

2023 Operations, Maintenance, and Monitoring Annual Report South Park Landfill

Volume II

Prepared for



**Seattle
Public
Utilities**

March 2024

ParametriX

In Association with



Appendix D4

Laboratory Reports

1st Quarter 2023





Analytical Resources, LLC
Analytical Chemists and Consultants

28 February 2023

Jeff Neuner
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)
23B0111

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

Shelly Fishel, Project 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

ARI Assigned Number: 23B011	Turn-around Requested: 2 weeks	Date: 2/6/23
ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of ANK 1
Client Contact: Laura Lee	Phone: 206 394-3665	No. of Coolers: _____ Cooler Temps: _____

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: Chris Bourgeois HWA					cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn	Dissolved As**						
Sample ID	Date	Time	Matrix	Number of Containers											
SPL-GW-MW12-0223			water	8	X		X	X	X						
SPL-GW-MW14-0223			water	7	X		X	X							
SPL-GW-MW29-0223	2/6/23	16:40	water	7	X		X	X							
SPL-GW-MW18-0223	2/6/23	15:10	water	14	X		X	X	X						MS/MSD
SPL-GW-MW32-0223	2/6/23	12:55	water	8	X		X	X	X						
SPL-GW-MW33-0223	2/6/23	13:55	water	8	X		X	X	X						
SPL-GW-MW10-0223	2/6/23	9:10	water	8	X		X	X	X						
SPL-GW-MW60-0223	2/6/23	15:45	water	8	X		X	X	X						
SPL-GW-MW80-0223	2/6/23	NA	water	2		X	X								
Comments/Special Instructions	Relinquished by: (Signature) <i>Nicole Kapre</i>		Received by: (Signature) <i>Shelly Fisher</i>		Relinquished by: (Signature)						Received by: (Signature)				
	Printed Name: Nicole Kapre		Printed Name: Shelly Fisher		Printed Name:						Printed Name:				
	Company: HWA		Company: ARI 1712		Company:						Company:				
	Date & Time: 2/6/23 17:12		Date & Time: 02/06/2023 17:15		Date & Time: SLF 02/06/2023						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: <i>23B0111</i>	Turn-around Requested: 2 weeks	Date: <i>2/6/23</i>
ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 1
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: Chris Bourgeois HWA			cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn	Dissolved As**						
Sample ID	Date	Time	Matrix	Number of Containers											**Field-filtered
SPL-GW-MW25-0223	<i>2/6/23</i>	<i>10:10</i>	water	8		X	X	X	X						
SPL-GW-MW30-0223			water	7	X		X	X							
SPL-GW-MW31-0223			water	7	X		X	X							
SPL-GW-MW24-0223			water	14	X		X	X	X						MS/MSD
SPL-GW-MW26-0223			water	8	X		X	X	X						
SPL-GW-MW08-0223			water	8	X		X	X	X						
SPL-GW-MW27-0223			water	8	X		X	X	X						
SPL-GW-MW61-0223			water	8	X		X	X	X						
SPL-GW-MW81-0223			water	2		X	X								
Comments/Special Instructions	Relinquished by (Signature): <i>Nicole Kapise</i>		Received by (Signature): <i>Shelly L Fisher</i>		Relinquished by (Signature):					Received by (Signature):					
	Printed Name: <i>Nicole Kapise</i>		Printed Name: <i>Shelly L Fisher</i>		Printed Name:					Printed Name:					
	Company: <i>HWA</i>		Company: <i>ARI</i>		Company:					Company:					
	Date & Time: <i>2/6/23 17:12</i>		Date & Time: <i>02/06/2023 17:12</i>		Date & Time:					Date & Time:					

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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: Jeff Neuner

Reported:
28-Feb-2023 11:11

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW29-0223	23B0111-01	Water	06-Feb-2023 16:40	06-Feb-2023 17:12
SPL-GW-MW18-0223	23B0111-02	Water	06-Feb-2023 15:10	06-Feb-2023 17:12
SPL-GW-MW18-0223	23B0111-03	Water	06-Feb-2023 15:10	06-Feb-2023 17:12
SPL-GW-MW32-0223	23B0111-04	Water	06-Feb-2023 12:55	06-Feb-2023 17:12
SPL-GW-MW32-0223	23B0111-05	Water	06-Feb-2023 12:55	06-Feb-2023 17:12
SPL-GW-MW33-0223	23B0111-06	Water	06-Feb-2023 13:55	06-Feb-2023 17:12
SPL-GW-MW33-0223	23B0111-07	Water	06-Feb-2023 13:55	06-Feb-2023 17:12
SPL-GW-MW10-0223	23B0111-08	Water	06-Feb-2023 09:10	06-Feb-2023 17:12
SPL-GW-MW10-0223	23B0111-09	Water	06-Feb-2023 09:10	06-Feb-2023 17:12
SPL-GW-MW60-0223	23B0111-10	Water	06-Feb-2023 15:45	06-Feb-2023 17:12
SPL-GW-MW60-0223	23B0111-11	Water	06-Feb-2023 15:45	06-Feb-2023 17:12
SLP-GW-MW80-0223	23B0111-12	Water	06-Feb-2023 00:00	06-Feb-2023 17:12
SPL-GW-MW25-0223	23B0111-13	Water	06-Feb-2023 10:10	06-Feb-2023 17:12
SPL-GW-MW25-0223	23B0111-14	Water	06-Feb-2023 10:10	06-Feb-2023 17:12



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: Jeff Neuner

Reported:
28-Feb-2023 11:11

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Work Order: 23B0111

Sample receipt

Sample(s) as listed on the preceding page were received 06-Feb-2023 17:12 under ARI work order 23B0111. 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: Jeff Neuner

Reported:
28-Feb-2023 11:11

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

Total and Dissolved Metals - EPA Method 6020B

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

Initial and continuing calibrations were within method requirements.

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

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

The duplicate (DUP) relative percent difference (RPD) were within advisory control limits. The matrix spike/matrix spike duplicate (MS/MSD) percent recoveries and relative percent difference (RPD) were within advisory control limits except Iron which was out of control low in the MS. The deviation has been flagged.



Cooler Receipt Form

ARI Client: SPU / Parametrix / HWA

Project Name: South Park Landfill 1

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 2302111

Tracking No: _____ NA

Preliminary Examination Phase:

Were intact, properly signed and dated custody seals attached to the outside of the cooler? _____

SLF 02/10/2023

YES NO
YES NO
YES NO

Were custody papers included with the cooler? _____

Were custody papers properly filled out (ink, signed, etc.) _____

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

4.9

Time 1714

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: K008117

Cooler Accepted by: [Signature]

Date: 02/10/2023

Time: 1712

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: [Signature] Date: 02/10/23 Time: 8:19 Labels checked by: TCS

**** 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: _____



WORK ORDER

23B0111

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

Client: Seattle Public Utilities

Project Manager: Shelly Fishel

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

Preservation Confirmation

Container ID	Container Type	pH
23B0111-01 A	VOA Vial, Clear, 40 mL, HCL	
23B0111-01 B	VOA Vial, Clear, 40 mL, HCL	
23B0111-01 C	VOA Vial, Clear, 40 mL, HCL	
23B0111-01 D	VOA Vial, Clear, 40 mL	
23B0111-01 E	VOA Vial, Clear, 40 mL	
23B0111-01 F	VOA Vial, Clear, 40 mL	
23B0111-01 G	HDPE NM, 500 mL, 1:1 HNO3	6.2 P
23B0111-02 A	VOA Vial, Clear, 40 mL, HCL	
23B0111-02 B	VOA Vial, Clear, 40 mL, HCL	
23B0111-02 C	VOA Vial, Clear, 40 mL, HCL	
23B0111-02 D	VOA Vial, Clear, 40 mL, HCL	
23B0111-02 E	VOA Vial, Clear, 40 mL, HCL	
23B0111-02 F	VOA Vial, Clear, 40 mL, HCL	
23B0111-02 G	VOA Vial, Clear, 40 mL	
23B0111-02 H	VOA Vial, Clear, 40 mL	
23B0111-02 I	VOA Vial, Clear, 40 mL	
23B0111-02 J	VOA Vial, Clear, 40 mL	
23B0111-02 K	VOA Vial, Clear, 40 mL	
23B0111-02 L	VOA Vial, Clear, 40 mL	
23B0111-02 M	HDPE NM, 500 mL, 1:1 HNO3	6.2 P
23B0111-03 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	6.2 P
23B0111-04 A	VOA Vial, Clear, 40 mL, HCL	
23B0111-04 B	VOA Vial, Clear, 40 mL, HCL	
23B0111-04 C	VOA Vial, Clear, 40 mL, HCL	
23B0111-04 D	VOA Vial, Clear, 40 mL	
23B0111-04 E	VOA Vial, Clear, 40 mL	
23B0111-04 F	VOA Vial, Clear, 40 mL	
23B0111-04 G	HDPE NM, 500 mL, 1:1 HNO3	6.2 P
23B0111-05 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	6.2 P
23B0111-06 A	VOA Vial, Clear, 40 mL, HCL	
23B0111-06 B	VOA Vial, Clear, 40 mL, HCL	
23B0111-06 C	VOA Vial, Clear, 40 mL, HCL	
23B0111-06 D	VOA Vial, Clear, 40 mL	
23B0111-06 E	VOA Vial, Clear, 40 mL	



WORK ORDER

23B0111

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

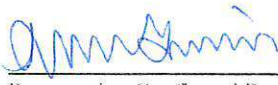
Client: Seattle Public Utilities

Project Manager: Shelly Fishel

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

23B0111-06 F	VOA Vial, Clear, 40 mL	
23B0111-06 G	HDPE NM, 500 mL, 1:1 HNO3	L2 P
23B0111-07 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 P
23B0111-08 A	VOA Vial, Clear, 40 mL, HCL	
23B0111-08 B	VOA Vial, Clear, 40 mL, HCL	
23B0111-08 C	VOA Vial, Clear, 40 mL, HCL	
23B0111-08 D	VOA Vial, Clear, 40 mL	
23B0111-08 E	VOA Vial, Clear, 40 mL	
23B0111-08 F	VOA Vial, Clear, 40 mL	
23B0111-08 G	HDPE NM, 500 mL, 1:1 HNO3	L2 P
23B0111-09 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 P
23B0111-10 A	VOA Vial, Clear, 40 mL, HCL	
23B0111-10 B	VOA Vial, Clear, 40 mL, HCL	
23B0111-10 C	VOA Vial, Clear, 40 mL, HCL	
23B0111-10 D	VOA Vial, Clear, 40 mL	
23B0111-10 E	VOA Vial, Clear, 40 mL	
23B0111-10 F	VOA Vial, Clear, 40 mL	
23B0111-10 G	HDPE NM, 500 mL, 1:1 HNO3	L2 P
23B0111-11 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 P
23B0111-12 A	VOA Vial, Clear, 40 mL, HCL	
23B0111-12 B	VOA Vial, Clear, 40 mL	
23B0111-13 A	VOA Vial, Clear, 40 mL, HCL	
23B0111-13 B	VOA Vial, Clear, 40 mL, HCL	
23B0111-13 C	VOA Vial, Clear, 40 mL, HCL	
23B0111-13 D	VOA Vial, Clear, 40 mL	
23B0111-13 E	VOA Vial, Clear, 40 mL	
23B0111-13 F	VOA Vial, Clear, 40 mL	
23B0111-13 G	HDPE NM, 500 mL, 1:1 HNO3	L2 P
23B0111-14 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	L2 P


Preservation Confirmed By

02/07/23
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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW29-0223
23B0111-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/06/2023 16:40
Instrument: NT3 Analyst: PKC Analyzed: 02/07/2023 12:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-01 A
Preparation Batch: BLB0143 Sample Size: 10 mL
Prepared: 02/07/2023 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>97.7</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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW29-0223
23B0111-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/06/2023 16:40
Instrument: NT16 Analyst: KOTT Analyzed: 02/07/2023 11:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-01 D
Preparation Batch: BLB0159 Sample Size: 10 mL
Prepared: 02/07/2023 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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW29-0223
23B0111-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/06/2023 16:40
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 19:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-01 G 01
Preparation Batch: BLB0481 Sample Size: 25 mL
Prepared: 02/17/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	17.6	mg/L	D
Manganese	7439-96-5	10	0.00500	0.434	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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW18-0223
23B0111-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/06/2023 15:10
Instrument: NT3 Analyst: PKC Analyzed: 02/07/2023 13:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-02 A
Preparation Batch: BLB0143 Sample Size: 10 mL
Prepared: 02/07/2023 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 %	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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW18-0223
23B0111-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/06/2023 15:10
Instrument: NT16 Analyst: KOTT Analyzed: 02/07/2023 12:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-02 G
Preparation Batch: BLB0159 Sample Size: 10 mL
Prepared: 02/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0264	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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW18-0223
23B0111-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/06/2023 15:10
Instrument: ICPMS2 Analyst: MCB Analyzed: 02/22/2023 16:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-02 M 01
Preparation Batch: BLB0481 Sample Size: 25 mL
Prepared: 02/17/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	2	0.0720	14.1	mg/L	D
Manganese	7439-96-5	20	0.0100	1.27	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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW18-0223
23B0111-03 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/06/2023 15:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/23/2023 18:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-03 A 01
Preparation Batch: BLB0447 Sample Size: 25 mL
Prepared: 02/16/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	ND	ug/L	U



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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW32-0223
23B0111-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/06/2023 12:55
Instrument: NT3 Analyst: PKC Analyzed: 02/07/2023 13:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-04 A
Preparation Batch: BLB0143 Sample Size: 10 mL
Prepared: 02/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.92	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	98.1	%	



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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW32-0223
23B0111-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/06/2023 12:55
Instrument: NT16 Analyst: KOTT Analyzed: 02/07/2023 13:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-04 D
Preparation Batch: BLB0159 Sample Size: 10 mL
Prepared: 02/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.317	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>98.5</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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW32-0223
23B0111-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/06/2023 12:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 18:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-04 G 01
Preparation Batch: BLB0481 Sample Size: 25 mL
Prepared: 02/17/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	16.2	mg/L	D
Manganese	7439-96-5	20	0.0100	1.61	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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW32-0223
23B0111-05 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/06/2023 12:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/23/2023 15:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-05 A 01
Preparation Batch: BLB0447 Sample Size: 25 mL
Prepared: 02/16/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	0.992	ug/L	



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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW33-0223
23B0111-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/06/2023 13:55
Instrument: NT3 Analyst: PKC Analyzed: 02/07/2023 13:58

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-06 A
Preparation Batch: BLB0143 Sample Size: 10 mL
Prepared: 02/07/2023 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	%	



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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW33-0223
23B0111-06 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/06/2023 13:55
Instrument: NT16 Analyst: KOTT Analyzed: 02/07/2023 14:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-06 D
Preparation Batch: BLB0159 Sample Size: 10 mL
Prepared: 02/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0967	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>103</i>	<i>%</i>	



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SPL-GW-MW33-0223
23B0111-06 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/06/2023 13:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 18:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-06 G 01
Preparation Batch: BLB0481 Sample Size: 25 mL
Prepared: 02/17/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	19.6	mg/L	D
Manganese	7439-96-5	20	0.0100	2.05	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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW33-0223
23B0111-07 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/06/2023 13:55
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/23/2023 16:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-07 A 01
Preparation Batch: BLB0447 Sample Size: 25 mL
Prepared: 02/16/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	1.07	ug/L	



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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW10-0223
23B0111-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/06/2023 09:10
Instrument: NT3 Analyst: PKC Analyzed: 02/07/2023 14:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-08 A
Preparation Batch: BLB0143 Sample Size: 10 mL
Prepared: 02/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.83	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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW10-0223
23B0111-08 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/06/2023 09:10
Instrument: NT16 Analyst: KOTT Analyzed: 02/07/2023 14:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-08 D
Preparation Batch: BLB0159 Sample Size: 10 mL
Prepared: 02/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.142	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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW10-0223
23B0111-08 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/06/2023 09:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 19:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-08 G 01
Preparation Batch: BLB0481 Sample Size: 25 mL
Prepared: 02/17/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	37.9	mg/L	D
Manganese	7439-96-5	50	0.0250	2.37	mg/L	D



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SPL-GW-MW10-0223
23B0111-09 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/06/2023 09:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/23/2023 16:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-09 A 01
Preparation Batch: BLB0447 Sample Size: 25 mL
Prepared: 02/16/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	ND	ug/L	U



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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW60-0223
23B0111-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/06/2023 15:45
Instrument: NT3 Analyst: PKC Analyzed: 02/07/2023 14:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-10 A
Preparation Batch: BLB0143 Sample Size: 10 mL
Prepared: 02/07/2023 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 %	97.4	%	



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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW60-0223
23B0111-10 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/06/2023 15:45
Instrument: NT16 Analyst: KOTT Analyzed: 02/07/2023 14:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-10 D
Preparation Batch: BLB0159 Sample Size: 10 mL
Prepared: 02/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0253	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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW60-0223
23B0111-10 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/06/2023 15:45
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 18:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-10 G 01
Preparation Batch: BLB0481 Sample Size: 25 mL
Prepared: 02/17/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	15.9	mg/L	D
Manganese	7439-96-5	20	0.0100	1.20	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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW60-0223
23B0111-11 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/06/2023 15:45
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/23/2023 16:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-11 A 01
Preparation Batch: BLB0447 Sample Size: 25 mL
Prepared: 02/16/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	ND	ug/L	U



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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SLP-GW-MW80-0223
23B0111-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/06/2023 00:00
Instrument: NT3 Analyst: PKC Analyzed: 02/07/2023 12:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-12 A
Preparation Batch: BLB0143 Sample Size: 10 mL
Prepared: 02/07/2023 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
Benzene	71-43-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	94.2	%	
<i>Surrogate: Toluene-d8</i>			80-120 %	93.8	%	



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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SLP-GW-MW80-0223
23B0111-12 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/06/2023 00:00
Instrument: NT16 Analyst: KOTT Analyzed: 02/07/2023 15:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-12 B
Preparation Batch: BLB0159 Sample Size: 10 mL
Prepared: 02/07/2023 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>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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW25-0223
23B0111-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/06/2023 10:10
Instrument: NT3 Analyst: PKC Analyzed: 02/07/2023 15:04

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-13 A
Preparation Batch: BLB0143 Sample Size: 10 mL
Prepared: 02/07/2023 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	
Benzene	71-43-2	1	0.20	3.99	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>98.7</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>94.7</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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW25-0223
23B0111-13 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/06/2023 10:10
Instrument: NT16 Analyst: KOTT Analyzed: 02/07/2023 15:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0111-13 D
Preparation Batch: BLB0159 Sample Size: 10 mL
Prepared: 02/07/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.593	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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW25-0223
23B0111-13 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/06/2023 10:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 19:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-13 G 01
Preparation Batch: BLB0481 Sample Size: 25 mL
Prepared: 02/17/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	36.6	mg/L	D
Manganese	7439-96-5	50	0.0250	2.90	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: Jeff Neuner	Reported: 28-Feb-2023 11:11
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SPL-GW-MW25-0223
23B0111-14 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/06/2023 10:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/23/2023 16:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0111-14 A 01
Preparation Batch: BLB0447 Sample Size: 25 mL
Prepared: 02/16/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	0.308	ug/L	



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: Jeff Neuner

Reported:
28-Feb-2023 11:11

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLB0143 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0143-BLK2)										
					Prepared: 07-Feb-2023		Analyzed: 07-Feb-2023 11:45			
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.69		ug/L	5.00		93.9	80-129			
<i>Surrogate: Toluene-d8</i>	4.75		ug/L	5.00		94.9	80-120			
LCS (BLB0143-BS2)										
					Prepared: 07-Feb-2023		Analyzed: 07-Feb-2023 10:17			
cis-1,2-Dichloroethene	9.48	0.20	ug/L	10.0		94.8	80-121			
Benzene	9.62	0.20	ug/L	10.0		96.2	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.68		ug/L	5.00		93.6	80-129			
<i>Surrogate: Toluene-d8</i>	4.86		ug/L	5.00		97.3	80-120			
LCS Dup (BLB0143-BSD2)										
					Prepared: 07-Feb-2023		Analyzed: 07-Feb-2023 11:01			
cis-1,2-Dichloroethene	9.77	0.20	ug/L	10.0		97.7	80-121	3.06	30	
Benzene	9.76	0.20	ug/L	10.0		97.6	80-120	1.52	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.95		ug/L	5.00		98.9	80-129			
<i>Surrogate: Toluene-d8</i>	4.95		ug/L	5.00		99.0	80-120			
Matrix Spike (BLB0143-MS1)										
		Source: 23B0111-02		Prepared: 07-Feb-2023		Analyzed: 07-Feb-2023 16:55				
cis-1,2-Dichloroethene	10.1	0.20	ug/L	10.0	ND	101	80-121			
Benzene	10.1	0.20	ug/L	10.0	ND	101	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.81		ug/L	5.00	5.04	96.1	80-129			
<i>Surrogate: Toluene-d8</i>	4.84		ug/L	5.00		96.9	80-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLB0143-MSD1)										
		Source: 23B0111-02		Prepared: 07-Feb-2023		Analyzed: 07-Feb-2023 17:17				
cis-1,2-Dichloroethene	10.1	0.20	ug/L	10.0	ND	101	80-121	0.05	30	
Benzene	10.2	0.20	ug/L	10.0	ND	102	80-120	1.76	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.83		ug/L	5.00	5.04	96.5	80-129			
<i>Surrogate: Toluene-d8</i>	4.92		ug/L	5.00		98.4	80-120			
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: Jeff Neuner

Reported:
28-Feb-2023 11:11

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLB0159 - EPA 8260D-SIM

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0159-BLK1)		Prepared: 07-Feb-2023 Analyzed: 07-Feb-2023 11:31								
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5010		ug/L	5000		100	80-129			
LCS (BLB0159-BS1)		Prepared: 07-Feb-2023 Analyzed: 07-Feb-2023 09:37								
Vinyl chloride	2.18	0.0200	ug/L	2.00		109	62-141			
Surrogate: 1,2-Dichloroethane-d4	4910		ug/L	5000		98.2	80-129			
LCS Dup (BLB0159-BSD1)		Prepared: 07-Feb-2023 Analyzed: 07-Feb-2023 10:25								
Vinyl chloride	2.13	0.0200	ug/L	2.00		107	62-141	2.21	30	
Surrogate: 1,2-Dichloroethane-d4	4990		ug/L	5000		99.8	80-129			
Matrix Spike (BLB0159-MS1)		Source: 23B0111-02		Prepared: 07-Feb-2023 Analyzed: 07-Feb-2023 12:34						
Vinyl chloride	1.98	0.0200	ug/L	2.00	0.0264	97.5	62-141			
Surrogate: 1,2-Dichloroethane-d4	5140		ug/L	5000	5090	103	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLB0159-MSD1)		Source: 23B0111-02		Prepared: 07-Feb-2023 Analyzed: 07-Feb-2023 12:55						
Vinyl chloride	1.95	0.0200	ug/L	2.00	0.0264	95.9	62-141	1.55	30	
Surrogate: 1,2-Dichloroethane-d4	4940		ug/L	5000	5090	98.9	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



Seattle Public Utilities
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Seattle WA, 98124-4018

Project: South Park Landfill -Parametrix Water
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Reported:
28-Feb-2023 11:11

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLB0481 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0481-BLK1)			Prepared: 17-Feb-2023 Analyzed: 20-Feb-2023 19:57								
Manganese	55	ND	0.000500	mg/L							U
Blank (BLB0481-BLK3)			Prepared: 17-Feb-2023 Analyzed: 22-Feb-2023 16:23								
Iron	54	ND	0.0360	mg/L							U
Iron	57	ND	0.0360	mg/L							U
LCS (BLB0481-BS1)			Prepared: 17-Feb-2023 Analyzed: 20-Feb-2023 20:01								
Manganese	55	0.0273	0.000500	mg/L	0.0250		109	80-120			
LCS (BLB0481-BS3)			Prepared: 17-Feb-2023 Analyzed: 22-Feb-2023 16:28								
Iron	54	4.98	0.0360	mg/L	5.00		99.7	80-120			
Iron	57	5.14	0.0360	mg/L	5.00		103	80-120			
Duplicate (BLB0481-DUP3)			Source: 23B0111-02		Prepared: 17-Feb-2023 Analyzed: 22-Feb-2023 16:56						
Iron	54	13.4	0.0720	mg/L		14.1			4.91	20	D
Duplicate (BLB0481-DUP4)			Source: 23B0111-02		Prepared: 17-Feb-2023 Analyzed: 23-Feb-2023 22:20						
Manganese	55	1.24	0.0100	mg/L		1.27			2.23	20	D
Matrix Spike (BLB0481-MS3)			Source: 23B0111-02		Prepared: 17-Feb-2023 Analyzed: 22-Feb-2023 17:01						
Iron	54	17.7	0.0720	mg/L	5.00	14.1	73.7	75-125			*, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BLB0481-MS4)			Source: 23B0111-02		Prepared: 17-Feb-2023 Analyzed: 23-Feb-2023 22:24						
Manganese	55	1.26	0.0100	mg/L	0.0250	1.27	-22.7	75-125			HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											



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Reported:
28-Feb-2023 11:11

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLB0447 - EPA 6020B UCT-KED

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BLB0447-DUP1)			Source: 23B0111-03			Prepared: 16-Feb-2023 Analyzed: 23-Feb-2023 18:41					
Arsenic, Dissolved	75a	ND	0.200	ug/L		ND					U

Matrix Spike (BLB0447-MS1)			Source: 23B0111-03			Prepared: 16-Feb-2023 Analyzed: 23-Feb-2023 18:44					
Arsenic, Dissolved	75a	25.2	0.200	ug/L	25.0	ND	100	75-125			

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

Matrix Spike Dup (BLB0447-MSD1)			Source: 23B0111-03			Prepared: 16-Feb-2023 Analyzed: 23-Feb-2023 18:48					
Arsenic, Dissolved	75a	25.4	0.200	ug/L	25.0	ND	101	75-125	0.89	20	

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

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0447-BLK1)						Prepared: 16-Feb-2023 Analyzed: 20-Feb-2023 19:01					
Arsenic, Dissolved	75a	ND	0.200	ug/L							U

LCS (BLB0447-BS1)						Prepared: 16-Feb-2023 Analyzed: 20-Feb-2023 19:05					
Arsenic, Dissolved	75a	22.7	0.200	ug/L	25.0		90.7	80-120			



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Reported:
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Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Iron-54	NELAP,WADOE,DoD-ELAP
Iron-57	NELAP,WADOE,DoD-ELAP
Manganese-55	NELAP,WADOE,DoD-ELAP
EPA 6020B UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
EPA 8260D in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE



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Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE



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Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA 8260D-SIM in Water

Acrylonitrile	NELAP,WADOE
Vinyl chloride	NELAP,WADOE
1,1-Dichloroethene	NELAP,WADOE
cis-1,2-Dichloroethene	NELAP,WADOE
trans-1,2-Dichloroethene	NELAP,WADOE
Trichloroethene	NELAP,WADOE
Tetrachloroethene	NELAP,WADOE
1,1,2,2-Tetrachloroethane	NELAP,WADOE
1,2-Dichloroethane	NELAP,WADOE
Benzene	NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



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Reported:
28-Feb-2023 11:11

Notes and Definitions

- * Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- 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.
- L Analyte concentration is ≤ 5 times the reporting limit and the replicate control limit defaults to \pm RL instead of 20% RPD
- 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

28 February 2023

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

RE: South Park Landfill -Parametrix Water (553-1550-067)

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)
23B0160

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

Shelly Fishel, Project 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

ARI Assigned Number: 23B0160	Turn-around Requested: 2 weeks	Date: 2/7/2023
ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 1
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 2.6

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: Chris Bourgeois HWA			cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn	Dissolved As**									
Sample ID	Date	Time	Matrix	Number of Containers														**Field-filtered
SPL-GW-MW25-0223			water	8		X	X	X	X									
SPL-GW-MW30-0223	2/7/23	930	water	7	X		X	X										
SPL-GW-MW31-0223	2/7/23	1015	water	7	X		X	X										
SPL-GW-MW24-0223	2/7/23	1135	water	14	X		X	X	X									MS/MSD
SPL-GW-MW26-0223	2/7/23	1320	water	8	X		X	X	X									
SPL-GW-MW08-0223	2/7/23	1435	water	8	X		X	X	X									
SPL-GW-MW27-0223	2/7/23	1610	water	8	X		X	X	X									
SPL-GW-MW61-0223	2/7/23	1200	water	8	X		X	X	X									
SPL-GW-MW81-0223			water	2		X	X											
Comments/Special Instructions	Relinquished by: (Signature) <i>Chris Bourgeois</i>			Received by: (Signature) <i>Jacob Walter</i>			Relinquished by: (Signature)			Received by: (Signature)								
	Printed Name: Chris Bourgeois			Printed Name: Jacob Walter			Printed Name:			Printed Name:								
	Company: HWA			Company: AR, LLC			Company:			Company:								
	Date & Time: 2/7/23 1651			Date & Time: 2/7/23 1651			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.



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Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
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Reported:
28-Feb-2023 11:16

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW30-0223	23B0160-01	Water	07-Feb-2023 09:30	07-Feb-2023 16:51
SPL-GW-MW31-0223	23B0160-02	Water	07-Feb-2023 10:15	07-Feb-2023 16:51
SPL-GW-MW24-0223	23B0160-03	Water	07-Feb-2023 11:35	07-Feb-2023 16:51
SPL-GW-MW24-0223	23B0160-04	Water	07-Feb-2023 11:35	07-Feb-2023 16:51
SPL-GW-MW26-0223	23B0160-05	Water	07-Feb-2023 13:20	07-Feb-2023 16:51
SPL-GW-MW26-0223	23B0160-06	Water	07-Feb-2023 13:20	07-Feb-2023 16:51
SPL-GW-MW08-0223	23B0160-07	Water	07-Feb-2023 14:35	07-Feb-2023 16:51
SPL-GW-MW08-0223	23B0160-08	Water	07-Feb-2023 14:35	07-Feb-2023 16:51
SPL-GW-MW27-0223	23B0160-09	Water	07-Feb-2023 16:10	07-Feb-2023 16:51
SPL-GW-MW27-0223	23B0160-10	Water	07-Feb-2023 16:10	07-Feb-2023 16:51
SPL-GW-MW61-0223	23B0160-11	Water	07-Feb-2023 12:00	07-Feb-2023 16:51
SPL-GW-MW61-0223	23B0160-12	Water	07-Feb-2023 12:00	07-Feb-2023 16:51



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Project: South Park Landfill -Parametrix Water
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Reported:
28-Feb-2023 11:16

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Work Order: 23B0160

Sample receipt

Sample(s) as listed on the preceding page were received 07-Feb-2023 16:51 under ARI work order 23B0160. 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

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

Total and Dissolved Metals - EPA Method 6020B

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

Initial and continuing calibrations were within method requirements.

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

23B0160

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

Client: Seattle Public Utilities

Project Manager: Shelly Fishel

Project: South Park Landfill -Parametrix Water

Project Number: 553-1550-067

Preservation Confirmation

Container ID	Container Type	pH
23B0160-01 A	HDPE NM, 500 mL, 1:1 HNO3	7.2 Pass (P)
23B0160-01 B	VOA Vial, Clear, 40 mL, HCL	
23B0160-01 C	VOA Vial, Clear, 40 mL, HCL	
23B0160-01 D	VOA Vial, Clear, 40 mL, HCL	
23B0160-01 E	VOA Vial, Clear, 40 mL	
23B0160-01 F	VOA Vial, Clear, 40 mL	
23B0160-01 G	VOA Vial, Clear, 40 mL	
23B0160-02 A	HDPE NM, 500 mL, 1:1 HNO3	7.2 P
23B0160-02 B	VOA Vial, Clear, 40 mL, HCL	
23B0160-02 C	VOA Vial, Clear, 40 mL, HCL	
23B0160-02 D	VOA Vial, Clear, 40 mL, HCL	
23B0160-02 E	VOA Vial, Clear, 40 mL	
23B0160-02 F	VOA Vial, Clear, 40 mL	
23B0160-02 G	VOA Vial, Clear, 40 mL	
23B0160-03 A	HDPE NM, 500 mL, 1:1 HNO3	7.2 P
23B0160-03 B	VOA Vial, Clear, 40 mL, HCL	
23B0160-03 C	VOA Vial, Clear, 40 mL, HCL	
23B0160-03 D	VOA Vial, Clear, 40 mL, HCL	
23B0160-03 E	VOA Vial, Clear, 40 mL, HCL	
23B0160-03 F	VOA Vial, Clear, 40 mL, HCL	
23B0160-03 G	VOA Vial, Clear, 40 mL, HCL	
23B0160-03 H	VOA Vial, Clear, 40 mL	
23B0160-03 I	VOA Vial, Clear, 40 mL	
23B0160-03 J	VOA Vial, Clear, 40 mL	
23B0160-03 K	VOA Vial, Clear, 40 mL	
23B0160-03 L	VOA Vial, Clear, 40 mL	
23B0160-03 M	VOA Vial, Clear, 40 mL	
23B0160-04 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	7.2 P
23B0160-05 A	HDPE NM, 500 mL, 1:1 HNO3	7.2 P
23B0160-05 B	VOA Vial, Clear, 40 mL, HCL	
23B0160-05 C	VOA Vial, Clear, 40 mL, HCL	
23B0160-05 D	VOA Vial, Clear, 40 mL, HCL	
23B0160-05 E	VOA Vial, Clear, 40 mL	
23B0160-05 F	VOA Vial, Clear, 40 mL	



WORK ORDER

23B0160

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

Client: Seattle Public Utilities	Project Manager: Shelly Fishel
Project: South Park Landfill -Parametrix Water	Project Number: 553-1550-067

23B0160-05 G	VOA Vial, Clear, 40 mL	
23B0160-06 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LZ P
23B0160-07 A	HDPE NM, 500 mL, 1:1 HNO3	LZ P
23B0160-07 B	VOA Vial, Clear, 40 mL, HCL	
23B0160-07 C	VOA Vial, Clear, 40 mL, HCL	
23B0160-07 D	VOA Vial, Clear, 40 mL, HCL	
23B0160-07 E	VOA Vial, Clear, 40 mL	
23B0160-07 F	VOA Vial, Clear, 40 mL	
23B0160-07 G	VOA Vial, Clear, 40 mL	
23B0160-08 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LZ P
23B0160-09 A	HDPE NM, 500 mL, 1:1 HNO3	LZ P
23B0160-09 B	VOA Vial, Clear, 40 mL, HCL	
23B0160-09 C	VOA Vial, Clear, 40 mL, HCL	
23B0160-09 D	VOA Vial, Clear, 40 mL, HCL	
23B0160-09 E	VOA Vial, Clear, 40 mL	
23B0160-09 F	VOA Vial, Clear, 40 mL	
23B0160-09 G	VOA Vial, Clear, 40 mL	
23B0160-10 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LZ P
23B0160-11 A	HDPE NM, 500 mL, 1:1 HNO3	LZ P
23B0160-11 B	VOA Vial, Clear, 40 mL, HCL	
23B0160-11 C	VOA Vial, Clear, 40 mL, HCL	
23B0160-11 D	VOA Vial, Clear, 40 mL, HCL	
23B0160-11 E	VOA Vial, Clear, 40 mL	
23B0160-11 F	VOA Vial, Clear, 40 mL	
23B0160-11 G	VOA Vial, Clear, 40 mL	
23B0160-12 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LZ P

PTB

PLB 219
219 2/8/23

Preservation Confirmed By _____

Date _____



Cooler Receipt Form

ARI Client: SPU/HWA

Project Name: South Park Landfill

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 23B0160

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 1651

2.6

If cooler temperature is out of compliance fill out form 00070F

Temp Gun ID#: JCC0970R

Cooler Accepted by: JR Date: 2/12/23 Time: 1651

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: PTB Date: 2/12/23 Time: 9:25 Labels checked by: _____

**** 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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW30-0223
23B0160-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/07/2023 09:30
Instrument: NT2 Analyst: LH Analyzed: 02/08/2023 13:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-01 B
Preparation Batch: BLB0184 Sample Size: 10 mL
Prepared: 02/08/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.35	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	99.5	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW30-0223
23B0160-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/07/2023 09:30
Instrument: NT16 Analyst: KOTT Analyzed: 02/09/2023 13:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-01 E
Preparation Batch: BLB0244 Sample Size: 10 mL
Prepared: 02/09/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0816	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>94.5</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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW30-0223
23B0160-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/07/2023 09:30
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 18:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-01 A 01
Preparation Batch: BLB0482 Sample Size: 25 mL
Prepared: 02/20/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	2	0.0720	3.31	mg/L	D
Manganese	7439-96-5	2	0.00100	0.138	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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW31-0223
23B0160-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/07/2023 10:15
Instrument: NT2 Analyst: LH Analyzed: 02/08/2023 13:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-02 B
Preparation Batch: BLB0184 Sample Size: 10 mL
Prepared: 02/08/2023 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 %	106	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW31-0223
23B0160-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/07/2023 10:15
Instrument: NT16 Analyst: KOTT Analyzed: 02/09/2023 13:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-02 E
Preparation Batch: BLB0244 Sample Size: 10 mL
Prepared: 02/09/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.219	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>98.0</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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW31-0223
23B0160-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/07/2023 10:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 18:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-02 A 01
Preparation Batch: BLB0482 Sample Size: 25 mL
Prepared: 02/20/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	18.2	mg/L	D
Manganese	7439-96-5	10	0.00500	0.765	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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW24-0223
23B0160-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/07/2023 11:35
Instrument: NT2 Analyst: LH Analyzed: 02/08/2023 13:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-03 B
Preparation Batch: BLB0184 Sample Size: 10 mL
Prepared: 02/08/2023 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 %	107	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW24-0223
23B0160-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/07/2023 11:35
Instrument: NT16 Analyst: KOTT Analyzed: 02/09/2023 12:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-03 H
Preparation Batch: BLB0244 Sample Size: 10 mL
Prepared: 02/09/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0484	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.2</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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW24-0223
23B0160-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/07/2023 11:35
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 19:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-03 A 01
Preparation Batch: BLB0482 Sample Size: 25 mL
Prepared: 02/20/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Manganese	7439-96-5	20	0.0100	1.76	mg/L	D

Instrument: ICPMS2 Analyst: MCB Analyzed: 02/22/2023 18:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-03 A 01
Preparation Batch: BLB0482 Sample Size: 25 mL
Prepared: 02/20/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	2	0.0720	22.2	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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW24-0223
23B0160-04 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/07/2023 11:35
Instrument: ICPMS2 Analyst: MCB Analyzed: 02/22/2023 08:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-04 A 02
Preparation Batch: BLB0537 Sample Size: 25 mL
Prepared: 02/21/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	ND	ug/L	U



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW26-0223
23B0160-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/07/2023 13:20
Instrument: NT2 Analyst: LH Analyzed: 02/08/2023 14:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-05 B
Preparation Batch: BLB0184 Sample Size: 10 mL
Prepared: 02/08/2023 Final Volume: 10 mL

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>			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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW26-0223
23B0160-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/07/2023 13:20
Instrument: NT16 Analyst: KOTT Analyzed: 02/09/2023 14:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-05 E
Preparation Batch: BLB0244 Sample Size: 10 mL
Prepared: 02/09/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.173	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.6</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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW26-0223
23B0160-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/07/2023 13:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 18:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-05 A 01
Preparation Batch: BLB0482 Sample Size: 25 mL
Prepared: 02/20/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	2	0.0720	7.98	mg/L	D
Manganese	7439-96-5	2	0.00100	0.0982	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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW26-0223
23B0160-06 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/07/2023 13:20
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/23/2023 20:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-06 A 02
Preparation Batch: BLB0537 Sample Size: 25 mL
Prepared: 02/21/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	0.647	ug/L	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW08-0223
23B0160-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/07/2023 14:35
Instrument: NT2 Analyst: LH Analyzed: 02/08/2023 14:40

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-07 B
Preparation Batch: BLB0184 Sample Size: 10 mL
Prepared: 02/08/2023 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>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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW08-0223
23B0160-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/07/2023 14:35
Instrument: NT16 Analyst: KOTT Analyzed: 02/09/2023 14:34

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-07 E
Preparation Batch: BLB0244 Sample Size: 10 mL
Prepared: 02/09/2023 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>99.5</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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW08-0223
23B0160-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/07/2023 14:35
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 18:37

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-07 A 01
Preparation Batch: BLB0482 Sample Size: 25 mL
Prepared: 02/20/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	2.70	mg/L	D
Manganese	7439-96-5	20	0.0100	0.825	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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW08-0223
23B0160-08 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/07/2023 14:35
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/23/2023 20:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-08 A 02
Preparation Batch: BLB0537 Sample Size: 25 mL
Prepared: 02/21/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	ND	ug/L	U



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW27-0223
23B0160-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/07/2023 16:10
Instrument: NT2 Analyst: LH Analyzed: 02/08/2023 15:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-09 B
Preparation Batch: BLB0184 Sample Size: 10 mL
Prepared: 02/08/2023 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>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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW27-0223
23B0160-09 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/07/2023 16:10
Instrument: NT16 Analyst: KOTT Analyzed: 02/09/2023 14:55

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-09 E
Preparation Batch: BLB0244 Sample Size: 10 mL
Prepared: 02/09/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0778	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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW27-0223
23B0160-09 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/07/2023 16:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 18:28

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-09 A 01
Preparation Batch: BLB0482 Sample Size: 25 mL
Prepared: 02/20/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	9.77	mg/L	D
Manganese	7439-96-5	5	0.00250	0.369	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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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SPL-GW-MW27-0223
23B0160-10 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/07/2023 16:10
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/23/2023 20:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-10 A 02
Preparation Batch: BLB0537 Sample Size: 25 mL
Prepared: 02/21/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	3.70	ug/L	



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SPL-GW-MW61-0223
23B0160-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/07/2023 12:00
Instrument: NT2 Analyst: LH Analyzed: 02/08/2023 15:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-11 B
Preparation Batch: BLB0184 Sample Size: 10 mL
Prepared: 02/08/2023 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>108</i>	<i>%</i>	



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SPL-GW-MW61-0223
23B0160-11 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/07/2023 12:00
Instrument: NT16 Analyst: KOTT Analyzed: 02/09/2023 15:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0160-11 E
Preparation Batch: BLB0244 Sample Size: 10 mL
Prepared: 02/09/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0482	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>100</i>	<i>%</i>	



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SPL-GW-MW61-0223
23B0160-11 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/07/2023 12:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 18:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-11 A 01
Preparation Batch: BLB0482 Sample Size: 25 mL
Prepared: 02/20/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	26.8	mg/L	D
Manganese	7439-96-5	20	0.0100	1.77	mg/L	D



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SPL-GW-MW61-0223
23B0160-12 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/07/2023 12:00
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/23/2023 20:36

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0160-12 A
Preparation Batch: BLB0537 Sample Size: 25 mL
Prepared: 02/21/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	ND	ug/L	U



Seattle Public Utilities
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Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Jeff Neuner

Reported:
28-Feb-2023 11:16

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLB0184 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0184-BLK2)				Prepared: 08-Feb-2023 Analyzed: 08-Feb-2023 08:49						
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.96		ug/L	5.00		99.2	80-129			
LCS (BLB0184-BS2)				Prepared: 08-Feb-2023 Analyzed: 08-Feb-2023 07:05						
cis-1,2-Dichloroethene	10.7	0.20	ug/L	10.0		107	80-121			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.96		ug/L	5.00		99.3	80-129			
LCS Dup (BLB0184-BSD2)				Prepared: 08-Feb-2023 Analyzed: 08-Feb-2023 07:46						
cis-1,2-Dichloroethene	10.7	0.20	ug/L	10.0		107	80-121	0.01	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.93		ug/L	5.00		98.6	80-129			
Matrix Spike (BLB0184-MS1)				Source: 23B0160-03		Prepared: 08-Feb-2023 Analyzed: 08-Feb-2023 17:28				
cis-1,2-Dichloroethene	12.0	0.20	ug/L	10.0	ND	120	80-121			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.10		ug/L	5.00	5.37	102	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLB0184-MSD1)				Source: 23B0160-03		Prepared: 08-Feb-2023 Analyzed: 08-Feb-2023 17:48				
cis-1,2-Dichloroethene	11.6	0.20	ug/L	10.0	ND	116	80-121	3.62	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.10		ug/L	5.00	5.37	102	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										



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Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Jeff Neuner

Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLB0244 - EPA 8260D-SIM

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0244-BLK1)				Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 11:41						
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5020		ug/L	5000		100	80-129			
LCS (BLB0244-BS1)				Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 09:46						
Vinyl chloride	2.07	0.0200	ug/L	2.00		103	62-141			
Surrogate: 1,2-Dichloroethane-d4	4920		ug/L	5000		98.4	80-129			
LCS Dup (BLB0244-BSD1)				Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 10:29						
Vinyl chloride	1.92	0.0200	ug/L	2.00		96.2	62-141	7.32	30	
Surrogate: 1,2-Dichloroethane-d4	4820		ug/L	5000		96.4	80-129			
Matrix Spike (BLB0244-MS1)				Source: 23B0160-03		Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 12:23				
Vinyl chloride	1.96	0.0200	ug/L	2.00	0.0484	95.4	62-141			
Surrogate: 1,2-Dichloroethane-d4	4870		ug/L	5000	4960	97.4	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLB0244-MSD1)				Source: 23B0160-03		Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 12:44				
Vinyl chloride	2.01	0.0200	ug/L	2.00	0.0484	98.1	62-141	2.66	30	
Surrogate: 1,2-Dichloroethane-d4	4870		ug/L	5000	4960	97.4	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: 553-1550-067 Project Manager: Jeff Neuner	Reported: 28-Feb-2023 11:16
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLB0482 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BLB0482-DUP3)			Source: 23B0160-03			Prepared: 20-Feb-2023 Analyzed: 24-Feb-2023 19:50					
Manganese	55	1.69	0.0100	mg/L		1.76			3.82	20	D
Matrix Spike (BLB0482-MS3)			Source: 23B0160-03			Prepared: 20-Feb-2023 Analyzed: 24-Feb-2023 19:54					
Manganese	55	1.63	0.0100	mg/L	0.0250	1.76	-529	75-125			HC, D

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

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0482-BLK1)						Prepared: 20-Feb-2023 Analyzed: 20-Feb-2023 16:53					
Manganese	55	ND	0.000500	mg/L							U
Blank (BLB0482-BLK2)						Prepared: 20-Feb-2023 Analyzed: 22-Feb-2023 17:25					
Iron	54	ND	0.0360	mg/L							U
Iron	57	ND	0.0360	mg/L							U
LCS (BLB0482-BS1)						Prepared: 20-Feb-2023 Analyzed: 20-Feb-2023 16:57					
Manganese	55	0.0265	0.000500	mg/L	0.0250		106	80-120			
LCS (BLB0482-BS2)						Prepared: 20-Feb-2023 Analyzed: 22-Feb-2023 17:30					
Iron	54	5.08	0.0360	mg/L	5.00		102	80-120			
Iron	57	5.22	0.0360	mg/L	5.00		104	80-120			
Duplicate (BLB0482-DUP2)			Source: 23B0160-03			Prepared: 20-Feb-2023 Analyzed: 22-Feb-2023 18:40					
Iron	54	22.0	0.0720	mg/L		22.2			0.88	20	D
Matrix Spike (BLB0482-MS2)			Source: 23B0160-03			Prepared: 20-Feb-2023 Analyzed: 22-Feb-2023 18:45					
Iron	54	25.1	0.0720	mg/L	5.00	22.2	58.3	75-125			HC, D

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



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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLB0537 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0537-BLK1)			Prepared: 21-Feb-2023 Analyzed: 21-Feb-2023 21:22								
Arsenic, Dissolved	75a	ND	0.200	ug/L							U
LCS (BLB0537-BS1)			Prepared: 21-Feb-2023 Analyzed: 21-Feb-2023 21:27								
Arsenic, Dissolved	75a	24.5	0.200	ug/L	25.0		97.9	80-120			
Duplicate (BLB0537-DUP1)			Source: 23B0160-04			Prepared: 21-Feb-2023 Analyzed: 22-Feb-2023 08:06					
Arsenic, Dissolved	75a	ND	0.200	ug/L		ND					L, U
Matrix Spike (BLB0537-MS1)			Source: 23B0160-04			Prepared: 21-Feb-2023 Analyzed: 22-Feb-2023 08:12					
Arsenic, Dissolved	75a	24.7	0.200	ug/L	25.0	ND	98.7	75-125			

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



Seattle Public Utilities
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Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Iron-54	NELAP,WADOE,DoD-ELAP
Iron-57	NELAP,WADOE,DoD-ELAP
Manganese-55	NELAP,WADOE,DoD-ELAP
EPA 6020B UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
EPA 8260D in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE



Seattle Public Utilities
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Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE



Seattle Public Utilities
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Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE

EPA 8260D-SIM in Water

Acrylonitrile	NELAP,WADOE
Vinyl chloride	NELAP,WADOE
1,1-Dichloroethene	NELAP,WADOE
cis-1,2-Dichloroethene	NELAP,WADOE
trans-1,2-Dichloroethene	NELAP,WADOE
Trichloroethene	NELAP,WADOE
Tetrachloroethene	NELAP,WADOE
1,1,2,2-Tetrachloroethane	NELAP,WADOE
1,2-Dichloroethane	NELAP,WADOE
Benzene	NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



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

Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Jeff Neuner

Reported:
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Notes and Definitions

- * Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- 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.
- L Analyte concentration is ≤ 5 times the reporting limit and the replicate control limit defaults to +/- RL instead of 20% RPD
- 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.



Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

16 March 2023

Jeff Neuner
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.

<u>Associated Work Order(s)</u>	<u>Associated SDG ID(s)</u>
23B0182	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

Shelly Fishel, Project 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: 23B0182	Turn-around Requested: 2 weeks	Date: 2/8/23
ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 1
Client Contact: Laura Lee	Phone: 206 394-3665	No. of Coolers: 5 Cooler Temps: 58

Client Project Name: SPU South Park Landfill	Analysis Requested	Notes/Comments
Samplers: Chris Bourgeois HWA		

Sample ID	Date	Time	Matrix	Number of Containers	cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn	Dissolved As**							**Field-filtered
SPL-GW-MW12-0223	2/8/23	915	water	8	X		X	X	X							
SPL-GW-MW14-0223	2/8/23	1165	water	7	X		X	X								
SPL-GW-MW29-0223			water	7	X		X	X								
SPL-GW-MW18-0223			water	14	X		X	X	X							MS/MSD
SPL-GW-MW32-0223			water	8	X		X	X	X							
SPL-GW-MW33-0223			water	8	X		X	X	X							
SPL-GW-MW10-0223			water	8	X		X	X	X							
SPL-GW-MW60-0223			water	8	X		X	X	X							
SPL-GW-MW80-0223			water	2		X	X									

Comments/Special Instructions	Relinquished by: (Signature) <i>Nicole Kapise</i>	Received by: (Signature) <i>Phillip Bates</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: <i>Nicole Kapise</i>	Printed Name: <i>Phillip Bates</i>	Printed Name:	Printed Name:
	Company: <i>HWA</i>	Company: <i>AR</i>	Company:	Company:
	Date & Time: <i>2/8/23 13:43</i>	Date & Time: <i>2/8/23 13:43</i>	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: Jeff Neuner	Reported: 16-Mar-2023 14:35
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ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW12-0223	23B0182-01	Water	08-Feb-2023 09:15	08-Feb-2023 13:43
SPL-GW-MW12-0223	23B0182-02	Water	08-Feb-2023 09:15	08-Feb-2023 13:43
SPL-GW-MW14-0223	23B0182-03	Water	08-Feb-2023 11:05	08-Feb-2023 13:43



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: Jeff Neuner

Reported:
16-Mar-2023 14:35

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Work Order: 23B0182

Revised Report - March 16, 2023

This report was revised to clarify the Manganese method blank detection.

Sample receipt

Sample(s) as listed on the preceding page were received 08-Feb-2023 13:43 under ARI work order 23B0182. 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)



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: Jeff Neuner

Reported:
16-Mar-2023 14:35

were within control limits.

Total and Dissolved Metals - EPA Method 6020B

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

Initial and continuing calibrations were within method requirements.

The method blank(s) were clean at the reporting limits. Manganese was detected between 1/2 the reporting limit and the reporting limit. As the samples are reported to the reporting limit, the method blank result is reported as a non-detect at the reporting limit. The sample concentrations are greater than 10X the blank detection and is therefore the method blank detection is considered insignificant. All samples which contain analyte have been flagged with a "B" qualifier.

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



WORK ORDER

23B0182

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

Client: Seattle Public Utilities

Project Manager: Shelly Fishel

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

Preservation Confirmation

Container ID	Container Type	pH
23B0182-01 A	HDPE NM, 500 mL, 1:1 HNO3	LL PASS
23B0182-01 B	VOA Vial, Clear, 40 mL, HCL	
23B0182-01 C	VOA Vial, Clear, 40 mL, HCL	
23B0182-01 D	VOA Vial, Clear, 40 mL, HCL	
23B0182-01 E	VOA Vial, Clear, 40 mL	
23B0182-01 F	VOA Vial, Clear, 40 mL	
23B0182-01 G	VOA Vial, Clear, 40 mL	
23B0182-02 A	HDPE NM, 500 mL, 1:1 HNO3 (FF)	LL PASS
23B0182-03 A	HDPE NM, 500 mL, 1:1 HNO3	LL PASS
23B0182-03 B	VOA Vial, Clear, 40 mL, HCL	
23B0182-03 C	VOA Vial, Clear, 40 mL, HCL	
23B0182-03 D	VOA Vial, Clear, 40 mL, HCL	
23B0182-03 E	VOA Vial, Clear, 40 mL	
23B0182-03 F	VOA Vial, Clear, 40 mL	
23B0182-03 G	VOA Vial, Clear, 40 mL	

PIB

2/8/23

Preservation Confirmed By

Date



Cooler Receipt Form

ARI Client: Seattle Public Utilities

Project Name: South Park Landfill W/ Bedrock

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 23B0182

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 13:43 5.8

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 7009703

Cooler Accepted by: PIB Date: 2/18/23 Time: 13:43

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: PIB Date: 2/18/23 Time: 16:03 Labels checked by: _____

**** 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: Jeff Neuner	Reported: 16-Mar-2023 14:35
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SPL-GW-MW12-0223
23B0182-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/08/2023 09:15
Instrument: NT2 Analyst: LH Analyzed: 02/09/2023 11:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0182-01 B
Preparation Batch: BLB0229 Sample Size: 10 mL
Prepared: 02/09/2023 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: Jeff Neuner	Reported: 16-Mar-2023 14:35
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SPL-GW-MW12-0223
23B0182-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/08/2023 09:15
Instrument: NT16 Analyst: KOTT Analyzed: 02/09/2023 15:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0182-01 E
Preparation Batch: BLB0244 Sample Size: 10 mL
Prepared: 02/09/2023 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: Jeff Neuner	Reported: 16-Mar-2023 14:35
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SPL-GW-MW12-0223
23B0182-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/08/2023 09:15
Instrument: ICPMS2 Analyst: MCB Analyzed: 02/22/2023 17:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0182-01 A 01
Preparation Batch: BLB0530 Sample Size: 25 mL
Prepared: 02/21/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	2	0.0720	ND	mg/L	U
Manganese	7439-96-5	1	0.000500	0.0200	mg/L	B



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: Jeff Neuner	Reported: 16-Mar-2023 14:35
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SPL-GW-MW12-0223
23B0182-02 (Water)

Metals and Metallic Compounds (dissolved)

Method: EPA 6020B UCT-KED Sampled: 02/08/2023 09:15
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/23/2023 15:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0182-02 A 01
Preparation Batch: BLB0447 Sample Size: 25 mL
Prepared: 02/16/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Arsenic, Dissolved	7440-38-2	1	0.200	0.287	ug/L	



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: Jeff Neuner	Reported: 16-Mar-2023 14:35
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SPL-GW-MW14-0223
23B0182-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/08/2023 11:05
Instrument: NT2 Analyst: LH Analyzed: 02/09/2023 11:22

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0182-03 B
Preparation Batch: BLB0229 Sample Size: 10 mL
Prepared: 02/09/2023 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 %	105	%	



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: Jeff Neuner	Reported: 16-Mar-2023 14:35
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SPL-GW-MW14-0223
23B0182-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/08/2023 11:05
Instrument: NT16 Analyst: KOTT Analyzed: 02/09/2023 15:59

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0182-03 E
Preparation Batch: BLB0244 Sample Size: 10 mL
Prepared: 02/09/2023 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: Jeff Neuner	Reported: 16-Mar-2023 14:35
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SPL-GW-MW14-0223
23B0182-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 02/08/2023 11:05
Instrument: ICPMS1 Analyst: MCB Analyzed: 02/24/2023 19:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23B0182-03 A 01
Preparation Batch: BLB0530 Sample Size: 25 mL
Prepared: 02/21/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	3.97	mg/L	D
Manganese	7439-96-5	10	0.00500	0.851	mg/L	B, 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: Jeff Neuner	Reported: 16-Mar-2023 14:35
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLB0229 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0229-BLK1)		Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 08:58								
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.95		ug/L	5.00		98.9	80-129			
LCS (BLB0229-BS1)		Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 06:54								
cis-1,2-Dichloroethene	11.2	0.20	ug/L	10.0		112	80-121			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.10		ug/L	5.00		102	80-129			
LCS Dup (BLB0229-BSD1)		Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 08:16								
cis-1,2-Dichloroethene	11.2	0.20	ug/L	10.0		112	80-121	0.28	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.16		ug/L	5.00		103	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: Jeff Neuner	Reported: 16-Mar-2023 14:35
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLB0244 - EPA 8260D-SIM

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0244-BLK1)										
					Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 11:41					
Vinyl chloride	ND	0.0200	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5020		ug/L	5000		100	80-129			
LCS (BLB0244-BS1)										
					Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 09:46					
Vinyl chloride	2.07	0.0200	ug/L	2.00		103	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4920		ug/L	5000		98.4	80-129			
LCS Dup (BLB0244-BSD1)										
					Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 10:29					
Vinyl chloride	1.92	0.0200	ug/L	2.00		96.2	62-141	7.32	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4820		ug/L	5000		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: Jeff Neuner	Reported: 16-Mar-2023 14:35
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLB0530 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0530-BLK1)					Prepared: 21-Feb-2023 Analyzed: 21-Feb-2023 17:30						
Manganese	55	ND	0.000500	mg/L							U
Blank (BLB0530-BLK2)					Prepared: 21-Feb-2023 Analyzed: 22-Feb-2023 17:35						
Iron	54	ND	0.0360	mg/L							U
LCS (BLB0530-BS1)					Prepared: 21-Feb-2023 Analyzed: 21-Feb-2023 17:35						
Manganese	55	0.0257	0.000500	mg/L	0.0250		103	80-120			B
LCS (BLB0530-BS2)					Prepared: 21-Feb-2023 Analyzed: 22-Feb-2023 17:40						
Iron	54	5.17	0.0360	mg/L	5.00		103	80-120			
Duplicate (BLB0530-DUP1)					Source: 23B0182-01		Prepared: 21-Feb-2023 Analyzed: 21-Feb-2023 22:59				
Manganese	55	0.0196	0.000500	mg/L		0.0200			2.18	20	B
Duplicate (BLB0530-DUP2)					Source: 23B0182-01		Prepared: 21-Feb-2023 Analyzed: 22-Feb-2023 17:57				
Iron	54	ND	0.0720	mg/L		ND					U, D
Matrix Spike (BLB0530-MS1)					Source: 23B0182-01		Prepared: 21-Feb-2023 Analyzed: 21-Feb-2023 23:05				
Manganese	55	0.0406	0.000500	mg/L	0.0250	0.0200	82.2	75-125			B
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BLB0530-MS2)					Source: 23B0182-01		Prepared: 21-Feb-2023 Analyzed: 22-Feb-2023 18:02				
Iron	54	4.84	0.0720	mg/L	5.00	ND	95.9	75-125			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: Jeff Neuner	Reported: 16-Mar-2023 14:35
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds (dissolved) - Quality Control

Batch BLB0447 - EPA 6020B UCT-KED

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0447-BLK1)						Prepared: 16-Feb-2023 Analyzed: 20-Feb-2023 19:01					
Arsenic, Dissolved	75a	ND	0.200	ug/L							U
LCS (BLB0447-BS1)						Prepared: 16-Feb-2023 Analyzed: 20-Feb-2023 19:05					
Arsenic, Dissolved	75a	22.7	0.200	ug/L	25.0		90.7	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: Jeff Neuner

Reported:
16-Mar-2023 14:35

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 6020B UCT-KED in Water	
Arsenic-75a	NELAP,WADOE,DoD-ELAP,ADEC
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	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



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: Jeff Neuner

Reported:
16-Mar-2023 14:35

Notes and Definitions

- * Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- 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.
- L Analyte concentration is ≤ 5 times the reporting limit and the replicate control limit defaults to \pm RL instead of 20% RPD
- 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.



Analytical Resources, LLC
Analytical Chemists and Consultants

14 February 2023

Jeff Neuner
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)
23B0183

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

Shelly Fishel, Project 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

ARI Assigned Number: 23B0183	Turn-around Requested: 2 weeks	Date: 2/8/2023
ARI Client Company: Jeff Neuner, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 1
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 5.8 Cooler Temps:

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: Chris Bourgeois HWA			cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn	Dissolved As**									
Sample ID	Date	Time	Matrix	Number of Containers														**Field-filtered
SPL-GW-MW25-0223			water	8		X	X	X	X									
SPL-GW-MW30-0223			water	7	X		X	X										
SPL-GW-MW31-0223			water	7	X		X	X										
SPL-GW-MW24-0223			water	14	X		X	X	X									MS/MSD
SPL-GW-MW26-0223			water	8	X		X	X	X									
SPL-GW-MW08-0223			water	8	X		X	X	X									
SPL-GW-MW27-0223			water	8	X		X	X	X									
SPL-GW-MW61-0223			water	8	X		X	X	X									
SPL-GW-MW81-0223	2/8/23		water	2		X	X											
Comments/Special Instructions	Relinquished by: (Signature) <i>Nicole Kapise</i>		Received by: (Signature) <i>Phillip Bates</i>		Relinquished by: (Signature)					Received by: (Signature)								
	Printed Name: <i>Nicole Kapise</i>		Printed Name: <i>Phillip Bates</i>		Printed Name:					Printed Name:								
	Company: <i>HWA</i>		Company: <i>AR</i>		Company:					Company:								
	Date & Time: <i>2/8/23 13:43</i>		Date & Time: <i>2/8/23 13:43</i>		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: Jeff Neuner

Reported:
14-Feb-2023 10:52

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW81-0223	23B0183-01	Water	08-Feb-2023 00:00	08-Feb-2023 13:43



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: Jeff Neuner

Reported:
14-Feb-2023 10:52

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill -Parametrix Water
Work Order: 23B0183

Sample receipt

One sample as listed on the preceding page was received 08-Feb-2023 13:43 under ARI work order 23B0183. 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.



Cooler Receipt Form

ARI Client: Seattle Public Utilities
COC No(s): _____ NA
Assigned ARI Job No: 23B0183

Project Name: South Park Landfill W/ Volatiles
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)

Time 13:43 5.8
If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 7009703
Cooler Accepted by: PIB Date: 2/18/23 Time: 13:43

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: PIB Date: 2/18/23 Time: 1621 Labels checked by: _____

**** 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 sampling time provided

By: PIB Date: 2/18/23



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: Jeff Neuner	Reported: 14-Feb-2023 10:52
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SPL-GW-MW81-0223
23B0183-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 02/08/2023 00:00
Instrument: NT2 Analyst: LH Analyzed: 02/09/2023 11:43

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0183-01 A
Preparation Batch: BLB0229 Sample Size: 10 mL
Prepared: 02/09/2023 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
Benzene	71-43-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>106</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>97.1</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: Jeff Neuner	Reported: 14-Feb-2023 10:52
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SPL-GW-MW81-0223
23B0183-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 02/08/2023 00:00
Instrument: NT16 Analyst: KOTT Analyzed: 02/09/2023 16:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23B0183-01 B
Preparation Batch: BLB0244 Sample Size: 10 mL
Prepared: 02/09/2023 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: Jeff Neuner	Reported: 14-Feb-2023 10:52
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLB0229 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0229-BLK1)		Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 08:58								
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.95		ug/L	5.00		98.9	80-129			
<i>Surrogate: Toluene-d8</i>	4.88		ug/L	5.00		97.7	80-120			
LCS (BLB0229-BS1)		Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 06:54								
cis-1,2-Dichloroethene	11.2	0.20	ug/L	10.0		112	80-121			
Benzene	11.4	0.20	ug/L	10.0		114	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.10		ug/L	5.00		102	80-129			
<i>Surrogate: Toluene-d8</i>	4.97		ug/L	5.00		99.3	80-120			
LCS Dup (BLB0229-BSD1)		Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 08:16								
cis-1,2-Dichloroethene	11.2	0.20	ug/L	10.0		112	80-121	0.28	30	
Benzene	11.6	0.20	ug/L	10.0		116	80-120	1.86	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.16		ug/L	5.00		103	80-129			
<i>Surrogate: Toluene-d8</i>	4.98		ug/L	5.00		99.6	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: Jeff Neuner	Reported: 14-Feb-2023 10:52
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLB0244 - EPA 8260D-SIM

Instrument: NT16 Analyst: KOTT

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLB0244-BLK1)				Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 11:41						
Vinyl chloride	ND	0.0200	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5020		ug/L	5000	100		80-129			
LCS (BLB0244-BS1)				Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 09:46						
Vinyl chloride	2.07	0.0200	ug/L	2.00		103	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4920		ug/L	5000	98.4		80-129			
LCS Dup (BLB0244-BSD1)				Prepared: 09-Feb-2023 Analyzed: 09-Feb-2023 10:29						
Vinyl chloride	1.92	0.0200	ug/L	2.00		96.2	62-141	7.32	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4820		ug/L	5000	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: Jeff Neuner

Reported:
14-Feb-2023 10:52

Certified Analyses included in this Report

Analyte	Certifications
EPA 8260D in Water	
Chloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Bromomethane	DoD-ELAP,ADEC,NELAP,WADOE
Chloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Trichlorofluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Acrolein	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloro-1,2,2-Trifluoroethane	DoD-ELAP,ADEC,NELAP,WADOE
Acetone	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Iodomethane	DoD-ELAP,NELAP,WADOE
Methylene Chloride	DoD-ELAP,ADEC,NELAP,WADOE
Acrylonitrile	DoD-ELAP,NELAP,WADOE
Carbon Disulfide	DoD-ELAP,NELAP,WADOE
trans-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Vinyl Acetate	DoD-ELAP,NELAP,WADOE
1,1-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Butanone	DoD-ELAP,NELAP,WADOE
2,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
cis-1,2-Dichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Chloroform	DoD-ELAP,ADEC,NELAP,WADOE
Bromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,1-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Carbon tetrachloride	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
Benzene	DoD-ELAP,ADEC,NELAP,WADOE
Trichloroethene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Bromodichloromethane	DoD-ELAP,ADEC,NELAP,WADOE
Dibromomethane	DoD-ELAP,ADEC,NELAP,WADOE
2-Chloroethyl vinyl ether	DoD-ELAP,ADEC,NELAP,WADOE
4-Methyl-2-Pentanone	DoD-ELAP,NELAP,WADOE
cis-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE
Toluene	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,3-Dichloropropene	DoD-ELAP,ADEC,NELAP,WADOE



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: Jeff Neuner

Reported:
14-Feb-2023 10:52

2-Hexanone	DoD-ELAP,NELAP,WADOE
1,1,2-Trichloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,3-Dichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
Tetrachloroethene	DoD-ELAP,ADEC,NELAP,WADOE
Dibromochloromethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromoethane	DoD-ELAP,NELAP,WADOE
Chlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Ethylbenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,1,1,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
m,p-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
o-Xylene	DoD-ELAP,ADEC,NELAP,WADOE
Styrene	DoD-ELAP,NELAP,WADOE
Bromoform	DoD-ELAP,NELAP,WADOE
1,1,2,2-Tetrachloroethane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichloropropane	DoD-ELAP,ADEC,NELAP,WADOE
trans-1,4-Dichloro 2-Butene	DoD-ELAP,ADEC,NELAP,WADOE
n-Propylbenzene	DoD-ELAP,NELAP,WADOE
Bromobenzene	DoD-ELAP,NELAP,WADOE
Isopropyl Benzene	DoD-ELAP,NELAP,WADOE
2-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
4-Chlorotoluene	DoD-ELAP,ADEC,NELAP,WADOE
t-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,3,5-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
1,2,4-Trimethylbenzene	DoD-ELAP,NELAP,WADOE
s-Butylbenzene	DoD-ELAP,NELAP,WADOE
4-Isopropyl Toluene	DoD-ELAP,NELAP,WADOE
1,3-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,4-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
n-Butylbenzene	DoD-ELAP,NELAP,WADOE
1,2-Dichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
1,2-Dibromo-3-chloropropane	DoD-ELAP,ADEC,NELAP,WADOE
1,2,4-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Hexachloro-1,3-Butadiene	DoD-ELAP,ADEC,NELAP,WADOE
Naphthalene	DoD-ELAP,ADEC,NELAP,WADOE
1,2,3-Trichlorobenzene	DoD-ELAP,ADEC,NELAP,WADOE
Dichlorodifluoromethane	DoD-ELAP,ADEC,NELAP,WADOE
Methyl tert-butyl Ether	DoD-ELAP,ADEC,NELAP,WADOE
n-Hexane	WADOE
2-Pentanone	WADOE



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: Jeff Neuner

Reported:
14-Feb-2023 10:52

EPA 8260D-SIM in Water

Acrylonitrile	NELAP,WADOE
Vinyl chloride	NELAP,WADOE
1,1-Dichloroethene	NELAP,WADOE
cis-1,2-Dichloroethene	NELAP,WADOE
trans-1,2-Dichloroethene	NELAP,WADOE
Trichloroethene	NELAP,WADOE
Tetrachloroethene	NELAP,WADOE
1,1,2,2-Tetrachloroethane	NELAP,WADOE
1,2-Dichloroethane	NELAP,WADOE
Benzene	NELAP,WADOE

Code	Description	Number	Expires
ADEC	Alaska Dept of Environmental Conservation	17-015	03/28/2023
DoD-ELAP	DoD-Environmental Laboratory Accreditation Program, PJLA Testing	66169	02/28/2023
NELAP	ORELAP - Oregon Laboratory Accreditation Program	WA100006-012	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



Seattle Public Utilities
700-5th Ave, Ste 4900, Box 34018
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Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Project Manager: Jeff Neuner

Reported:
14-Feb-2023 10:52

Notes and Definitions

- * Flagged value is not within established control limits.
- E The analyte concentration exceeds the upper limit of the calibration range of the instrument established by the initial calibration (ICAL)
- 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.

2nd Quarter 2023





Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

20 May 2023

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

RE: South Park Landfill -Parametrix Water (553-1550-067)

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)
23E0018

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

Shelly Fishel, Project 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: 23E0018	Turn-around Requested: 2 weeks	Date: 5/1/2023
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: 4.0° Temps:

Client Project Name: SPU South Park Landfill	Analysis Requested	Notes/Comments
Samplers: Chris Bourgeois HWA		

Sample ID	Date	Time	Matrix	Number of Containers	cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn									
SPL-GW-MW12-0523			water	7	X		X	X									
SPL-GW-MW14-0523			water	7	X		X	X									
SPL-GW-MW29-0523			water	7	X		X	X									
SPL-GW-MW18-0523			water	7	X		X	X									
SPL-GW-MW32-0523	5/1/2023	1345	water	13	X		X	X									MS/MSD
SPL-GW-MW33-0523	5/1/2023	1435	water	7	X		X	X									
SPL-GW-MW10-0523	5/1/2023	950	water	7	X		X	X									
SPL-GW-MW60-0523	5/1/2023	1320	water	7	X		X	X									
SPL-GW-MW80-0523	5/1/2023	—	water	2		X	X										

Comments/Special Instructions	Relinquished by: (Signature) <i>Chris Bourgeois</i>	Received by: (Signature) <i>Rowan M.</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Chris Bourgeois	Printed Name: <i>Rowan M.</i>	Printed Name:	Printed Name:
	Company: HWA	Company: ARI	Company:	Company:
	Date & Time: 5/1/2023 1515	Date & Time: 5/1/23 1515	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: 23E0018	Turn-around Requested: 2 weeks	Date: 5/1/2023
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: 2 X of 2 X
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: Cooler Temps: 4.0°

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments		
Client Project #: 553-1550-067		Samplers: Chris Bourgeois HWA			cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn									
Sample ID	Date	Time	Matrix	Number of Containers													
SPL-GW-MW25-0523	5/1/2023	1035	water	7		X	X	X									
SPL-GW-MW30-0523			water	7	X		X	X									
SPL-GW-MW31-0523			water	7	X		X	X									
SPL-GW-MW24-0523			water	7	X		X	X									
SPL-GW-MW26-0523			water	13	X		X	X									MS/MSD
SPL-GW-MW08-0523			water	7	X		X	X									
SPL-GW-MW27-0523			water	7	X		X	X									
SPL-GW-MW61-0523			water	7	X		X	X									
SPL-GW-MW81-0523			water	2		X	X										
Comments/Special Instructions	Relinquished by: (Signature) <i>Chris</i>			Received by: (Signature) <i>Roman</i>			Relinquished by: (Signature)			Received by: (Signature)							
	Printed Name: Chris Bourgeois			Printed Name: <i>Roman</i>			Printed Name:			Printed Name:							
	Company: HWA			Company: ARI			Company:			Company:							
	Date & Time: 5/1/2023 1515			Date & Time: <i>5/1/23 1515</i>			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: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
20-May-2023 12:10

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW32-0523	23E0018-01	Water	01-May-2023 13:45	01-May-2023 15:15
SPL-GW-MW33-0523	23E0018-02	Water	01-May-2023 14:35	01-May-2023 15:15
SPL-GW-MW10-0523	23E0018-03	Water	01-May-2023 09:50	01-May-2023 15:15
SPL-GW-MW60-0523	23E0018-04	Water	01-May-2023 13:20	01-May-2023 15:15
SPL-GW-MW80-0523	23E0018-05	Water	01-May-2023 00:00	01-May-2023 15:15
SPL-GW-MW25-0523	23E0018-06	Water	01-May-2023 10:35	01-May-2023 15:15



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

Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
20-May-2023 12:10

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Work Order: 23E0018

Sample receipt

Sample(s) as listed on the preceding page were received 01-May-2023 15:15 under ARI work order 23E0018. 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 except as follows. Benzene was out of control low in the MS. cis-1,2-Dichloroethene was out of control low in both the MS and MSD. The deviations have been flagged.

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)



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

Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
20-May-2023 12:10

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 were within method requirements.

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

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

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



WORK ORDER

23E0018

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

Client: Seattle Public Utilities

Project Manager: Shelly Fishel

Project: South Park Landfill -Parametrix Water

Project Number: 553-1550-067

Preservation Confirmation

Container ID	Container Type	pH	
23E0018-01 A	HDPE NM, 500 mL, 1:1 HNO3	C2	PASS (P)
23E0018-01 B	VOA Vial, Clear, 40 mL, HCL		
23E0018-01 C	VOA Vial, Clear, 40 mL, HCL		
23E0018-01 D	VOA Vial, Clear, 40 mL, HCL		
23E0018-01 E	VOA Vial, Clear, 40 mL, HCL		
23E0018-01 F	VOA Vial, Clear, 40 mL, HCL		
23E0018-01 G	VOA Vial, Clear, 40 mL, HCL		
23E0018-01 H	VOA Vial, Clear, 40 mL		
23E0018-01 I	VOA Vial, Clear, 40 mL		
23E0018-01 J	VOA Vial, Clear, 40 mL		
23E0018-01 K	VOA Vial, Clear, 40 mL		
23E0018-01 L	VOA Vial, Clear, 40 mL		
23E0018-01 M	VOA Vial, Clear, 40 mL		
23E0018-02 A	HDPE NM, 500 mL, 1:1 HNO3	C2	P
23E0018-02 B	VOA Vial, Clear, 40 mL, HCL		
23E0018-02 C	VOA Vial, Clear, 40 mL, HCL		
23E0018-02 D	VOA Vial, Clear, 40 mL, HCL		
23E0018-02 E	VOA Vial, Clear, 40 mL		
23E0018-02 F	VOA Vial, Clear, 40 mL		
23E0018-02 G	VOA Vial, Clear, 40 mL		
23E0018-03 A	HDPE NM, 500 mL, 1:1 HNO3	C2	P
23E0018-03 B	VOA Vial, Clear, 40 mL, HCL		
23E0018-03 C	VOA Vial, Clear, 40 mL, HCL		
23E0018-03 D	VOA Vial, Clear, 40 mL, HCL		
23E0018-03 E	VOA Vial, Clear, 40 mL		
23E0018-03 F	VOA Vial, Clear, 40 mL		
23E0018-03 G	VOA Vial, Clear, 40 mL		
23E0018-04 A	HDPE NM, 500 mL, 1:1 HNO3	C2	P
23E0018-04 B	VOA Vial, Clear, 40 mL, HCL		
23E0018-04 C	VOA Vial, Clear, 40 mL, HCL		
23E0018-04 D	VOA Vial, Clear, 40 mL, HCL		
23E0018-04 E	VOA Vial, Clear, 40 mL		
23E0018-04 F	VOA Vial, Clear, 40 mL		
23E0018-04 G	VOA Vial, Clear, 40 mL		



WORK ORDER

23E0018

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

Client: Seattle Public Utilities	Project Manager: Shelly Fishel
Project: South Park Landfill -Parametrix Water	Project Number: 553-1550-067

23E0018-05 A	VOA Vial, Clear, 40 mL, HCL	
23E0018-05 B	VOA Vial, Clear, 40 mL	
23E0018-06 A	HDPE NM, 500 mL, 1:1 HNO3	C2 P
23E0018-06 B	VOA Vial, Clear, 40 mL, HCL	
23E0018-06 C	VOA Vial, Clear, 40 mL, HCL	
23E0018-06 D	VOA Vial, Clear, 40 mL, HCL	
23E0018-06 E	VOA Vial, Clear, 40 mL	
23E0018-06 F	VOA Vial, Clear, 40 mL	
23E0018-06 G	VOA Vial, Clear, 40 mL	

PIB

Preservation Confirmed By _____

PEB
5/1/23
5/1/23
Date



Cooler Receipt Form

ARI Client: SPu
 COC No(s): _____ (NA)
 Assigned ARI Job No: 23E0019

Project Name: South park
 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) 4.0°
 Time 1515
 If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 9908
 Cooler Accepted by: _____ Date: 5/1/23 Time: 1515

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: PLB Date: 5/1/23 Time: 15:31 Labels checked by: PLB

**** 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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW32-0523
23E0018-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/01/2023 13:45
Instrument: NT3 Analyst: PKC Analyzed: 05/02/2023 23:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0018-01 B
Preparation Batch: BLE0087 Sample Size: 10 mL
Prepared: 05/02/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.48	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	111	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW32-0523
23E0018-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/01/2023 13:45
Instrument: NT16 Analyst: PB Analyzed: 05/02/2023 19:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0018-01 I
Preparation Batch: BLE0081 Sample Size: 10 mL
Prepared: 05/02/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.339	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>114</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW32-0523
23E0018-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/01/2023 13:45
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 19:23

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0018-01 A 01
Preparation Batch: BLE0405 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	14.0	mg/L	D
Manganese	7439-96-5	50	0.0250	1.39	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW33-0523
23E0018-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/01/2023 14:35
Instrument: NT3 Analyst: PKC Analyzed: 05/03/2023 00:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0018-02 B
Preparation Batch: BLE0087 Sample Size: 10 mL
Prepared: 05/02/2023 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 %	111	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW33-0523
23E0018-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/01/2023 14:35
Instrument: NT16 Analyst: PB Analyzed: 05/02/2023 19:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0018-02 G
Preparation Batch: BLE0081 Sample Size: 10 mL
Prepared: 05/02/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.133	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>114</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW33-0523
23E0018-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/01/2023 14:35
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 19:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0018-02 A 01
Preparation Batch: BLE0405 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	18.8	mg/L	D
Manganese	7439-96-5	50	0.0250	1.89	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW10-0523
23E0018-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/01/2023 09:50
Instrument: NT3 Analyst: PKC Analyzed: 05/03/2023 00:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0018-03 B
Preparation Batch: BLE0087 Sample Size: 10 mL
Prepared: 05/02/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.54	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	106	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW10-0523
23E0018-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/01/2023 09:50
Instrument: NT16 Analyst: PB Analyzed: 05/02/2023 20:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0018-03 E
Preparation Batch: BLE0081 Sample Size: 10 mL
Prepared: 05/02/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.151	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>115</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW10-0523
23E0018-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/01/2023 09:50
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 19:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0018-03 A 01
Preparation Batch: BLE0405 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	100	3.60	36.6	mg/L	D
Manganese	7439-96-5	100	0.0500	2.26	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW60-0523
23E0018-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/01/2023 13:20
Instrument: NT3 Analyst: PKC Analyzed: 05/03/2023 00:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0018-04 B
Preparation Batch: BLE0087 Sample Size: 10 mL
Prepared: 05/02/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.49	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	108	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW60-0523
23E0018-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/01/2023 13:20
Instrument: NT16 Analyst: PB Analyzed: 05/02/2023 20:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0018-04 E
Preparation Batch: BLE0081 Sample Size: 10 mL
Prepared: 05/02/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.348	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>115</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW60-0523
23E0018-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/01/2023 13:20
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 19:18

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0018-04 A 01
Preparation Batch: BLE0405 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	13.9	mg/L	D
Manganese	7439-96-5	50	0.0250	1.38	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: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
20-May-2023 12:10

SPL-GW-MW80-0523
23E0018-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/01/2023 00:00

Instrument: NT3 Analyst: PKC

Analyzed: 05/03/2023 01:19

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23E0018-05 A

Preparation Batch: BLE0087

Sample Size: 10 mL

Prepared: 05/02/2023

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
Benzene	71-43-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>105</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>98.2</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW80-0523
23E0018-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/01/2023 00:00
Instrument: NT16 Analyst: PB Analyzed: 05/02/2023 20:51

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0018-05 B
Preparation Batch: BLE0081 Sample Size: 10 mL
Prepared: 05/02/2023 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>112</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW25-0523
23E0018-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/01/2023 10:35
Instrument: NT3 Analyst: PKC Analyzed: 05/03/2023 01:41

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0018-06 C
Preparation Batch: BLE0087 Sample Size: 10 mL
Prepared: 05/02/2023 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
Benzene	71-43-2	1	0.20	2.49	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>115</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>97.1</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW25-0523
23E0018-06 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/01/2023 10:35
Instrument: NT16 Analyst: PB Analyzed: 05/02/2023 21:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0018-06 E
Preparation Batch: BLE0081 Sample Size: 10 mL
Prepared: 05/02/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.562	ug/L	
<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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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SPL-GW-MW25-0523
23E0018-06 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/01/2023 10:35
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 19:20

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0018-06 A 01
Preparation Batch: BLE0405 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	31.3	mg/L	D
Manganese	7439-96-5	50	0.0250	2.47	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: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
20-May-2023 12:10

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLE0087 - EPA 8260D

Instrument: NT3 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLE0087-BLK1)		Prepared: 02-May-2023 Analyzed: 02-May-2023 22:44								
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.11		ug/L	5.00		102	80-129			
<i>Surrogate: Toluene-d8</i>	4.86		ug/L	5.00		97.2	80-120			
LCS (BLE0087-BS1)		Prepared: 02-May-2023 Analyzed: 02-May-2023 21:37								
cis-1,2-Dichloroethene	10.1	0.20	ug/L	10.0		101	80-121			
Benzene	11.1	0.20	ug/L	10.0		111	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.01		ug/L	5.00		100	80-129			
<i>Surrogate: Toluene-d8</i>	5.07		ug/L	5.00		101	80-120			
LCS Dup (BLE0087-BSD1)		Prepared: 02-May-2023 Analyzed: 02-May-2023 21:59								
cis-1,2-Dichloroethene	9.75	0.20	ug/L	10.0		97.5	80-121	3.62	30	
Benzene	10.7	0.20	ug/L	10.0		107	80-120	3.76	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.98		ug/L	5.00		99.6	80-129			
<i>Surrogate: Toluene-d8</i>	4.94		ug/L	5.00		98.7	80-120			
Matrix Spike (BLE0087-MS1)		Source: 23E0018-01		Prepared: 02-May-2023 Analyzed: 03-May-2023 09:14						
cis-1,2-Dichloroethene	7.51	0.20	ug/L	10.0	0.48	70.3	80-121			*
Benzene	7.95	0.20	ug/L	10.0	0.08	78.7	80-120			*
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.21		ug/L	5.00	5.57	104	80-129			
<i>Surrogate: Toluene-d8</i>	5.12		ug/L	5.00		102	80-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLE0087-MSD1)		Source: 23E0018-01		Prepared: 02-May-2023 Analyzed: 03-May-2023 09:36						
cis-1,2-Dichloroethene	8.22	0.20	ug/L	10.0	0.48	77.4	80-121	9.00	30	*
Benzene	8.39	0.20	ug/L	10.0	0.08	83.1	80-120	5.39	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.44		ug/L	5.00	5.57	109	80-129			
<i>Surrogate: Toluene-d8</i>	5.02		ug/L	5.00		100	80-120			
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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLE0081 - EPA 8260D-SIM

Instrument: NT16 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLE0081-BLK1)				Prepared: 02-May-2023 Analyzed: 02-May-2023 15:49						
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5550		ug/L	5000		111	80-129			
LCS (BLE0081-BS1)				Prepared: 02-May-2023 Analyzed: 02-May-2023 14:49						
Vinyl chloride	2.24	0.0200	ug/L	2.00		112	62-141			
Surrogate: 1,2-Dichloroethane-d4	5390		ug/L	5000		108	80-129			
LCS Dup (BLE0081-BSD1)				Prepared: 02-May-2023 Analyzed: 02-May-2023 15:27						
Vinyl chloride	2.36	0.0200	ug/L	2.00		118	62-141	5.16	30	
Surrogate: 1,2-Dichloroethane-d4	5360		ug/L	5000		107	80-129			
Matrix Spike (BLE0081-MS1)				Source: 23E0018-01		Prepared: 02-May-2023 Analyzed: 02-May-2023 21:36				
Vinyl chloride	2.73	0.0200	ug/L	2.00	0.339	120	62-141			
Surrogate: 1,2-Dichloroethane-d4	5530		ug/L	5000	5680	111	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLE0081-MSD1)				Source: 23E0018-01		Prepared: 02-May-2023 Analyzed: 02-May-2023 21:58				
Vinyl chloride	2.71	0.0200	ug/L	2.00	0.339	119	62-141	0.65	30	
Surrogate: 1,2-Dichloroethane-d4	5470		ug/L	5000	5680	109	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: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
20-May-2023 12:10

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLE0405 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLE0405-BLK1)			Prepared: 12-May-2023 Analyzed: 15-May-2023 15:35								
Iron	54	ND	0.0360	mg/L							U
Manganese	55	ND	0.000500	mg/L							U

LCS (BLE0405-BS1)

Prepared: 12-May-2023 Analyzed: 15-May-2023 15:40

Iron	54	5.46	0.0360	mg/L	5.00		109	80-120			
Manganese	55	0.0249	0.000500	mg/L	0.0250		99.4	80-120			

Instrument: ICPMS2 Analyst: SKD

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BLE0405-DUP2)			Source: 23E0018-01 Prepared: 12-May-2023 Analyzed: 16-May-2023 19:25								
Iron	54	14.0	1.80	mg/L		14.0			0.11	20	D
Manganese	55	1.39	0.0250	mg/L		1.39			0.17	20	D
Matrix Spike (BLE0405-MS2)			Source: 23E0018-01 Prepared: 12-May-2023 Analyzed: 16-May-2023 19:26								
Iron	54	19.5	1.80	mg/L	5.00	14.0	110	75-125			D
Manganese	55	1.44	0.0250	mg/L	0.0250	1.39	201	75-125			HC, D

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

Matrix Spike Dup (BLE0405-MSD2)

Source: 23E0018-01 Prepared: 12-May-2023 Analyzed: 16-May-2023 19:28

Iron	54	19.3	1.80	mg/L	5.00	14.0	107	75-125	0.67	20	D
Manganese	55	1.42	0.0250	mg/L	0.0250	1.39	120	75-125	1.42	20	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 20-May-2023 12:10
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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	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



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

Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
20-May-2023 12:10

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.
- 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

20 May 2023

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.

<u>Associated Work Order(s)</u>	<u>Associated SDG ID(s)</u>
23E0077	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

Shelly Fishel, Project 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

ARI Assigned Number: 23E0077	Turn-around Requested: 2 weeks	Date: 5/13/2023
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 2 X
Client Contact: Laura Lee	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 80°

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	
Sample ID	Date	Time	Matrix	Number of Containers	cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn								
	Samplers: Chris Bourgeois HWA															
SPL-GW-MW12-0523	5/13/23	920	water	7	X		X	X								
SPL-GW-MW14-0523	5/13/23	1325	water	7	X		X	X								
SPL-GW-MW29-0523	5/13/23	1155	water	7	X		X	X								
SPL-GW-MW18-0523	5/13/23	1030	water	7	X		X	X								
SPL-GW-MW32-0523			water	13	X		X	X								MS/MSD
SPL-GW-MW33-0523			water	7	X		X	X								
SPL-GW-MW10-0523			water	7	X		X	X								
SPL-GW-MW60-0523			water	7	X		X	X								
SPL-GW-MW80-0523			water	2		X	X									
Comments/Special Instructions	Relinquished by: (Signature) <i>[Signature]</i>			Received by: (Signature) <i>[Signature]</i>			Relinquished by: (Signature)			Received by: (Signature)						
	Printed Name: Nick Johnson			Printed Name: Matthew Parel			Printed Name:			Printed Name:						
	Company: HWA			Company: AKLLC			Company:			Company:						
	Date & Time: 5/13/23 1352			Date & Time: 5/13/23 13:52			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: 23E0077	Turn-around Requested: 2 weeks	Date: 5/13/2023
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: 2 Cooler Temps: 8°C

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments		
Client Project #: 553-1550-067		Samplers: Chris Bourgeois HWA			cis-1,2-DCE	cis-1,2-DCE, benzene	Vinyl Chloride	Total Fe, Mn									
Sample ID	Date	Time	Matrix	Number of Containers													
SPL-GW-MW25-0523			water	7		X	X	X									
SPL-GW-MW30-0523	5/2/23	855	water	7	X		X	X									
SPL-GW-MW31-0523	5/2/23	1010	water	7	X		X	X									
SPL-GW-MW24-0523	5/2/23	1105	water	7	X		X	X									
SPL-GW-MW26-0523	5/2/23	1240	water	13	X		X	X									MS/MSD
SPL-GW-MW08-0523	5/2/23	1445	water	7	X		X	X									
SPL-GW-MW27-0523	5/2/23	1620	water	7	X		X	X									
SPL-GW-MW61-0523	5/2/23	1310	water	7	X		X	X									
SPL-GW-MW81-0523	5/3/23		water	2		X	X										

Comments/Special Instructions	Relinquished by: (Signature) <i>Nick Johnson</i>	Received by: (Signature) <i>Matthew Patel</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Nick Johnson	Printed Name: <i>Matthew Patel</i>	Printed Name:	Printed Name:
	Company: HWA	Company: ARLLC	Company:	Company:
	Date & Time: 5/13/23 1352	Date & Time: 5/13/23 13:52	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:
20-May-2023 12:19

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW12-0523	23E0077-01	Water	03-May-2023 09:20	03-May-2023 13:52
SPL-GW-MW14-0523	23E0077-02	Water	03-May-2023 13:25	03-May-2023 13:52
SPL-GW-MW29-0523	23E0077-03	Water	03-May-2023 11:55	03-May-2023 13:52
SPL-GW-MW18-0523	23E0077-04	Water	03-May-2023 10:30	03-May-2023 13:52
SPL-GW-MW30-0523	23E0077-05	Water	02-May-2023 08:55	03-May-2023 13:52
SPL-GW-MW31-0523	23E0077-06	Water	02-May-2023 10:10	03-May-2023 13:52
SPL-GW-MW24-0523	23E0077-07	Water	02-May-2023 11:05	03-May-2023 13:52
SPL-GW-MW26-0523	23E0077-08	Water	02-May-2023 12:40	03-May-2023 13:52
SPL-GW-MW08-0523	23E0077-09	Water	02-May-2023 14:45	03-May-2023 13:52
SPL-GW-MW27-0523	23E0077-10	Water	02-May-2023 16:20	03-May-2023 13:52
SPL-GW-MW61-0523	23E0077-11	Water	02-May-2023 13:10	03-May-2023 13:52
SPL-GW-MW81-0523	23E0077-12	Water	03-May-2023 00:00	03-May-2023 13:52



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:
20-May-2023 12:19

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill -Parametrix Water
Project Number: 553-155-067
Work Order: 23E0077

Sample receipt

Sample(s) as listed on the preceding page were received 03-May-2023 13:52 under ARI work order 23E0077. 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:
20-May-2023 12:19

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 were within method requirements.

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

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

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



WORK ORDER

23E0077

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

Client: Seattle Public Utilities

Project Manager: Shelly Fishel

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

Preservation Confirmation

Container ID	Container Type	pH	
23E0077-01 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	Pass
23E0077-01 B	VOA Vial, Clear, 40 mL, HCL		
23E0077-01 C	VOA Vial, Clear, 40 mL, HCL		
23E0077-01 D	VOA Vial, Clear, 40 mL, HCL		
23E0077-01 E	VOA Vial, Clear, 40 mL		
23E0077-01 F	VOA Vial, Clear, 40 mL		
23E0077-01 G	VOA Vial, Clear, 40 mL		
23E0077-02 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	Pass
23E0077-02 B	VOA Vial, Clear, 40 mL, HCL		
23E0077-02 C	VOA Vial, Clear, 40 mL, HCL		
23E0077-02 D	VOA Vial, Clear, 40 mL, HCL		
23E0077-02 E	VOA Vial, Clear, 40 mL		
23E0077-02 F	VOA Vial, Clear, 40 mL		
23E0077-02 G	VOA Vial, Clear, 40 mL		
23E0077-03 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	Pass
23E0077-03 B	VOA Vial, Clear, 40 mL, HCL		
23E0077-03 C	VOA Vial, Clear, 40 mL, HCL		
23E0077-03 D	VOA Vial, Clear, 40 mL, HCL		
23E0077-03 E	VOA Vial, Clear, 40 mL		
23E0077-03 F	VOA Vial, Clear, 40 mL		
23E0077-03 G	VOA Vial, Clear, 40 mL		
23E0077-04 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	Pass
23E0077-04 B	VOA Vial, Clear, 40 mL, HCL		
23E0077-04 C	VOA Vial, Clear, 40 mL, HCL		
23E0077-04 D	VOA Vial, Clear, 40 mL, HCL		
23E0077-04 E	VOA Vial, Clear, 40 mL		
23E0077-04 F	VOA Vial, Clear, 40 mL		
23E0077-04 G	VOA Vial, Clear, 40 mL		
23E0077-05 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	Pass
23E0077-05 B	VOA Vial, Clear, 40 mL, HCL		
23E0077-05 C	VOA Vial, Clear, 40 mL, HCL		
23E0077-05 D	VOA Vial, Clear, 40 mL, HCL		
23E0077-05 E	VOA Vial, Clear, 40 mL		
23E0077-05 F	VOA Vial, Clear, 40 mL		



WORK ORDER

23E0077

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

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

23E0077-05 G	VOA Vial, Clear, 40 mL		
23E0077-06 A	HDPE NM, 500 mL, 1:1 HNO3	L2	Pass
23E0077-06 B	VOA Vial, Clear, 40 mL, HCL		
23E0077-06 C	VOA Vial, Clear, 40 mL, HCL		
23E0077-06 D	VOA Vial, Clear, 40 mL, HCL		
23E0077-06 E	VOA Vial, Clear, 40 mL		
23E0077-06 F	VOA Vial, Clear, 40 mL		
23E0077-06 G	VOA Vial, Clear, 40 mL		
23E0077-07 A	HDPE NM, 500 mL, 1:1 HNO3	L2	Pass
23E0077-07 B	VOA Vial, Clear, 40 mL, HCL		
23E0077-07 C	VOA Vial, Clear, 40 mL, HCL		
23E0077-07 D	VOA Vial, Clear, 40 mL, HCL		
23E0077-07 E	VOA Vial, Clear, 40 mL		
23E0077-07 F	VOA Vial, Clear, 40 mL		
23E0077-07 G	VOA Vial, Clear, 40 mL		
23E0077-08 A	HDPE NM, 500 mL, 1:1 HNO3	L2	Pass
23E0077-08 B	VOA Vial, Clear, 40 mL, HCL		
23E0077-08 C	VOA Vial, Clear, 40 mL, HCL		
23E0077-08 D	VOA Vial, Clear, 40 mL, HCL		
23E0077-08 E	VOA Vial, Clear, 40 mL, HCL		
23E0077-08 F	VOA Vial, Clear, 40 mL, HCL		
23E0077-08 G	VOA Vial, Clear, 40 mL, HCL		
23E0077-08 H	VOA Vial, Clear, 40 mL		
23E0077-08 I	VOA Vial, Clear, 40 mL		
23E0077-08 J	VOA Vial, Clear, 40 mL		
23E0077-08 K	VOA Vial, Clear, 40 mL		
23E0077-08 L	VOA Vial, Clear, 40 mL		
23E0077-08 M	VOA Vial, Clear, 40 mL		Bubble
23E0077-09 A	HDPE NM, 500 mL, 1:1 HNO3	L2	Pass
23E0077-09 B	VOA Vial, Clear, 40 mL, HCL		
23E0077-09 C	VOA Vial, Clear, 40 mL, HCL		
23E0077-09 D	VOA Vial, Clear, 40 mL, HCL		
23E0077-09 E	VOA Vial, Clear, 40 mL		
23E0077-09 F	VOA Vial, Clear, 40 mL		
23E0077-09 G	VOA Vial, Clear, 40 mL		
23E0077-10 A	HDPE NM, 500 mL, 1:1 HNO3	L2	Pass



WORK ORDER

23E0077

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


Client: Seattle Public Utilities

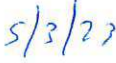
Project Manager: Shelly Fishel

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

23E0077-10 B	VOA Vial, Clear, 40 mL, HCL		
23E0077-10 C	VOA Vial, Clear, 40 mL, HCL		
23E0077-10 D	VOA Vial, Clear, 40 mL, HCL		
23E0077-10 E	VOA Vial, Clear, 40 mL		
23E0077-10 F	VOA Vial, Clear, 40 mL		
23E0077-10 G	VOA Vial, Clear, 40 mL		
23E0077-11 A	HDPE NM, 500 mL, 1:1 HNO3	CC	PASS
23E0077-11 B	VOA Vial, Clear, 40 mL, HCL		
23E0077-11 C	VOA Vial, Clear, 40 mL, HCL		
23E0077-11 D	VOA Vial, Clear, 40 mL, HCL		
23E0077-11 E	VOA Vial, Clear, 40 mL		
23E0077-11 F	VOA Vial, Clear, 40 mL		
23E0077-11 G	VOA Vial, Clear, 40 mL		
23E0077-12 A	VOA Vial, Clear, 40 mL, HCL		
23E0077-12 B	VOA Vial, Clear, 40 mL		Bubble


Preservation Confirmed By


Date



Cooler Receipt Form

ARI Client: Seattle Public Utilities

Project Name: SPU South Park Landfill

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 23E0077

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 1352 80°

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 5009708

Cooler Accepted by: MP Date: 05/03/23 Time: 1352

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 5/3/23

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: MP Date: 5/3/23 Time: 1435 Labels checked by: _____

**** 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: _____



Cooler Temperature Compliance Form

ARI Work Order: <u>23E0077</u>		
Cooler#: _____ Temperature(°C): <u>8.0°C</u>		
Sample ID	Bottle Count	Bottle Type
<i>Samples reviewed above 6.0°C</i>		
Cooler#: _____ Temperature(°C): _____		
Sample ID	Bottle Count	Bottle Type
Cooler#: _____ Temperature(°C): _____		
Sample ID	Bottle Count	Bottle Type
Cooler#: _____ Temperature(°C): _____		
Sample ID	Bottle Count	Bottle Type

Completed by: MID Date: 05/03/23 Time: 1352



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: 20-May-2023 12:19
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SPL-GW-MW12-0523
23E0077-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/03/2023 09:20
Instrument: NT3 Analyst: TWC Analyzed: 05/04/2023 17:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-01 C
Preparation Batch: BLE0137 Sample Size: 10 mL
Prepared: 05/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.21	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: 20-May-2023 12:19
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SPL-GW-MW12-0523
23E0077-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/03/2023 09:20
Instrument: NT16 Analyst: PB Analyzed: 05/04/2023 13:14

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-01 D
Preparation Batch: BLE0140 Sample Size: 10 mL
Prepared: 05/04/2023 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>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: 20-May-2023 12:19
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SPL-GW-MW12-0523
23E0077-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/03/2023 09:20
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 18:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0077-01 A 01
Preparation Batch: BLE0404 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	2.36	mg/L	D
Manganese	7439-96-5	5	0.00250	0.189	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: 20-May-2023 12:19
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SPL-GW-MW14-0523
23E0077-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/03/2023 13:25
Instrument: NT3 Analyst: TWC Analyzed: 05/04/2023 17:32

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-02 D
Preparation Batch: BLE0137 Sample Size: 10 mL
Prepared: 05/04/2023 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 %	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: 20-May-2023 12:19
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SPL-GW-MW14-0523
23E0077-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/03/2023 13:25
Instrument: NT16 Analyst: PB Analyzed: 05/04/2023 13:35

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-02 C
Preparation Batch: BLE0140 Sample Size: 10 mL
Prepared: 05/04/2023 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>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: 20-May-2023 12:19
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SPL-GW-MW14-0523
23E0077-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/03/2023 13:25
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 18:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0077-02 A 01
Preparation Batch: BLE0404 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	3.90	mg/L	D
Manganese	7439-96-5	10	0.00500	0.740	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: 20-May-2023 12:19
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SPL-GW-MW29-0523
23E0077-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/03/2023 11:55
Instrument: NT3 Analyst: TWC Analyzed: 05/04/2023 17:54

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-03 D
Preparation Batch: BLE0137 Sample Size: 10 mL
Prepared: 05/04/2023 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: 20-May-2023 12:19
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SPL-GW-MW29-0523
23E0077-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/03/2023 11:55
Instrument: NT16 Analyst: PB Analyzed: 05/04/2023 13:56

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-03 C
Preparation Batch: BLE0140 Sample Size: 10 mL
Prepared: 05/04/2023 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>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: 20-May-2023 12:19
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SPL-GW-MW29-0523
23E0077-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/03/2023 11:55
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 18:48

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0077-03 A 01
Preparation Batch: BLE0404 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	11.6	mg/L	D
Manganese	7439-96-5	10	0.00500	0.291	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: 20-May-2023 12:19
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SPL-GW-MW18-0523
23E0077-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/03/2023 10:30
Instrument: NT3 Analyst: TWC Analyzed: 05/04/2023 18:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-04 D
Preparation Batch: BLE0137 Sample Size: 10 mL
Prepared: 05/04/2023 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 %	109	%	



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: 20-May-2023 12:19
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SPL-GW-MW18-0523
23E0077-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/03/2023 10:30
Instrument: NT16 Analyst: PB Analyzed: 05/04/2023 14:17

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-04 C
Preparation Batch: BLE0140 Sample Size: 10 mL
Prepared: 05/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0268	ug/L	M
<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: 20-May-2023 12:19
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SPL-GW-MW18-0523
23E0077-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/03/2023 10:30
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 18:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0077-04 A 01
Preparation Batch: BLE0404 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	13.7	mg/L	D
Manganese	7439-96-5	20	0.0100	1.07	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: 20-May-2023 12:19
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SPL-GW-MW30-0523
23E0077-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/02/2023 08:55
Instrument: NT3 Analyst: TWC Analyzed: 05/04/2023 18:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-05 D
Preparation Batch: BLE0137 Sample Size: 10 mL
Prepared: 05/04/2023 Final Volume: 10 mL

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>			80-129 %	103	%	



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: 20-May-2023 12:19
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SPL-GW-MW30-0523
23E0077-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/02/2023 08:55
Instrument: NT16 Analyst: PB Analyzed: 05/04/2023 14:38

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-05 C
Preparation Batch: BLE0140 Sample Size: 10 mL
Prepared: 05/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0667	ug/L	M
<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: 20-May-2023 12:19
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SPL-GW-MW30-0523
23E0077-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/02/2023 08:55
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 18:44

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0077-05 A 01
Preparation Batch: BLE0404 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	1.20	mg/L	D
Manganese	7439-96-5	5	0.00250	0.0520	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: 20-May-2023 12:19
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SPL-GW-MW31-0523
23E0077-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/02/2023 10:10
Instrument: NT3 Analyst: TWC Analyzed: 05/04/2023 19:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-06 D
Preparation Batch: BLE0137 Sample Size: 10 mL
Prepared: 05/04/2023 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	%	



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: 20-May-2023 12:19
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SPL-GW-MW31-0523
23E0077-06 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/02/2023 10:10
Instrument: NT16 Analyst: PB Analyzed: 05/04/2023 15:00

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-06 C
Preparation Batch: BLE0140 Sample Size: 10 mL
Prepared: 05/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.576	ug/L	M
<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: 20-May-2023 12:19
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SPL-GW-MW31-0523
23E0077-06 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/02/2023 10:10
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 18:52

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0077-06 A 01
Preparation Batch: BLE0404 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	17.2	mg/L	D
Manganese	7439-96-5	20	0.0100	0.711	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:
20-May-2023 12:19

SPL-GW-MW24-0523
23E0077-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D

Sampled: 05/02/2023 11:05

Instrument: NT2 Analyst: LH

Analyzed: 05/04/2023 13:09

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLE0129
Prepared: 05/04/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 23E0077-07 B

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>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: 20-May-2023 12:19
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SPL-GW-MW24-0523
23E0077-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/02/2023 11:05
Instrument: NT16 Analyst: PB Analyzed: 05/04/2023 15:21

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-07 D
Preparation Batch: BLE0140 Sample Size: 10 mL
Prepared: 05/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0425	ug/L	M
<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: 20-May-2023 12:19
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SPL-GW-MW24-0523
23E0077-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/02/2023 11:05
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 18:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0077-07 A 01
Preparation Batch: BLE0404 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	13.3	mg/L	D
Manganese	7439-96-5	20	0.0100	1.29	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: 20-May-2023 12:19
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SPL-GW-MW26-0523
23E0077-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/02/2023 12:40
Instrument: NT2 Analyst: LH Analyzed: 05/04/2023 13:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-08 B
Preparation Batch: BLE0129 Sample Size: 10 mL
Prepared: 05/04/2023 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>			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: 20-May-2023 12:19
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SPL-GW-MW26-0523
23E0077-08 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/02/2023 12:40
Instrument: NT16 Analyst: PB Analyzed: 05/04/2023 15:42

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-08 E
Preparation Batch: BLE0140 Sample Size: 10 mL
Prepared: 05/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0219	ug/L	M
<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: 20-May-2023 12:19
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SPL-GW-MW26-0523
23E0077-08 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/02/2023 12:40
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 19:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0077-08 A 01
Preparation Batch: BLE0404 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	9.40	mg/L	D
Manganese	7439-96-5	5	0.00250	0.117	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: 20-May-2023 12:19
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SPL-GW-MW08-0523
23E0077-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/02/2023 14:45
Instrument: NT2 Analyst: LH Analyzed: 05/04/2023 13:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-09 B
Preparation Batch: BLE0129 Sample Size: 10 mL
Prepared: 05/04/2023 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>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: 20-May-2023 12:19
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SPL-GW-MW08-0523
23E0077-09 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/02/2023 14:45
Instrument: NT16 Analyst: PB Analyzed: 05/04/2023 16:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-09 D
Preparation Batch: BLE0140 Sample Size: 10 mL
Prepared: 05/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0850	ug/L	M
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>112</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: 20-May-2023 12:19
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SPL-GW-MW08-0523
23E0077-09 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/02/2023 14:45
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 19:13

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0077-09 A 01
Preparation Batch: BLE0404 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	17.6	mg/L	D
Manganese	7439-96-5	20	0.0100	0.914	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: 20-May-2023 12:19
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SPL-GW-MW27-0523
23E0077-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/02/2023 16:20
Instrument: NT2 Analyst: LH Analyzed: 05/04/2023 14:10

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-10 B
Preparation Batch: BLE0129 Sample Size: 10 mL
Prepared: 05/04/2023 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>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: 20-May-2023 12:19
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SPL-GW-MW27-0523
23E0077-10 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/02/2023 16:20
Instrument: NT16 Analyst: PB Analyzed: 05/04/2023 16:24

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-10 C
Preparation Batch: BLE0140 Sample Size: 10 mL
Prepared: 05/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.155	ug/L	M
<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: 20-May-2023 12:19
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SPL-GW-MW27-0523
23E0077-10 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/02/2023 16:20
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 18:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0077-10 A 01
Preparation Batch: BLE0404 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	12.8	mg/L	D
Manganese	7439-96-5	5	0.00250	0.370	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: 20-May-2023 12:19
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SPL-GW-MW61-0523
23E0077-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/02/2023 13:10
Instrument: NT2 Analyst: LH Analyzed: 05/04/2023 14:30

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-11 B
Preparation Batch: BLE0129 Sample Size: 10 mL
Prepared: 05/04/2023 Final Volume: 10 mL

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: 20-May-2023 12:19
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SPL-GW-MW61-0523
23E0077-11 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 05/02/2023 13:10
Instrument: NT16 Analyst: PB Analyzed: 05/04/2023 16:45

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-11 C
Preparation Batch: BLE0140 Sample Size: 10 mL
Prepared: 05/04/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0224	ug/L	M
<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: 20-May-2023 12:19
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SPL-GW-MW61-0523
23E0077-11 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 05/02/2023 13:10
Instrument: ICPMS2 Analyst: SKD Analyzed: 05/16/2023 19:15

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23E0077-11 A 01
Preparation Batch: BLE0404 Sample Size: 25 mL
Prepared: 05/12/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	9.30	mg/L	D
Manganese	7439-96-5	50	0.0250	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: 20-May-2023 12:19
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SPL-GW-MW81-0523
23E0077-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 05/03/2023 00:00
Instrument: NT2 Analyst: LH Analyzed: 05/04/2023 09:47

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23E0077-12 A
Preparation Batch: BLE0129 Sample Size: 10 mL
Prepared: 05/04/2023 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
Benzene	71-43-2	1	0.20	ND	ug/L	U
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>93.5</i>	<i>%</i>	
<i>Surrogate: Toluene-d8</i>			<i>80-120 %</i>	<i>97.9</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:
20-May-2023 12:19

SPL-GW-MW81-0523
23E0077-12 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM

Sampled: 05/03/2023 00:00

Instrument: NT16 Analyst: PB

Analyzed: 05/04/2023 12:53

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLE0140
Prepared: 05/04/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 23E0077-12 B

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:
20-May-2023 12:19

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLE0129 - EPA 8260D

Instrument: NT2 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLE0129-BLK2)		Prepared: 04-May-2023 Analyzed: 04-May-2023 08:46								
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Benzene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.98		ug/L	5.00		99.7	80-129			
<i>Surrogate: Toluene-d8</i>	4.92		ug/L	5.00		98.3	80-120			
LCS (BLE0129-BS2)		Prepared: 04-May-2023 Analyzed: 04-May-2023 07:45								
cis-1,2-Dichloroethene	9.63	0.20	ug/L	10.0		96.3	80-121			
Benzene	10.2	0.20	ug/L	10.0		102	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.74		ug/L	5.00		94.8	80-129			
<i>Surrogate: Toluene-d8</i>	5.12		ug/L	5.00		102	80-120			
LCS Dup (BLE0129-BSD2)		Prepared: 04-May-2023 Analyzed: 04-May-2023 08:05								
cis-1,2-Dichloroethene	10.2	0.20	ug/L	10.0		102	80-121	5.59	30	
Benzene	10.4	0.20	ug/L	10.0		104	80-120	1.92	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.89		ug/L	5.00		97.7	80-129			
<i>Surrogate: Toluene-d8</i>	5.10		ug/L	5.00		102	80-120			
Matrix Spike (BLE0129-MS1)		Source: 23E0077-08		Prepared: 04-May-2023 Analyzed: 04-May-2023 16:11						
cis-1,2-Dichloroethene	10.7	0.20	ug/L	10.0	0.34	104	80-121			
Benzene	11.0	0.20	ug/L	10.0	ND	110	80-120			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.01		ug/L	5.00	5.22	100	80-129			
<i>Surrogate: Toluene-d8</i>	4.96		ug/L	5.00		99.1	80-120			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLE0129-MSD1)		Source: 23E0077-08		Prepared: 04-May-2023 Analyzed: 04-May-2023 16:32						
cis-1,2-Dichloroethene	10.8	0.20	ug/L	10.0	0.34	105	80-121	1.21	30	
Benzene	10.8	0.20	ug/L	10.0	ND	108	80-120	1.19	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.95		ug/L	5.00	5.22	98.9	80-129			
<i>Surrogate: Toluene-d8</i>	5.03		ug/L	5.00		101	80-120			

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: 20-May-2023 12:19
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLE0137 - EPA 8260D

Instrument: NT3 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLE0137-BLK1)				Prepared: 04-May-2023 Analyzed: 04-May-2023 14:05						
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.23		ug/L	5.00	105		80-129			
LCS (BLE0137-BS1)				Prepared: 04-May-2023 Analyzed: 04-May-2023 12:37						
cis-1,2-Dichloroethene	9.46	0.20	ug/L	10.0	94.6		80-121			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.01		ug/L	5.00	100		80-129			
LCS Dup (BLE0137-BSD1)				Prepared: 04-May-2023 Analyzed: 04-May-2023 13:21						
cis-1,2-Dichloroethene	10.4	0.20	ug/L	10.0	104		80-121	9.01	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.08		ug/L	5.00	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:
20-May-2023 12:19

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLE0140 - EPA 8260D-SIM

Instrument: NT16 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLE0140-BLK1)				Prepared: 04-May-2023 Analyzed: 04-May-2023 11:29						
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5260		ug/L	5000		105	80-129			
LCS (BLE0140-BS1)				Prepared: 04-May-2023 Analyzed: 04-May-2023 10:32						
Vinyl chloride	1.82	0.0200	ug/L	2.00		90.8	62-141			
Surrogate: 1,2-Dichloroethane-d4	5070		ug/L	5000		101	80-129			
LCS Dup (BLE0140-BSD1)				Prepared: 04-May-2023 Analyzed: 04-May-2023 11:59						
Vinyl chloride	2.06	0.0200	ug/L	2.00		103	62-141	12.70	30	
Surrogate: 1,2-Dichloroethane-d4	5140		ug/L	5000		103	80-129			
Matrix Spike (BLE0140-MS1)				Source: 23E0077-08		Prepared: 04-May-2023 Analyzed: 04-May-2023 17:06				
Vinyl chloride	2.00	0.0200	ug/L	2.00	0.0219	99.1	62-141			
Surrogate: 1,2-Dichloroethane-d4	5330		ug/L	5000	5470	107	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLE0140-MSD1)				Source: 23E0077-08		Prepared: 04-May-2023 Analyzed: 04-May-2023 17:28				
Vinyl chloride	2.01	0.0200	ug/L	2.00	0.0219	99.3	62-141	0.17	30	
Surrogate: 1,2-Dichloroethane-d4	5360		ug/L	5000	5470	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: 20-May-2023 12:19
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Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLE0404 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLE0404-BLK1)			Prepared: 12-May-2023 Analyzed: 15-May-2023 18:02								
Iron	54	ND	0.0360	mg/L							U
Iron	57	ND	0.0360	mg/L							U
Manganese	55	ND	0.000500	mg/L							U

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLE0404-BS1)			Prepared: 12-May-2023 Analyzed: 15-May-2023 18:06								
Iron	54	5.54	0.0360	mg/L	5.00		111	80-120			
Iron	57	5.47	0.0360	mg/L	5.00		109	80-120			
Manganese	55	0.0244	0.000500	mg/L	0.0250		97.4	80-120			

Instrument: ICPMS2 Analyst: SKD

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Duplicate (BLE0404-DUP2)			Source: 23E0077-08 Prepared: 12-May-2023 Analyzed: 16-May-2023 19:47								
Iron	57	9.11	0.180	mg/L		9.40			3.16	20	D
Manganese	55	0.112	0.00250	mg/L		0.117			3.87	20	D

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLE0404-MS2)			Source: 23E0077-08 Prepared: 12-May-2023 Analyzed: 16-May-2023 19:48								
Iron	57	14.0	0.180	mg/L	5.00	9.40	92.0	75-125			D
Manganese	55	0.136	0.00250	mg/L	0.0250	0.117	76.9	75-125			D

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

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLE0404-MSD2)			Source: 23E0077-08 Prepared: 12-May-2023 Analyzed: 16-May-2023 19:50								
Iron	57	14.2	0.180	mg/L	5.00	9.40	95.0	75-125	1.08	20	D
Manganese	55	0.138	0.00250	mg/L	0.0250	0.117	85.4	75-125	1.55	20	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:
20-May-2023 12:19

Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Iron-54	NELAP,WADOE,DoD-ELAP
Iron-57	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	05/12/2023
WADOE	WA Dept of Ecology	C558	06/30/2023
WA-DW	Ecology - Drinking Water	C558	06/30/2023



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:
20-May-2023 12:19

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.
- M Estimated value for a GC/MS analyte detected and confirmed by an analyst but with low spectral match parameters.
- 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.

3rd Quarter 2023



Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

14 August 2023

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.

<u>Associated Work Order(s)</u>	<u>Associated SDG ID(s)</u>
23H0010	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: 23 H0010	Turn-around Requested: 2 weeks	Date: 7/31/2023
ARI Client Company: Min Soon Yim, Seattle Public Utility	Phone: 206 684-7693	Page: 1 of 1
Client Contact: Laura Lee, Parametrix	Phone: 206 394-3665	No. of Coolers: 1 Cooler Temps: 9.10

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments
Client Project #: 553-1550-067		Samplers: Chris Bourgeois HWA			cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn								
Sample ID	Date	Time	Matrix	Number of Containers											
SPL-GW-MW25-0823			water	7	X	X	X								
SPL-GW-MW30-0823	7/31/23	1050	water	7	X	X	X								
SPL-GW-MW31-0823	7/31/23	1209	water	7	X	X	X								
SPL-GW-MW24-0823	7/31/23	1305	water	7	X	X	X								
SPL-GW-MW26-0823	7/31/23	1405	water	7	X	X	X								
SPL-GW-MW08-0823			water	13	X	X	X								MS/MSD
SPL-GW-MW27-0823			water	7	X	X	X								
SPL-GW-MW61-0823			water	7	X	X	X								
SPL-GW-MW81-0823	7/31/23		water	2	X	X									
Comments/Special Instructions	Relinquished by: (Signature) <i>Chris Bourgeois</i>		Received by: (Signature) <i>Roman</i>			Relinquished by: (Signature)					Received by: (Signature)				
	Printed Name: Chris Bourgeois		Printed Name: Roman			Printed Name:					Printed Name:				
	Company: HWA		Company: ARI			Company:					Company:				
	Date & Time: 7/31/23 1439		Date & Time: 7/31/23 1439			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, not withstanding 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:
14-Aug-2023 15:58

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW30-0823	23H0010-01	Water	31-Jul-2023 10:50	31-Jul-2023 14:39
SPL-GW-MW31-0823	23H0010-02	Water	31-Jul-2023 12:04	31-Jul-2023 14:39
SPL-GW-MW24-0823	23H0010-03	Water	31-Jul-2023 13:05	31-Jul-2023 14:39
SPL-GW-MW26-0823	23H0010-04	Water	31-Jul-2023 14:05	31-Jul-2023 14:39
SPL-GW-MW81-0823	23H0010-05	Water	31-Jul-2023 10:50	31-Jul-2023 14:39



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:
14-Aug-2023 15:58

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill
Work Order: 23H0010

Sample receipt

Samples as listed on the preceding page were received July 31, 2023 under ARI work order 23H0010. 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:

14-Aug-2023 15:58

Total Metals - EPA Method 6020B

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

Initial and continuing calibrations were within method requirements.

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

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



WORK ORDER

23H0010

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
23H0010-01 A	HDPE NM, 500 mL, 1:1 HNO3	7.2 Pass (P)
23H0010-01 B	VOA Vial, Clear, 40 mL, HCL	
23H0010-01 C	VOA Vial, Clear, 40 mL, HCL	
23H0010-01 D	VOA Vial, Clear, 40 mL, HCL	
23H0010-01 E	VOA Vial, Clear, 40 mL	
23H0010-01 F	VOA Vial, Clear, 40 mL	
23H0010-01 G	VOA Vial, Clear, 40 mL	
23H0010-02 A	HDPE NM, 500 mL, 1:1 HNO3	7.2 P
23H0010-02 B	VOA Vial, Clear, 40 mL, HCL	
23H0010-02 C	VOA Vial, Clear, 40 mL, HCL	
23H0010-02 D	VOA Vial, Clear, 40 mL, HCL	
23H0010-02 E	VOA Vial, Clear, 40 mL	
23H0010-02 F	VOA Vial, Clear, 40 mL	
23H0010-02 G	VOA Vial, Clear, 40 mL	
23H0010-03 A	HDPE NM, 500 mL, 1:1 HNO3	7.2 P
23H0010-03 B	VOA Vial, Clear, 40 mL, HCL	
23H0010-03 C	VOA Vial, Clear, 40 mL, HCL	
23H0010-03 D	VOA Vial, Clear, 40 mL, HCL	
23H0010-03 E	VOA Vial, Clear, 40 mL	
23H0010-03 F	VOA Vial, Amber, 40 mL	
23H0010-03 G	VOA Vial, Amber, 40 mL	
23H0010-04 A	HDPE NM, 500 mL, 1:1 HNO3	7.2 P
23H0010-04 B	VOA Vial, Clear, 40 mL, HCL	
23H0010-04 C	VOA Vial, Clear, 40 mL, HCL	
23H0010-04 D	VOA Vial, Clear, 40 mL, HCL	
23H0010-04 E	VOA Vial, Clear, 40 mL	
23H0010-04 F	VOA Vial, Clear, 40 mL	
23H0010-04 G	VOA Vial, Clear, 40 mL	
23H0010-05 A	VOA Vial, Clear, 40 mL, HCL	
23H0010-05 B	VOA Vial, Clear, 40 mL	

PIB
Preservation Confirmed By

08/01/23
Date



Cooler Receipt Form

ARI Client: SPu

Project Name: SPu Santa Park Landfill

COC No(s): _____ NA

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 23H0010

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 1439 _____ 9.1° _____

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 4708

Cooler Accepted by: R Date: 7/31/23 Time: 1439

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 07/27/23

Were the sample(s) split by ARI? NA YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: PIB Date: 08/12 08/1/23 Time: 11:21 Labels checked by: PIB

**** 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:

Client crossed out volume was received. SPL-GW-MN26-0823 However, sample

By: PIB Date: 08/01/23



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: 14-Aug-2023 15:58
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SPL-GW-MW30-0823
23H0010-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 07/31/2023 10:50
Instrument: NT20 Analyst: PKC Analyzed: 08/02/2023 17:16

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23H0010-01 C
Preparation Batch: BLH0032 Sample Size: 10 mL
Prepared: 08/02/2023 Final Volume: 10 mL

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 %	112	%	



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:
14-Aug-2023 15:58

SPL-GW-MW30-0823
23H0010-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM

Sampled: 07/31/2023 10:50

Instrument: NT16 Analyst: TWC

Analyzed: 08/01/2023 17:08

Analysis by: Analytical Resources, LLC

Sample Preparation:

Preparation Method: EPA 5030C (Purge and Trap)

Extract ID: 23H0010-01 E

Preparation Batch: BLH0020

Sample Size: 10 mL

Prepared: 08/01/2023

Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.427	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.7</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: 14-Aug-2023 15:58
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SPL-GW-MW30-0823
23H0010-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 07/31/2023 10:50
Instrument: ICPMS2 Analyst: MCB Analyzed: 08/11/2023 00:02

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23H0010-01 A 01
Preparation Batch: BLH0298 Sample Size: 25 mL
Prepared: 08/10/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	9.27	mg/L	D
Manganese	7439-96-5	10	0.00500	0.291	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: 14-Aug-2023 15:58
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SPL-GW-MW31-0823
23H0010-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 07/31/2023 12:04
Instrument: NT20 Analyst: PKC Analyzed: 08/02/2023 17:39

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23H0010-02 B
Preparation Batch: BLH0032 Sample Size: 10 mL
Prepared: 08/02/2023 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>113</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:
14-Aug-2023 15:58

SPL-GW-MW31-0823
23H0010-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM

Sampled: 07/31/2023 12:04

Instrument: NT16 Analyst: TWC

Analyzed: 08/01/2023 17:29

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)
Preparation Batch: BLH0020
Prepared: 08/01/2023

Sample Size: 10 mL
Final Volume: 10 mL

Extract ID: 23H0010-02 E

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.765	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>98.1</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: 14-Aug-2023 15:58
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SPL-GW-MW31-0823
23H0010-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 07/31/2023 12:04
Instrument: ICPMS2 Analyst: MCB Analyzed: 08/11/2023 00:07

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23H0010-02 A 01
Preparation Batch: BLH0298 Sample Size: 25 mL
Prepared: 08/10/2023 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	0.830	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: 14-Aug-2023 15:58
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SPL-GW-MW24-0823
23H0010-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 07/31/2023 13:05
Instrument: NT20 Analyst: PKC Analyzed: 08/02/2023 18:03

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23H0010-03 B
Preparation Batch: BLH0032 Sample Size: 10 mL
Prepared: 08/02/2023 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>112</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: 14-Aug-2023 15:58
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SPL-GW-MW24-0823
23H0010-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 07/31/2023 13:05
Instrument: NT16 Analyst: TWC Analyzed: 08/01/2023 17:50

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23H0010-03 E
Preparation Batch: BLH0020 Sample Size: 10 mL
Prepared: 08/01/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0489	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>99.8</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: 14-Aug-2023 15:58
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SPL-GW-MW24-0823
23H0010-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 07/31/2023 13:05
Instrument: ICPMS2 Analyst: MCB Analyzed: 08/11/2023 00:12

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23H0010-03 A 01
Preparation Batch: BLH0298 Sample Size: 25 mL
Prepared: 08/10/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	27.8	mg/L	D
Manganese	7439-96-5	50	0.0250	1.65	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: 14-Aug-2023 15:58
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SPL-GW-MW26-0823
23H0010-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 07/31/2023 14:05
Instrument: NT20 Analyst: PKC Analyzed: 08/02/2023 18:26

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23H0010-04 B
Preparation Batch: BLH0032 Sample Size: 10 mL
Prepared: 08/02/2023 Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.24	ug/L	
<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: 14-Aug-2023 15:58
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SPL-GW-MW26-0823
23H0010-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 07/31/2023 14:05
Instrument: NT16 Analyst: TWC Analyzed: 08/01/2023 18:11

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23H0010-04 E
Preparation Batch: BLH0020 Sample Size: 10 mL
Prepared: 08/01/2023 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>98.7</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: 14-Aug-2023 15:58
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SPL-GW-MW26-0823
23H0010-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B Sampled: 07/31/2023 14:05
Instrument: ICPMS2 Analyst: MCB Analyzed: 08/10/2023 23:57

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: REN - EPA 3010A M Extract ID: 23H0010-04 A 01
Preparation Batch: BLH0298 Sample Size: 25 mL
Prepared: 08/10/2023 Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	12.1	mg/L	D
Manganese	7439-96-5	10	0.00500	0.137	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: 14-Aug-2023 15:58
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SPL-GW-MW81-0823
23H0010-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 07/31/2023 10:50
Instrument: NT20 Analyst: PKC Analyzed: 08/02/2023 18:49

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23H0010-05 A
Preparation Batch: BLH0032 Sample Size: 10 mL
Prepared: 08/02/2023 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 %	112	%	



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: 14-Aug-2023 15:58
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SPL-GW-MW81-0823
23H0010-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM Sampled: 07/31/2023 10:50
Instrument: NT16 Analyst: TWC Analyzed: 08/01/2023 18:33

Analysis by: Analytical Resources, LLC

Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23H0010-05 B
Preparation Batch: BLH0020 Sample Size: 10 mL
Prepared: 08/01/2023 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>97.2</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: 14-Aug-2023 15:58
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLH0032 - EPA 8260D

Instrument: NT20 Analyst: PKC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLH0032-BLK1)				Prepared: 02-Aug-2023 Analyzed: 02-Aug-2023 12:34						
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.20		ug/L	5.0000	104		80-129			
LCS (BLH0032-BS1)				Prepared: 02-Aug-2023 Analyzed: 02-Aug-2023 11:00						
cis-1,2-Dichloroethene	8.50	0.20	ug/L	10.000		85.0	80-121			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.75		ug/L	5.0000	95.1		80-129			
LCS Dup (BLH0032-BSD1)				Prepared: 02-Aug-2023 Analyzed: 02-Aug-2023 11:47						
cis-1,2-Dichloroethene	8.58	0.20	ug/L	10.000		85.8	80-121	0.95	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.78		ug/L	5.0000	95.5		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:
14-Aug-2023 15:58

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLH0020 - EPA 8260D-SIM

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLH0020-BLK1)					Prepared: 01-Aug-2023 Analyzed: 01-Aug-2023 11:12					
Vinyl chloride	ND	0.0200	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4890		ug/L	5000.0		97.9	80-129			
LCS (BLH0020-BS1)					Prepared: 01-Aug-2023 Analyzed: 01-Aug-2023 09:30					
Vinyl chloride	2.22	0.0200	ug/L	2.0000		111	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4760		ug/L	5000.0		95.2	80-129			
LCS Dup (BLH0020-BSD1)					Prepared: 01-Aug-2023 Analyzed: 01-Aug-2023 09:51					
Vinyl chloride	2.11	0.0200	ug/L	2.0000		106	62-141	4.96	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4860		ug/L	5000.0		97.1	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:
14-Aug-2023 15:58

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLH0298 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLH0298-BLK1)						Prepared: 10-Aug-2023 Analyzed: 10-Aug-2023 18:22					
Iron	54	ND	0.0360	mg/L							U
Manganese	55	ND	0.000500	mg/L							U
LCS (BLH0298-BS1)						Prepared: 10-Aug-2023 Analyzed: 10-Aug-2023 18:27					
Iron	54	4.97	0.0360	mg/L	5.0001		99.5	80-120			
Manganese	55	0.0267	0.000500	mg/L	0.025000		107	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: 14-Aug-2023 15:58
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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



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:
14-Aug-2023 15:58

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)
- 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.



Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

21 August 2023

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

RE: South Park Landfill -Parametrix Water (553-1550-067)

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)
23H0102

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: 2360102	Turn-around Requested: 2 weeks	Date: 8/2/23
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: _____ Coolers: _____ Temps: _____

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments			
Samplers: Chris Bourgeois HWA					cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn											
Sample ID	Date	Time	Matrix	Number of Containers														
SPL-GW-MW12-0823	8/1/23	1210	water	7	X	X	X											
SPL-GW-MW14-0823	8/1/23	1325	water	7	X	X	X											
SPL-GW-MW29-0823	8/1/23	1445	water	7	X	X	X											
SPL-GW-MW18-0823	8/1/23	1545	water	7	X	X	X											
SPL-GW-MW32-0823	8/2/23	1135	water	7	X	X	X											
SPL-GW-MW33-0823	8/2/23	1030	water	18 12	X	X	X											MS/MSD
SPL-GW-MW10-0823	8/2/23	925	water	7 6	X	X	X											
SPL-GW-MW60-0823	8/2/23	1100	water	7	X	X	X											
SPL-GW-MW80-0823	8/2/23	—	water	2	X	X												
Comments/Special Instructions	Relinquished by: (Signature) <i>Chris Bourgeois</i>				Received by: (Signature) <i>Sean Rahman</i>				Relinquished by: (Signature)				Received by: (Signature)					
	Printed Name: Chris Bourgeois				Printed Name: SEAN RAHMAN				Printed Name:				Printed Name:					
	Company: HWA				Company: ARI LLC				Company:				Company:					
	Date & Time: 8/2/23 / 1208				Date & Time: 8-2-23 1208				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: 2360102	Turn-around Requested: 2 weeks	Date: 8/2/23
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: _____ Coolers: _____
Client Project Name: SPU South Park Landfill		Temp: _____

Sample ID	Date	Time	Matrix	Number of Containers	Analysis Requested								Notes/Comments	
					cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn							
SPL-GW-MW25-0823	8/2/23	845	water	7	X	X	X							
SPL-GW-MW30-0823			water	7	X	X	X							
SPL-GW-MW31-0823			water	7	X	X	X							
SPL-GW-MW24-0823			water	7	X	X	X							
SPL-GW-MW26-0823			water	7	X	X	X							
SPL-GW-MW08-0823	8/1/23	920	water	13	X	X	X							MS/MSD
SPL-GW-MW27-0823	8/1/23	1045	water	7	X	X	X							
SPL-GW-MW61-0823	8/1/23	945	water	7	X	X	X							
SPL-GW-MW81-0823			water	2	X	X								
Comments/Special Instructions	Relinquished by: (Signature) <i>Chris</i>	Received by: (Signature) <i>Sean</i>		Relinquished by: (Signature)				Received by: (Signature)						
	Printed Name: <i>Chris Bourgeois</i>	Printed Name: <i>SEAN RANMAN</i>		Printed Name:				Printed Name:						
	Company: <i>HWA</i>	Company: <i>ARI LLC</i>		Company:				Company:						
	Date & Time: <i>8/2/23/1208</i>	Date & Time: <i>8-2-23 12:08</i>		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: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
21-Aug-2023 18:42

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW12-0823	23H0102-01	Water	01-Aug-2023 12:10	02-Aug-2023 12:08
SPL-GW-MW14-0823	23H0102-02	Water	01-Aug-2023 13:25	02-Aug-2023 12:08
SPL-GW-MW29-0823	23H0102-03	Water	01-Aug-2023 14:45	02-Aug-2023 12:08
SPL-GW-MW18-0823	23H0102-04	Water	01-Aug-2023 15:45	02-Aug-2023 12:08
SPL-GW-MW32-0823	23H0102-05	Water	02-Aug-2023 11:35	02-Aug-2023 12:08
SPL-GW-MW33-0823	23H0102-06	Water	02-Aug-2023 10:30	02-Aug-2023 12:08
SPL-GW-MW10-0823	23H0102-07	Water	02-Aug-2023 09:25	02-Aug-2023 12:08
SPL-GW-MW60-0823	23H0102-08	Water	02-Aug-2023 11:00	02-Aug-2023 12:08
SPL-GW-MW80-0823	23H0102-09	Water	01-Aug-2023 09:20	02-Aug-2023 12:08
SPL-GW-MW25-0823	23H0102-10	Water	02-Aug-2023 08:45	02-Aug-2023 12:08
SPL-GW-MW08-0823	23H0102-11	Water	01-Aug-2023 09:20	02-Aug-2023 12:08
SPL-GW-MW27-0823	23H0102-12	Water	01-Aug-2023 10:45	02-Aug-2023 12:08
SPL-GW-MW61-0823	23H0102-13	Water	01-Aug-2023 09:45	02-Aug-2023 12:08



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

Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
21-Aug-2023 18:42

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill
Work Order: 23H0102

Sample receipt

Samples as listed on the preceding page were received August 2, 2023 under ARI work order 23H0102. 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: 553-1550-067

Project Manager: Min-Soon Yim

Reported:

21-Aug-2023 18:42

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 were within method requirements.

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

23H0102

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: 553-1550-067

Preservation Confirmation

Container ID	Container Type	pH	
23H0102-01 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	PASS (P)
23H0102-01 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-01 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-01 D	VOA Vial, Clear, 40 mL, HCL		
23H0102-01 E	VOA Vial, Clear, 40 mL		
23H0102-01 F	VOA Vial, Clear, 40 mL		
23H0102-01 G	VOA Vial, Clear, 40 mL		
23H0102-02 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	P
23H0102-02 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-02 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-02 D	VOA Vial, Clear, 40 mL, HCL		
23H0102-02 E	VOA Vial, Clear, 40 mL		
23H0102-02 F	VOA Vial, Clear, 40 mL		
23H0102-02 G	VOA Vial, Clear, 40 mL		
23H0102-03 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	P
23H0102-03 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-03 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-03 D	VOA Vial, Clear, 40 mL, HCL		
23H0102-03 E	VOA Vial, Clear, 40 mL		
23H0102-03 F	VOA Vial, Clear, 40 mL		
23H0102-03 G	VOA Vial, Clear, 40 mL		
23H0102-04 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	P
23H0102-04 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-04 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-04 D	VOA Vial, Clear, 40 mL, HCL		
23H0102-04 E	VOA Vial, Clear, 40 mL		
23H0102-04 F	VOA Vial, Clear, 40 mL		
23H0102-04 G	VOA Vial, Clear, 40 mL		
23H0102-05 A	HDPE NM, 500 mL, 1:1 HNO3	7.2	P
23H0102-05 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-05 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-05 D	VOA Vial, Clear, 40 mL, HCL		
23H0102-05 E	VOA Vial, Clear, 40 mL		
23H0102-05 F	VOA Vial, Clear, 40 mL		



WORK ORDER

23H0102

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: 553-1550-067

23H0102-05 G	VOA Vial, Clear, 40 mL		
23H0102-06 A	HDPE NM, 500 mL, 1:1 HNO3	CC	P
23H0102-06 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-06 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-06 D	VOA Vial, Clear, 40 mL, HCL		
23H0102-06 E	VOA Vial, Clear, 40 mL, HCL		
23H0102-06 F	VOA Vial, Clear, 40 mL, HCL		
23H0102-06 G	VOA Vial, Clear, 40 mL		
23H0102-06 H	VOA Vial, Clear, 40 mL		
23H0102-06 I	VOA Vial, Clear, 40 mL		
23H0102-06 J	VOA Vial, Clear, 40 mL		
23H0102-06 K	VOA Vial, Clear, 40 mL		
23H0102-06 L	VOA Vial, Clear, 40 mL		
23H0102-07 A	HDPE NM, 500 mL, 1:1 HNO3	CC	P
23H0102-07 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-07 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-07 D	VOA Vial, Clear, 40 mL		
23H0102-07 E	VOA Vial, Clear, 40 mL		
23H0102-07 F	VOA Vial, Clear, 40 mL		
23H0102-08 A	HDPE NM, 500 mL, 1:1 HNO3	CC	P
23H0102-08 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-08 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-08 D	VOA Vial, Clear, 40 mL, HCL		
23H0102-08 E	VOA Vial, Clear, 40 mL		
23H0102-08 F	VOA Vial, Clear, 40 mL		
23H0102-08 G	VOA Vial, Clear, 40 mL		
23H0102-09 A	VOA Vial, Clear, 40 mL, HCL		
23H0102-09 B	VOA Vial, Clear, 40 mL		
23H0102-10 A	HDPE NM, 500 mL, 1:1 HNO3	CC	P
23H0102-10 B	VOA Vial, Clear, 40 mL, HCL		
23H0102-10 C	VOA Vial, Clear, 40 mL, HCL		
23H0102-10 D	VOA Vial, Clear, 40 mL, HCL		
23H0102-10 E	VOA Vial, Clear, 40 mL		
23H0102-10 F	VOA Vial, Clear, 40 mL		
23H0102-10 G	VOA Vial, Clear, 40 mL		
23H0102-11 A	HDPE NM, 500 mL, 1:1 HNO3	CC	P



WORK ORDER

23H0102

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: 553-1550-067

23H0102-11 B	VOA Vial, Clear, 40 mL, HCL	
23H0102-11 C	VOA Vial, Clear, 40 mL, HCL	
23H0102-11 D	VOA Vial, Clear, 40 mL, HCL	
23H0102-11 E	VOA Vial, Clear, 40 mL, HCL	
23H0102-11 F	VOA Vial, Clear, 40 mL, HCL	
23H0102-11 G	VOA Vial, Clear, 40 mL, HCL	
23H0102-11 H	VOA Vial, Clear, 40 mL	
23H0102-11 I	VOA Vial, Clear, 40 mL	
23H0102-11 J	VOA Vial, Clear, 40 mL	
23H0102-11 K	VOA Vial, Clear, 40 mL	
23H0102-11 L	VOA Vial, Clear, 40 mL	
23H0102-11 M	VOA Vial, Clear, 40 mL	
23H0102-12 A	HDPE NM, 500 mL, 1:1 HNO3	C2 P
23H0102-12 B	VOA Vial, Clear, 40 mL, HCL	
23H0102-12 C	VOA Vial, Clear, 40 mL, HCL	
23H0102-12 D	VOA Vial, Clear, 40 mL, HCL	
23H0102-12 E	VOA Vial, Clear, 40 mL	
23H0102-12 F	VOA Vial, Clear, 40 mL	
23H0102-12 G	VOA Vial, Clear, 40 mL	
23H0102-13 A	HDPE NM, 500 mL, 1:1 HNO3	C2 P
23H0102-13 B	VOA Vial, Clear, 40 mL, HCL	
23H0102-13 C	VOA Vial, Clear, 40 mL, HCL	
23H0102-13 D	VOA Vial, Clear, 40 mL, HCL	
23H0102-13 E	VOA Vial, Clear, 40 mL	
23H0102-13 F	VOA Vial, Clear, 40 mL	
23H0102-13 G	VOA Vial, Clear, 40 mL	

PTB

Preservation Confirmed By

08/04/23

Date



Cooler Receipt Form

ARI Client: SPU

Project Name: South Park Landfill

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 2360102

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 12:08 2.1 0.3

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 5009708

Cooler Accepted by: SR Date: 8-2-23 Time: 12:08

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 7/27/23

Were the sample(s) split by ARI? (NA) YES Date/Time: _____ Equipment: _____ Split by: _____

Samples Logged by: PJB Date: 08/04/23 Time: 11:10 Labels checked by: PJB

**** 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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW12-0823
23H0102-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D Sampled: 08/01/2023 12:10
Instrument: NT20 Analyst: TWC Analyzed: 08/04/2023 22:09
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap) Extract ID: 23H0102-01 B
Preparation Batch: BLH0123 Sample Size: 10 mL
Prepared: 08/04/2023 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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW12-0823
23H0102-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/01/2023 12:10
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 12:14
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-01 E
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	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>95.9</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW12-0823
23H0102-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Sampled: 08/01/2023 12:10
Instrument: ICPMS1 Analyst: MCB	Analyzed: 08/17/2023 00:24
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23H0102-01 A 01
Preparation Batch: BLH0390	Sample Size: 25 mL
Prepared: 08/15/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	1.41	mg/L	D
Manganese	7439-96-5	5	0.00250	0.0993	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW14-0823
23H0102-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/01/2023 13:25
Instrument: NT20 Analyst: TWC	Analyzed: 08/04/2023 22:32
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-02 B
Preparation Batch: BLH0123	Sample Size: 10 mL
Prepared: 08/04/2023	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW14-0823
23H0102-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/01/2023 13:25
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 12:35
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-02 E
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	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>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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW14-0823
23H0102-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Sampled: 08/01/2023 13:25
Instrument: ICPMS1 Analyst: MCB	Analyzed: 08/17/2023 00:29
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23H0102-02 A 01
Preparation Batch: BLH0390	Sample Size: 25 mL
Prepared: 08/15/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	4.39	mg/L	D
Manganese	7439-96-5	10	0.00500	0.797	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW29-0823
23H0102-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/01/2023 14:45
Instrument: NT20 Analyst: TWC	Analyzed: 08/04/2023 22:55
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-03 B
Preparation Batch: BLH0123	Sample Size: 10 mL
Prepared: 08/04/2023	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW29-0823
23H0102-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/01/2023 14:45
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 12:56
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-03 E
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	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>97.5</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW29-0823
23H0102-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Sampled: 08/01/2023 14:45
Instrument: ICPMS1 Analyst: MCB	Analyzed: 08/17/2023 00:34
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23H0102-03 A 01
Preparation Batch: BLH0390	Sample Size: 25 mL
Prepared: 08/15/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	23.4	mg/L	D
Manganese	7439-96-5	10	0.00500	0.562	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW18-0823
23H0102-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/01/2023 15:45
Instrument: NT20 Analyst: TWC	Preparation Batch: BLH0123	Analyzed: 08/04/2023 23:18
Sample Preparation:	Sample Size: 10 mL	Extract ID: 23H0102-04 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>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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW18-0823
23H0102-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/01/2023 15:45
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 13:17
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-04 F
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0223	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>98.6</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW18-0823
23H0102-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Sampled: 08/01/2023 15:45
Instrument: ICPMS1 Analyst: MCB	Analyzed: 08/16/2023 23:21
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23H0102-04 A 01
Preparation Batch: BLH0390	Sample Size: 25 mL
Prepared: 08/15/2023	Final Volume: 25 mL

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	1.17	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW32-0823
23H0102-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/02/2023 11:35
Instrument: NT20 Analyst: TWC	Analyzed: 08/04/2023 23:42
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-05 B
Preparation Batch: BLH0123	Sample Size: 10 mL
Prepared: 08/04/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.44	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	108	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW32-0823
23H0102-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/02/2023 11:35
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 13:39
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-05 E
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.279	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	99.1	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW32-0823
23H0102-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Sampled: 08/02/2023 11:35
Instrument: ICPMS1 Analyst: MCB	Analyzed: 08/16/2023 23:26
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23H0102-05 A 01
Preparation Batch: BLH0390	Sample Size: 25 mL
Prepared: 08/15/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	18.6	mg/L	D
Manganese	7439-96-5	20	0.0100	1.45	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW33-0823
23H0102-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/02/2023 10:30
Instrument: NT20 Analyst: TWC	Analyzed: 08/05/2023 00:05
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-06 B
Preparation Batch: BLH0123	Sample Size: 10 mL
Prepared: 08/04/2023	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 %	107	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW33-0823
23H0102-06 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/02/2023 10:30
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 14:00
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-06 G
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.168	ug/L	
<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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW33-0823
23H0102-06 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Sampled: 08/02/2023 10:30
Instrument: ICPMS1 Analyst: MCB	Analyzed: 08/16/2023 23:46
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23H0102-06 A 01
Preparation Batch: BLH0390	Sample Size: 25 mL
Prepared: 08/15/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	20.8	mg/L	D
Manganese	7439-96-5	50	0.0250	1.98	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW10-0823
23H0102-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/02/2023 09:25
Instrument: NT20 Analyst: TWC	Analyzed: 08/05/2023 00:28
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-07 B
Preparation Batch: BLH0123	Sample Size: 10 mL
Prepared: 08/04/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.69	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	106	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW10-0823
23H0102-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/02/2023 09:25
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 14:21
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-07 D
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.121	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW10-0823
23H0102-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS1	Analyst: MCB	Sampled: 08/02/2023 09:25	Analyzed: 08/16/2023 23:36
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BLH0390	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 08/15/2023		Extract ID: 23H0102-07 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	45.8	mg/L	D
Manganese	7439-96-5	50	0.0250	2.51	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW60-0823
23H0102-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/02/2023 11:00
Instrument: NT20 Analyst: TWC	Analyzed: 08/05/2023 00:51
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-08 B
Preparation Batch: BLH0123	Sample Size: 10 mL
Prepared: 08/04/2023	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 %	106	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW60-0823
23H0102-08 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/02/2023 11:00
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 14:43
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-08 E
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.164	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	99.2	%	



Seattle Public Utilities 700-5th Ave, Ste 4900, Box 34018 Seattle WA, 98124-4018	Project: South Park Landfill -Parametrix Water Project Number: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW60-0823
23H0102-08 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Sampled: 08/02/2023 11:00
Instrument: ICPMS1 Analyst: MCB	Analyzed: 08/16/2023 23:31
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23H0102-08 A 01
Preparation Batch: BLH0390	Sample Size: 25 mL
Prepared: 08/15/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	19.5	mg/L	D
Manganese	7439-96-5	20	0.0100	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW80-0823
23H0102-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 08/01/2023 09:20
Instrument: NT20 Analyst: TWC	Preparation Batch: BLH0123	Analyzed: 08/05/2023 01:15
Sample Preparation:	Sample Size: 10 mL	Extract ID: 23H0102-09 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>			<i>80-129 %</i>	<i>114</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW80-0823
23H0102-09 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/01/2023 09:20
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 15:04
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-09 B
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	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>98.7</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW25-0823
23H0102-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/02/2023 08:45
Instrument: NT20 Analyst: TWC	Analyzed: 08/05/2023 01:38
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-10 B
Preparation Batch: BLH0123	Sample Size: 10 mL
Prepared: 08/04/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.21	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	105	%	



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SPL-GW-MW25-0823
23H0102-10 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/02/2023 08:45
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 15:25
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-10 E
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.311	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>97.5</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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW25-0823
23H0102-10 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Sampled: 08/02/2023 08:45
Instrument: ICPMS1 Analyst: MCB	Analyzed: 08/16/2023 23:41
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23H0102-10 A 01
Preparation Batch: BLH0390	Sample Size: 25 mL
Prepared: 08/15/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	35.9	mg/L	D
Manganese	7439-96-5	50	0.0250	2.88	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW08-0823
23H0102-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/01/2023 09:20
Instrument: NT20 Analyst: TWC	Analyzed: 08/05/2023 02:01
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-11 B
Preparation Batch: BLH0123	Sample Size: 10 mL
Prepared: 08/04/2023	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW08-0823
23H0102-11 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/01/2023 09:20
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 15:46
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-11 H
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0721	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW08-0823
23H0102-11 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS1	Analyst: MCB	Sampled: 08/01/2023 09:20	Analyzed: 08/17/2023 00:49
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BLH0390	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 08/15/2023		Extract ID: 23H0102-11 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	17.1	mg/L	D
Manganese	7439-96-5	20	0.0100	0.979	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW27-0823
23H0102-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/01/2023 10:45
Instrument: NT20 Analyst: TWC	Analyzed: 08/05/2023 02:24
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-12 B
Preparation Batch: BLH0123	Sample Size: 10 mL
Prepared: 08/04/2023	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW27-0823
23H0102-12 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/01/2023 10:45
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 16:08
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-12 F
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0955	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW27-0823
23H0102-12 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Sampled: 08/01/2023 10:45
Instrument: ICPMS1 Analyst: MCB	Analyzed: 08/17/2023 00:39
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23H0102-12 A 01
Preparation Batch: BLH0390	Sample Size: 25 mL
Prepared: 08/15/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	28.8	mg/L	D
Manganese	7439-96-5	10	0.00500	0.683	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW61-0823
23H0102-13 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 08/01/2023 09:45
Instrument: NT20 Analyst: TWC	Analyzed: 08/05/2023 02:48
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-13 B
Preparation Batch: BLH0123	Sample Size: 10 mL
Prepared: 08/04/2023	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW61-0823
23H0102-13 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 08/01/2023 09:45
Instrument: NT16 Analyst: TWC	Analyzed: 08/07/2023 16:29
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23H0102-13 E
Preparation Batch: BLH0163	Sample Size: 10 mL
Prepared: 08/07/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0704	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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SPL-GW-MW61-0823
23H0102-13 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Sampled: 08/01/2023 09:45
Instrument: ICPMS1 Analyst: MCB	Analyzed: 08/17/2023 00:44
Sample Preparation: Preparation Method: REN - EPA 3010A M	Extract ID: 23H0102-13 A 01
Preparation Batch: BLH0390	Sample Size: 25 mL
Prepared: 08/15/2023	Final Volume: 25 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	16.1	mg/L	D
Manganese	7439-96-5	10	0.00500	0.934	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: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
21-Aug-2023 18:42

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLH0123 - EPA 8260D

Instrument: NT20 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLH0123-BLK1)				Prepared: 04-Aug-2023 Analyzed: 04-Aug-2023 21:23						
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.29		ug/L	5.0000		106	80-129			
LCS (BLH0123-BS1)				Prepared: 04-Aug-2023 Analyzed: 04-Aug-2023 20:14						
cis-1,2-Dichloroethene	9.16	0.20	ug/L	10.000		91.6	80-121			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.91		ug/L	5.0000		98.1	80-129			
LCS Dup (BLH0123-BSD1)				Prepared: 04-Aug-2023 Analyzed: 04-Aug-2023 20:37						
cis-1,2-Dichloroethene	9.14	0.20	ug/L	10.000		91.4	80-121	0.29	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.81		ug/L	5.0000		96.2	80-129			
Matrix Spike (BLH0123-MS1)				Source: 23H0102-06		Prepared: 04-Aug-2023 Analyzed: 05-Aug-2023 03:57				
cis-1,2-Dichloroethene	8.89	0.20	ug/L	10.000	ND	88.9	80-121			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5.00		ug/L	5.0000	5.36	100	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike (BLH0123-MS2)				Source: 23H0102-11		Prepared: 04-Aug-2023 Analyzed: 05-Aug-2023 04:44				
cis-1,2-Dichloroethene	9.58	0.20	ug/L	10.000	ND	95.8	80-121			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.85		ug/L	5.0000	5.50	97.1	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLH0123-MSD1)				Source: 23H0102-06		Prepared: 04-Aug-2023 Analyzed: 05-Aug-2023 04:20				
cis-1,2-Dichloroethene	9.14	0.20	ug/L	10.000	ND	91.4	80-121	2.86	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.76		ug/L	5.0000	5.36	95.3	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLH0123-MSD2)				Source: 23H0102-11		Prepared: 04-Aug-2023 Analyzed: 05-Aug-2023 05:07				
cis-1,2-Dichloroethene	9.15	0.20	ug/L	10.000	ND	91.5	80-121	4.56	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.76		ug/L	5.0000	5.50	95.2	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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLH0163 - EPA 8260D-SIM

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLH0163-BLK1)				Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 11:43						
Vinyl chloride	ND	0.0200	ug/L							U
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4840		ug/L	5000.0		96.9	80-129			
LCS (BLH0163-BS1)				Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 10:02						
Vinyl chloride	2.13	0.0200	ug/L	2.0000		106	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4790		ug/L	5000.0		95.9	80-129			
LCS Dup (BLH0163-BSD1)				Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 11:00						
Vinyl chloride	2.39	0.0200	ug/L	2.0000		119	62-141	11.40	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4770		ug/L	5000.0		95.4	80-129			
Matrix Spike (BLH0163-MS1)				Source: 23H0102-06		Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 18:36				
Vinyl chloride	2.32	0.0200	ug/L	2.0000	0.168	108	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5040		ug/L	5000.0	4950	101	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike (BLH0163-MS2)				Source: 23H0102-11		Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 19:18				
Vinyl chloride	2.20	0.0200	ug/L	2.0000	0.0721	107	62-141			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4960		ug/L	5000.0	5030	99.2	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLH0163-MSD1)				Source: 23H0102-06		Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 18:57				
Vinyl chloride	2.30	0.0200	ug/L	2.0000	0.168	107	62-141	0.92	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	5010		ug/L	5000.0	4950	100	80-129			
Recovery limits for target analytes in MS/MSD QC samples are advisory only.										
Matrix Spike Dup (BLH0163-MSD2)				Source: 23H0102-11		Prepared: 07-Aug-2023 Analyzed: 07-Aug-2023 19:40				
Vinyl chloride	2.22	0.0200	ug/L	2.0000	0.0721	108	62-141	0.87	30	
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4950		ug/L	5000.0	5030	99.0	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: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
21-Aug-2023 18:42

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLH0390 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLH0390-BLK1)			Prepared: 15-Aug-2023 Analyzed: 15-Aug-2023 17:23								
Iron	54	ND	0.0360	mg/L							U
Iron	57	ND	0.0360	mg/L							U
Manganese	55	ND	0.000500	mg/L							U
LCS (BLH0390-BS1)			Prepared: 15-Aug-2023 Analyzed: 15-Aug-2023 17:28								
Iron	54	5.12	0.0360	mg/L	5.0001		102	80-120			
Iron	57	5.05	0.0360	mg/L	5.0001		101	80-120			
Manganese	55	0.0267	0.000500	mg/L	0.025000		107	80-120			
Duplicate (BLH0390-DUP1)			Source: 23H0102-06		Prepared: 15-Aug-2023 Analyzed: 16-Aug-2023 23:51						
Iron	54	19.7	1.80	mg/L		20.8			5.24	20	D
Manganese	55	1.88	0.0250	mg/L		1.98			5.01	20	D
Duplicate (BLH0390-DUP2)			Source: 23H0102-11		Prepared: 15-Aug-2023 Analyzed: 17-Aug-2023 00:54						
Iron	54	16.0	0.720	mg/L		17.1			6.88	20	D
Manganese	55	0.942	0.0100	mg/L		0.979			3.79	20	D
Matrix Spike (BLH0390-MS1)			Source: 23H0102-06		Prepared: 15-Aug-2023 Analyzed: 16-Aug-2023 23:56						
Iron	54	25.9	1.80	mg/L	5.0001	20.8	102	75-125			D
Manganese	55	1.99	0.0250	mg/L	0.025000	1.98	27.6	75-125			HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BLH0390-MS2)			Source: 23H0102-11		Prepared: 15-Aug-2023 Analyzed: 17-Aug-2023 00:59						
Iron	54	21.5	0.720	mg/L	5.0001	17.1	88.7	75-125			D
Manganese	55	0.972	0.0100	mg/L	0.025000	0.979	-25.6	75-125			HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLH0390-MSD1)			Source: 23H0102-06		Prepared: 15-Aug-2023 Analyzed: 17-Aug-2023 00:01						
Iron	54	24.9	1.80	mg/L	5.0001	20.8	81.8	75-125	3.96	20	D
Manganese	55	1.91	0.0250	mg/L	0.025000	1.98	-285	75-125	4.01	20	HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLH0390-MSD2)			Source: 23H0102-11		Prepared: 15-Aug-2023 Analyzed: 17-Aug-2023 01:04						
Iron	54	22.6	0.720	mg/L	5.0001	17.1	111	75-125	5.01	20	D
Manganese	55	1.01	0.0100	mg/L	0.025000	0.979	128	75-125	3.86	20	HC, D



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

Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
21-Aug-2023 18:42

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLH0390 - EPA 6020B

Instrument: ICPMS1 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
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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: 553-1550-067 Project Manager: Min-Soon Yim	Reported: 21-Aug-2023 18:42
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Certified Analyses included in this Report

Analyte	Certifications
EPA 6020B in Water	
Iron-54	NELAP,WADOE,DoD-ELAP
Iron-57	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	05/12/2024



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

Project: South Park Landfill -Parametrix Water
Project Number: 553-1550-067
Project Manager: Min-Soon Yim

Reported:
21-Aug-2023 18:42

Notes and Definitions

- * Flagged value is not within established control limits.
- B This analyte was detected in the method blank.
- 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.
- 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.

4th Quarter 2023





Analytical Resources, LLC
Analytical Chemists and Consultants
Tukwila, WA

28 November 2023

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)
23K0184

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: 23K0184	Turn-around Requested: 2 weeks	Date: 11/6/2023
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: 4/100

Client Project Name: SPU South Park Landfill	Analysis Requested	Notes/Comments
Samplers: Chris Bourgeois HWA		

Sample ID	Date	Time	Matrix	Number of Containers	cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn											
SPL-GW-MW12-1123			water	7	X	X	X											
SPL-GW-MW14-1123			water	7	X	X	X											
SPL-GW-MW29-1123			water	7	X	X	X											
SPL-GW-MW18-1123			water	7	X	X	X											
SPL-GW-MW32-1123	11/6/23	1045	water	7	X	X	X											
SPL-GW-MW33-1123	11/6/23	1200	water	7	X	X	X											
SPL-GW-MW10-1123	11/6/23	1310	water	13	X	X	X											MS/MSD
SPL-GW-MW60-1123	11/6/23	1350	water	7	X	X	X											
SPL-GW-MW80-1123			water	2	X	X												

Comments/Special Instructions	Relinquished by: (Signature) <i>Chris Bourgeois</i>	Received by: (Signature) <i>Matthew Dannel</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: Chris Bourgeois	Printed Name: Matthew Dannel	Printed Name:	Printed Name:
	Company: HWA	Company: ARLLC	Company:	Company:
	Date & Time: 11/6/23	Date & Time: 11/06/23 1516	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: 23K0184	Turn-around Requested: 2 weeks	Date: 11/6/2023
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: _____ Cooler Temps: _____

Client Project Name: SPU South Park Landfill					Analysis Requested								Notes/Comments	
Sample ID	Date	Time	Matrix	Number of Containers	cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn							
SPL-GW-MW25-1123	11/6/23	1730	water	7	X	X	X							
SPL-GW-MW30-1123			water	7	X	X	X							
SPL-GW-MW31-1123			water	7	X	X	X							
SPL-GW-MW24-1123			water	7	X	X	X							
SPL-GW-MW26-1123			water	7	X	X	X							
SPL-GW-MW08-1123			water	7	X	X	X							
SPL-GW-MW27-1123			water	13	X	X	X							MS/MSD
SPL-GW-MW61-1123			water	7	X	X	X							
SPL-GW-MW81-1123			water	2	X	X								

Comments/Special Instructions	Relinquished by: (Signature) <i>Chris</i>	Received by: (Signature) <i>Matthew Panu</i>	Relinquished by: (Signature)	Received by: (Signature)
	Printed Name: <i>Chris Bourgeois</i>	Printed Name: <i>Matthew Panu</i>	Printed Name:	Printed Name:
	Company: <i>HWA</i>	Company: <i>ARLCC</i>	Company:	Company:
	Date & Time: <i>11/6/23</i>	Date & Time: <i>11/06/23 1516</i>	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:
28-Nov-2023 11:40

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW32-1123	23K0184-01	Water	06-Nov-2023 10:45	06-Nov-2023 15:16
SPL-GW-MW33-1123	23K0184-02	Water	06-Nov-2023 12:00	06-Nov-2023 15:16
SPL-GW-MW10-1123	23K0184-03	Water	06-Nov-2023 13:10	06-Nov-2023 15:16
SPL-GW-MW60-1123	23K0184-04	Water	06-Nov-2023 13:50	06-Nov-2023 15:16
SPL-GW-MW80-1123	23K0184-05	Water	06-Nov-2023 00:00	06-Nov-2023 15:16
SPL-GW-MW25-1123	23K0184-06	Water	06-Nov-2023 14:30	06-Nov-2023 15:16



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-Nov-2023 11:40

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill
Work Order: 23K0184

Sample receipt

Samples as listed on the preceding page were received November 6, 2023 under ARI work order 23K0184. For details regarding sample receipt, please refer to the Cooler Receipt Form.

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.

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

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.



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-Nov-2023 11:40

The matrix spike/matrix spike duplicate (MS/MSD) spike 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 were within method requirements.

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

23K0184

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
23K0184-01 A	HDPE NM, 500 mL, 1:1 HNO3	<2 Pass
23K0184-01 B	VOA Vial, Clear, 40 mL, HCL	
23K0184-01 C	VOA Vial, Clear, 40 mL, HCL	
23K0184-01 D	VOA Vial, Clear, 40 mL, HCL	
23K0184-01 E	VOA Vial, Clear, 40 mL, HCL	
23K0184-01 F	VOA Vial, Clear, 40 mL, HCL	
23K0184-01 G	VOA Vial, Clear, 40 mL, HCL	
23K0184-02 A	HDPE NM, 500 mL, 1:1 HNO3	<2 Pass
23K0184-02 B	VOA Vial, Clear, 40 mL, HCL	
23K0184-02 C	VOA Vial, Clear, 40 mL, HCL	
23K0184-02 D	VOA Vial, Clear, 40 mL, HCL	
23K0184-02 E	VOA Vial, Clear, 40 mL, HCL	
23K0184-02 F	VOA Vial, Clear, 40 mL, HCL	
23K0184-02 G	VOA Vial, Clear, 40 mL, HCL	
23K0184-03 A	HDPE NM, 500 mL, 1:1 HNO3	<2 Pass
23K0184-03 B	VOA Vial, Clear, 40 mL, HCL	
23K0184-03 C	VOA Vial, Clear, 40 mL, HCL	
23K0184-03 D	VOA Vial, Clear, 40 mL, HCL	
23K0184-03 E	VOA Vial, Clear, 40 mL, HCL	
23K0184-03 F	VOA Vial, Clear, 40 mL, HCL	
23K0184-03 G	VOA Vial, Clear, 40 mL, HCL	
23K0184-03 H	VOA Vial, Clear, 40 mL, HCL	
23K0184-03 I	VOA Vial, Clear, 40 mL, HCL	
23K0184-03 J	VOA Vial, Clear, 40 mL, HCL	
23K0184-03 K	VOA Vial, Clear, 40 mL, HCL	
23K0184-03 L	VOA Vial, Clear, 40 mL, HCL	
23K0184-03 M	VOA Vial, Clear, 40 mL, HCL	
23K0184-04 A	HDPE NM, 500 mL, 1:1 HNO3	<2 Pass
23K0184-04 B	VOA Vial, Clear, 40 mL, HCL	
23K0184-04 C	VOA Vial, Clear, 40 mL, HCL	
23K0184-04 D	VOA Vial, Clear, 40 mL, HCL	
23K0184-04 E	VOA Vial, Clear, 40 mL, HCL	
23K0184-04 F	VOA Vial, Clear, 40 mL, HCL	
23K0184-04 G	VOA Vial, Clear, 40 mL, HCL	



WORK ORDER

23K0184

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

23K0184-05 A	VOA Vial, Clear, 40 mL, HCL	
23K0184-05 B	VOA Vial, Clear, 40 mL, HCL	
23K0184-06 A	HDPE NM, 500 mL, 1:1 HNO3	≤ 2 Pass
23K0184-06 B	VOA Vial, Clear, 40 mL, HCL	
23K0184-06 C	VOA Vial, Clear, 40 mL, HCL	
23K0184-06 D	VOA Vial, Clear, 40 mL, HCL	
23K0184-06 E	VOA Vial, Clear, 40 mL, HCL	
23K0184-06 F	VOA Vial, Clear, 40 mL, HCL	
23K0184-06 G	VOA Vial, Clear, 40 mL, HCL	

KFC
Preservation Confirmed By

11-7-23
Date



Cooler Receipt Form

ARI Client: Seattle Public Utility

Project Name: SPU South Park Landfill

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 23K0184

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 1516 4:16

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: SC00709

Cooler Accepted by: mm Date: 11/07/23 Time: 1516

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: KFC Date: 11-7-23 Time: 0901 Labels checked by: KFC

**** 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: 28-Nov-2023 11:40
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SPL-GW-MW32-1123
23K0184-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)		Sampled: 11/06/2023 10:45
Instrument: NT20 Analyst: LH	Preparation Batch: BLK0236	Sample Size: 10 mL	Analyzed: 11/08/2023 10:59
Sample Preparation:	Prepared: 11/08/2023	Final Volume: 10 mL	Extract ID: 23K0184-01 E

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 %	103	%	



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-Nov-2023 11:40
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SPL-GW-MW32-1123
23K0184-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/06/2023 10:45
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 14:02
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0184-01 B
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.275	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	95.9	%	



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-Nov-2023 11:40
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SPL-GW-MW32-1123
23K0184-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 11/06/2023 10:45
Instrument: ICPMS2 Analyst: MCB	Preparation Batch: BLK0517	Final Volume: 25 mL	Analyzed: 11/24/2023 17:31
Sample Preparation:	Prepared: 11/17/2023	Extract ID: 23K0184-01 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	14.7	mg/L	D
Manganese	7439-96-5	10	0.00500	1.32	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-Nov-2023 11:40
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SPL-GW-MW33-1123
23K0184-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/06/2023 12:00
Instrument: NT20 Analyst: LH	Analyzed: 11/08/2023 11:22
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0184-02 E
Preparation Batch: BLK0236	Sample Size: 10 mL
Prepared: 11/08/2023	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>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: 28-Nov-2023 11:40
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SPL-GW-MW33-1123
23K0184-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/06/2023 12:00
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 14:22
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0184-02 B
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.104	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>96.7</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-Nov-2023 11:40
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SPL-GW-MW33-1123
23K0184-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS2	Analyst: MCB	Sampled: 11/06/2023 12:00	Analyzed: 11/24/2023 17:28
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BLK0517	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 11/17/2023		Extract ID: 23K0184-02 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	1.74	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-Nov-2023 11:40
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SPL-GW-MW10-1123
23K0184-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/06/2023 13:10
Instrument: NT20 Analyst: LH	Analyzed: 11/08/2023 11:45
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0184-03 H
Preparation Batch: BLK0236	Sample Size: 10 mL
Prepared: 11/08/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.76	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: 28-Nov-2023 11:40
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SPL-GW-MW10-1123
23K0184-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/06/2023 13:10
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 14:43
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0184-03 B
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0877	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>98.0</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-Nov-2023 11:40
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SPL-GW-MW10-1123
23K0184-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS2 Analyst: MCB	Sampled: 11/06/2023 13:10 Analyzed: 11/24/2023 17:14
Sample Preparation:	Preparation Method: REN - EPA 3010A M Preparation Batch: BLK0517 Prepared: 11/17/2023	Sample Size: 25 mL Final Volume: 25 mL Extract ID: 23K0184-03 A 01

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	43.9	mg/L	D
Manganese	7439-96-5	50	0.0250	2.51	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-Nov-2023 11:40
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SPL-GW-MW60-1123
23K0184-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 11/06/2023 13:50
Instrument: NT20 Analyst: LH	Preparation Batch: BLK0236	Analyzed: 11/08/2023 12:08
Sample Preparation:	Sample Size: 10 mL	Extract ID: 23K0184-04 E
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.75	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: 28-Nov-2023 11:40
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SPL-GW-MW60-1123
23K0184-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/06/2023 13:50
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 15:04
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0184-04 B
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0850	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>97.5</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-Nov-2023 11:40
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SPL-GW-MW60-1123
23K0184-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 11/06/2023 13:50
Instrument: ICPMS2 Analyst: MCB	Preparation Batch: BLK0517	Final Volume: 25 mL	Analyzed: 11/24/2023 17:30
Sample Preparation:	Prepared: 11/17/2023	Extract ID: 23K0184-04 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	44.5	mg/L	D
Manganese	7439-96-5	50	0.0250	2.63	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-Nov-2023 11:40
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SPL-GW-MW80-1123
23K0184-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 11/06/2023 00:00
Instrument: NT20 Analyst: LH	Preparation Batch: BLK0236	Analyzed: 11/08/2023 12:31
Sample Preparation:	Sample Size: 10 mL	Extract ID: 23K0184-05 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>			<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: 28-Nov-2023 11:40
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SPL-GW-MW80-1123
23K0184-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/06/2023 00:00
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 15:24
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0184-05 B
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	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>96.4</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-Nov-2023 11:40
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SPL-GW-MW25-1123
23K0184-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 11/06/2023 14:30
Instrument: NT20 Analyst: LH	Preparation Batch: BLK0236	Analyzed: 11/08/2023 12:54
Sample Preparation:	Sample Size: 10 mL	Extract ID: 23K0184-06 E
	Final Volume: 10 mL	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.23	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	99.1	%	



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-Nov-2023 11:40
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SPL-GW-MW25-1123
23K0184-06 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/06/2023 14:30
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 15:45
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0184-06 B
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.285	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>94.6</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-Nov-2023 11:40
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SPL-GW-MW25-1123
23K0184-06 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 11/06/2023 14:30
Instrument: ICPMS2 Analyst: MCB	Preparation Batch: BLK0517	Final Volume: 25 mL	Analyzed: 11/24/2023 17:12
Sample Preparation:	Prepared: 11/17/2023	Extract ID: 23K0184-06 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	100	3.60	34.9	mg/L	D
Manganese	7439-96-5	100	0.0500	2.78	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-Nov-2023 11:40
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLK0236 - EPA 8260D

Instrument: NT20 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLK0236-BLK1)					Prepared: 08-Nov-2023 Analyzed: 08-Nov-2023 09:04					
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4.94		ug/L	5.00		98.9	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-Nov-2023 11:40
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLK0236 - EPA 8260D

Instrument: NT20 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLK0236-BS1)					Prepared: 08-Nov-2023 Analyzed: 08-Nov-2023 07:33					
cis-1,2-Dichloroethene	10.3	0.20	ug/L	10.0		103	80-121			
Surrogate: 1,2-Dichloroethane-d4	4.97		ug/L	5.00		99.3	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-Nov-2023 11:40

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLK0236 - EPA 8260D

Instrument: NT20 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLK0236-BSD1)					Prepared: 08-Nov-2023 Analyzed: 08-Nov-2023 08:19					
cis-1,2-Dichloroethene	13.4	0.20	ug/L	10.0		134	80-121	25.80	30	*
Surrogate: 1,2-Dichloroethane-d4	5.03		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: 28-Nov-2023 11:40
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLK0236 - EPA 8260D

Instrument: NT20 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLK0236-MS1)		Source: 23K0184-03		Prepared: 08-Nov-2023	Analyzed: 08-Nov-2023 16:31					
cis-1,2-Dichloroethene	10.7	0.20	ug/L	10.0	0.76	99.8	80-121			
Surrogate: 1,2-Dichloroethane-d4	5.05		ug/L	5.00	5.08	101	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-Nov-2023 11:40
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLK0236 - EPA 8260D

Instrument: NT20 Analyst: LH

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLK0236-MSD1)		Source: 23K0184-03		Prepared: 08-Nov-2023		Analyzed: 08-Nov-2023 16:54				
cis-1,2-Dichloroethene	10.9	0.20	ug/L	10.0	0.76	101	80-121	1.41	30	
Surrogate: 1,2-Dichloroethane-d4	5.03		ug/L	5.00	5.08	101	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-Nov-2023 11:40
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLK0236 - EPA 8260D

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLK0289 - EPA 8260D-SIM

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLK0289-BLK1)					Prepared: 09-Nov-2023 Analyzed: 09-Nov-2023 13:19					
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4750		ug/L	5000		95.0	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: 28-Nov-2023 11:40
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLK0289 - EPA 8260D-SIM

Instrument: NT16 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLK0289-BS1)					Prepared: 09-Nov-2023 Analyzed: 09-Nov-2023 11:42					
Vinyl chloride	2.04	0.0200	ug/L	2.00		102	62-141			
Surrogate: 1,2-Dichloroethane-d4	4760		ug/L	5000		95.2	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-Nov-2023 11:40
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLK0289 - EPA 8260D-SIM

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLK0289-BSD1)					Prepared: 09-Nov-2023 Analyzed: 09-Nov-2023 12:38					
Vinyl chloride	2.35	0.0200	ug/L	2.00		117	62-141	13.90	30	
Surrogate: 1,2-Dichloroethane-d4	4670		ug/L	5000		93.3	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-Nov-2023 11:40
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLK0289 - EPA 8260D-SIM

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLK0289-MS1)		Source: 23K0184-03		Prepared: 09-Nov-2023		Analyzed: 09-Nov-2023 20:12				
Vinyl chloride	2.11	0.0200	ug/L	2.00	0.0877	101	62-141			
Surrogate: 1,2-Dichloroethane-d4	5010		ug/L	5000	4900	100	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:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLK0289 - EPA 8260D-SIM

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLK0289-MSD1)		Source: 23K0184-03		Prepared: 09-Nov-2023		Analyzed: 09-Nov-2023 20:32				
Vinyl chloride	2.14	0.0200	ug/L	2.00	0.0877	102	62-141	1.19	30	
Surrogate: 1,2-Dichloroethane-d4	4980		ug/L	5000	4900	99.6	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-Nov-2023 11:40
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLK0289 - EPA 8260D-SIM

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLK0517 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLK0517-BLK1)					Prepared: 17-Nov-2023 Analyzed: 17-Nov-2023 16:08						
Manganese	55	ND	0.000500	mg/L							U
Blank (BLK0517-BLK2)					Prepared: 17-Nov-2023 Analyzed: 24-Nov-2023 17:06						
Iron	54	ND	0.0360	mg/L							U
LCS (BLK0517-BS1)					Prepared: 17-Nov-2023 Analyzed: 17-Nov-2023 16:13						
Manganese	55	0.0244	0.000500	mg/L	0.0250		97.5	80-120			
LCS (BLK0517-BS2)					Prepared: 17-Nov-2023 Analyzed: 24-Nov-2023 17:08						
Iron	54	4.96	0.0360	mg/L	5.00		99.1	80-120			
Duplicate (BLK0517-DUP1)					Source: 23K0184-03 Prepared: 17-Nov-2023 Analyzed: 17-Nov-2023 18:47						
Manganese	55	2.38	0.0250	mg/L		2.51			5.44	20	D
Duplicate (BLK0517-DUP2)					Source: 23K0184-03 Prepared: 17-Nov-2023 Analyzed: 24-Nov-2023 17:16						
Iron	54	41.1	1.80	mg/L		43.9			6.59	20	D
Matrix Spike (BLK0517-MS1)					Source: 23K0184-03 Prepared: 17-Nov-2023 Analyzed: 17-Nov-2023 18:51						
Manganese	55	2.46	0.0250	mg/L	0.0250	2.51	-208	75-125			HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike (BLK0517-MS2)					Source: 23K0184-03 Prepared: 17-Nov-2023 Analyzed: 24-Nov-2023 17:18						
Iron	54	47.6	1.80	mg/L	5.00	43.9	73.8	75-125			HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLK0517-MSD1)					Source: 23K0184-03 Prepared: 17-Nov-2023 Analyzed: 17-Nov-2023 18:56						
Manganese	55	2.41	0.0250	mg/L	0.0250	2.51	-417	75-125	2.15	20	HC, D
Recovery limits for target analytes in MS/MSD QC samples are advisory only.											
Matrix Spike Dup (BLK0517-MSD2)					Source: 23K0184-03 Prepared: 17-Nov-2023 Analyzed: 24-Nov-2023 17:19						
Iron	54	47.8	1.80	mg/L	5.00	43.9	77.6	75-125	0.39	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-Nov-2023 11:40
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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	05/12/2024



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-Nov-2023 11:40

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.
- 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 November 2023

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)
23K0260

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: 23K0260	Turn-around Requested: 2 weeks	Date: 11/8/23
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: 2 Cooler Temps: 1.6 1.3

Client Project Name: SPU South Park Landfill					Analysis Requested										Notes/Comments			
Samplers: Chris Bourgeois HWA					cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn											
Sample ID	Date	Time	Matrix	Number of Containers														
SPL-GW-MW12-1123	11/8/23	905	water	7	X	X	X											
SPL-GW-MW14-1123	11/8/23	1350	water	7	X	X	X											
SPL-GW-MW29-1123	11/8/23	1020	water	7	X	X	X											
SPL-GW-MW18-1123	11/8/23	1130	water	7	X	X	X											
SPL-GW-MW32-1123			water	7	X	X	X											
SPL-GW-MW33-1123			water	7	X	X	X											
SPL-GW-MW10-1123			water	13	X	X	X											MS/MSD
SPL-GW-MW60-1123			water	7	X	X	X											
SPL-GW-MW80-1123			water	2	X	X												
Comments/Special Instructions	Relinquished by: (Signature) <i>Chris Bourgeois</i>		Received by: (Signature) <i>Matthew Dene</i>		Relinquished by: (Signature)					Received by: (Signature)								
	Printed Name: <i>Chris Bourgeois</i>		Printed Name: <i>Matthew Dene</i>		Printed Name:					Printed Name:								
	Company: <i>HWA</i>		Company: <i>ARU</i>		Company:					Company:								
	Date & Time: <i>11/8/23 1432</i>		Date & Time: <i>11/8/23 1452</i>		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: 23K0260	Turn-around Requested: 2 weeks	Date: 11/8/23
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: 2 Cooler Temps: 1.6 1.3

Client Project Name: SPU South Park Landfill					Analysis Requested								Notes/Comments	
Client Project #: 553-1550-067		Samplers: Chris Bourgeois HWA			cis-1,2-DCE	Vinyl Chloride	Total Fe, Mn							
Sample ID	Date	Time	Matrix	Number of Containers										
SPL-GW-MW25-1123			water	7	X	X	X							
SPL-GW-MW30-1123	11/7/23	1025	water	7	X	X	X							
SPL-GW-MW31-1123	11/7/23	920	water	7	X	X	X							
SPL-GW-MW24-1123	11/7/23	1120	water	7	X	X	X							
SPL-GW-MW26-1123	11/7/23	1230	water	7	X	X	X							
SPL-GW-MW08-1123	11/7/23	1500	water	7	X	X	X							
SPL-GW-MW27-1123	11/7/23	1330	water	13	X	X	X							MS/MSD
SPL-GW-MW61-1123	11/7/23	1410	water	7	X	X	X							
SPL-GW-MW81-1123	—	—	water	2	X	X								
Comments/Special Instructions	Relinquished by: (Signature) <i>Chris Bourgeois</i>				Received by: (Signature) <i>Matthew Dandel</i>				Relinquished by: (Signature)				Received by: (Signature)	
	Printed Name: Chris Bourgeois				Printed Name: Matthew Dandel				Printed Name:				Printed Name:	
	Company: HWA				Company: ARLU				Company:				Company:	
	Date & Time: 11/8/23 1432				Date & Time: 11/08/23 1432				Date & Time:				Date & Time:	

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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-Nov-2023 11:55

ANALYTICAL REPORT FOR SAMPLES

Sample ID	Laboratory ID	Matrix	Date Sampled	Date Received
SPL-GW-MW12-1123	23K0260-01	Water	08-Nov-2023 09:05	08-Nov-2023 14:32
SPL-GW-MW14-1123	23K0260-02	Water	08-Nov-2023 13:50	08-Nov-2023 14:32
SPL-GW-MW29-1123	23K0260-03	Water	08-Nov-2023 10:20	08-Nov-2023 14:32
SPL-GW-MW18-1123	23K0260-04	Water	08-Nov-2023 11:30	08-Nov-2023 14:32
SPL-GW-MW30-1123	23K0260-05	Water	07-Nov-2023 10:25	08-Nov-2023 14:32
SPL-GW-MW31-1123	23K0260-06	Water	07-Nov-2023 09:20	08-Nov-2023 14:32
SPL-GW-MW24-1123	23K0260-07	Water	07-Nov-2023 11:20	08-Nov-2023 14:32
SPL-GW-MW26-1123	23K0260-08	Water	07-Nov-2023 12:30	08-Nov-2023 14:32
SPL-GW-MW08-1123	23K0260-09	Water	07-Nov-2023 15:00	08-Nov-2023 14:32
SPL-GW-MW27-1123	23K0260-10	Water	07-Nov-2023 13:30	08-Nov-2023 14:32
SPL-GW-MW61-1123	23K0260-11	Water	07-Nov-2023 14:10	08-Nov-2023 14:32
SPL-GW-MW81-1123	23K0260-12	Water	07-Nov-2023 00:00	08-Nov-2023 14:32



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-Nov-2023 11:55

Work Order Case Narrative

Client: Seattle Public Utilities
Project: South Park Landfill
Work Order: 23K0260

Sample receipt

Samples as listed on the preceding page were received November 8, 2023 under ARI work order 23K0260. For details regarding sample receipt, please refer to the Cooler Receipt Form.

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.

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

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



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-Nov-2023 11:55

advisory control limits.

Total Metals - EPA Method 6020B

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

Initial and continuing calibrations were within method requirements.

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

23K0260

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	
23K0260-01 A	HDPE NM, 500 mL, 1:1 HNO3	< 2	pass
23K0260-01 B	VOA Vial, Clear, 40 mL, HCL		
23K0260-01 C	VOA Vial, Clear, 40 mL, HCL		
23K0260-01 D	VOA Vial, Clear, 40 mL, HCL		
23K0260-01 E	VOA Vial, Clear, 40 mL		
23K0260-01 F	VOA Vial, Clear, 40 mL		
23K0260-01 G	VOA Vial, Clear, 40 mL		
23K0260-02 A	HDPE NM, 500 mL, 1:1 HNO3	< 2	pass
23K0260-02 B	VOA Vial, Clear, 40 mL, HCL		
23K0260-02 C	VOA Vial, Clear, 40 mL, HCL		
23K0260-02 D	VOA Vial, Clear, 40 mL, HCL		
23K0260-02 E	VOA Vial, Clear, 40 mL		
23K0260-02 F	VOA Vial, Clear, 40 mL		
23K0260-02 G	VOA Vial, Clear, 40 mL		
23K0260-03 A	HDPE NM, 500 mL, 1:1 HNO3	< 2	pass
23K0260-03 B	VOA Vial, Clear, 40 mL, HCL		
23K0260-03 C	VOA Vial, Clear, 40 mL, HCL		
23K0260-03 D	VOA Vial, Clear, 40 mL, HCL		
23K0260-03 E	VOA Vial, Clear, 40 mL		
23K0260-03 F	VOA Vial, Clear, 40 mL		
23K0260-03 G	VOA Vial, Clear, 40 mL		
23K0260-04 A	HDPE NM, 500 mL, 1:1 HNO3	< 2	pass
23K0260-04 B	VOA Vial, Clear, 40 mL, HCL		
23K0260-04 C	VOA Vial, Clear, 40 mL, HCL		
23K0260-04 D	VOA Vial, Clear, 40 mL, HCL		
23K0260-04 E	VOA Vial, Clear, 40 mL		
23K0260-04 F	VOA Vial, Clear, 40 mL		
23K0260-04 G	VOA Vial, Clear, 40 mL		
23K0260-05 A	HDPE NM, 500 mL, 1:1 HNO3	< 2	pass
23K0260-05 B	VOA Vial, Clear, 40 mL, HCL		
23K0260-05 C	VOA Vial, Clear, 40 mL, HCL		
23K0260-05 D	VOA Vial, Clear, 40 mL, HCL		
23K0260-05 E	VOA Vial, Clear, 40 mL		
23K0260-05 F	VOA Vial, Clear, 40 mL		



WORK ORDER

23K0260

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

23K0260-05 G	VOA Vial, Clear, 40 mL		
23K0260-06 A	HDPE NM, 500 mL, 1:1 HNO3	<2	pan
23K0260-06 B	VOA Vial, Clear, 40 mL, HCL		
23K0260-06 C	VOA Vial, Clear, 40 mL, HCL		
23K0260-06 D	VOA Vial, Clear, 40 mL, HCL		
23K0260-06 E	VOA Vial, Clear, 40 mL		
23K0260-06 F	VOA Vial, Clear, 40 mL		
23K0260-06 G	VOA Vial, Clear, 40 mL		
23K0260-07 A	HDPE NM, 500 mL, 1:1 HNO3	<2	pan
23K0260-07 B	VOA Vial, Clear, 40 mL, HCL		
23K0260-07 C	VOA Vial, Clear, 40 mL, HCL		
23K0260-07 D	VOA Vial, Clear, 40 mL, HCL		
23K0260-07 E	VOA Vial, Clear, 40 mL		
23K0260-07 F	VOA Vial, Clear, 40 mL		
23K0260-07 G	VOA Vial, Clear, 40 mL		
23K0260-08 A	HDPE NM, 500 mL, 1:1 HNO3	<2	pan
23K0260-08 B	VOA Vial, Clear, 40 mL, HCL		
23K0260-08 C	VOA Vial, Clear, 40 mL, HCL		
23K0260-08 D	VOA Vial, Clear, 40 mL, HCL		
23K0260-08 E	VOA Vial, Clear, 40 mL		
23K0260-08 F	VOA Vial, Clear, 40 mL		
23K0260-08 G	VOA Vial, Clear, 40 mL		
23K0260-09 A	HDPE NM, 500 mL, 1:1 HNO3	<2	pan
23K0260-09 B	VOA Vial, Clear, 40 mL, HCL		
23K0260-09 C	VOA Vial, Clear, 40 mL, HCL		
23K0260-09 D	VOA Vial, Clear, 40 mL, HCL		
23K0260-09 E	VOA Vial, Clear, 40 mL		
23K0260-09 F	VOA Vial, Clear, 40 mL		
23K0260-09 G	VOA Vial, Clear, 40 mL		
23K0260-10 A	HDPE NM, 500 mL, 1:1 HNO3	<2	pan
23K0260-10 B	VOA Vial, Clear, 40 mL, HCL		
23K0260-10 C	VOA Vial, Clear, 40 mL, HCL		
23K0260-10 D	VOA Vial, Clear, 40 mL, HCL		
23K0260-10 E	VOA Vial, Clear, 40 mL, HCL		
23K0260-10 F	VOA Vial, Clear, 40 mL, HCL		
23K0260-10 G	VOA Vial, Clear, 40 mL, HCL		



WORK ORDER

23K0260

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

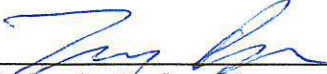
Client: Seattle Public Utilities

Project Manager: Kelly Bottem

Project: South Park Landfill -Parametrix Water

Project Number: 553-155-067

23K0260-10 H	VOA Vial, Clear, 40 mL		
23K0260-10 I	VOA Vial, Clear, 40 mL		
23K0260-10 J	VOA Vial, Clear, 40 mL		
23K0260-10 K	VOA Vial, Clear, 40 mL		
23K0260-10 L	VOA Vial, Clear, 40 mL		
23K0260-10 M	VOA Vial, Clear, 40 mL		
23K0260-11 A	HDPE NM, 500 mL, 1:1 HNO3	C2	pass
23K0260-11 B	VOA Vial, Clear, 40 mL, HCL		
23K0260-11 C	VOA Vial, Clear, 40 mL, HCL		
23K0260-11 D	VOA Vial, Clear, 40 mL, HCL		
23K0260-11 E	VOA Vial, Clear, 40 mL		
23K0260-11 F	VOA Vial, Clear, 40 mL		
23K0260-11 G	VOA Vial, Clear, 40 mL		
23K0260-12 A	VOA Vial, Clear, 40 mL, HCL		
23K0260-12 B	VOA Vial, Clear, 40 mL		


Preservation Confirmed By

11/9/23
Date



Cooler Receipt Form

ARI Client: SPU

Project Name: South Park Landfill

COC No(s): _____ (NA)

Delivered by: Fed-Ex UPS Courier Hand Delivered Other: _____

Assigned ARI Job No: 23K0260

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 1432 1.6 1.3

If cooler temperature is out of compliance fill out form 00070F Temp Gun ID#: 5009708

Cooler Accepted by: MD Date: 11/08/23 Time: 1432

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: Jy Br Date: 11/9/23 Time: 0949 Labels checked by: LB

**** 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: 28-Nov-2023 11:55
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SPL-GW-MW12-1123
23K0260-01 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/08/2023 09:05
Instrument: NT20 Analyst: TWC	Analyzed: 11/10/2023 23:15
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-01 B
Preparation Batch: BLK0346	Sample Size: 10 mL
Prepared: 11/10/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.24	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	106	%	



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-Nov-2023 11:55
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SPL-GW-MW12-1123
23K0260-01 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/08/2023 09:05
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 16:05
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-01 E
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	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>96.6</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-Nov-2023 11:55
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SPL-GW-MW12-1123
23K0260-01 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 11/08/2023 09:05
Instrument: ICPMS2 Analyst: MCB	Preparation Batch: BLK0518	Final Volume: 25 mL	Analyzed: 11/24/2023 17:58
Sample Preparation:	Prepared: 11/17/2023	Extract ID: 23K0260-01 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	1.41	mg/L	D
Manganese	7439-96-5	5	0.00250	0.132	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-Nov-2023 11:55
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SPL-GW-MW14-1123
23K0260-02 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/08/2023 13:50
Instrument: NT20 Analyst: TWC	Analyzed: 11/10/2023 23:39
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-02 B
Preparation Batch: BLK0346	Sample Size: 10 mL
Prepared: 11/10/2023	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: 28-Nov-2023 11:55
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SPL-GW-MW14-1123
23K0260-02 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/08/2023 13:50
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 16:26
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-02 E
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	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>			80-129 %	96.9	%	



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-Nov-2023 11:55
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SPL-GW-MW14-1123
23K0260-02 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 11/08/2023 13:50
Instrument: ICPMS2 Analyst: MCB	Preparation Batch: BLK0518	Final Volume: 25 mL	Analyzed: 11/24/2023 17:52
Sample Preparation:	Prepared: 11/17/2023	Extract ID: 23K0260-02 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	3.94	mg/L	D
Manganese	7439-96-5	20	0.0100	0.865	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-Nov-2023 11:55
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SPL-GW-MW29-1123
23K0260-03 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/08/2023 10:20
Instrument: NT20 Analyst: TWC	Analyzed: 11/11/2023 00:02
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-03 B
Preparation Batch: BLK0346	Sample Size: 10 mL
Prepared: 11/10/2023	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>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-Nov-2023 11:55
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SPL-GW-MW29-1123
23K0260-03 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/08/2023 10:20
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 16:46
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-03 E
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0312	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>96.3</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: 28-Nov-2023 11:55
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SPL-GW-MW29-1123
23K0260-03 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS2	Analyst: MCB	Sampled: 11/08/2023 10:20	Analyzed: 11/24/2023 17:35
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BLK0518	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 11/17/2023		Extract ID: 23K0260-03 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	17.3	mg/L	D
Manganese	7439-96-5	10	0.00500	0.441	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-Nov-2023 11:55
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SPL-GW-MW18-1123
23K0260-04 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/08/2023 11:30
Instrument: NT20 Analyst: TWC	Analyzed: 11/11/2023 00:25
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-04 B
Preparation Batch: BLK0346	Sample Size: 10 mL
Prepared: 11/10/2023	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>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-Nov-2023 11:55
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SPL-GW-MW18-1123
23K0260-04 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/08/2023 11:30
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 17:07
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-04 E
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0222	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>97.5</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-Nov-2023 11:55
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SPL-GW-MW18-1123
23K0260-04 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 11/08/2023 11:30
Instrument: ICPMS2 Analyst: MCB	Preparation Batch: BLK0518	Final Volume: 25 mL	Analyzed: 11/24/2023 17:54
Sample Preparation:	Prepared: 11/17/2023	Extract ID: 23K0260-04 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	12.1	mg/L	D
Manganese	7439-96-5	20	0.0100	0.943	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-Nov-2023 11:55
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SPL-GW-MW30-1123
23K0260-05 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/07/2023 10:25
Instrument: NT20 Analyst: TWC	Analyzed: 11/11/2023 00:49
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-05 B
Preparation Batch: BLK0346	Sample Size: 10 mL
Prepared: 11/10/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
cis-1,2-Dichloroethene	156-59-2	1	0.20	0.29	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	108	%	



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-Nov-2023 11:55
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SPL-GW-MW30-1123
23K0260-05 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/07/2023 10:25
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 17:28
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-05 E
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0710	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>96.3</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: 28-Nov-2023 11:55
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SPL-GW-MW30-1123
23K0260-05 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 11/07/2023 10:25
Instrument: ICPMS2 Analyst: MCB	Preparation Batch: BLK0518	Final Volume: 25 mL	Analyzed: 11/24/2023 17:59
Sample Preparation:	Prepared: 11/17/2023	Extract ID: 23K0260-05 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	3.52	mg/L	D
Manganese	7439-96-5	5	0.00250	0.112	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-Nov-2023 11:55
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SPL-GW-MW31-1123
23K0260-06 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/07/2023 09:20
Instrument: NT20 Analyst: TWC	Analyzed: 11/11/2023 01:12
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-06 B
Preparation Batch: BLK0346	Sample Size: 10 mL
Prepared: 11/10/2023	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>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-Nov-2023 11:55
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SPL-GW-MW31-1123
23K0260-06 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/07/2023 09:20
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 17:48
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-06 E
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.435	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	97.4	%	



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-Nov-2023 11:55
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SPL-GW-MW31-1123
23K0260-06 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS2	Analyst: MCB	Sampled: 11/07/2023 09:20	Analyzed: 11/24/2023 17:55
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BLK0518	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 11/17/2023		Extract ID: 23K0260-06 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	21.3	mg/L	D
Manganese	7439-96-5	20	0.0100	0.890	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-Nov-2023 11:55
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SPL-GW-MW24-1123
23K0260-07 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/07/2023 11:20
Instrument: NT20 Analyst: TWC	Analyzed: 11/11/2023 01:35
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-07 B
Preparation Batch: BLK0346	Sample Size: 10 mL
Prepared: 11/10/2023	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: 28-Nov-2023 11:55
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SPL-GW-MW24-1123
23K0260-07 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/07/2023 11:20
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 18:09
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-07 E
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0559	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	97.5	%	



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-Nov-2023 11:55
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SPL-GW-MW24-1123
23K0260-07 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Preparation Method: REN - EPA 3010A M	Sample Size: 25 mL	Sampled: 11/07/2023 11:20
Instrument: ICPMS2 Analyst: MCB	Preparation Batch: BLK0518	Final Volume: 25 mL	Analyzed: 11/24/2023 17:51
Sample Preparation:	Prepared: 11/17/2023	Extract ID: 23K0260-07 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	50	1.80	28.6	mg/L	D
Manganese	7439-96-5	50	0.0250	1.78	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-Nov-2023 11:55
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SPL-GW-MW26-1123
23K0260-08 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/07/2023 12:30
Instrument: NT20 Analyst: TWC	Analyzed: 11/11/2023 01:59
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-08 B
Preparation Batch: BLK0346	Sample Size: 10 mL
Prepared: 11/10/2023	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: 28-Nov-2023 11:55
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SPL-GW-MW26-1123
23K0260-08 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/07/2023 12:30
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 18:29
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-08 E
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0240	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			80-129 %	97.4	%	



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-Nov-2023 11:55
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SPL-GW-MW26-1123
23K0260-08 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS2	Analyst: MCB	Sampled: 11/07/2023 12:30	Analyzed: 11/24/2023 18:01
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BLK0518	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 11/17/2023		Extract ID: 23K0260-08 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	5	0.180	12.3	mg/L	D
Manganese	7439-96-5	5	0.00250	0.145	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-Nov-2023 11:55
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SPL-GW-MW08-1123
23K0260-09 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/07/2023 15:00
Instrument: NT20 Analyst: TWC	Analyzed: 11/11/2023 02:22
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-09 B
Preparation Batch: BLK0346	Sample Size: 10 mL
Prepared: 11/10/2023	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: 28-Nov-2023 11:55
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SPL-GW-MW08-1123
23K0260-09 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/07/2023 15:00
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 18:50
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-09 E
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	Final Volume: 10 mL

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Vinyl chloride	75-01-4	1	0.0200	0.0520	ug/L	
<i>Surrogate: 1,2-Dichloroethane-d4</i>			<i>80-129 %</i>	<i>98.6</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-Nov-2023 11:55
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SPL-GW-MW08-1123
23K0260-09 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS2	Analyst: MCB	Sampled: 11/07/2023 15:00	Analyzed: 11/24/2023 17:57
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BLK0518	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 11/17/2023		Extract ID: 23K0260-09 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	20	0.720	14.3	mg/L	D
Manganese	7439-96-5	20	0.0100	0.802	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-Nov-2023 11:55
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SPL-GW-MW27-1123
23K0260-10 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Preparation Method: EPA 5030C (Purge and Trap)	Sampled: 11/07/2023 13:30
Instrument: NT20 Analyst: TWC	Preparation Batch: BLK0346	Analyzed: 11/11/2023 02:46
Sample Preparation:	Sample Size: 10 mL	Extract ID: 23K0260-10 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: 28-Nov-2023 11:55
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SPL-GW-MW27-1123
23K0260-10 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/07/2023 13:30
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 19:10
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-10 H
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	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>			80-129 %	97.7	%	



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-Nov-2023 11:55
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SPL-GW-MW27-1123
23K0260-10 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS2	Analyst: MCB	Sampled: 11/07/2023 13:30	Analyzed: 11/24/2023 17:37
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BLK0518	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 11/17/2023		Extract ID: 23K0260-10 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	10.4	mg/L	D
Manganese	7439-96-5	10	0.00500	0.393	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-Nov-2023 11:55
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SPL-GW-MW61-1123
23K0260-11 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/07/2023 14:10
Instrument: NT20 Analyst: TWC	Analyzed: 11/11/2023 03:09
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-11 B
Preparation Batch: BLK0346	Sample Size: 10 mL
Prepared: 11/10/2023	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: 28-Nov-2023 11:55
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SPL-GW-MW61-1123
23K0260-11 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/07/2023 14:10
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 19:31
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-11 E
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	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>97.7</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-Nov-2023 11:55
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SPL-GW-MW61-1123
23K0260-11 (Water)

Metals and Metallic Compounds

Method: EPA 6020B	Instrument: ICPMS2	Analyst: MCB	Sampled: 11/07/2023 14:10	Analyzed: 11/24/2023 17:33
Sample Preparation:	Preparation Method: REN - EPA 3010A M	Preparation Batch: BLK0518	Sample Size: 25 mL	Final Volume: 25 mL
	Prepared: 11/17/2023		Extract ID: 23K0260-11 A 01	

Analyte	CAS Number	Dilution	Reporting Limit	Result	Units	Notes
Iron	7439-89-6	10	0.360	10.5	mg/L	D
Manganese	7439-96-5	10	0.00500	0.397	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-Nov-2023 11:55
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SPL-GW-MW81-1123
23K0260-12 (Water)

Volatile Organic Compounds

Method: EPA 8260D	Sampled: 11/07/2023 00:00
Instrument: NT20 Analyst: TWC	Analyzed: 11/11/2023 03:32
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-12 A
Preparation Batch: BLK0346	Sample Size: 10 mL
Prepared: 11/10/2023	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-Nov-2023 11:55
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SPL-GW-MW81-1123
23K0260-12 (Water)

Volatile Organic Compounds - SIM

Method: EPA 8260D-SIM	Sampled: 11/07/2023 00:00
Instrument: NT16 Analyst: TWC	Analyzed: 11/09/2023 19:51
Sample Preparation: Preparation Method: EPA 5030C (Purge and Trap)	Extract ID: 23K0260-12 B
Preparation Batch: BLK0289	Sample Size: 10 mL
Prepared: 11/09/2023	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>97.4</i>	<i>%</i>	



Seattle Public Utilities
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Project Manager: Min-Soon Yim

Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLK0346 - EPA 8260D

Instrument: NT20 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLK0346-BLK1)					Prepared: 10-Nov-2023 Analyzed: 10-Nov-2023 22:29					
cis-1,2-Dichloroethene	ND	0.20	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	5.12		ug/L	5.00		102	80-129			



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLK0346 - EPA 8260D

Instrument: NT20 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLK0346-BS1)					Prepared: 10-Nov-2023 Analyzed: 10-Nov-2023 21:19					
cis-1,2-Dichloroethene	10.2	0.20	ug/L	10.0		102	80-121			
<i>Surrogate: 1,2-Dichloroethane-d4</i>	4.94		ug/L	5.00		98.9	80-129			



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Reported:
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLK0346 - EPA 8260D

Instrument: NT20 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLK0346-BSD1)				Prepared: 10-Nov-2023 Analyzed: 10-Nov-2023 21:42						
cis-1,2-Dichloroethene	9.78	0.20	ug/L	10.0		97.8	80-121	4.14	30	
Surrogate: 1,2-Dichloroethane-d4	5.00		ug/L	5.00		100	80-129			



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLK0346 - EPA 8260D

Instrument: NT20 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLK0346-MS1)		Source: 23K0260-10		Prepared: 10-Nov-2023	Analyzed: 11-Nov-2023 05:53					
cis-1,2-Dichloroethene	9.67	0.20	ug/L	10.0	ND	96.7	80-121			
Surrogate: 1,2-Dichloroethane-d4	5.36		ug/L	5.00	5.34	107	80-129			

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



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLK0346 - EPA 8260D

Instrument: NT20 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLK0346-MSD1)		Source: 23K0260-10		Prepared: 10-Nov-2023		Analyzed: 11-Nov-2023 06:16				
cis-1,2-Dichloroethene	8.60	0.20	ug/L	10.0	ND	86.0	80-121	11.80	30	
Surrogate: 1,2-Dichloroethane-d4	5.15		ug/L	5.00	5.34	103	80-129			

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



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - Quality Control

Batch BLK0346 - EPA 8260D

Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLK0289 - EPA 8260D-SIM

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLK0289-BLK1)					Prepared: 09-Nov-2023 Analyzed: 09-Nov-2023 13:19					
Vinyl chloride	ND	0.0200	ug/L							U
Surrogate: 1,2-Dichloroethane-d4	4750		ug/L	5000		95.0	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: 28-Nov-2023 11:55
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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLK0289 - EPA 8260D-SIM

Instrument: NT16 Analyst: PB

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS (BLK0289-BS1)					Prepared: 09-Nov-2023 Analyzed: 09-Nov-2023 11:42					
Vinyl chloride	2.04	0.0200	ug/L	2.00		102	62-141			
Surrogate: 1,2-Dichloroethane-d4	4760		ug/L	5000		95.2	80-129			



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLK0289 - EPA 8260D-SIM

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
LCS Dup (BLK0289-BSD1)					Prepared: 09-Nov-2023 Analyzed: 09-Nov-2023 12:38					
Vinyl chloride	2.35	0.0200	ug/L	2.00		117	62-141	13.90	30	
Surrogate: 1,2-Dichloroethane-d4	4670		ug/L	5000		93.3	80-129			



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLK0289 - EPA 8260D-SIM

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike (BLK0289-MS2)		Source: 23K0260-10		Prepared: 09-Nov-2023		Analyzed: 09-Nov-2023 20:53				
Vinyl chloride	2.01	0.0200	ug/L	2.00	ND	99.9	62-141			
Surrogate: 1,2-Dichloroethane-d4	4930		ug/L	5000	4880	98.7	80-129			

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



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLK0289 - EPA 8260D-SIM

Instrument: NT16 Analyst: TWC

QC Sample/Analyte	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Matrix Spike Dup (BLK0289-MSD2)		Source: 23K0260-10		Prepared: 09-Nov-2023		Analyzed: 09-Nov-2023 21:14				
Vinyl chloride	2.02	0.0200	ug/L	2.00	ND	100	62-141	0.52	30	
Surrogate: 1,2-Dichloroethane-d4	4960		ug/L	5000	4880	99.2	80-129			

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



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Analysis by: Analytical Resources, LLC

Volatile Organic Compounds - SIM - Quality Control

Batch BLK0289 - EPA 8260D-SIM

Analysis by: Analytical Resources, LLC

Metals and Metallic Compounds - Quality Control

Batch BLK0518 - EPA 6020B

Instrument: ICPMS2 Analyst: MCB

QC Sample/Analyte	Isotope	Result	Reporting Limit	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Notes
Blank (BLK0518-BLK1)					Prepared: 17-Nov-2023 Analyzed: 24-Nov-2023 17:09						
Iron	54	ND	0.0360	mg/L							U
Manganese	55	ND	0.000500	mg/L							U
LCS (BLK0518-BS1)					Prepared: 17-Nov-2023 Analyzed: 24-Nov-2023 17:11						
Iron	54	4.92	0.0360	mg/L	5.00		98.3	80-120			
Manganese	55	0.0246	0.000500	mg/L	0.0250		98.4	80-120			
Duplicate (BLK0518-DUPI)					Source: 23K0260-10 Prepared: 17-Nov-2023 Analyzed: 24-Nov-2023 17:39						
Iron	54	9.80	0.360	mg/L		10.4			5.96	20	D
Manganese	55	0.379	0.00500	mg/L		0.393			3.63	20	D
Matrix Spike (BLK0518-MS1)					Source: 23K0260-10 Prepared: 17-Nov-2023 Analyzed: 24-Nov-2023 17:41						
Iron	54	15.2	0.360	mg/L	5.00	10.4	95.5	75-125			D
Manganese	55	0.405	0.00500	mg/L	0.0250	0.393	47.8	75-125			HC, D

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

Matrix Spike Dup (BLK0518-MSD1)					Source: 23K0260-10 Prepared: 17-Nov-2023 Analyzed: 24-Nov-2023 17:42						
Iron	54	15.2	0.360	mg/L	5.00	10.4	96.9	75-125	0.48	20	D
Manganese	55	0.410	0.00500	mg/L	0.0250	0.393	69.1	75-125	1.30	20	HC, D

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



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Project: South Park Landfill -Parametrix Water
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Project Manager: Min-Soon Yim

Reported:
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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	05/12/2024



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Reported:
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Notes and Definitions

- 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.
- 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.