring Point	Total Well Depth (ft bgs)	Screen Interval (ft bgs)	SU (ft)
MW-12	<i>713</i>	<i>6.64</i>		TOC	15.3	10-15	1.52
MW-14	<i>708</i>	<i>3.42</i>		TOC	21.8	11.5-21.5	0.8
<i>*</i> MW-29	<i>702</i>	<i>8.91</i>		TOC	30	20-30	-0.29
MW-18	<i>641</i>	<i>15.98</i>		TOC	40.4	30-40	1.25
MW-25	<i>722</i>	<i>14.40</i>		TOC	27	22-27	2.79
MW-32	<i>739</i>	<i>11.41</i>		TOC	24	19-24	-0.44
MW-33	<i>735</i>	<i>11.58</i>		TOC	25	20-25	-0.47
MW-26	<i>620</i>	<i>10.25</i>		TOC	25	15-25	2.39
MW-27	<i>632</i>	<i>8.99</i>		TOC	20	10-20	2.04
MW-10	<i>723</i>	<i>13.66</i>		TOC	45	35-45	1.65
<i>+</i> MW-24	<i>N/A</i>	<i>N/A</i>		TOC	45.3	35-45	1.56
MW-08	<i>631</i>	<i>9.04</i>		TOC	45.6	35.5-45.5	1.88
MW-30	<i>610</i>	<i>10.79</i>		TOC	13	8-13	-0.53
MW-31	<i>607</i>	<i>11.54</i>		TOC	23	18-23	-0.46

Comments: **10 mins to equilibrate*
+ Broken lock required off site assistance given no bolt cutters were on hand. when ~~arrived~~ at 1330, depth to water was 9.54'

TOC – top of PVC casing SG – staff gauge

SIGNED:



Rudolf Anderson

Attachment 2

Draft Groundwater Quality Data Summary
Third Quarter 2024



Groundwater Quality Data Summary, Third Quarter 2024, South Park Landfill

Parameter	Units	Cleanup Level	Upgradient Wells				Downgradient Wells											Trip Blanks		
			A-Zone				Perched Zone		A-Zone						B-Zone				MW-80	MW-81
			MW-12	MW-14	MW-29	MW-60 (MW-29 Dup)	MW-30 ¹	MW-25	MW-26	MW-27	MW-31 ¹	MW-61 (MW-31 Dup)	MW-32 ²	MW-33 ²	MW-08	MW-10	MW-18 ²	MW-24	MW-80	MW-81
8/7/24	8/7/24	8/7/24	8/7/24	8/6/24	8/7/24	8/6/24	8/6/24	8/6/24	8/6/24	8/6/24	8/6/24	8/6/24	8/6/24	8/7/24	8/6/24	8/6/24	8/7/24	8/6/24	8/6/24	8/7/24
Field Parameters																				
Temperature	C		14.8	15.8	12.8	--	15.3	14.7	12.3	13.6	14.2	--	14.9	16.9	13.6	14.6	14.8	12.9	--	--
Dissolved Oxygen	mg/L		0.36	0.24	0.30	--	0.27	0.32	0.28	0.29	0.32	--	0.36	0.23	0.22	0.05	0.37	0.49	--	--
Specific Conductivity	µS/cm		520	593	835	--	616	1182	315.8	513	524	--	831	1299	1097	1449	589	1152	--	--
pH	units		6.13	6.72	6.80	--	6.29	6.64	6.04	6.57	5.33	--	6.86	6.80	6.77	7.03	6.75	6.72	--	--
Redox	mv		133.5	-39.0	-87.5	--	0.9	-74.5	39.9	-73.6	-77.1	--	-93.7	-100.3	-101.2	-128.0	-71.3	-75.1	--	--
Turbidity	NTU		0.68	1.13	1.24	--	1.27	0.87	1.71	7.47	3.99	--	0.67	0.50	1.54	0.82	0.75	4.44	--	--
Metals																				
Iron, Total	mg/L	27 A-Zone	0.228	5.05	21.4	21.8	3.65	35.4	9.10	20.8	22.2	20.0	16.1	18.7	--	--	--	--	--	--
		31 B-Zone	--	--	--	--	--	--	--	--	--	--	--	--	15.2	37.7	14.9	30.3	--	--
Manganese, Total	mg/L	2.2	0.0290	0.929	0.636	0.593	0.155	2.87	0.109	0.537	0.945	0.835	1.33	1.97	0.916	2.15	0.820	1.92	--	--
Volatile Organic Compounds																				
Vinyl Chloride	µg/L	0.29	0.0200 U	0.0200 U	0.0200 UJ	0.126	0.232	0.249	0.0200 U	0.0581	0.741	0.793	0.306	0.192	0.0613	0.0802	0.0205	0.0501	0.0200 U	0.0200 U
Cis-1,2-Dichloroethene	µg/L	16	0.20 U	0.20 U	0.20 UJ	0.20 U	0.74	0.20 U	0.22	0.20 U	0.33	0.34	0.36	0.20 U	0.20 U	0.53	0.20 U	0.20 U	0.20 U	0.20 U

Notes:

- ¹ MW 30 and MW-31 monitor the former Glitsa property and are not CPOC wells.
- ² MW 18 is completed in refuse along the downgradient edge of the Landfill; MW 32 and MW 33 are completed beneath refuse along the downgradient edge.
- █ = Exceeds cleanup level for CPOC wells
- = Not analyzed
- U = The analyte was analyzed for but was not detected above the reported sample quantitation limit.
- UJ = The analyte was not detected above a detection limit that may be inaccurate or imprecise.

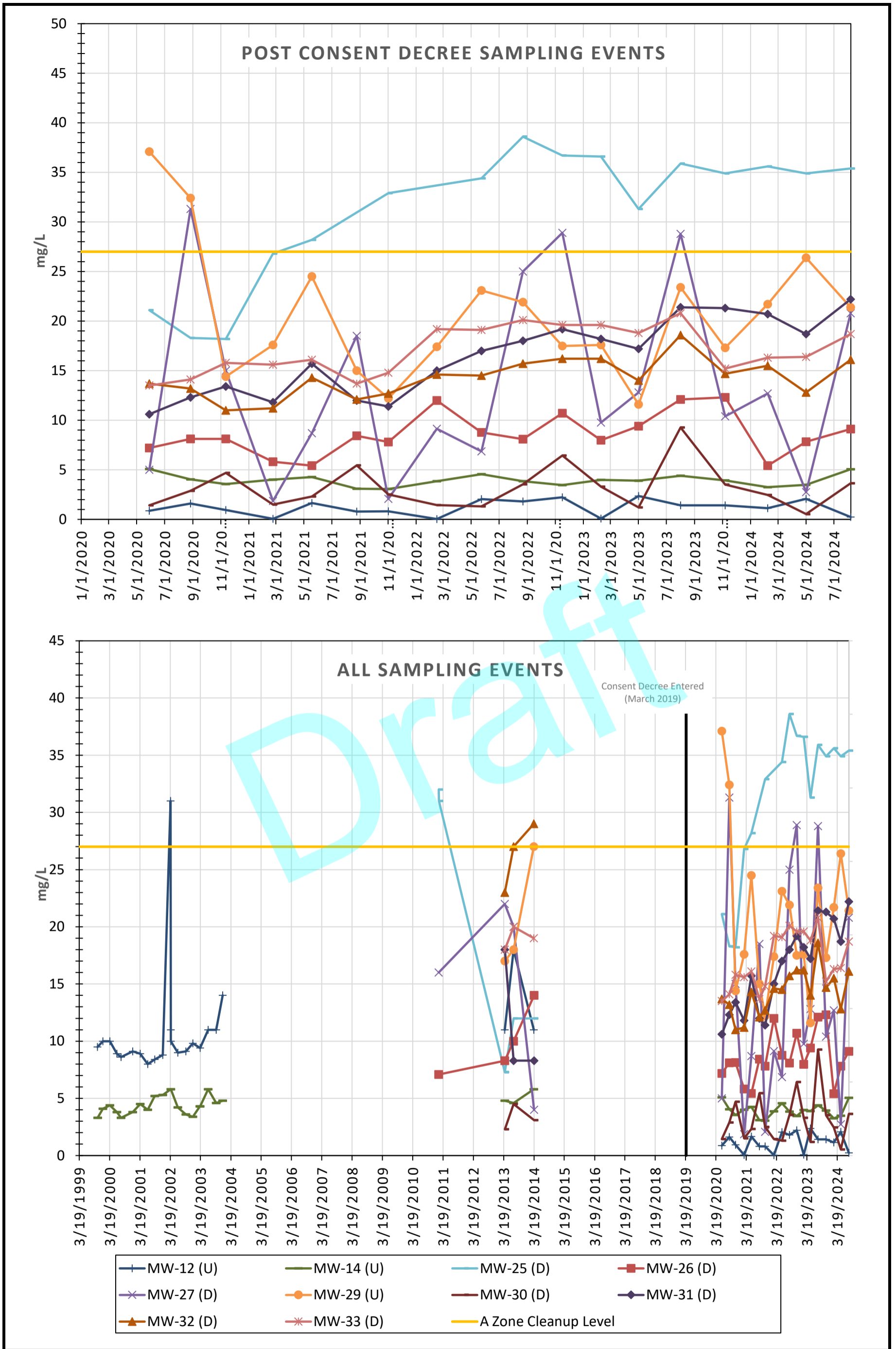
Abbreviations:

- µg/L Micrograms per liter
- mg/L Milligrams per liter
- µS/cm Microsiemens per centimeter
- NTU Nephelometric Turbidity unit
- CPOC Conditional point of compliance

Attachment 3

Draft Groundwater Quality Time Series
Plots through Third Quarter 2024

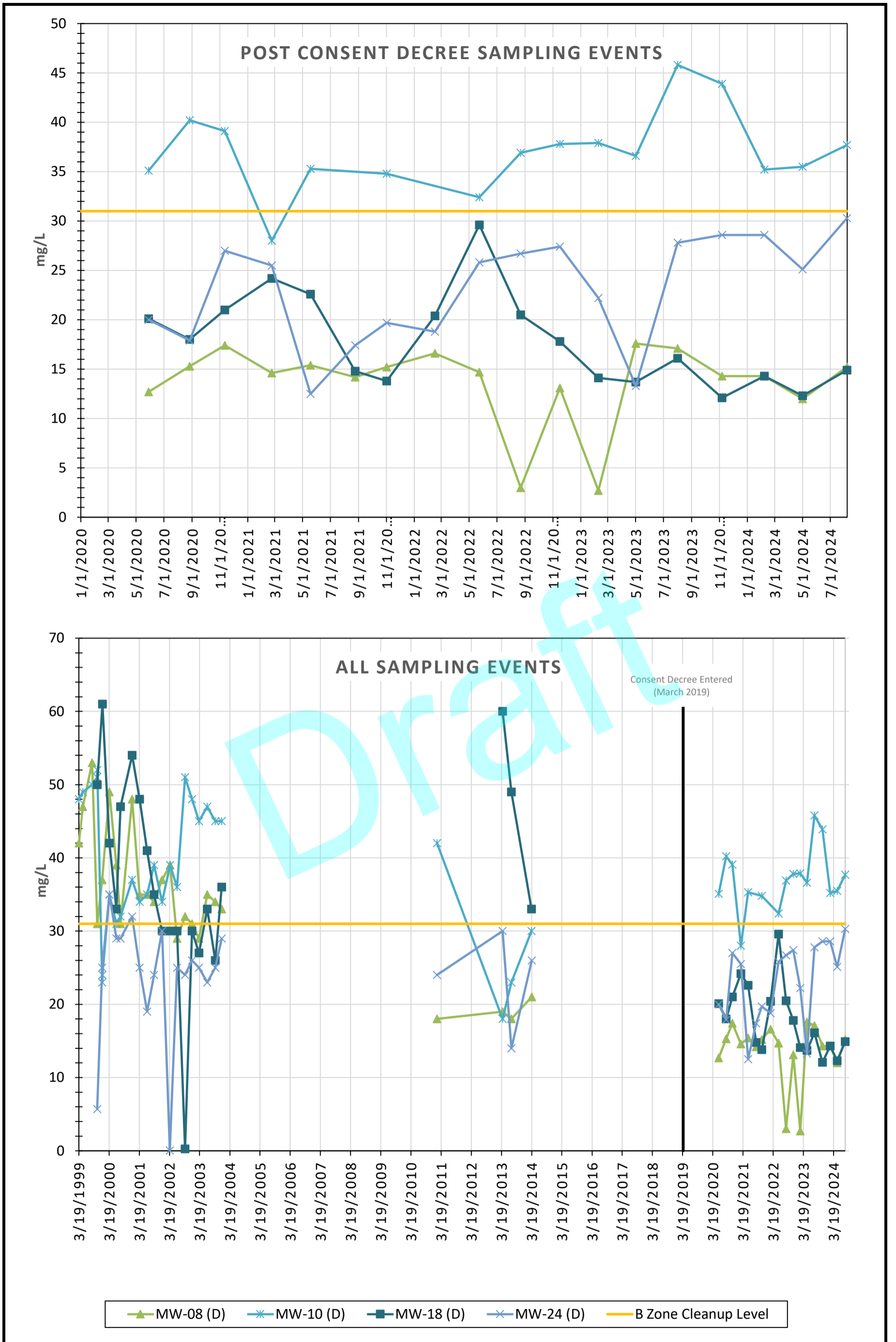




Parametrix

**Total Iron Concentrations
A-Zone CPOC Wells
South Park Landfill**

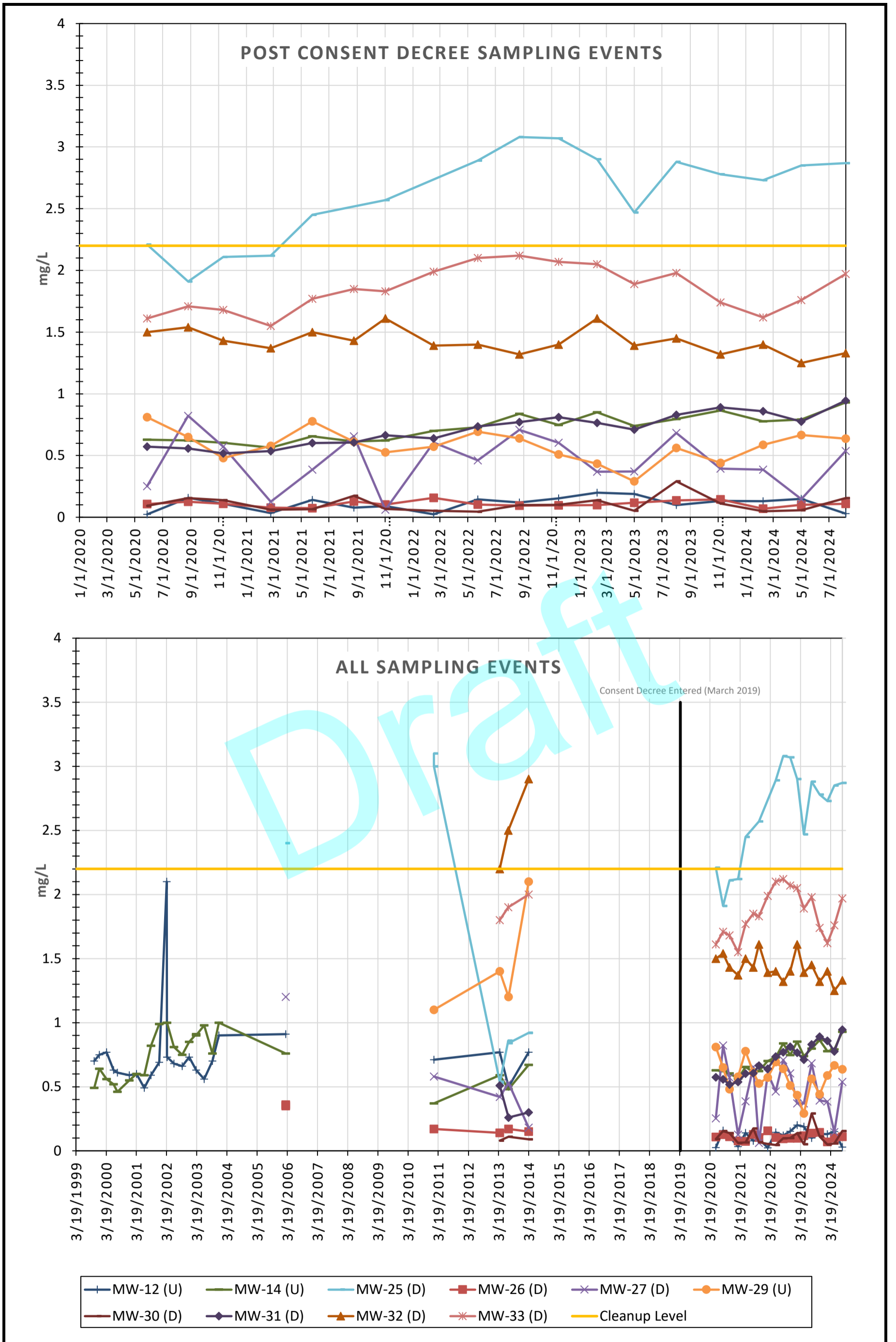
D = Downgradient
U = Upgradient

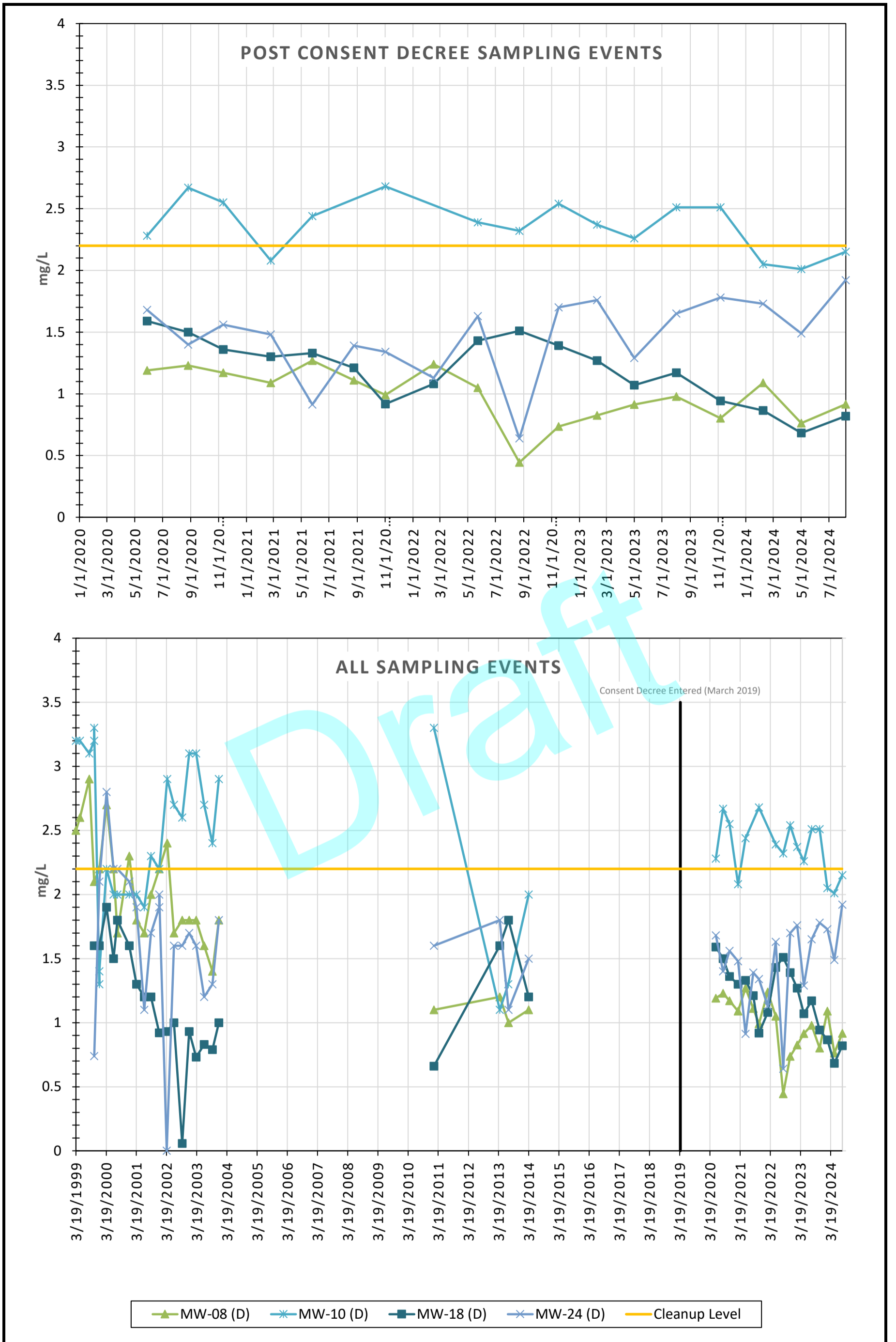


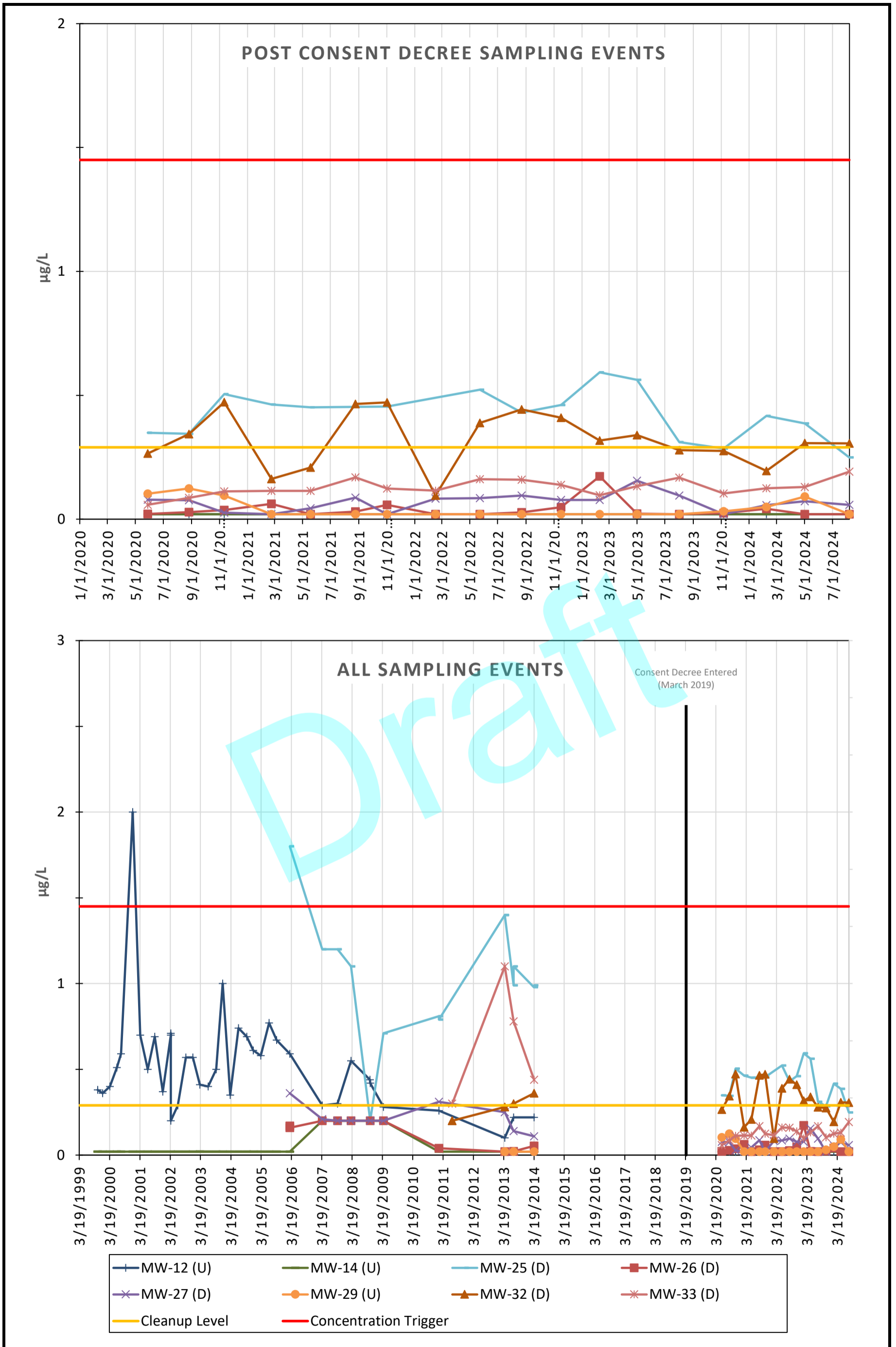
Parametrix

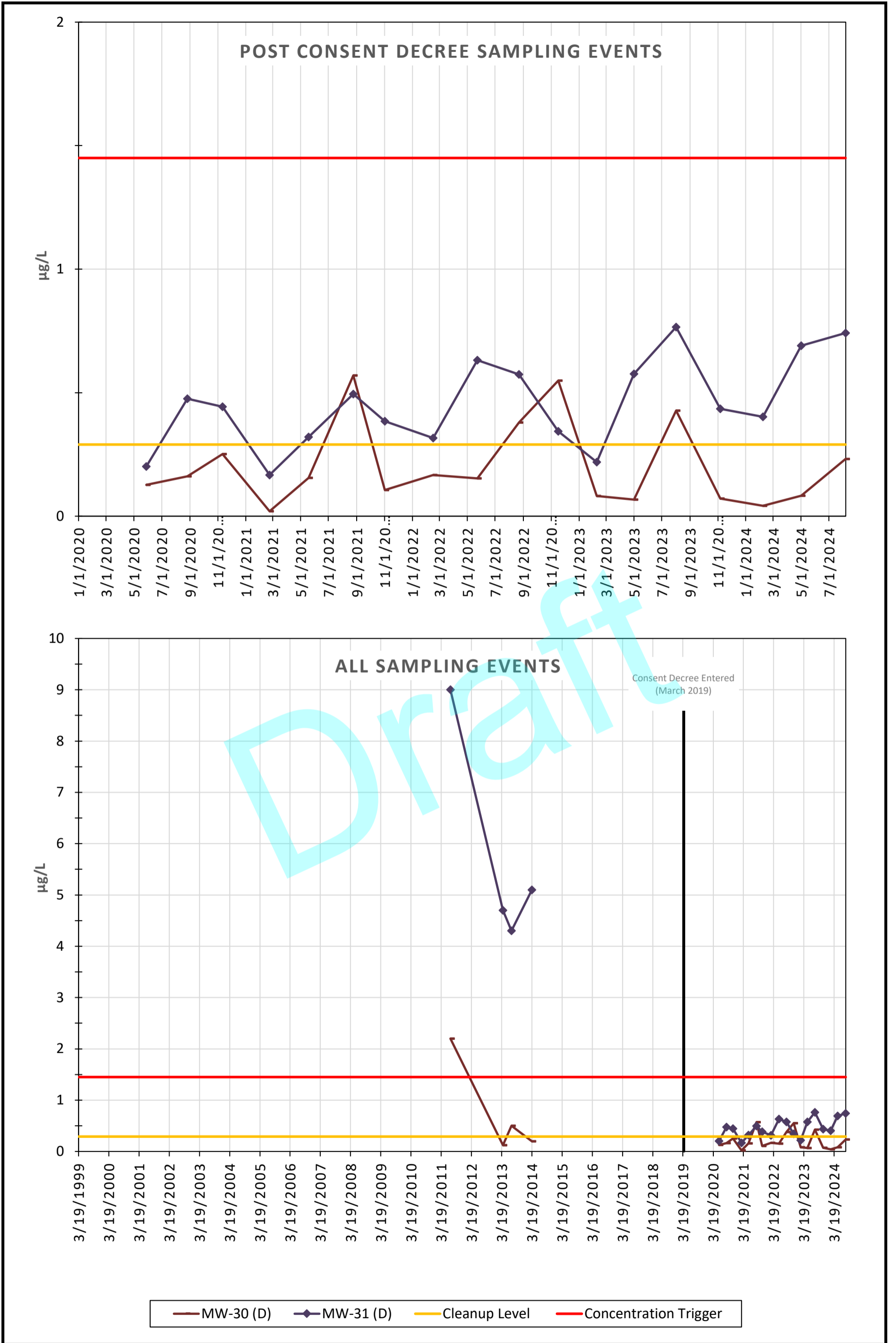
**Total Iron Concentrations
B-Zone CPOC Wells
South Park Landfill**

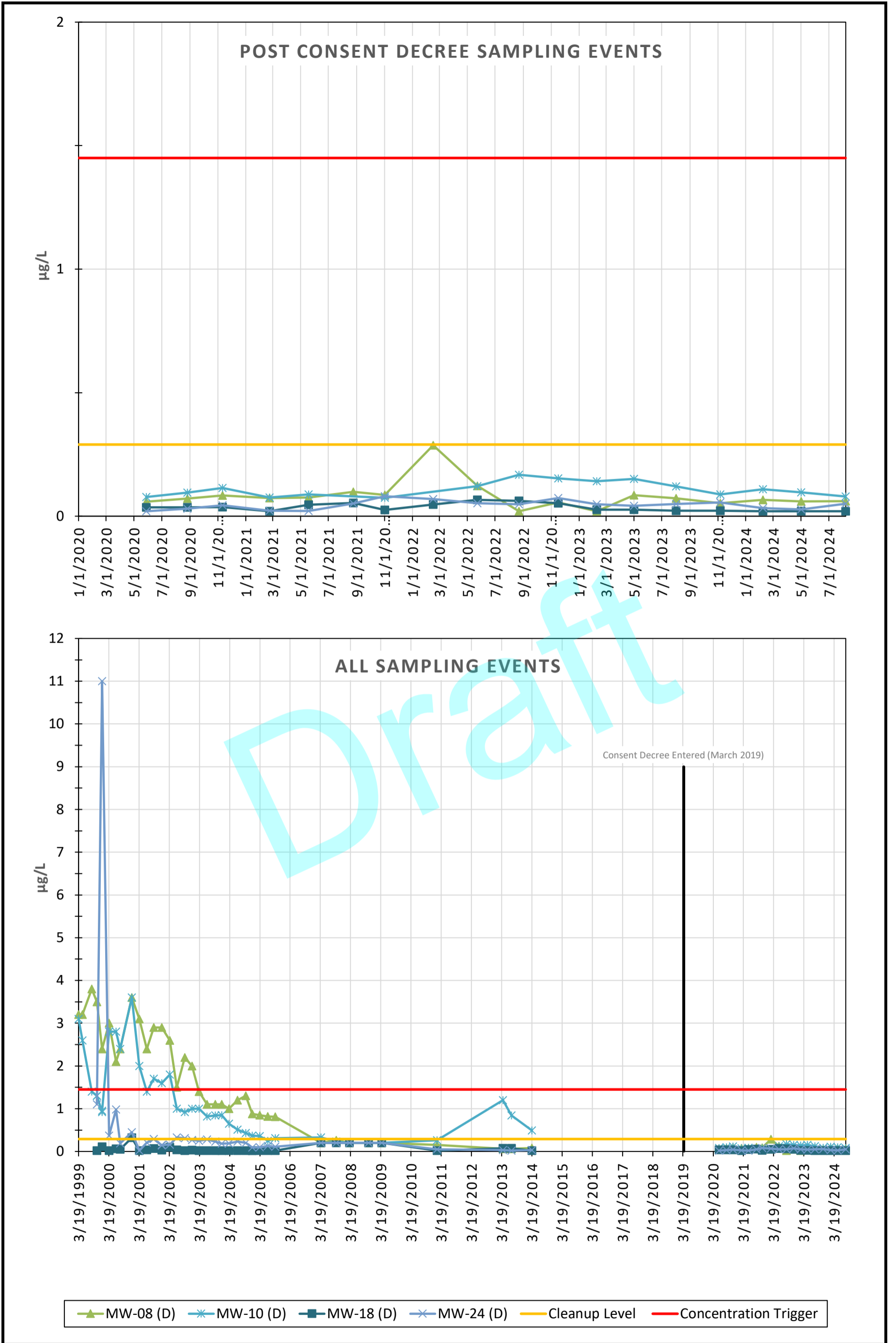
D = Downgradient
U = Upgradient







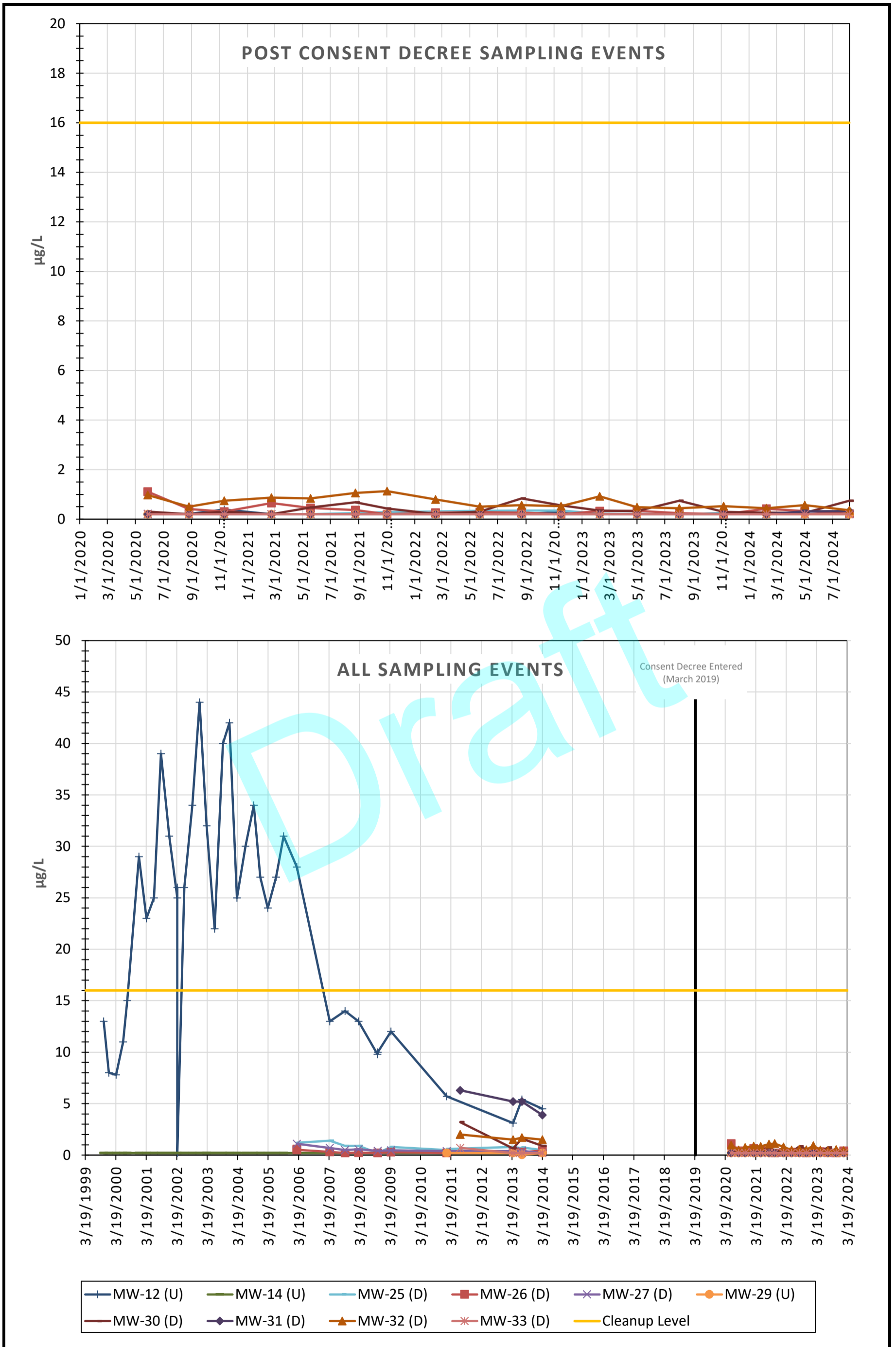




Parametrix

**Vinyl Chloride Concentrations
B-Zone CPOC Wells
South Park Landfill**

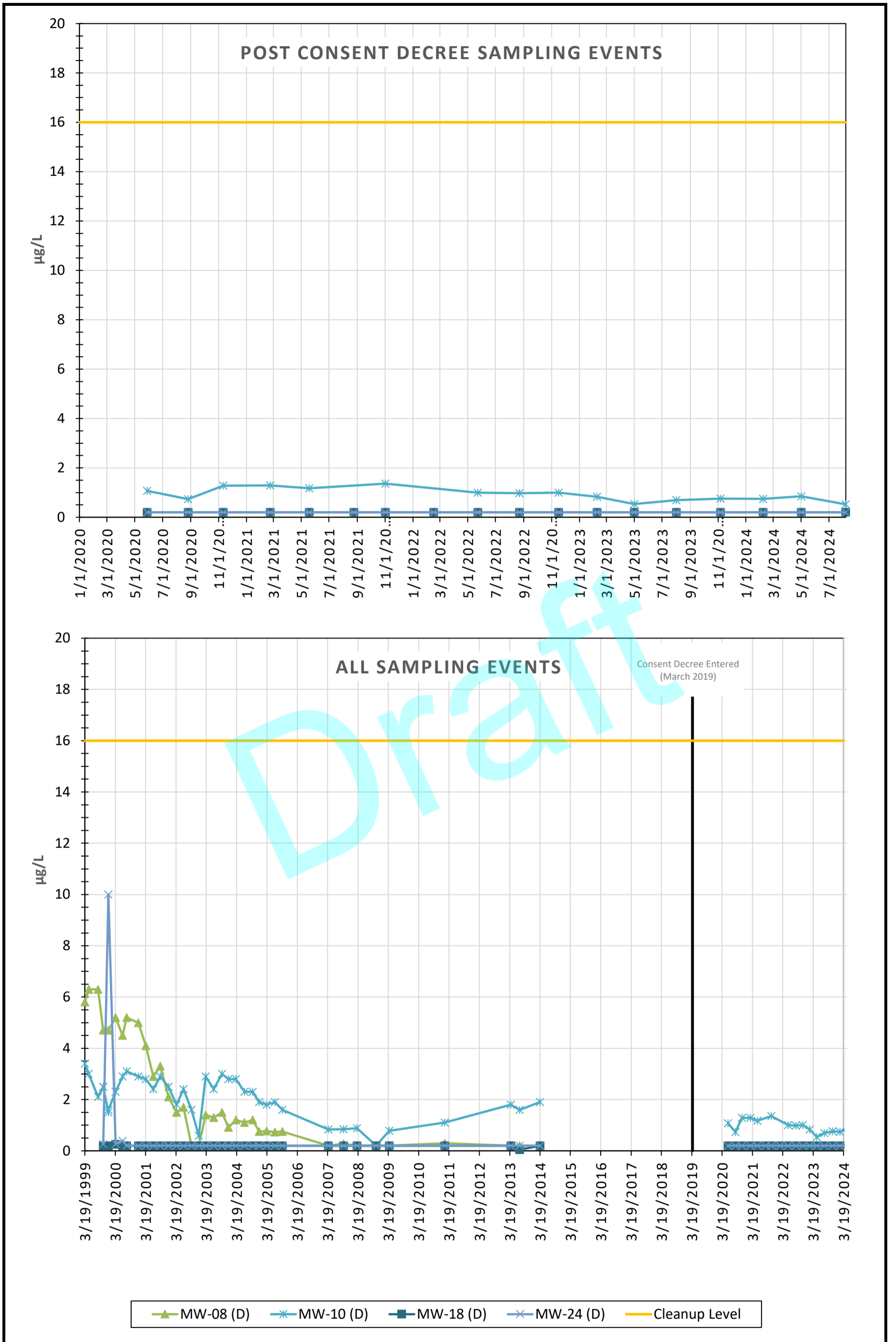
D = Downgradient
U = Upgradient



Parametrix

**Cis-1,2-Dichloroethene Concentrations
A-Zone CPOC Wells
South Park Landfill**

D = Downgradient
U = Upgradient



Attachment 4

Draft Summary of Vinyl Chloride Trend
Analyses for Wells that Exceed the
Cleanup Level, Third Quarter 2024



**Summary of Vinyl Chloride Trend Analyses for Wells that Exceed the Cleanup Level,
South Park Landfill, Third Quarter 2024**

Well ID	# Samples	# ND's	% ND's	MK S Value ¹	Significance Level ²	Trend ²
MW-32	18	0	0	-27	0.1650	no trend

Notes:

Trend analyses include all post-Consent Decree data (Second Quarter 2020 through Third Quarter 2024)

ND = Non-detected value

¹ The Mann-Kendall test statistic, S, is based on pair-wise differences between each concentration and all earlier concentrations. A positive S value indicates an increasing trend, a zero value indicates no trend, and a negative value indicates a decreasing trend. The null hypothesis for this test is no trend. For a positive S value, the alternative hypothesis is an increasing trend. For a negative S value, the alternative hypothesis is a decreasing trend.

² Significance of the Mann-Kendall test statistic, S, is a function of the magnitude of S and the number of concentrations, with a larger positive or negative value of S and a greater number of concentrations leading to a higher statistical significance. An increasing or decreasing trend is considered statistically significant if the significance level is less than 0.05 (the confidence level is greater than 0.95); otherwise, no trend is indicated. Value provided is the tabulated p-value reported by ProUCL.

Draft

Attachment 5

Third Quarter 2024 Groundwater
Laboratory Data





Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

26 August 2024

Min-Soon Yim
Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle, WA 98124-4018

RE: South Park Landfill -Parametrix Water (553-155-067)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
24H0113

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager



The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number: 24H0113	Turn-around Requested: 2 weeks	Date: 8/6/24
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: of
Client Contact: Laura Lee	Phone: 206 394-3665	No. of Coolers: Cooler Temps: Temps:

Client Project Name: SPU South Park Landfill					Analysis Requested								Notes/Comments		
Samplers: Richard Anderson & Avril Fosbre HWA					Cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn								
Sample ID	Date	Time	Matrix	Number of Containers											
SPL-GW-MW12-0824			water	7	X	X	X								
SPL-GW-MW14-0824			water	7	X	X	X								
SPL-GW-MW29-0824			water	13	X	X	X								MS/MSD
SPL-GW-MW18-0824			water	7	X	X	X								
SPL-GW-MW32-0824			water	7	X	X	X								
SPL-GW-MW33-0824	8/6/24	1510	water	7	X	X	X								
SPL-GW-MW10-0824			water	7	X	X	X								
SPL-GW-MW60-0824			water	7	X	X	X								
SPL-GW-MW80-0824	8/6/24	1645	water	2	X	X									
Comments/Special Instructions	Relinquished by: (Signature) 		Received by: (Signature) 		Relinquished by: (Signature)			Received by: (Signature)							
	Printed Name: Richard Anderson		Printed Name: Savannah Wright		Printed Name:			Printed Name:							
	Company: HWA		Company: ARI		Company:			Company:							
	Date & Time: 8/6/24 1645		Date & Time: 8-6-24 16:36		Date & Time:			Date & Time:							

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: Unless specified by work order or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:23

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW33-0824	24H0113-01	Water	06-Aug-2024 15:10	06-Aug-2024 16:36
SPL-GW-MW80-0824	24H0113-02	Water	06-Aug-2024 00:00	06-Aug-2024 16:36



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:23

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill
Work Order: 24H0113

Sample receipt

Samples as listed on the preceding page were received August 6, 2024 under ARI work order 24H0113. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

Volatiles - EPA Method 8260D-SIM (Selected Ion Monitoring)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.



Seattle Public Utilities

700-5th Ave, Ste 4900, Box 34018

Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

Project Manager: Min-Soon Yim

Reported:

26-Aug-2024 13:23

Total Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations including interference checks were within method requirements for reported elements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.



WORK ORDER

24H0113

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Seattle Public Utilities

Project Manager: Kelly Bottem

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

Preservation Confirmation

Container ID	Container Type	pH
24H0113-01 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0113-01 B	VOA Vial, Clear, 40 mL, HCL	
24H0113-01 C	VOA Vial, Clear, 40 mL, HCL	
24H0113-01 D	VOA Vial, Clear, 40 mL, HCL	
24H0113-01 E	VOA Vial, Clear, 40 mL	
24H0113-01 F	VOA Vial, Clear, 40 mL	
24H0113-01 G	VOA Vial, Clear, 40 mL	
24H0113-02 A	VOA Vial, Clear, 40 mL	
24H0113-02 B	VOA Vial, Clear, 40 mL, HCL	

RL
Preservation Confirmed By

8-7-24
Date



Cooler Receipt Form

ARI Client: Public Utility
 COC No(s): _____ (NA)
 Assigned ARI Job No: 24H0113

Project Name: _____
 Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES NO
 Were custody papers included with the cooler? YES NO
 Were custody papers properly filled out (ink, signed, etc.) YES NO
 Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 8.5
 Time 16:36
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 9708
 Cooler Accepted by: JW Date: 8-6-24 Time: 16:36

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES NO
 What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
 Was sufficient ice used (if appropriate)? NA YES NO
 How were bottles sealed in plastic bags? Individually Grouped Not
 Did all bottles arrive in good condition (unbroken)? YES NO
 Were all bottle labels complete and legible? YES NO
 Did the number of containers listed on COC match with the number of containers received? YES NO
 Did all bottle labels and tags agree with custody papers? YES NO
 Were all bottles used correct for the requested analyses? YES NO
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES NO
 Were all VOC vials free of air bubbles? NA YES NO
 Was sufficient amount of sample sent in each bottle? YES NO
 Date VOC Trip Blank was made at ARI: _____ (NA)
 Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: RL Date: 8-7-24 Time: 08:01 Labels checked by: RL

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

No sample time on SPL-GW-MW80-0824.

By: _____ Date: _____



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:23
--	--	---------------------------------------

SPL-GW-MW33-0824
24H0113-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/06/2024 15:10
Instrument: NT3 Analyst: LN	Analyzed: 08/08/2024 11:53
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0113-01 B
Preparation Batch: BMH0151	Sample Size: 10 mL
Prepared: 08/08/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	108	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	99.3	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:23
--	--	---------------------------------------

SPL-GW-MW33-0824
24H0113-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/06/2024 15:10
Instrument: NT16 Analyst: PKC	Analyzed: 08/12/2024 20:42
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0113-01 G
Preparation Batch: BMH0217	Sample Size: 10 mL
Prepared: 08/12/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.192	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	101	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:23
--	--	---------------------------------------

SPL-GW-MW33-0824
24H0113-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS1	Analyst: DOE	Sampled: 08/06/2024 15:10	Analyzed: 08/22/2024 21:18
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMH0376	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 08/20/2024		Extract ID: 24H0113-01 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	18.7	mg/L	D
Manganese	7439-96-5	50	0.0250	1.97	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:23
--	--	---------------------------------------

SPL-GW-MW80-0824
24H0113-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/06/2024 00:00
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0151	Analyzed: 08/08/2024 12:15
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24H0113-02 B
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>97.3</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:23
--	--	---------------------------------------

SPL-GW-MW80-0824
24H0113-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/06/2024 00:00
Instrument: NT16 Analyst: PKC	Analyzed: 08/12/2024 20:18
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0113-02 A
Preparation Batch: BMH0217	Sample Size: 10 mL
Prepared: 08/12/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.1</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:23
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0151 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMH0151-BLK1)					Prepared: 08-Aug-2024 Analyzed: 08-Aug-2024 09:40					
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.05		ug/L	5.00		101	80-129			
Surrogate: Toluene-d8	4.88		ug/L	5.00		97.6	80-120			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:23
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0151 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BMH0151-BS1)				Prepared: 08-Aug-2024 Analyzed: 08-Aug-2024 08:12						
cis-1,2-Dichloroethene	8.70	0.20	ug/L	10.0		87.0	80-121			
Surrogate: 1,2-Dichloroethane-d4	5.01		ug/L	5.00		100	80-129			
Surrogate: Toluene-d8	5.00		ug/L	5.00		99.9	80-120			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:23
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0151 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BMH0151-BSD1)				Prepared: 08-Aug-2024 Analyzed: 08-Aug-2024 08:56						
cis-1,2-Dichloroethene	10.1	0.20	ug/L	10.0		101	80-121	14.80	30	
Surrogate: 1,2-Dichloroethane-d4	5.07		ug/L	5.00		101	80-129			
Surrogate: Toluene-d8	4.91		ug/L	5.00		98.2	80-120			



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:23

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0217 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMH0217-BLK1)					Prepared: 12-Aug-2024 Analyzed: 12-Aug-2024 19:55					
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4950		ug/L	5000		99.0	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:23
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0217 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BMH0217-BS1)					Prepared: 12-Aug-2024 Analyzed: 12-Aug-2024 18:43					
Vinyl chloride	2.48	0.0200	ug/L	2.00		124	62-141			
Surrogate: 1,2-Dichloroethane-d4	5110		ug/L	5000		102	80-129			



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:23

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0217 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BMH0217-BSD1)					Prepared: 12-Aug-2024 Analyzed: 12-Aug-2024 19:08					
Vinyl chloride	2.42	0.0200	ug/L	2.00		121	62-141	2.29	30	
Surrogate: 1,2-Dichloroethane-d4	5100		ug/L	5000		102	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:23
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMH0376 - EPA 6020B

Instrument: ICPMS1 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMH0376-BLK1)						Prepared: 20-Aug-2024 Analyzed: 22-Aug-2024 15:21					
Iron	54	ND	0.0360	mg/L							U
Manganese	55	ND	0.000500	mg/L							U
LCS (BMH0376-BS1)						Prepared: 20-Aug-2024 Analyzed: 22-Aug-2024 15:26					
Iron	54	4.66	0.0360	mg/L	5.00		93.1	80-120			
Manganese	55	0.0259	0.000500	mg/L	0.0250		103	80-120			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:23
--	--	--------------------------------

Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Iron-54	NELAP,WADOE,DoD-ELAP
Manganese-55	NELAP,WADOE,DoD-ELAP
EPA 8260D in Water	
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
EPA 8260D-SIM in Water	
Vinyl chloride	NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2025
WADOE	WA Dept of Ecology	C558	06/30/2025
WA-DW	Ecology - Drinking Water	C558	06/30/2025



Seattle Public Utilities

700-5th Ave, Ste 4900, Box 34018

Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

Project Manager: Min-Soon Yim

Reported:

26-Aug-2024 13:23

Notes and Definitions

- * Flagged value is not within established control limits.
- D The reported value is from a dilution
- HC The natural concentration of the spiked analyte is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- J Estimated concentration value detected below the reporting limit.
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

26 August 2024

Min-Soon Yim
Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle, WA 98124-4018

RE: South Park Landfill -Parametrix Water (553-155-067)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
24H0116

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.



Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number: <u>2440116</u>	Turn-around Requested: 2 weeks	Date: <u>8/6/24</u>
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: <u>2</u> of <u>2</u>
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: _____ Cooler Temps: _____

Client Project Name: SPU South Park Landfill					Analysis Requested								Notes/Comments
Client Project #: 553-1550-067		Samplers: Richard Anderson & Avril Fosbre HWA			cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn						
Sample ID	Date	Time	Matrix	Number of Containers									
SPL-GW-MW25-0824			water	7	X	X	X						
SPL-GW-MW30-0824	8/6/24	1000	water	7 6	X	X	X						
SPL-GW-MW31-0824	8/6/24	0900	water	13	X	X	X						MS/MSD
SPL-GW-MW24-0824	8/6/24	1405	water	7	X	X	X						
SPL-GW-MW26-0824	8/6/24	1315	water	7	X	X	X						
SPL-GW-MW08-0824	8/6/24	1115	water	7	X	X	X						
SPL-GW-MW27-0824	8/6/24	1210	water	7	X	X	X						
SPL-GW-MW61-0824	8/6/24	0945	water	7	X	X	X						
SPL-GW-MW81-0824			water	2	X	X							

Comments/Special Instructions	Relinquished by: (Signature) <u>[Signature]</u>	Received by: (Signature) <u>[Signature]</u>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: <u>Richard Anderson</u>	Printed Name: <u>Savannah Wright</u>	Printed Name:	Printed Name:
	Company: <u>HWA</u>	Company: <u>Ari</u>	Company:	Company:
	Date & Time: <u>8/6/24 1645</u>	Date & Time: <u>8-6-24 16:36</u>	Date & Time:	Date & Time:

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: Unless specified by work order or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:25

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW30-0824	24H0116-01	Water	06-Aug-2024 10:00	06-Aug-2024 16:36
SPL-GW-MW31-0824	24H0116-02	Water	06-Aug-2024 09:00	06-Aug-2024 16:36
SPL-GW-MW24-0824	24H0116-03	Water	06-Aug-2024 14:05	06-Aug-2024 16:36
SPL-GW-MW26-0824	24H0116-04	Water	06-Aug-2024 13:15	06-Aug-2024 16:36
SPL-GW-MW08-0824	24H0116-05	Water	06-Aug-2024 11:15	06-Aug-2024 16:36
SPL-GW-MW27-0824	24H0116-06	Water	06-Aug-2024 12:10	06-Aug-2024 16:36
SPL-GW-MW61-0824	24H0116-07	Water	06-Aug-2024 09:45	06-Aug-2024 16:36



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:25

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill
Work Order: 24H0116

Sample receipt

Samples as listed on the preceding page were received August 6, 2024 under ARI work order 24H0116. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits.

Volatiles - EPA Method 8260D-SIM (Selected Ion Monitoring)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:25

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Total Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations including interference checks were within method requirements for reported elements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.



WORK ORDER

24H0116

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Seattle Public Utilities

Project Manager: Kelly Bottem

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

Preservation Confirmation

Container ID	Container Type	pH
24H0116-01 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0116-01 B	VOA Vial, Clear, 40 mL, HCL	
24H0116-01 C	VOA Vial, Clear, 40 mL, HCL	
24H0116-01 D	VOA Vial, Clear, 40 mL	
24H0116-01 E	VOA Vial, Clear, 40 mL	
24H0116-01 F	VOA Vial, Clear, 40 mL	
24H0116-02 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0116-02 B	VOA Vial, Clear, 40 mL, HCL	
24H0116-02 C	VOA Vial, Clear, 40 mL, HCL	
24H0116-02 D	VOA Vial, Clear, 40 mL, HCL	
24H0116-02 E	VOA Vial, Clear, 40 mL, HCL	
24H0116-02 F	VOA Vial, Clear, 40 mL, HCL	
24H0116-02 G	VOA Vial, Clear, 40 mL, HCL	
24H0116-02 H	VOA Vial, Clear, 40 mL	
24H0116-02 I	VOA Vial, Clear, 40 mL	
24H0116-02 J	VOA Vial, Clear, 40 mL	
24H0116-02 K	VOA Vial, Clear, 40 mL	
24H0116-02 L	VOA Vial, Clear, 40 mL	
24H0116-02 M	VOA Vial, Clear, 40 mL	
24H0116-03 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0116-03 B	VOA Vial, Clear, 40 mL, HCL	
24H0116-03 C	VOA Vial, Clear, 40 mL, HCL	
24H0116-03 D	VOA Vial, Clear, 40 mL, HCL	
24H0116-03 E	VOA Vial, Clear, 40 mL	
24H0116-03 F	VOA Vial, Clear, 40 mL	
24H0116-03 G	VOA Vial, Clear, 40 mL	
24H0116-04 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0116-04 B	VOA Vial, Clear, 40 mL, HCL	
24H0116-04 C	VOA Vial, Clear, 40 mL, HCL	
24H0116-04 D	VOA Vial, Clear, 40 mL, HCL	
24H0116-04 E	VOA Vial, Clear, 40 mL	
24H0116-04 F	VOA Vial, Clear, 40 mL	
24H0116-04 G	VOA Vial, Clear, 40 mL	
24H0116-05 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass



WORK ORDER

24H0116

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Seattle Public Utilities

Project Manager: Kelly Bottem

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

24H0116-05 B	VOA Vial, Clear, 40 mL, HCL
24H0116-05 C	VOA Vial, Clear, 40 mL, HCL
24H0116-05 D	VOA Vial, Clear, 40 mL, HCL
24H0116-05 E	VOA Vial, Clear, 40 mL
24H0116-05 F	VOA Vial, Clear, 40 mL
24H0116-05 G	VOA Vial, Clear, 40 mL
24H0116-06 A	HDPE NM, 500 mL, 1:1 HNO3 < 2 Pass
24H0116-06 B	VOA Vial, Clear, 40 mL, HCL
24H0116-06 C	VOA Vial, Clear, 40 mL, HCL
24H0116-06 D	VOA Vial, Clear, 40 mL, HCL
24H0116-06 E	VOA Vial, Clear, 40 mL
24H0116-06 F	VOA Vial, Clear, 40 mL
24H0116-06 G	VOA Vial, Clear, 40 mL
24H0116-07 A	HDPE NM, 500 mL, 1:1 HNO3 < 2 Pass
24H0116-07 B	VOA Vial, Clear, 40 mL, HCL
24H0116-07 C	VOA Vial, Clear, 40 mL, HCL
24H0116-07 D	VOA Vial, Clear, 40 mL, HCL
24H0116-07 E	VOA Vial, Clear, 40 mL
24H0116-07 F	VOA Vial, Clear, 40 mL
24H0116-07 G	VOA Vial, Clear, 40 mL

RL

Preservation Confirmed By

8-7-24

Date



Cooler Receipt Form

ARI Client: Public Utility
 COC No(s): _____ (NA)
 Assigned ARI Job No: 2440116

Project Name: _____
 Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES (NO)
 Were custody papers included with the cooler? YES (NO)
 Were custody papers properly filled out (ink, signed, etc.) YES (NO)

Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry) 8.5

Time 16:36

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 9708

Cooler Accepted by: JW Date: 8-6-24 Time: 16:36

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)
 What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
 Was sufficient ice used (if appropriate)? NA YES (NO)
 How were bottles sealed in plastic bags? Individually Grouped Not
 Did all bottles arrive in good condition (unbroken)? YES (NO)
 Were all bottle labels complete and legible? YES (NO)
 Did the number of containers listed on COC match with the number of containers received? YES (NO)
 Did all bottle labels and tags agree with custody papers? YES (NO)
 Were all bottles used correct for the requested analyses? YES (NO)
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES (NO)
 Were all VOC vials free of air bubbles? NA YES (NO)
 Was sufficient amount of sample sent in each bottle? YES (NO)
 Date VOC Trip Blank was made at ARI: _____ (NA)
 Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: RL Date: 8-7-24 Time: 09:17 Labels checked by: RL

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

By: _____ Date: _____



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW30-0824
24H0116-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)		Sampled: 08/06/2024 10:00
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0151	Sample Size: 10 mL	Analyzed: 08/08/2024 12:37
Sample Preparation:	Prepared: 08/08/2024	Final Volume: 10 mL	Extract ID: 24H0116-01 B

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.74	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	102	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW30-0824
24H0116-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/06/2024 10:00
Instrument: NT16 Analyst: PKC	Analyzed: 08/12/2024 21:04
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0116-01 F
Preparation Batch: BMH0217	Sample Size: 10 mL
Prepared: 08/12/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.232	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:25

SPL-GW-MW30-0824
24H0116-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B		Sampled: 08/06/2024 10:00
Instrument: ICPMS1 Analyst: DOE		Analyzed: 08/22/2024 20:54
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Extract ID: 24H0116-01 A 01
	Preparation Batch: BMH0376	Sample Size: 25 mL
	Prepared: 08/20/2024	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	3.65	mg/L	D
Manganese	7439-96-5	5	0.00250	0.155	mg/L	D



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:25

SPL-GW-MW31-0824
24H0116-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/06/2024 09:00
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0151	Analyzed: 08/08/2024 12:59
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24H0116-02 B
	Final Volume: 10 mL	
	Prepared: 08/08/2024	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.33	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>104</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW31-0824
24H0116-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/06/2024 09:00
Instrument: NT16 Analyst: PKC	Analyzed: 08/12/2024 21:27
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0116-02 K
Preparation Batch: BMH0217	Sample Size: 10 mL
Prepared: 08/12/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.741	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>100</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW31-0824
24H0116-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS1	Analyst: DOE	Sampled: 08/06/2024 09:00	Analyzed: 08/22/2024 19:14
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMH0376	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 08/20/2024		Extract ID: 24H0116-02 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	22.2	mg/L	D
Manganese	7439-96-5	50	0.0250	0.945	mg/L	D



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:25

SPL-GW-MW24-0824
24H0116-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 08/06/2024 14:05
Instrument: NT3 Analyst: LN Analyzed: 08/08/2024 13:21
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 24H0116-03 D
Preparation Batch: BMH0151 Sample Size: 10 mL
Prepared: 08/08/2024 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>106</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW24-0824
24H0116-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/06/2024 14:05
Instrument: NT16 Analyst: PKC	Analyzed: 08/12/2024 21:50
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0116-03 F
Preparation Batch: BMH0217	Sample Size: 10 mL
Prepared: 08/12/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0501	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW24-0824
24H0116-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS1	Analyst: DOE	Sampled: 08/06/2024 14:05	Analyzed: 08/22/2024 21:08
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMH0376	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 08/20/2024		Extract ID: 24H0116-03 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	30.3	mg/L	D
Manganese	7439-96-5	50	0.0250	1.92	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW26-0824
24H0116-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/06/2024 13:15
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0151	Analyzed: 08/08/2024 13:43
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24H0116-04 D
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.22	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	100	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW26-0824
24H0116-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/06/2024 13:15
Instrument: NT16 Analyst: PKC	Analyzed: 08/12/2024 22:13
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0116-04 E
Preparation Batch: BMH0217	Sample Size: 10 mL
Prepared: 08/12/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>103</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW26-0824
24H0116-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS1	Analyst: DOE	Sampled: 08/06/2024 13:15	Analyzed: 08/22/2024 20:59
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMH0376	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 08/20/2024		Extract ID: 24H0116-04 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	9.10	mg/L	D
Manganese	7439-96-5	10	0.00500	0.109	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW08-0824
24H0116-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/06/2024 11:15
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0151	Analyzed: 08/08/2024 14:06
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24H0116-05 C
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>111</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW08-0824
24H0116-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/06/2024 11:15
Instrument: NT16 Analyst: PKC	Analyzed: 08/12/2024 22:36
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0116-05 F
Preparation Batch: BMH0217	Sample Size: 10 mL
Prepared: 08/12/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0613	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>101</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW08-0824
24H0116-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 08/06/2024 11:15
Instrument: ICPMS1 Analyst: DOE	Preparation Batch: BMH0376	Final Volume: 25 mL	Analyzed: 08/22/2024 21:13
Sample Preparation:	Prepared: 08/20/2024		Extract ID: 24H0116-05 A 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	15.2	mg/L	D
Manganese	7439-96-5	50	0.0250	0.916	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW27-0824
24H0116-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/06/2024 12:10
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0151	Analyzed: 08/08/2024 14:28
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24H0116-06 B
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>107</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW27-0824
24H0116-06 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/06/2024 12:10
Instrument: NT16 Analyst: PKC	Analyzed: 08/12/2024 22:58
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0116-06 E
Preparation Batch: BMH0217	Sample Size: 10 mL
Prepared: 08/12/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0581	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>102</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW27-0824
24H0116-06 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS1	Analyst: DOE	Sampled: 08/06/2024 12:10	Analyzed: 08/22/2024 21:04
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMH0376	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 08/20/2024		Extract ID: 24H0116-06 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	20.8	mg/L	D
Manganese	7439-96-5	10	0.00500	0.537	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW61-0824
24H0116-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/06/2024 09:45
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0151	Analyzed: 08/08/2024 14:50
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24H0116-07 B
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.34	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>107</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW61-0824
24H0116-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/06/2024 09:45
Instrument: NT16 Analyst: PKC	Analyzed: 08/12/2024 23:21
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0116-07 E
Preparation Batch: BMH0217	Sample Size: 10 mL
Prepared: 08/12/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.793	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>102</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

SPL-GW-MW61-0824
24H0116-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 08/06/2024 09:45
Instrument: ICPMS1 Analyst: DOE	Preparation Batch: BMH0376	Final Volume: 25 mL	Analyzed: 08/22/2024 19:58
Sample Preparation:	Prepared: 08/20/2024	Extract ID: 24H0116-07 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	20.0	mg/L	D
Manganese	7439-96-5	5	0.00250	0.835	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0151 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMH0151-BLK1)					Prepared: 08-Aug-2024 Analyzed: 08-Aug-2024 09:40					
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.05		ug/L	5.00		101	80-129			



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:25

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0151 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BMH0151-BS1)					Prepared: 08-Aug-2024 Analyzed: 08-Aug-2024 08:12					
cis-1,2-Dichloroethene	8.70	0.20	ug/L	10.0		87.0	80-121			
Surrogate: 1,2-Dichloroethane-d4	5.01		ug/L	5.00		100	80-129			



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:25

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0151 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BMH0151-BSD1)					Prepared: 08-Aug-2024 Analyzed: 08-Aug-2024 08:56					
cis-1,2-Dichloroethene	10.1	0.20	ug/L	10.0		101	80-121	14.80	30	
Surrogate: 1,2-Dichloroethane-d4	5.07		ug/L	5.00		101	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0151 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BMH0151-MS1)		Source: 24H0116-02		Prepared: 08-Aug-2024		Analyzed: 08-Aug-2024 15:44				
cis-1,2-Dichloroethene	9.14	0.20	ug/L	10.0	0.33	88.1	80-121			
Surrogate: 1,2-Dichloroethane-d4	5.38		ug/L	5.00	5.21	108	80-129			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0151 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BMH0151-MSD1)		Source: 24H0116-02		Prepared: 08-Aug-2024		Analyzed: 08-Aug-2024 16:06				
cis-1,2-Dichloroethene	8.44	0.20	ug/L	10.0	0.33	81.2	80-121	7.92	30	
Surrogate: 1,2-Dichloroethane-d4	5.48		ug/L	5.00	5.21	110	80-129			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0217 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMH0217-BLK1)					Prepared: 12-Aug-2024 Analyzed: 12-Aug-2024 19:55					
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4950		ug/L	5000		99.0	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0217 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BMH0217-BS1)					Prepared: 12-Aug-2024 Analyzed: 12-Aug-2024 18:43					
Vinyl chloride	2.48	0.0200	ug/L	2.00		124	62-141			
Surrogate: 1,2-Dichloroethane-d4	5110		ug/L	5000		102	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0217 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BMH0217-BSD1)					Prepared: 12-Aug-2024 Analyzed: 12-Aug-2024 19:08					
Vinyl chloride	2.42	0.0200	ug/L	2.00		121	62-141	2.29	30	
Surrogate: 1,2-Dichloroethane-d4	5100		ug/L	5000		102	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0217 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BMH0217-MS1)		Source: 24H0116-02		Prepared: 12-Aug-2024		Analyzed: 12-Aug-2024 23:42				
Vinyl chloride	3.04	0.0200	ug/L	2.00	0.741	115	62-141			
Surrogate: 1,2-Dichloroethane-d4	5250		ug/L	5000	5000	105	80-129			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0217 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BMH0217-MSD1)		Source: 24H0116-02		Prepared: 12-Aug-2024		Analyzed: 13-Aug-2024 00:04				
Vinyl chloride	3.19	0.0200	ug/L	2.00	0.741	122	62-141	4.86	30	
Surrogate: 1,2-Dichloroethane-d4	5290		ug/L	5000	5000	106	80-129			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMH0376 - EPA 6020B

Instrument: ICPMS1 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMH0376-BLK1)						Prepared: 20-Aug-2024 Analyzed: 22-Aug-2024 15:21					
Iron	54	ND	0.0360	mg/L							U
Manganese	55	ND	0.000500	mg/L							U
LCS (BMH0376-BS1)						Prepared: 20-Aug-2024 Analyzed: 22-Aug-2024 15:26					
Iron	54	4.66	0.0360	mg/L	5.00		93.1	80-120			
Manganese	55	0.0259	0.000500	mg/L	0.0250		103	80-120			
Duplicate (BMH0376-DUP1)						Source: 24H0116-02 Prepared: 20-Aug-2024 Analyzed: 22-Aug-2024 19:19					
Iron	54	23.5	1.80	mg/L		22.2			5.92	20	D
Manganese	55	0.996	0.0250	mg/L		0.945			5.22	20	D
Matrix Spike (BMH0376-MS1)						Source: 24H0116-02 Prepared: 20-Aug-2024 Analyzed: 22-Aug-2024 19:24					
Iron	54	28.9	1.80	mg/L	5.00	22.2	135	75-125			HC, D
Manganese	55	1.02	0.0250	mg/L	0.0250	0.945	313	75-125			HC, D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BMH0376-MSD1)						Source: 24H0116-02 Prepared: 20-Aug-2024 Analyzed: 22-Aug-2024 19:28					
Iron	54	29.4	1.80	mg/L	5.00	22.2	144	75-125	1.53	20	HC, D
Manganese	55	1.03	0.0250	mg/L	0.0250	0.945	350	75-125	0.91	20	HC, D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 26-Aug-2024 13:25
--	--	---------------------------------------

Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Iron-54	NELAP,WADOE,DoD-ELAP
Manganese-55	NELAP,WADOE,DoD-ELAP
EPA 8260D in Water	
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
EPA 8260D-SIM in Water	
Vinyl chloride	NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2025
WADOE	WA Dept of Ecology	C558	06/30/2025
WA-DW	Ecology - Drinking Water	C558	06/30/2025



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
26-Aug-2024 13:25

Notes and Definitions

- * Flagged value is not within established control limits.
- D The reported value is from a dilution
- HC The natural concentration of the spiked analyte is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- J Estimated concentration value detected below the reporting limit.
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.



Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

28 August 2024

Min-Soon Yim
Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle, WA 98124-4018

RE: South Park Landfill -Parametrix Water (553-155-067)

Please find enclosed sample receipt documentation and analytical results for samples from the project referenced above.

Sample analyses were performed according to ARI's Quality Assurance Plan and any provided project specific Quality Assurance Plan. Each analytical section of this report has been approved and reviewed by an analytical peer, the appropriate Laboratory Supervisor or qualified substitute, and a technical reviewer.

Should you have any questions or problems, please feel free to contact us at your convenience.

Associated Work Order(s)
24H0168

Associated SDG ID(s)
N/A

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed in the enclosed Narrative. ARI, an accredited laboratory, certifies that the report results for which ARI is accredited meets all the requirements of the accrediting body. A list of certified analyses, accreditations, and expiration dates is included in this report.

Release of the data contained in this hardcopy data package has been authorized by the Laboratory Manager or his/her designee, as verified by the following signature.

Analytical Resources, LLC

Kelly Bottem, Client Services Manager

The results in this report apply to the samples analyzed in accordance with the chain of custody document. This analytical report must be reproduced in its entirety.





Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number: 24H0168	Turn-around Requested: 2 weeks	Date: 8/7/24
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 2
Client Contact: Laura Lee	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 500

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments			
Samplers: Richard Anderson & Avril Fosbre HWA					cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn											
Sample ID	Date	Time	Matrix	Number of Containers														
SPL-GW-MW12-0824	8/7/24	945	water	7	X	X	X											
SPL-GW-MW14-0824	8/7/24	1045	water	7	X	X	X											
SPL-GW-MW29-0824	8/7/24	810	water	13	X	X	X											
SPL-GW-MW18-0824	8/7/24	810 655	water	7	X	X	X											MS/MSD
SPL-GW-MW32-0824	8/7/24	1210	water	7	X	X	X											
SPL-GW-MW33-0824			water	7	X	X	X											
SPL-GW-MW10-0824	8/7/24	1520	water	7	X	X	X											
SPL-GW-MW60-0824			water	7	X	X	X											
SPL-GW-MW80-0824			water	2	X	X												

Comments/Special Instructions	Relinquished by: (Signature) 	Received by: (Signature) 	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Richard Anderson	Printed Name: Matthew Deen	Printed Name:	Printed Name:
	Company: HWA	Company: ARCI	Company:	Company:
	Date & Time: 8/7/24 1631	Date & Time: 08/07/24 1631	Date & Time:	Date & Time:

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.


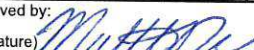
Sample Retention Policy: Unless specified by work order or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

ARI Assigned Number: 24H0168	Turn-around Requested: 2 weeks	Date: 8/7/24
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: 2 of 2
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 5.600

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments		
Client Project #: 553-1550-067		Samplers: Richard Anderson & Avril Fosbre HWA			cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn										
Sample ID	Date	Time	Matrix	Number of Containers													
SPL-GW-MW25-0824	8/7/24	1330	water	7	X	X	X										
SPL-GW-MW30-0824			water	7	X	X	X										
SPL-GW-MW31-0824			water	13	X	X	X										MS/MSD
SPL-GW-MW24-0824			water	7	X	X	X										
SPL-GW-MW26-0824			water	7	X	X	X										
SPL-GW-MW08-0824			water	7	X	X	X										
SPL-GW-MW27-0824			water	7	X	X	X										
SPL-GW-MW61-0824			water	7	X	X	X										
SPL-GW-MW81-0824			water	2	X	X											

Comments/Special Instructions	Relinquished by: (Signature) 	Received by: (Signature) 	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Richard Anderson	Printed Name: Matt Deam	Printed Name:	Printed Name:
	Company: HWA	Company: ARICE	Company:	Company:
	Date & Time: 8/7/24 1631	Date & Time: 08/07/24 1631	Date & Time:	Date & Time:

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the Invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: Unless specified by work order or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number:	Turn-around Requested: 2 weeks	Date: 8/7/24
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 2
Client Contact: Laura Lee	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 5000

Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

Client Project Name: SPU South Park Landfill					Analysis Requested								Notes/Comments		
Samplers: Richard Anderson & Avril Fosbre HWA					cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn								
Sample ID	Date	Time	Matrix	Number of Containers											
SPL-GW-MW12-0824	8/7/24	945	water	7	X	X	X								
SPL-GW-MW14-0824	8/7/24	1045	water	7	X	X	X								
SPL-GW-MW29-0824	8/7/24	810	water	13	X	X	X								MS/MSD
SPL-GW-MW18-0824	8/7/24	0655	water	7	X	X	X								
SPL-GW-MW32-0824	8/7/24	1210	water	7	X	X	X								
SPL-GW-MW33-0824			water	7	X	X	X								
SPL-GW-MW10-0824	8/7/24	1520	water	7	X	X	X								
SPL-GW-MW60-0824	8/7/24	840	water	7	X	X	X	(RA)							
SPL-GW-MW80-0824			water	2	X	X									
Comments/Special Instructions	Relinquished by: (Signature)		Received by: (Signature)			Relinquished by: (Signature)			Received by: (Signature)						
	Printed Name: Richard Anderson		Printed Name: Matthew Deane			Printed Name:			Printed Name:						
	Company: HWA		Company: ARCC			Company:			Company:						
	Date & Time: 8/7/24 1631		Date & Time: 08/07/24 (63)			Date & Time:			Date & Time:						

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: Unless specified by work order or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

COC amended to include additional samples
Please disregard strikeout on sample SPL-GW-MW60-0824

Chain of Custody Record & Laboratory Analysis Request

ARI Assigned Number:	Turn-around Requested: 2 weeks	Date: 8/7/24
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: 2 of 2
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 5.60C

Analytical Resources, Incorporated
 Analytical Chemists and Consultants
 4611 South 134th Place, Suite 100
 Tukwila, WA 98168
 206-695-6200 206-695-6201 (fax)

Client Project Name: SPU South Park Landfill	Analysis Requested							Notes/Comments
Client Project #: 553-1550-067	Samplers: Richard Anderson & Avril Fosbre HWA							

Sample ID	Date	Time	Matrix	Number of Containers	cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn											
SPL-GW-MW25-0824	8/7/24	1330	water	7	X	X	X											
SPL-GW-MW30-0824			water	7	X	X	X											
SPL-GW-MW31-0824			water	13	X	X	X											MS/MSD
SPL-GW-MW24-0824			water	7	X	X	X											
SPL-GW-MW26-0824			water	7	X	X	X											
SPL-GW-MW08-0824			water	7	X	X	X											
SPL-GW-MW27-0824			water	7	X	X	X											
SPL-GW-MW61-0824			water	7	X	X	X											
SPL-GW-MW81-0824	8/7/24	N/A	water	2	X	X	(RA)											

Comments/Special Instructions	Relinquished by: (Signature)	Received by: (Signature)	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Richard Anderson	Printed Name: Matthew Deam	Printed Name:	Printed Name:
	Company: HWA	Company: ARCC	Company:	Company:
	Date & Time: 8/7/24 1631	Date & Time: 08/07/24 1631	Date & Time:	Date & Time:

Limits of Liability: ARI will perform all requested services in accordance with appropriate methodology following ARI Standard Operating Procedures and the ARI Quality Assurance Program. This program meets standards for the industry. The total liability of ARI, its officers, agents, employees, or successors, arising out of or in connection with the requested services, shall not exceed the invoiced amount for said services. The acceptance by the client of a proposal for services by ARI release ARI from any liability in excess thereof, notwithstanding any provision to the contrary in any contract, purchase order or co-signed agreement between ARI and the Client.

Sample Retention Policy: Unless specified by work order or contract, all water/soil samples submitted to ARI will be discarded or returned, no sooner than 90 days after receipt or 60 days after submission of hardcopy data, whichever is longer. Sediment samples submitted under PSDDA/PSEP/SMS protocol will be stored frozen for up to one year and then discarded.

COC amended to include additional samples
Please disregard strikeout on sample SPL-GW-MW81-0824



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
28-Aug-2024 08:57

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW12-0824	24H0168-01	Water	07-Aug-2024 09:45	07-Aug-2024 16:31
SPL-GW-MW14-0824	24H0168-02	Water	07-Aug-2024 10:45	07-Aug-2024 16:31
SPL-GW-MW29-0824	24H0168-03	Water	07-Aug-2024 08:10	07-Aug-2024 16:31
SPL-GW-MW18-0824	24H0168-04	Water	07-Aug-2024 06:55	07-Aug-2024 16:31
SPL-GW-MW32-0824	24H0168-05	Water	07-Aug-2024 12:10	07-Aug-2024 16:31
SPL-GW-MW10-0824	24H0168-06	Water	07-Aug-2024 15:20	07-Aug-2024 16:31
SPL-GW-MW60-0824	24H0168-07	Water	07-Aug-2024 08:40	07-Aug-2024 16:31
SPL-GW-MW25-0824	24H0168-08	Water	07-Aug-2024 13:30	07-Aug-2024 16:31
SPL-GW-MW81-0824	24H0168-09	Water	07-Aug-2024 00:00	07-Aug-2024 16:31



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
28-Aug-2024 08:57

Work Order Case Narrative

Client: SEattle Public Utilities
Project: South Park Landfill
Work Order: 24H0168

Sample receipt

Samples as listed on the preceding page were received August 7, 2024 under ARI work order 24H0168. For details regarding sample receipt, please refer to the Cooler Receipt Form.

Volatiles - EPA Method SW8260D

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) spike recoveries and relative percent difference (RPD) were within advisory control limits with the exception of analytes flagged on the associated forms.

Volatiles - EPA Method 8260D-SIM (Selected Ion Monitoring)

The sample(s) were analyzed within the recommended holding times.

Initial and continuing calibrations were within method requirements.

Internal standard areas were within limits.

The surrogate percent recoveries were within control limits.

The method blank(s) were clean at the reporting limits.



Seattle Public Utilities

700-5th Ave, Ste 4900, Box 34018

Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

Project Manager: Min-Soon Yim

Reported:

28-Aug-2024 08:57

The blank spike and blank spike duplicate (BS/LCS and BSD/LCSD) spike recoveries and relative percent difference (RPD) were within control limits.

The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits.

Total Metals - EPA Method 6020B

The sample(s) were digested and analyzed within the recommended holding times.

Initial and continuing calibrations including interference checks were within method requirements for reported elements.

The method blank(s) were clean at the reporting limits.

The blank spike (BS/LCS) percent recoveries were within control limits.

The matrix spike (MS) percent recoveries and the duplicate (DUP) relative percent difference (RPD) were within advisory control limits.



WORK ORDER

24H0168

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Seattle Public Utilities

Project Manager: Kelly Bottem

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

Preservation Confirmation

Container ID	Container Type	pH
24H0168-01 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0168-01 B	VOA Vial, Clear, 40 mL, HCL	
24H0168-01 C	VOA Vial, Clear, 40 mL, HCL	
24H0168-01 D	VOA Vial, Clear, 40 mL, HCL	
24H0168-01 E	VOA Vial, Clear, 40 mL	
24H0168-01 F	VOA Vial, Clear, 40 mL	
24H0168-01 G	VOA Vial, Clear, 40 mL	
24H0168-02 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0168-02 B	VOA Vial, Clear, 40 mL, HCL	
24H0168-02 C	VOA Vial, Clear, 40 mL, HCL	
24H0168-02 D	VOA Vial, Clear, 40 mL, HCL	
24H0168-02 E	VOA Vial, Clear, 40 mL	
24H0168-02 F	VOA Vial, Clear, 40 mL	
24H0168-02 G	VOA Vial, Clear, 40 mL	
24H0168-03 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0168-03 B	VOA Vial, Clear, 40 mL, HCL	
24H0168-03 C	VOA Vial, Clear, 40 mL, HCL	
24H0168-03 D	VOA Vial, Clear, 40 mL, HCL	
24H0168-03 E	VOA Vial, Clear, 40 mL	
24H0168-03 F	VOA Vial, Clear, 40 mL	
24H0168-03 G	VOA Vial, Clear, 40 mL	
24H0168-03 H	VOA Vial, Clear, 40 mL	
24H0168-03 I	VOA Vial, Clear, 40 mL	
24H0168-03 J	VOA Vial, Clear, 40 mL	
24H0168-03 K	VOA Vial, Clear, 40 mL, HCL	
24H0168-03 L	VOA Vial, Clear, 40 mL, HCL	
24H0168-03 M	VOA Vial, Clear, 40 mL, HCL	
24H0168-04 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0168-04 B	VOA Vial, Clear, 40 mL, HCL	
24H0168-04 C	VOA Vial, Clear, 40 mL, HCL	
24H0168-04 D	VOA Vial, Clear, 40 mL, HCL	
24H0168-04 E	VOA Vial, Clear, 40 mL	
24H0168-04 F	VOA Vial, Clear, 40 mL	
24H0168-04 G	VOA Vial, Clear, 40 mL	



WORK ORDER

24H0168

Samples will be discarded 90 days after submission of a final report unless other instructions are received

Client: Seattle Public Utilities	Project Manager: Kelly Bottem
Project: South Park Landfill -Parametrix Water	Project Number: 553-155-067

24H0168-05 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0168-05 B	VOA Vial, Clear, 40 mL, HCL	
24H0168-05 C	VOA Vial, Clear, 40 mL, HCL	
24H0168-05 D	VOA Vial, Clear, 40 mL, HCL	
24H0168-05 E	VOA Vial, Clear, 40 mL	
24H0168-05 F	VOA Vial, Clear, 40 mL	
24H0168-05 G	VOA Vial, Clear, 40 mL	
24H0168-06 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0168-06 B	VOA Vial, Clear, 40 mL, HCL	
24H0168-06 C	VOA Vial, Clear, 40 mL, HCL	
24H0168-06 D	VOA Vial, Clear, 40 mL, HCL	
24H0168-06 E	VOA Vial, Clear, 40 mL	
24H0168-06 F	VOA Vial, Clear, 40 mL	
24H0168-06 G	VOA Vial, Clear, 40 mL	
24H0168-07 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0168-07 B	VOA Vial, Clear, 40 mL, HCL	
24H0168-07 C	VOA Vial, Clear, 40 mL, HCL	
24H0168-07 D	VOA Vial, Clear, 40 mL, HCL	
24H0168-07 E	VOA Vial, Clear, 40 mL	
24H0168-07 F	VOA Vial, Clear, 40 mL	
24H0168-07 G	VOA Vial, Clear, 40 mL	
24H0168-08 A	HDPE NM, 500 mL, 1:1 HNO3	< 2 Pass
24H0168-08 B	VOA Vial, Clear, 40 mL, HCL	
24H0168-08 C	VOA Vial, Clear, 40 mL, HCL	
24H0168-08 D	VOA Vial, Clear, 40 mL, HCL	
24H0168-08 E	VOA Vial, Clear, 40 mL	
24H0168-08 F	VOA Vial, Clear, 40 mL	
24H0168-08 G	VOA Vial, Clear, 40 mL	
24H0168-09 A	VOA Vial, Clear, 40 mL, HCL	
24H0168-09 B	VOA Vial, Clear, 40 mL	

RL
Preservation Confirmed By

8-8-24
Date



Cooler Receipt Form

ARI Client: Seattle Public Utility Project Name: South Park Landfill
 COC No(s): _____ (NA) Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____
 Assigned ARI Job No: 24H0168 Tracking No: _____ (NA)

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? YES (NO)
 Were custody papers included with the cooler? YES (NO)
 Were custody papers properly filled out (ink, signed, etc.) YES (NO)
 Temperature of Cooler(s) (°C) (recommended 2.0-6.0 °C for chemistry)

Time 16:31 5.6
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: J009708
 Cooler Accepted by: RL for MD Date: 8-7-24 Time: 1631

Complete custody forms and attach all shipping documents

Log-In Phase:

Was a temperature blank included in the cooler? YES (NO)
 What kind of packing material was used? ... Bubble Wrap Wet Ice Gel Packs Baggies Foam Block Paper Other: _____
 Was sufficient ice used (if appropriate)? NA YES (NO)
 How were bottles sealed in plastic bags? Individually Grouped Not
 Did all bottles arrive in good condition (unbroken)? YES (NO)
 Were all bottle labels complete and legible? YES (NO)
 Did the number of containers listed on COC match with the number of containers received? YES (NO)
 Did all bottle labels and tags agree with custody papers? YES (NO)
 Were all bottles used correct for the requested analyses? YES (NO)
 Do any of the analyses (bottles) require preservation? (attach preservation sheet, excluding VOCs) ... NA YES (NO)
 Were all VOC vials free of air bubbles? NA YES (NO)
 Was sufficient amount of sample sent in each bottle? YES (NO)
 Date VOC Trip Blank was made at ARI: _____ (NA)
 Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: RL Date: 8-8-24 Time: 14:19 Labels checked by: RL

**** Notify Project Manager of discrepancies or concerns ****

Sample ID on Bottle	Sample ID on COC	Sample ID on Bottle	Sample ID on COC

Additional Notes, Discrepancies, & Resolutions:

- Samples mw60 and mw81 were both received, but crossed out on COC. Client notified, and samples were not intended to be lined through.

By: RL Date: 8/8/24



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW12-0824
24H0168-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/07/2024 09:45
Instrument: NT3 Analyst: LN	Analyzed: 08/12/2024 14:23
Sample Preparation:	Extract ID: 24H0168-01 B
Preparation Method: EPA 5030C (Purge and Trap)	
Preparation Batch: BMH0210	Sample Size: 10 mL
Prepared: 08/12/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	104	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW12-0824
24H0168-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/07/2024 09:45
Instrument: NT16 Analyst: PKC	Analyzed: 08/13/2024 12:41
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0168-01 E
Preparation Batch: BMH0243	Sample Size: 10 mL
Prepared: 08/13/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.0</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW12-0824
24H0168-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 08/07/2024 09:45
Instrument: ICPMS1 Analyst: DOE	Preparation Batch: BMH0417	Final Volume: 25 mL	Analyzed: 08/26/2024 16:45
Sample Preparation:	Prepared: 08/21/2024	Extract ID: 24H0168-01 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	4	0.144	0.228	mg/L	D
Manganese	7439-96-5	4	0.00200	0.0290	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW14-0824
24H0168-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/07/2024 10:45
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0210	Analyzed: 08/12/2024 14:45
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24H0168-02 B
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>109</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW14-0824
24H0168-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/07/2024 10:45
Instrument: NT16 Analyst: PKC	Analyzed: 08/13/2024 13:04
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0168-02 F
Preparation Batch: BMH0243	Sample Size: 10 mL
Prepared: 08/13/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>102</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW14-0824
24H0168-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS1	Analyst: DOE	Sampled: 08/07/2024 10:45	Analyzed: 08/22/2024 21:27
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMH0417	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 08/21/2024		Extract ID: 24H0168-02 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	5.05	mg/L	D
Manganese	7439-96-5	10	0.00500	0.929	mg/L	D



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
28-Aug-2024 08:57

SPL-GW-MW29-0824
24H0168-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 08/07/2024 08:10
Instrument: NT3 Analyst: LN Analyzed: 08/13/2024 17:25

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 24H0168-03 K
Preparation Batch: BMH0239 Sample Size: 10 mL
Prepared: 08/13/2024 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	113	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW29-0824
24H0168-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/07/2024 08:10
Instrument: NT16 Analyst: PKC	Analyzed: 08/13/2024 13:27
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0168-03 G
Preparation Batch: BMH0243	Sample Size: 10 mL
Prepared: 08/13/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>102</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW29-0824
24H0168-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sampled: 08/07/2024 08:10
Instrument: ICPMS1 Analyst: DOE	Preparation Batch: BMH0417	Analyzed: 08/22/2024 18:05
Sample Preparation:	Prepared: 08/21/2024	Extract ID: 24H0168-03 A 01
	Sample Size: 25 mL	
	Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	21.4	mg/L	D
Manganese	7439-96-5	20	0.0100	0.636	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW18-0824
24H0168-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/07/2024 06:55
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0210	Analyzed: 08/12/2024 15:29
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24H0168-04 B
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>110</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW18-0824
24H0168-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/07/2024 06:55
Instrument: NT16 Analyst: PKC	Analyzed: 08/13/2024 13:52
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0168-04 E
Preparation Batch: BMH0243	Sample Size: 10 mL
Prepared: 08/13/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0205	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>103</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW18-0824
24H0168-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sampled: 08/07/2024 06:55
Instrument: ICPMS1 Analyst: DOE	Preparation Batch: BMH0417	Analyzed: 08/22/2024 21:54
Sample Preparation:	Prepared: 08/21/2024	Extract ID: 24H0168-04 A 01
	Sample Size: 25 mL	
	Final Volume: 25 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	14.9	mg/L	D
Manganese	7439-96-5	20	0.0100	0.820	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW32-0824
24H0168-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/07/2024 12:10
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0210	Analyzed: 08/12/2024 15:52
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24H0168-05 B
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.36	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	114	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW32-0824
24H0168-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/07/2024 12:10
Instrument: NT16 Analyst: PKC	Analyzed: 08/13/2024 14:17
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0168-05 F
Preparation Batch: BMH0243	Sample Size: 10 mL
Prepared: 08/13/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.306	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>104</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW32-0824
24H0168-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS1	Analyst: DOE	Sampled: 08/07/2024 12:10	Analyzed: 08/22/2024 21:59
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMH0417	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 08/21/2024		Extract ID: 24H0168-05 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	16.1	mg/L	D
Manganese	7439-96-5	20	0.0100	1.33	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW10-0824
24H0168-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/07/2024 15:20
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0210	Analyzed: 08/12/2024 16:14
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24H0168-06 B
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.53	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	110	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW10-0824
24H0168-06 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/07/2024 15:20
Instrument: NT16 Analyst: PKC	Analyzed: 08/13/2024 14:41
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0168-06 E
Preparation Batch: BMH0243	Sample Size: 10 mL
Prepared: 08/13/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0802	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>105</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW10-0824
24H0168-06 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS1	Analyst: DOE	Sampled: 08/07/2024 15:20	Analyzed: 08/22/2024 22:03
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMH0417	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 08/21/2024		Extract ID: 24H0168-06 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	37.7	mg/L	D
Manganese	7439-96-5	20	0.0100	2.15	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW60-0824
24H0168-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/07/2024 08:40
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0210	Analyzed: 08/12/2024 16:36
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24H0168-07 B
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	116	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW60-0824
24H0168-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/07/2024 08:40
Instrument: NT16 Analyst: PKC	Analyzed: 08/13/2024 15:03
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0168-07 E
Preparation Batch: BMH0243	Sample Size: 10 mL
Prepared: 08/13/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.126	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>103</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW60-0824
24H0168-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS1	Analyst: DOE	Sampled: 08/07/2024 08:40	Analyzed: 08/22/2024 21:32
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMH0417	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 08/21/2024		Extract ID: 24H0168-07 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	21.8	mg/L	D
Manganese	7439-96-5	10	0.00500	0.593	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW25-0824
24H0168-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/07/2024 13:30
Instrument: NT3 Analyst: LN	Analyzed: 08/12/2024 16:58
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0168-08 B
Preparation Batch: BMH0210	Sample Size: 10 mL
Prepared: 08/12/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>109</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW25-0824
24H0168-08 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/07/2024 13:30
Instrument: NT16 Analyst: PKC	Analyzed: 08/13/2024 15:26
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0168-08 E
Preparation Batch: BMH0243	Sample Size: 10 mL
Prepared: 08/13/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.249	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>105</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW25-0824
24H0168-08 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS1	Analyst: DOE	Sampled: 08/07/2024 13:30	Analyzed: 08/22/2024 22:08
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BMH0417	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 08/21/2024		Extract ID: 24H0168-08 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	35.4	mg/L	D
Manganese	7439-96-5	20	0.0100	2.87	mg/L	D



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW81-0824
24H0168-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/07/2024 00:00
Instrument: NT3 Analyst: LN	Preparation Batch: BMH0210	Analyzed: 08/12/2024 17:20
Sample Preparation:	Sample Size: 10 mL	Extract ID: 24H0168-09 A
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	99.8	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

SPL-GW-MW81-0824
24H0168-09 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/07/2024 00:00
Instrument: NT16 Analyst: PKC	Analyzed: 08/13/2024 15:49
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 24H0168-09 B
Preparation Batch: BMH0243	Sample Size: 10 mL
Prepared: 08/13/2024	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>102</i>	<i>%</i>	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0210 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMH0210-BLK1)					Prepared: 12-Aug-2024 Analyzed: 12-Aug-2024 09:50					
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4.93		ug/L	5.00		98.5	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0210 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BMH0210-BS1)					Prepared: 12-Aug-2024 Analyzed: 12-Aug-2024 08:44					
cis-1,2-Dichloroethene	9.84	0.20	ug/L	10.0		98.4	80-121			
Surrogate: 1,2-Dichloroethane-d4	4.82		ug/L	5.00		96.4	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0210 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BMH0210-BSD1)				Prepared: 12-Aug-2024 Analyzed: 12-Aug-2024 09:06						
cis-1,2-Dichloroethene	10.4	0.20	ug/L	10.0		104	80-121	5.69	30	
Surrogate: 1,2-Dichloroethane-d4	4.96		ug/L	5.00		99.2	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

Volatile Organic Compounds - Quality Control

Batch BMH0239 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMH0239-BLK1)				Prepared: 13-Aug-2024 Analyzed: 13-Aug-2024 10:00						
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4.81		ug/L	5.00		96.2	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0239 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BMH0239-BS1)				Prepared: 13-Aug-2024 Analyzed: 13-Aug-2024 08:54						
cis-1,2-Dichloroethene	8.88	0.20	ug/L	10.0		88.8	80-121			
Surrogate: 1,2-Dichloroethane-d4	4.72		ug/L	5.00		94.5	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0239 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BMH0239-BSD1)					Prepared: 13-Aug-2024 Analyzed: 13-Aug-2024 09:16					
cis-1,2-Dichloroethene	9.45	0.20	ug/L	10.0		94.5	80-121	6.29	30	
Surrogate: 1,2-Dichloroethane-d4	4.84		ug/L	5.00		96.8	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0239 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BMH0239-MS2)		Source: 24H0168-03		Prepared: 13-Aug-2024		Analyzed: 13-Aug-2024 18:31				
cis-1,2-Dichloroethene	6.87	0.20	ug/L	10.0	ND	68.7	80-121			*
Surrogate: 1,2-Dichloroethane-d4	5.51		ug/L	5.00	5.63	110	80-129			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
28-Aug-2024 08:57

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BMH0239 - EPA 8260D

Instrument: NT3 Analyst: LN

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BMH0239-MSD2)		Source: 24H0168-03		Prepared: 13-Aug-2024		Analyzed: 13-Aug-2024 18:54				
cis-1,2-Dichloroethene	7.51	0.20	ug/L	10.0	ND	75.1	80-121	8.91	30	*
Surrogate: 1,2-Dichloroethane-d4	5.35		ug/L	5.00	5.63	107	80-129			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0243 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMH0243-BLK1)					Prepared: 13-Aug-2024 Analyzed: 13-Aug-2024 11:27					
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5040		ug/L	5000		101	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0243 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BMH0243-BS1)					Prepared: 13-Aug-2024 Analyzed: 13-Aug-2024 10:42					
Vinyl chloride	2.21	0.0200	ug/L	2.00		111	62-141			
Surrogate: 1,2-Dichloroethane-d4	5260		ug/L	5000		105	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0243 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BMH0243-BSD1)				Prepared: 13-Aug-2024 Analyzed: 13-Aug-2024 11:05						
Vinyl chloride	2.20	0.0200	ug/L	2.00		110	62-141	0.59	30	
Surrogate: 1,2-Dichloroethane-d4	5210		ug/L	5000		104	80-129			



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0243 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BMH0243-MS1)		Source: 24H0168-03		Prepared: 13-Aug-2024		Analyzed: 13-Aug-2024 20:01				
Vinyl chloride	2.75	0.0200	ug/L	2.00	ND	138	62-141			
Surrogate: 1,2-Dichloroethane-d4	4620		ug/L	5000	5110	92.3	80-129			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
28-Aug-2024 08:57

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BMH0243 - EPA 8260D-SIM

Instrument: NT16 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BMH0243-MSD1)		Source: 24H0168-03		Prepared: 13-Aug-2024		Analyzed: 13-Aug-2024 20:25				
Vinyl chloride	2.63	0.0200	ug/L	2.00	ND	132	62-141	4.47	30	
Surrogate: 1,2-Dichloroethane-d4	4700		ug/L	5000	5110	93.9	80-129			

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
28-Aug-2024 08:57

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BMH0417 - EPA 6020B

Instrument: ICPMS1 Analyst: DOE

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BMH0417-BLK1)						Prepared: 21-Aug-2024 Analyzed: 22-Aug-2024 13:49					
Iron	54	ND	0.0360	mg/L							U
Manganese	55	ND	0.000500	mg/L							U

LCS (BMH0417-BS1)						Prepared: 21-Aug-2024 Analyzed: 22-Aug-2024 13:54					
Iron	54	4.55	0.0360	mg/L	5.00		91.0	80-120			
Manganese	55	0.0260	0.000500	mg/L	0.0250		104	80-120			

Duplicate (BMH0417-DUP1)			Source: 24H0168-03			Prepared: 21-Aug-2024 Analyzed: 22-Aug-2024 18:10					
Iron	54	21.0	0.720	mg/L		21.4			1.84	20	D
Manganese	55	0.625	0.0100	mg/L		0.636			1.76	20	D

Matrix Spike (BMH0417-MS1)			Source: 24H0168-03			Prepared: 21-Aug-2024 Analyzed: 22-Aug-2024 18:14					
Iron	54	26.2	0.720	mg/L	5.00	21.4	95.8	75-125			D
Manganese	55	0.659	0.0100	mg/L	0.0250	0.636	92.1	75-125			D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.

Matrix Spike Dup (BMH0417-MSD1)			Source: 24H0168-03			Prepared: 21-Aug-2024 Analyzed: 22-Aug-2024 18:19					
Iron	54	27.8	0.720	mg/L	5.00	21.4	128	75-125	5.93	20	HC, D
Manganese	55	0.705	0.0100	mg/L	0.0250	0.636	274	75-125	6.65	20	HC, D

Recovery limits for target analytes in MS/MSD QC samples are advisory only.



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-155-067 Project Manager: Min-Soon Yim	Reported: 28-Aug-2024 08:57
--	--	---------------------------------------

Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Iron-54	NELAP,WADOE,DoD-ELAP
Manganese-55	NELAP,WADOE,DoD-ELAP
EPA 8260D in Water	
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
EPA 8260D-SIM in Water	
Vinyl chloride	NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2025
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2025
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2025
WADOE	WA Dept of Ecology	C558	06/30/2025
WA-DW	Ecology - Drinking Water	C558	06/30/2025



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Min-Soon Yim

Reported:
28-Aug-2024 08:57

Notes and Definitions

- * Flagged value is not within established control limits.
- D The reported value is from a dilution
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- HC The natural concentration of the spiked analyte is so much greater than the concentration spiked that an accurate determination of spike recovery is not possible
- J Estimated concentration value detected below the reporting limit.
- Q Indicates a detected analyte with an initial or continuing calibration that does not meet established acceptance criteria (<20% RSD, <20% drift or minimum RRF)
- U This analyte is not detected above the reporting limit (RL) or if noted, not detected above the limit of detection (LOD).
- DET Analyte DETECTED
- ND Analyte NOT DETECTED at or above the reporting limit
- NR Not Reported
- dry Sample results reported on a dry weight basis
- RPD Relative Percent Difference
- [2C] Indicates this result was quantified on the second column on a dual column analysis.