KBL Environmental Ltd.

Soil Treatment Facility
Inuvik, Northwest Territories

KBL

2024 Annual Report

Submitted To: Gwich'in Land and Water Board
License Number: G22L1-005
Version Number: V.1.0

March 2025

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INTRODUCTION

1.1. Project Information

Corporate Office	Project Location
KBL Environmental Ltd. 17 Cameron Road, Box 1895 Yellowknife, NT X1A 2P4	Town of Inuvik Solid Waste Disposal Facility Lot 65, Group 1355, CLSR 611339 Inuvik, NT

KBL Environmental Ltd.'s (KBL) Inuvik Soil Treatment Facility (the Facility) received renewed Water Licence G22L1-005 on November 23, 2022. The Licence was approved for a term of five (5) years effective November 18, 2022, and expiring November 17, 2027.

1.2. Purpose

This document fulfills the annual reporting requirements under Part B (6) and Schedule 1 of Water Licence G22L1-005.

2.0 LICENCE SCHEDULE 1 – ANNUAL WATER LICENCE REPORT

2.1. 1. a) The generator, carrier, volume, and analytical results of soil, snow and water accepted at the Inuvik Soil Treatment Facility

In 2024, 66 cubic meters (132 tonnes) of soil were accepted to the facility. No water or snow were accepted at the facility in 2024. Analytical results for accepted soil are shown in Appendix A.

Table 2.1: Amount of soil accepted in 2023

Generator	Date	Carrier	Volume (tonnes)
Northwest Territories Power Corporation	September 2024	Northwind Industries	132

2.2. 1. b) The generator, carrier, volume, and analytical results of soil, snow and water refused at the Inuvik Soil Treatment Facility

No soil was refused for acceptance at the Inuvik STF in 2024.

2.3. 1. c) The volume, analytical results, carrier, and destination of treated soil removed at the Inuvik Soil Treatment Facility

No soil met removal and reuse requirements at the Inuvik STF in 2024.

2.4. 1. d) The monthly and annual quantities in cubic meters of all effluent discharged from the Water Retention Pond and Water Holding Tanks

No planned pump-off of effluent occurred in 2024.

2.5. 1. e) The water level and remaining capacity of each of the Water Holding Tanks and Water Retention Pond

The two water holding tanks in STF with the capacity of 60 m^3 were inspected in June of 2024 and deemed to be in disrepair to the point that they required replacing. Both tanks were replaced with tanks of equal capacity in September 2024 and were left empty at the end of the season. There was approximately 300 m^3 of water in the surface water retention pond during the last field visit in October 2024. There was approximately 1 m of freeboard remaining in the pond at the conclusion of field activities in 2024; both emergency pump-off tanks were empty.

2.6. 1. f) A description and volume or quantity of process additives used, with MSDS provided

In accordance with the approved Operations and Maintenance Plan, a surfactant (24, 20L pails of Iveysol) was used to treat the soil at the site and a coagulant (2 20L pail of KLARAID CDP131) was used to treat the water. Copies of the MSDS are included in Appendix B.

2.7. 1. g) Discharge location(s) and effluent quality test results (raw and summarized data) for each discharge event from the Water Retention Pond and Treated Water Tanks

There was no discharge event for 2024. Analytical for the samples taken from the pond to assess for discharge suitability are presented in Appendix C. Samples in the analytical corresponding to the effluent retention pond are SW24-001 in lab work order VA24C6155 and 24PR001 in lab work order VA24B2281.

2.8. 1. h) Tabular summaries of all data generated under the Surveillance Network Program (SNP) in accordance with Part 2, Item 3, and Annex A of this Licence

Tabular summaries are included in Appendix E. SNP0037-4 appears to have been installed too shallow to obtain meaningful up-gradient groundwater data. Monitoring wells SNP0037-04, SNP0037-5 and SNP 0037-6 are planned to be replaced in 2025.

2.9. 1. i) Details and results of the Environmental Monitoring Program, in accordance with Part E, Item 6, and Schedule 2 of this Licence

KBL performed groundwater monitoring on July 19, 2024. Monitoring well SNP0037-4 was frozen and SNP 0037-6 was missing and presumed destroyed due to slumping of the slope in which the well was installed. Sampling was completed on SNP0037-5 and SNP0037-7.

On October 9, 2024 fall groundwater monitoring was preformed. During this event SNP0037-4 was dry and SNP0037-5 was destroyed due to construction activity for fence construction by the Town of Inuvik Landfill. Groundwater samples were obtained from SNP0037-7.

The groundwater samples collected from all the wells were analyzed for the following chemical

parameters as per the Surveillance Network Program (SNP) where sufficient water allowed for the sampling of all parameters:

- ICP-MS Metal Scan (Total)
- Field Parameters
- Total Petroleum Hydrocarbons (F1, F2, F3, F4 CCME Fractions)
- Benzene, Toluene, Ethylbenzene, and Xylene (BTEX)
- Chemical Oxygen Demand (COD)
- Extractable Petroleum Hydrocarbons (TPH)
- Total Suspended Solids (TSS)
- Oil and Grease
- pH

Insufficient water was available in order to gather enough groundwater samples for analysis of the following parameters:

- Oil and Grease analysis
- Inorganic parameters (October only)
- Polycyclic aromatic hydrocarbons (PAHs) and Polychlorinated bisphenols (PCBs) (July only)

Field parameters are presented in Appendix D.

All results were compared to the Inuvik Soil Treatment Facility Environmental Monitoring Program Groundwater Action Levels. No exceedances of the Facility Groundwater Action Levels were reported.

2.10. 1. j) Laboratory reports for all samples collected for the Surveillance Network Program, attached as an appendix

Laboratory reports of SNP sampling are included in Appendix E.

2.11. 1. k) For parameters that exhibit on-going exceedances of compliance criteria, provide:

i. additional data analysis
ii. a comparison to monitoring data from previous years to detect trends or patterns, and
iii. a review of field conditions in order to explain results

No on-going exceedances of compliance criteria was reported.

2.12. 1. l) A summary of Construction activities conducted in accordance with Part F of this Licence

No construction activities took place during 2024.

2.13. 1. m) A summary of major maintenance activities carried out during previous calendar year

During the July 2024 site visit it was noted that the emergency pump-off tanks and the pond liner were in disrepair. The pond was pumped down and the water moved off-site to temporary holding tanks to allow for enough freeboard to meet regulatory requirements outlined in the licence. As the pond was pumped down areas of the liner that were previously under water were exposed. The newly exposed areas of the

liner had been damaged from wildlife activity as well as the ongoing freeze/thaw cycle over the last two seasons with a near-full pond. The pump-off tanks had rusted through in critical areas and needed replacement.

Between October 1 and 10th 2024, KBL replaced the pond liner and pump-off tanks. The tanks were tested for integrity by filling them with retention pond water and leaving them for 24 hours prior to draining them back into the retention pond. No leaks were noted within the 24-hour test. The liner was installed by the manufacturer/supplier (Western Tank and Liner).

2.14. 1. n) A copy of facility inspection reports referred to in Part F, condition 7 of this Licence

Internal facility inspections were completed in April, May, June, July, August, and October of 2024; reports are included in Appendix F. No activity occurred at the facility in the months that were not reported as no activity took place in these months.

2.15. 1. o) A list and description of all Unauthorized Discharges that occurred during the previous calendar year, including the date, MWT spill number, volume, location, and summary of the circumstances and follow-up actions taken, and the status (i.e. open or closed), in accordance with the reporting requirements referred to in Part H of this Licence

Two unauthorized releases of pond effluent occurred in 2024. The first occurred On May 27, 2024 when an unknown volume of water overflowed from the effluent pond due to snow melt and the pond being left with insufficient freeboard to handle the melting snow. The estimated volume released was less than $100m^3$. Spill number 2024188 was assigned to the release when the GNWT-ECC was contacted. The location of the release was off the southwest corner of the surface water retention pond. The following is a list of actions taken to address the release:

- Immediate notification to the GNWT Spill response line and KBL corporate.
- A tank truck was contracted from Northwind Industries to pump off and haul water from the pond to off site temporary storage tanks located on the Northwind Industries property in Inuvik NT.
- Obtained water samples from the wetland immediately downgradient of the release area and from the source pond water.
- Soil samples were obtained from the release area as well. All soil and water samples were submitted to ALS laboratories in Burnaby BC on RUSH turn around.

Results from the analysis of the water indicated exceedances of the effluent discharge guidelines of selenium, manganese, and iron. Manganese and Iron however were within the background conditions of ponds sampled in the immediate area not related to the release area. The minor exceedance in selenium is not likely to have an adverse effect in to the environment due to the filtration of the water released through the wetland and the dilution factor of such a minor release into the surrounding ecosystem. No exceedances greater than background were noted for any of the parameters analyzed for in the soil sample results. A full release report was submitted under separate cover.

The second unauthorized release of effluent occurred due to wildlife damaging temporary holding tanks.

Being used to draw down the pond for repairs. KBL estimated that less than 40m^3 of water was released. The GNWT-ECC spill line was notified and the spill number 2024322 was assigned to the release. The following actions were taken immediately when the release was found:

- Immediate notification to the GNWT-ECC spill reporting line.
- Pumped the remaining water from the temporary tank back into the retention pond which had enough freeboard below the damaged areas to accept the remaining water.
- Assessed the size of the release area and took representative soil samples for analysis of contaminants of concern. Samples were submitted to ALS laboratories of Burnaby BC for RUSH turn around. No water samples were taken from the release area as no standing water was present.
- Reviewed laboratory results of soil samples and determined that no contaminants of concern greater than the background conditions were present.

No adverse environmental effects appear to have occurred from the two releases.

KBL recommends treating all remaining effluent on site to below discharge guidelines and discharging the water off site with approval from the inspector. This will negate the potential for precipitation and runoff from the soil cell from overflowing the retention pond.

2.16. 1. p) An outline of any spill training and communications exercises carried out during the previous calendar year

There were no on-site spill training or communications exercises carried out in 2024.

2.17. 1. q) A summary of any closure and reclamation work completed during the year and an outline of any work anticipated for the next year

No closure or reclamation work was completed during 2023 and none is anticipated in 2025.

2.18. 1. r) A summary of any studies requested by the Board that relate to Waste disposal or Reclamation, and a brief description of any future studies planned

No studies were requested by the Board in 2024 relating to Waste disposal or Reclamation. There are no future studies planned at this time.

2.19. 1. s) A summary of actions taken to address concerns, nonconformances, or deficiencies in any reports filed by an Inspector

No report filed by an Inspector in 2024.

2.20. 1. t) A summary of any updates or revisions to the Spill Contingency Plan, Waste Management Plan, Operations & Maintenance Plan, Environmental Monitoring Program, and Closure and Reclamation Plan

No updates or revisions were completed in 2024.

2.21. 1. u) A summary of any updates or revisions to the Engagement Plan, including records of any engagement carried out during the previous year

No updates were completed in 2024.

2.22. 1. v) Any other details on waste disposal, operating procedures, construction, maintenance work, or other topics, requested by the Board on or before November 1 of the year being reported.

No additional information or details were requested by the Board on or before November 1st, 2024.

APPENDIX A

Appendix A: Accepted Soil and Water Analytical

CERTIFICATE OF ANALYSIS

Work Order	: **YL2401176**	Page	: 1 of 4
Client	: **Northwest Territories Power Corporation**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Graeme Reid	Account Manager	: Oliver Gregg
Address	: PO Box 2250 Yellowkife NT Canada X1A 2P7	Address	: 314 Old Airport Road, Unit 116 Yellowknife NT Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: ----	Date Samples Received	: 14-Aug-2024 09:06
PO	: ----	Date Analysis Commenced	: 18-Aug-2024
C-O-C number	: 17-824800	Issue Date	: 21-Aug-2024 17:44
Sampler	: ----		
Site	: Jackfish NTPC		
Quote number	: YL23-NTPC100-001		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Cynthia Bauer	Organic Supervisor	Organics, Calgary, Alberta
Rosalie Van Deelen	Laboratory Assistant	Organics, Calgary, Alberta
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta
Stephanie Korol	Laboratory Assistant	Organics, Calgary, Alberta

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
mg/kg	milligrams per kilogram

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
SMI	*Surrogate recovery could not be measured due to sample matrix interference.*

Analytical Results

Sub-Matrix: **Soil/Solid**
(Matrix: **Soil/Solid**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Block 1	Block 2	Block 3	Block 4	Block 5
					Client sampling date / time	10-Aug-2024 20:28	10-Aug-2024 20:33	10-Aug-2024 20:37	10-Aug-2024 20:41	10-Aug-2024 20:46
						YL2401176-001	YL2401176-002	YL2401176-003	YL2401176-004	YL2401176-005
						Result	Result	Result	Result	Result
Physical Tests										
Moisture	----	E144/CG	0.25	%		12.8	24.0	21.5	18.6	13.4
Volatile Organic Compounds [BTEXS+MTBE]										
Benzene	71-43-2	E611A/CG	0.0050	mg/kg		0.0201	0.0208	0.0481	0.0084	0.0199
Ethylbenzene	100-41-4	E611A/CG	0.015	mg/kg		0.030	<0.015	0.067	0.020	<0.015
Toluene	108-88-3	E611A/CG	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Xylene, m+p-	179601-23-1	E611A/CG	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Xylene, o-	95-47-6	E611A/CG	0.050	mg/kg		<0.050	<0.050	<0.050	<0.050	<0.050
Xylenes, total	1330-20-7	E611A/CG	0.075	mg/kg		<0.075	<0.075	<0.075	<0.075	<0.075
BTEX, total	----	E611A/CG	0.10	mg/kg		<0.10	<0.10	0.12	<0.10	<0.10
Hydrocarbons										
F1 (C6-C10)	----	E581.F1/CG	5.0	mg/kg		<5.0	<5.0	14.6	<5.0	6.6
F1-BTEX	----	EC580/CG	5.0	mg/kg		<5.0	<5.0	14.5	<5.0	6.6
F4G-sg	----	E601.F4G/CG	500	mg/kg		14500	13200	3050	3640	10300
F2 (C10-C16)	----	E601.SG/CG	25	mg/kg		483	602	191	134	486
F3 (C16-C34)	----	E601.SG/CG	50	mg/kg		8430	8180	1960	2040	6540
F4 (C34-C50)	----	E601.SG/CG	50	mg/kg		3260	3040	720	884	2400
Chromatogram to baseline at nC50	n/a	E601.SG/CG	-	-		NO	NO	NO	NO	NO
Hydrocarbons, total (C6-C50)	n/a	EC581/CG	80	mg/kg		12200	11800	2880	3060	9430
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG/CG	1.0	%		89.3	92.4	91.9	94.0	96.6
Dichlorotoluene, 3,4-	95-75-0	E581.F1/CG	1.0	%		75.2	72.4	Not Determined [SMI]	75.4	85.8
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/CG	0.10	%		70.6	80.6	118	95.9	117
Difluorobenzene, 1,4-	540-36-3	E611A/CG	0.10	%		82.6	79.6	75.1	85.0	83.4

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

Analytical Results

Sub-Matrix: Soil/Solid (Matrix: Soil/Solid)					Client sample ID	Block 6	----	----	----	----
					Client sampling date / time	10-Aug-2024 20:51	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2401176-006	--------	--------	--------	--------
						Result	----	----	----	----
Physical Tests										
Moisture	----	E144/CG	0.25	%		17.0	----	----	----	----
Volatile Organic Compounds [BTEXS+MTBE]										
Benzene	71-43-2	E611A/CG	0.0050	mg/kg		0.0130	----	----	----	----
Ethylbenzene	100-41-4	E611A/CG	0.015	mg/kg		0.017	----	----	----	----
Toluene	108-88-3	E611A/CG	0.050	mg/kg		<0.050	----	----	----	----
Xylene, m+p-	179601-23-1	E611A/CG	0.050	mg/kg		<0.050	----	----	----	----
Xylene, o-	95-47-6	E611A/CG	0.050	mg/kg		<0.050	----	----	----	----
Xylenes, total	1330-20-7	E611A/CG	0.075	mg/kg		<0.075	----	----	----	----
BTEX, total	----	E611A/CG	0.10	mg/kg		<0.10	----	----	----	----
Hydrocarbons										
F1 (C6-C10)	----	E581.F1/CG	5.0	mg/kg		<5.0	----	----	----	----
F1-BTEX	----	EC580/CG	5.0	mg/kg		<5.0	----	----	----	----
F4G-sg	----	E601.F4G/CG	500	mg/kg		4730	----	----	----	----
F2 (C10-C16)	----	E601.SG/CG	25	mg/kg		246	----	----	----	----
F3 (C16-C34)	----	E601.SG/CG	50	mg/kg		2800	----	----	----	----
F4 (C34-C50)	----	E601.SG/CG	50	mg/kg		892	----	----	----	----
Chromatogram to baseline at nC50	n/a	E601.SG/CG	-	-		NO	----	----	----	----
Hydrocarbons, total (C6-C50)	n/a	EC581/CG	80	mg/kg		3940	----	----	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601.SG/CG	1.0	%		93.8	----	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.F1/CG	1.0	%		83.8	----	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/CG	0.10	%		89.8	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611A/CG	0.10	%		76.6	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **YL2401176**	Page	: 1 of 10
Client	: **Northwest Territories Power Corporation**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Graeme Reid	Account Manager	: Oliver Gregg
Address	: PO Box 2250 Yellowkife NT Canada X1A 2P7	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: ----	Date Samples Received	: 14-Aug-2024 09:06
PO	: ----	Issue Date	: 21-Aug-2024 17:45
C-O-C number	: 17-824800		
Sampler	: ----		
Site	: Jackfish NTPC		
Quote number	: YL23-NTPC100-001		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Duplicate outliers occur - please see following pages for full details.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Outliers : Quality Control Samples

Duplicates, Method Blanks, Laboratory Control Samples and Matrix Spikes

Matrix: **Soil/Solid**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Method	Result	Limits	Comment
Duplicate (DUP) RPDs								
Hydrocarbons	YL2401176-001	Block 1	F2 (C10-C16)	----	E601.SG	72.1 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Hydrocarbons	YL2401176-001	Block 1	F3 (C16-C34)	----	E601.SG	58.2 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.
Hydrocarbons	YL2401176-001	Block 1	F4 (C34-C50)	----	E601.SG	59.4 % DUP-H	40%	Duplicate RPD does not meet the DQO for this test.

Result Qualifiers

Qualifier	*Description*
DUP-H	*Duplicate results outside ALS DQO, due to sample heterogeneity.*

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial Block 1	E581.F1	10-Aug-2024	18-Aug-2024	40 days	8 days	✓	19-Aug-2024	40 days	9 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial Block 2	E581.F1	10-Aug-2024	18-Aug-2024	40 days	8 days	✓	19-Aug-2024	40 days	9 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial Block 3	E581.F1	10-Aug-2024	18-Aug-2024	40 days	8 days	✓	19-Aug-2024	40 days	9 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial Block 4	E581.F1	10-Aug-2024	18-Aug-2024	40 days	8 days	✓	19-Aug-2024	40 days	9 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial Block 5	E581.F1	10-Aug-2024	18-Aug-2024	40 days	8 days	✓	19-Aug-2024	40 days	9 days	✓
Hydrocarbons : CCME PHC - F1 by Headspace GC-FID										
Glass soil methanol vial Block 6	E581.F1	10-Aug-2024	18-Aug-2024	40 days	8 days	✓	19-Aug-2024	40 days	9 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Glass soil jar/Teflon lined cap Block 1	E601.SG	10-Aug-2024	18-Aug-2024	14 days	8 days	✓	20-Aug-2024	40 days	2 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Glass soil jar/Teflon lined cap										
Block 2	E601.SG	10-Aug-2024	18-Aug-2024	14 days	8 days	✓	20-Aug-2024	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Glass soil jar/Teflon lined cap										
Block 3	E601.SG	10-Aug-2024	18-Aug-2024	14 days	8 days	✓	20-Aug-2024	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Glass soil jar/Teflon lined cap										
Block 4	E601.SG	10-Aug-2024	18-Aug-2024	14 days	8 days	✓	20-Aug-2024	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Glass soil jar/Teflon lined cap										
Block 5	E601.SG	10-Aug-2024	18-Aug-2024	14 days	8 days	✓	20-Aug-2024	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Glass soil jar/Teflon lined cap										
Block 6	E601.SG	10-Aug-2024	18-Aug-2024	14 days	8 days	✓	20-Aug-2024	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F4G by Gravimetry										
Glass soil jar/Teflon lined cap										
Block 1	E601.F4G	10-Aug-2024	21-Aug-2024	14 days	11 days	✓	21-Aug-2024	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F4G by Gravimetry										
Glass soil jar/Teflon lined cap										
Block 2	E601.F4G	10-Aug-2024	21-Aug-2024	14 days	11 days	✓	21-Aug-2024	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F4G by Gravimetry										
Glass soil jar/Teflon lined cap										
Block 3	E601.F4G	10-Aug-2024	21-Aug-2024	14 days	11 days	✓	21-Aug-2024	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F4G by Gravimetry										
Glass soil jar/Teflon lined cap										
Block 4	E601.F4G	10-Aug-2024	21-Aug-2024	14 days	11 days	✓	21-Aug-2024	40 days	0 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : CCME PHCs - F4G by Gravimetry										
Glass soil jar/Teflon lined cap										
Block 5	E601.F4G	10-Aug-2024	21-Aug-2024	14 days	11 days	✓	21-Aug-2024	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F4G by Gravimetry										
Glass soil jar/Teflon lined cap										
Block 6	E601.F4G	10-Aug-2024	21-Aug-2024	14 days	11 days	✓	21-Aug-2024	40 days	0 days	✓
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Block 1	E144	10-Aug-2024	----	----	----		18-Aug-2024	----	8 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Block 2	E144	10-Aug-2024	----	----	----		18-Aug-2024	----	8 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Block 3	E144	10-Aug-2024	----	----	----		18-Aug-2024	----	8 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Block 4	E144	10-Aug-2024	----	----	----		18-Aug-2024	----	8 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Block 5	E144	10-Aug-2024	----	----	----		18-Aug-2024	----	8 days	
Physical Tests : Moisture Content by Gravimetry										
Glass soil jar/Teflon lined cap										
Block 6	E144	10-Aug-2024	----	----	----		18-Aug-2024	----	8 days	
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial										
Block 1	E611A	10-Aug-2024	18-Aug-2024	40 days	8 days	✓	19-Aug-2024	40 days	9 days	✓

Matrix: **Soil/Solid**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times*		*Eval*	*Analysis Date*	*Holding Times*		*Eval*
				Rec	*Actual*			*Rec*	*Actual*	
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial Block 2	E611A	10-Aug-2024	18-Aug-2024	40 days	8 days	✓	19-Aug-2024	40 days	9 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial Block 3	E611A	10-Aug-2024	18-Aug-2024	40 days	8 days	✓	19-Aug-2024	40 days	9 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial Block 4	E611A	10-Aug-2024	18-Aug-2024	40 days	8 days	✓	19-Aug-2024	40 days	9 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial Block 5	E611A	10-Aug-2024	18-Aug-2024	40 days	8 days	✓	19-Aug-2024	40 days	9 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass soil methanol vial Block 6	E611A	10-Aug-2024	18-Aug-2024	40 days	8 days	✓	19-Aug-2024	40 days	9 days	✓

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Soil/Solid**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
BTEX by Headspace GC-MS	E611A	1602629	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1602631	1	6	16.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601.SG	1602857	1	6	16.6	5.0	✓
CCME PHCs - F4G by Gravimetry	E601.F4G	1607930	1	13	7.6	5.0	✓
Moisture Content by Gravimetry	E144	1602858	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	1602629	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1602631	1	6	16.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601.SG	1602857	1	6	16.6	5.0	✓
CCME PHCs - F4G by Gravimetry	E601.F4G	1607930	1	13	7.6	5.0	✓
Moisture Content by Gravimetry	E144	1602858	1	19	5.2	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	1602629	1	20	5.0	5.0	✓
CCME PHC - F1 by Headspace GC-FID	E581.F1	1602631	1	6	16.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601.SG	1602857	1	6	16.6	5.0	✓
CCME PHCs - F4G by Gravimetry	E601.F4G	1607930	1	13	7.6	5.0	✓
Moisture Content by Gravimetry	E144	1602858	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1602629	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601.SG	1602857	1	6	16.6	5.0	✓
CCME PHCs - F4G by Gravimetry	E601.F4G	1607930	1	13	7.6	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Moisture Content by Gravimetry	E144 ALS Environmental - Calgary	Soil/Solid	CCME PHC in Soil - Tier 1	Moisture is measured gravimetrically by drying the sample at 105°C. Moisture content is calculated as the weight loss (due to water) divided by the wet weight of the sample, expressed as a percentage.
CCME PHC - F1 by Headspace GC-FID	E581.F1 ALS Environmental - Calgary	Soil/Solid	CCME PHC in Soil - Tier 1	CCME Fraction 1 (F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Test results are expressed on a dry weight basis. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
CCME PHCs - F4G by Gravimetry	E601.F4G ALS Environmental - Calgary	Soil/Solid	CCME PHC in Soil - Tier 1	A portion of the silica gel treated sample extract is filtered and dried at 105°C and the mass of the residual gravimetric heavy hydrocarbons (F4G) is determined gravimetrically. Where both F4 and F4G are reported, the greater of both results must be used for comparison to CWS PHC F4 guidelines.
CCME PHCs - F2-F4 by GC-FID	E601.SG ALS Environmental - Calgary	Soil/Solid	CCME PHC in Soil - Tier 1	Sample extracts are subjected to in-situ silica gel treatment prior to analysis by GC-FID for CCME hydrocarbon fractions (F2-F4). Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Test results are expressed on a dry weight basis. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
BTEX by Headspace GC-MS	E611A ALS Environmental - Calgary	Soil/Solid	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
F1-BTEX	EC580 ALS Environmental - Calgary	Soil/Solid	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
Sum F1 to F4 (C6-C50)	EC581 ALS Environmental - Calgary	Soil/Solid	CCME PHC in Soil - Tier 1	Hydrocarbons, total (C6-C50) is the sum of CCME Fractions F1(C6-C10), F2(C10-C16), F3(C16-C34), and F4(C34-C50). F4G-sg is not used within this calculation due to overlap with other fractions.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Methanol Extraction for Headspace Analysis	EP581 ALS Environmental - Calgary	Soil/Solid	EPA 5035A (mod)	VOCs in samples are extracted with methanol. Extracts are then prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PHCs and PAHs Hexane-Acetone Tumbler Extraction	EP601 ALS Environmental - Calgary	Soil/Solid	CCME PHC in Soil - Tier 1 (mod)	Samples are subsampled and Petroleum Hydrocarbons (PHC) and PAHs are extracted with 1:1 hexane:acetone using a rotary extractor.

QUALITY CONTROL REPORT

Work Order	: **YL2401176**	Page	: 1 of 6
Client	: Northwest Territories Power Corporation	Laboratory	: ALS Environmental - Yellowknife
Contact	: Graeme Reid	Account Manager	: Oliver Gregg
Address	: PO Box 2250 Yellowkife NT Canada X1A 2P7	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: ----	Date Samples Received	: 14-Aug-2024 09:06
PO	: ----	Date Analysis Commenced	: 18-Aug-2024
C-O-C number	: 17-824800	Issue Date	: 21-Aug-2024 17:46
Sampler	: ----		
Site	: Jackfish NTPC		
Quote number	: YL23-NTPC100-001		
No. of samples received	: 6		
No. of samples analysed	: 6		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Cynthia Bauer	Organic Supervisor	Calgary Organics, Calgary, Alberta
Rosalie Van Deelen	Laboratory Assistant	Calgary Organics, Calgary, Alberta
Sorina Motea	Laboratory Analyst	Calgary Organics, Calgary, Alberta
Stephanie Korol	Laboratory Assistant	Calgary Organics, Calgary, Alberta

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Soil/Solid**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1602858)											
GP2401535-024	Anonymous	Moisture	----	E144	0.25	%	14.5	14.2	2.63%	20%	----
Volatile Organic Compounds (QC Lot: 1602629)											
FJ2402370-001	Anonymous	Benzene	71-43-2	E611A	0.0050	mg/kg	<0.0050	<0.0050	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	<0.015	0	Diff <2x LOR	----
		Toluene	108-88-3	E611A	0.050	mg/kg	<0.050	<0.050	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611A	0.030	mg/kg	<0.030	<0.030	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1602631)											
YL2401176-001	Block 1	F1 (C6-C10)	----	E581.F1	5.0	mg/kg	<5.0	<5.0	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1602857)											
YL2401176-001	Block 1	F2 (C10-C16)	----	E601.SG	25	mg/kg	483	1030	72.1%	40%	DUP-H
		F3 (C16-C34)	----	E601.SG	50	mg/kg	8430	15400	58.2%	40%	DUP-H
		F4 (C34-C50)	----	E601.SG	50	mg/kg	3260	6020	59.4%	40%	DUP-H
Hydrocarbons (QC Lot: 1607930)											
YL2401176-001	Block 1	F4G-sg	----	E601.F4G	500	mg/kg	14500	19100	27.3%	40%	----

Qualifiers

Qualifier	*Description*
DUP-H	*Duplicate results outside ALS DQO, due to sample heterogeneity.*

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1602858)						
Moisture	----	E144	0.25	%	<0.25	----
Volatile Organic Compounds (QCLot: 1602629)						
Benzene	71-43-2	E611A	0.005	mg/kg	<0.0050	----
Ethylbenzene	100-41-4	E611A	0.015	mg/kg	<0.015	----
Toluene	108-88-3	E611A	0.05	mg/kg	<0.050	----
Xylene, m+p-	179601-23-1	E611A	0.03	mg/kg	<0.030	----
Xylene, o-	95-47-6	E611A	0.03	mg/kg	<0.030	----
Hydrocarbons (QCLot: 1602631)						
F1 (C6-C10)	----	E581.F1	5	mg/kg	<5.0	----
Hydrocarbons (QCLot: 1602857)						
F2 (C10-C16)	----	E601.SG	25	mg/kg	<25	----
F3 (C16-C34)	----	E601.SG	50	mg/kg	<50	----
F4 (C34-C50)	----	E601.SG	50	mg/kg	<50	----
Hydrocarbons (QCLot: 1607930)						
F4G-sg	----	E601.F4G	500	mg/kg	<500	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Soil/Solid**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1602858)									
Moisture	----	E144	0.25	%	50 %	91.7	90.0	110	----
Volatile Organic Compounds (QCLot: 1602629)									
Benzene	71-43-2	E611A	0.005	mg/kg	2.5 mg/kg	91.7	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.015	mg/kg	2.5 mg/kg	85.2	70.0	130	----
Toluene	108-88-3	E611A	0.05	mg/kg	2.5 mg/kg	91.4	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.03	mg/kg	5 mg/kg	71.8	70.0	130	----
Xylene, o-	95-47-6	E611A	0.03	mg/kg	2.5 mg/kg	86.0	70.0	130	----
Hydrocarbons (QCLot: 1602631)									
F1 (C6-C10)	----	E581.F1	5	mg/kg	75.3 mg/kg	100	70.0	130	----
Hydrocarbons (QCLot: 1602857)									
F2 (C10-C16)	----	E601.SG	25	mg/kg	641 mg/kg	81.5	70.0	130	----
F3 (C16-C34)	----	E601.SG	50	mg/kg	1390 mg/kg	85.4	70.0	130	----
F4 (C34-C50)	----	E601.SG	50	mg/kg	768 mg/kg	82.1	70.0	130	----
Hydrocarbons (QCLot: 1607930)									
F4G-sg	----	E601.F4G	500	mg/kg	1110 mg/kg	80.0	70.0	130	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Soil/Solid**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1602629)										
FJ2402370-001	Anonymous	Benzene	71-43-2	E611A	2.60 mg/kg	2.45 mg/kg	106	60.0	140	----
		Ethylbenzene	100-41-4	E611A	2.38 mg/kg	2.45 mg/kg	96.9	60.0	140	----
		Toluene	108-88-3	E611A	2.49 mg/kg	2.45 mg/kg	102	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	4.61 mg/kg	4.9 mg/kg	94.0	60.0	140	----
		Xylene, o-	95-47-6	E611A	2.59 mg/kg	2.45 mg/kg	106	60.0	140	----
Hydrocarbons (QCLot: 1602857)										
YL2401176-001	Block 1	F2 (C10-C16)	----	E601.SG	361 mg/kg	533 mg/kg	67.7	60.0	140	----
		F3 (C16-C34)	----	E601.SG	ND mg/kg	----	ND	60.0	140	----
		F4 (C34-C50)	----	E601.SG	ND mg/kg	----	ND	60.0	140	----
Hydrocarbons (QCLot: 1607930)										
YL2401176-001	Block 1	F4G-sg	----	E601.F4G	ND mg/kg	----	ND	60.0	140	----

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 - 824800

Page of

Report To	Contact and company name below will appear on the final report	Report Format / Distribution		Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)	
Company:	Northwest Territoris Power Corp.	Select Report Format:	☑ PDF ☐ EXCEL ☑ EDD (DIGITAL)	Regular [R]	☑ Standard TAT if received by 3 pm - business days - no surcharges apply
Contact:	Graeme Reid GReid@ntpc.com	Quality Control (QC) Report with Report	☑ YES ☐ NO	PRIORITY (Business Days) 4 day [P4-20%]	☐ EMERGENCY 1 Business day [E - 100%] ☐
Phone:		☐ Compare Results to Criteria on Report - provide details below if box checked		3 day [P3-25%]	☐ Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)] ☐
	Company address below will appear on the final report	Select Distribution:	☑ EMAIL ☐ MAIL ☐ FAX	2 day [P2-50%]	☐
Street:	4 Capital Drive	Email 1 or Fax	GReid@ntpc.com	Date and Time Required for all E&P TATs:	dd-mmm-yy hh:mm
City/Province:	Hay River NT	Email 2	PSmith@ntpc.com	For tests that can not be performed according to the service level selected, you will be contacted.	
Postal Code:	X0E 1G2	Email 3	CTurnbull@ntpc.com		

Invoice To		Invoice Distribution	
	Same as Report To ☑ YES ☐ NO	Select Invoice Distribution:	☑ EMAIL ☐ MAIL ☐ FAX
	Copy of Invoice with Report ☑ YES ☐ NO	Email 1 or Fax	GReid@ntpc.com
Company:	NTPC	Email 2	PSmith@ntpc.com
Contact:	GReid@ntpc.com		

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:		Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Organics	BTEX (VOC)	F1/VH/VPH	C1 - Aromatics	VFAs	1,4 - Dioxane	C1 - C5 Gases	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
						P	P	P	P	P	P	P		
	Block 1	10-Aug-24	20:28	Soil		X	X	X	X	X	X	X		
	Block 2		20:33			X	X	X	X	X	X	X		
	Block 3		20:37			X	X	X	X	X	X	X		
	Block 4		20:41			X	X	X	X	X	X	X		
	Block 5		20:46			X	X	X	X	X	X	X		
	Block 6		20:51			X	X	X	X	X	X	X		

Environmental Division
Yellowknife
Work Order Reference
YL2401176

Telephone : +1 867 873 5593

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? ☐ YES ☐ NO	
Are samples for human consumption/ use? ☐ YES ☐ NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	☐	SIF Observations	Yes ☐	No	☐
Ice Packs	☐ Ice Cubes ☐	Custody seal intact	Yes ☐	No	☐
Cooling Initiated	☐				

INITIAL COOLER TEMPERATURES °C			FINAL COOLER TEMPERATURES °C		
6.6					

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by: P.Smith	Date: Aug 14/2024	Time: 9:00	Received by:	Date: AUG 14/24	Time: 9:06	Received by:	Date:	Time:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

APPENDIX B

Appendix B: SDS for Amendments

SAFETY DATA SHEET

SDS # 190708-04

Ivey-sol® Surfactant Remediation Technology

Ivey-sol® Formulations: 103, 106, 106 and 108

1. Identification

Product identifier:	Ivey-sol® 103, 106, 108
Other means of identification:	Not applicable
Recommended use:	Remediation surfactant
Restriction on use:	Not applicable
Manufacturer/Supplier Address:	Ivey International Inc. Unit 7, 19122-27 Avenue, Surrey, BC Canada V3Z5T1
Global Suppliers Locations:	USA, Europe, S.E. Asia, South America
Emergency telephone number:	Tel: +1 (604) 538-1168 (Not available 24 hours) Toll Free: +1 800 246-2744
Emergency/Support Email:	info@iveyinternational.com

2. Hazard Identification

WHMIS 2015/OSHA Hazcom 2012/GHS Classification:

- Serious Eye Damage/Irritation Category 2
- Skin Corrosion/Irritation Category 3

Label elements:

Signal word: Warning

Pictograms: Hazard statements:

H316 – May causes mild skin irritation.
H319 – may causes eye irritation.

Precautionary Statements:
P264 - Wash contacted areas thoroughly after handling.
P280 - Wear eye protection.
P305/P351/P338 - If In Eyes: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do so. Continue rinsing.
P332/P313 - If skin irritation occurs: Get medical advice/attention.
P337/P313 - If eye irritation persists: Get medical advice/attention

3. Composition / Information on Ingredients

Chemical Name	CAS No.	Concentration (v/v)	Other Identifiers
Biodegradable Non-ionic Surfactant 1	Proprietary	1-10%	*Not applicable*
Biodegradable Non-ionic Surfactant 2	Proprietary	1-10%	*Not applicable*
Biodegradable Non-ionic Surfactant 3	Proprietary	1-10%	*Not applicable*
Biodegradable Non-ionic Surfactant 4	Proprietary	1-10%	*Not applicable*
Biodegradable Non-ionic Surfactant 5	Proprietary	1-10%	*Not applicable*
Biodegradable Non-ionic Surfactant 6	Proprietary	1-10%	*Not applicable*
Preservative	4080-31-3	<5%	Food Grade (Optional)
Scent	8016	<1%	*Optional*
Water	7732-18-5	<90%	*Not applicable*

Regulatory Note: *Chemical names, CAS numbers and actual concentrations have been withheld as part of a confidential business information claim with HMIRA Registry #11724 filed on 2017-07-17.*

4. First-aid Measures

Inhalation: No adverse effects anticipated by this route when handled according to section 7 of document. However, if necessary, move person to fresh air.

Skin contact: Generally will not irritate skin. Wash contact areas with soap and water. If irritation persist, seek medical attention.

Eye contact: May cause eye irritation. Flush eyes with plenty of water for at least 15 minutes, remove contact lenses if present and easy to do so. If irritation persists, seek medical attention.

Ingestion: Do NOT induce vomiting. Never give anything by mouth to an unconscious person. Rinse mouth with water. If necessary, seek medical attention.

Most Important Symptoms and Effects, Acute and Delayed

Acute Symptoms:

Eye Contact: May be irritating to the eyes. Occasional contact through splashing is not expected to affect the eyes. If irritation occurs, effect will be transient.

Chronic Symptoms: Not Applicable

Immediate Medical Attention and Special Treatment: Not Applicable

5. Fire-Fighting Measures

Suitable extinguishing media:	Not flammable. Use extinguishing media for surrounding fire.
Unsuitable extinguishing media:	Not applicable
Specific hazards arising from the hazardous product:	Not available
Special protective equipment for fire-fighters:	Not available

6. Accidental release measures

Personal Precautions, Protective Equipment:
Observe good industrial hygiene practices. Use personal protective equipment as recommended in Section 8. Avoid breathing vapors, mist or gas.
Ensure adequate ventilation.

Emergency Procedures:
Eliminate and/or contain source with inert material (sand, earth, absorbent pads, etc.). Wear basic eye and skin protection. Floor may be slightly slippery; so use care to avoid falling. Avoid discharge to natural waters, and/or dilute with water. Transfer liquids to suitable containers for recovery, re-use or disposal. Contact Ivey for technical assistance if required.

7. Handling and Storage

Precautions for Safe Handling:
Practice good housekeeping. Avoid breathing excessive vapors. Ensure adequate ventilation. Avoid contact with skin and eyes. Wear protective gloves. Wash thoroughly after handling.

Conditions for Safe Storage:
Keep closed or sealed when not in use. Do not allow to freeze, keep >0°C.

8. Exposure Controls / Personal Protection

Control parameters:	Not available
Appropriate Engineering Controls:	General mechanical room ventilation is expected to be satisfactory.
Individual Protections Measures:	Eye/face protection: Mono goggles or similar.
Skin protection:	Latex gloves, or similar, would be sufficient. Normal work clothes.
Respiratory Protection:	None expected to be needed. However, if an engineered / industrial application where vapors and/or misting may occur, wear MSHA/NIOSH approved half mask air purifying respirator

9. Physical and Chemical Properties

Appearance:	Liquid, cloudy
Odor:	Mild
Odor threshold:	Not available
pH:	7 (+/- 0.5) (1% solution)
Melting Point:	~0°C
Freezing point:	~0°C
Boiling Point:	Not available
Flash Point:	Not applicable
Evaporation Rate:	<0.01
Flammability:	Not applicable
Lower flammable/ Explosive limit:	Not applicable

Upper flammable/ Explosive Limit:	Not applicable
Vapour Pressure:	<0.01 mm Hg
Vapour Density:	>1
Relative Density:	0.99-1.04
Solubility:	100% (Completely miscible in water)
Partition Coefficient:	Not available (n-octanol / water)
Auto-Ignition Temperature:	Not applicable
Decomposition Temperature:	Not available
Viscosity:	Not available

10. Stability and Reactivity

Reactivity:	Not reactive.
Chemical Stability:	Stable.
Possibility of Hazardous Reactions:	Not applicable
Conditions to Avoid:	Prolonged excessive heat may cause product decomposition. Freezing should also be avoided as it may cause product decomposition. In some cases freezing may cause irreversible changes.
Incompatible Materials:	Normally un-reactive; however avoid strong bases at high temperatures, strong acids, strong oxidizing agents, and materials with reactive hydroxyl compounds. These compounds would damage the mixture and reduce its effectiveness during application.
Hazardous Decomposition Products:	Not applicable

11. Toxicological Information

Likely Routes of Exposure

Inhalation:	No
Skin contact:	No
Eye contact:	Yes
Ingestion:	No

Acute Toxicity:

LD50 - Oral (Rat): =	>43.000mg/kg (rat) mg/kg
LD50 - Dermal (Rabbit):	>58.000mg/kg (rabbit) mg/kg
Inhalation:	Not available

Skin corrosion/irritation:	Mild irritation
Serious eye damage/irritation:	Eye irritation
Respiratory or skin sensitization:	No
Germ cell mutagenicity:	No
Carcinogenicity:	None known or expected
Reproductive toxicity:	No

12. Ecological Information

Toxicity: Low potential to affect aquatic organisms when used in accordance with Ivey International Inc. In-situ and Ex-situ Remediation Application Guidelines.

Acute toxicity	Time	Species	Method	Evaluation	Remarks
LC/50 = 0.07695%	96h	Rainbow trout	OECD 203	Not applicable	Not applicable
LC/50 = 0.11%	48h	Daphnia magna	OECD 202	Not applicable	Not applicable
EC/50 = Not applicable	72h	Algae	OECD 201	Not applicable	Not applicable

Persistence and degradability:	>90% biodegradable in < 28 days.*
Bio-accumulative potential:	Not available
Mobility in soil:	Completely miscible with water.
Other adverse effects:	Not available

Based on actual testing or on data for similar material(s). Degradation Biodegradation reached in Modified OECD Screening Test (OECD Test No.301 E) after 28 days: 90 %. Biodegradation reached in CO2 Evolution Test (Modified Sturm Test, (OECD Test No. 301 B) after 28 days: 70 %.

13. Disposal Considerations

Product/Packaging:
For aqueous mixture solutions; aerobic biological wastewater treatment systems are effective in treating said mixtures. Ivey-sol does not have any known negative affect on coagulant or flocculent water treatment processes.

14. Transport Information

UN Number:	Not applicable
Proper Shipping Name:	Not applicable
Technical Name:	Not applicable
Transport Hazard Class:	Not applicable
Packing Group:	Not applicable
Environmental Hazards:	Not applicable

15. Regulatory Information

UN GHS Classification:	Classified in accordance with GHS 5th revised edition.
WHMIS Classification:	Classified in accordance with HPR August 29, 2016 revised edition.
CPR Compliance:	This product has been classified in accordance with the hazard criteria of the CPR, and the SDS contains all the information required by the CPR.
CEPA Compliance:	All ingredients of this product are listed on the DSL.

16. Other Information

Creation Date: July 5, 2017

Revision Date: Updated October 2, 2017, October 18, 2018, July 7, 2019

Disclaimer: This Safety Data Sheet (SDS) was prepared by iHazmat Regulatory Ltd., (www.iHazmat.com) using information provided by Ivey International Inc. The information in this SDS is offered for your consideration and guidance when working with this product. As per usual practice, accuracy of the information included is based on what was provided by the manufacturer and sole liability for the accuracy of these documents falls to Ivey International Inc.

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SDS Created By: iHazmat Regulatory Ltd.
www.iHazmat.com

SAFETY DATA SHEET
KLARAID* CDP1311

1. Identification

Product identifier	**KLARAID CDP1311**
Other means of identification	None.
Version #	1.2
Prepared by	This SDS has been prepared by SUEZ Regulatory Department (1-215-355-3300).
Revision date	May-13-2018
Supersedes date	Dec-17-2017
Recommended use	Coagulant Coagulant
Recommended restrictions	None known.

Company/undertaking identification

SUEZ Water Technologies & Solutions Canada
3239 Dundas Street West
Oakville, Ontario, L6M 4B2
T 905-465-3030

Emergency telephone

(800) 877-1940

2. Hazard(s) identification

Physical hazards	Corrosive to metals	Category 1
Health hazards	Serious eye damage/eye irritation	Category 2
	Specific target organ toxicity, single exposure	Category 3 respiratory tract irritation

Label elements

Signal word	Warning
Hazard statement	May be corrosive to metals. Causes serious eye irritation. May cause respiratory irritation.
Precautionary statement	
Prevention	Keep only in original packaging. Avoid breathing mist or vapor. Wash thoroughly after handling. Use only outdoors or in a well-ventilated area. Wear eye protection/face protection.
Response	IF INHALED: Remove person to fresh air and keep comfortable for breathing. IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing. Call a POISON CENTER/doctor if you feel unwell. If eye irritation persists: Get medical advice/attention. Absorb spillage to prevent material-damage.
Storage	Store in a well-ventilated place. Keep container tightly closed. Store locked up. Store in corrosive resistant container with a resistant inner liner.
Disposal	Dispose of contents/container in accordance with local/regional/national/international regulations.
Other hazards	None known.
Supplemental information	None.

3. Composition/information on ingredients

Mixtures

Components	CAS #	Percent (wt/wt)
Aluminium chlorhydroxide	12042-91-0	30 - 60
Epichlorohydrin-dimethylamine copolymer	25988-97-0	3 - 7

Composition comments Information for specific product ingredients as required by the WHMIS Regulations is listed. Refer to additional sections of this SDS for our assessment of the potential hazards of this formulation.

4. First-aid measures

Inhalation Remove victim to fresh air and keep at rest in a position comfortable for breathing. Call a POISON CENTER or doctor/physician if you feel unwell.

Skin contact Wash off with soap and water.

Eye contact Continue rinsing. If eye irritation persists: Get medical advice/attention.

Ingestion Rinse mouth.

Most important symptoms/effects, acute and delayed Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation.

Indication of immediate medical attention and special treatment needed Provide general supportive measures and treat symptomatically. Keep victim under observation. Symptoms may be delayed.

General information If you feel unwell, seek medical advice (show the label where possible). Ensure that medical personnel are aware of the material(s) involved, and take precautions to protect themselves.

5. Fire-fighting measures

Suitable extinguishing media Water fog. Foam. Dry chemical powder. Carbon dioxide (CO2).

Unsuitable extinguishing media Do not use water jet as an extinguisher, as this will spread the fire.

Specific hazards arising from the chemical During fire, gases hazardous to health may be formed.

Special protective equipment and precautions for firefighters Wear full protective clothing, including helmet, self-contained positive pressure or pressure demand breathing apparatus, protective clothing and face mask.

Fire fighting equipment/instructions In case of fire and/or explosion do not breathe fumes. Use standard firefighting procedures and consider the hazards of other involved materials. Move containers from fire area if you can do so without risk. Cool containers / tanks with water spray.

Specific methods Use standard firefighting procedures and consider the hazards of other involved materials.

6. Accidental release measures

Personal precautions, protective equipment and emergency procedures Keep unnecessary personnel away. Keep people away from and upwind of spill/leak. Wear appropriate protective equipment and clothing during clean-up. Avoid breathing mist or vapor. Do not touch damaged containers or spilled material unless wearing appropriate protective clothing. Ensure adequate ventilation. Local authorities should be advised if significant spillages cannot be contained. For personal protection, see section 8 of the SDS.

Methods and materials for containment and cleaning up Prevent entry into waterways, sewer, basements or confined areas.

Large Spills: Stop the flow of material, if this is without risk. Dike the spilled material, where this is possible. Absorb spillage to prevent material damage. Use a non-combustible material like vermiculite, sand or earth to soak up the product and place into a container for later disposal. Following product recovery, flush area with water.

Small Spills: Wipe up with absorbent material (e.g. cloth, fleece). Clean surface thoroughly to remove residual contamination.

Never return spills to original containers for re-use. For waste disposal, see section 13 of the SDS.

Environmental precautions Avoid discharge into drains, water courses or onto the ground.

7. Handling and storage

Precautions for safe handling Avoid breathing mist or vapor. Avoid contact with eyes. Avoid prolonged exposure. Provide adequate ventilation. Wear appropriate personal protective equipment. Observe good industrial hygiene practices.

Conditions for safe storage, including any incompatibilities Store locked up. Store in a cool, dry place out of direct sunlight. Store in corrosive resistant container with a resistant inner liner. Keep only in the original container. Store away from incompatible materials (see Section 10 of the SDS).

8. Exposure controls/personal protection

Occupational exposure limits

US. ACGIH Threshold Limit Values

Components	Type	Value	Form
Aluminium chlorhydroxide (CAS 12042-91-0)	TWA	1 mg/m3	Respirable fraction.

Canada. Alberta OELs (Occupational Health & Safety Code, Schedule 1, Table 2)

Components	Type	Value
Aluminium chlorhydroxide (CAS 12042-91-0)	TWA	2 mg/m3

Canada. British Columbia OELs. (Occupational Exposure Limits for Chemical Substances, Occupational Health and Safety Regulation 296/97, as amended)

Components	Type	Value	Form
Aluminium chlorhydroxide (CAS 12042-91-0)	TWA	1 mg/m3	Respirable.

Canada. Manitoba OELs (Reg. 217/2006, The Workplace Safety And Health Act)

Components	Type	Value	Form
Aluminium chlorhydroxide (CAS 12042-91-0)	TWA	1 mg/m3	Respirable fraction.

Canada. Ontario OELs. (Control of Exposure to Biological or Chemical Agents)

Components	Type	Value	Form
Aluminium chlorhydroxide (CAS 12042-91-0)	TWA	1 mg/m3	Respirable fraction.

Canada. Quebec OELs. (Ministry of Labor - Regulation Respecting the Quality of the Work Environment)

Components	Type	Value
Aluminium chlorhydroxide (CAS 12042-91-0)	TWA	2 mg/m3

Biological limit values No biological exposure limits noted for the ingredient(s).

Appropriate engineering controls Good general ventilation (typically 10 air changes per hour) should be used. Ventilation rates should be matched to conditions. If applicable, use process enclosures, local exhaust ventilation, or other engineering controls to maintain airborne levels below recommended exposure limits. If exposure limits have not been established, maintain airborne levels to an acceptable level. Provide eyewash station.

Individual protection measures, such as personal protective equipment

Eye/face protection Splash proof chemical goggles.

Skin protection

Hand protection Wear appropriate chemical resistant gloves. The choice of an appropriate glove does not only depend on its material but also on other quality features and is different from one producer to the other. Suitable gloves can be recommended by the glove supplier. Glove selection must take into account any solvents and other hazards present.

Other Wear suitable protective clothing.

Respiratory protection If engineering controls do not maintain airborne concentrations below recommended exposure limits (where applicable) or to an acceptable level (in countries where exposure limits have not been established), an approved respirator must be worn.

Thermal hazards Wear appropriate thermal protective clothing, when necessary.

General hygiene considerations Always observe good personal hygiene measures, such as washing after handling the material and before eating, drinking, and/or smoking. Routinely wash work clothing and protective equipment to remove contaminants.

9. Physical and chemical properties

Appearance Liquid

Color Colorless to yellow

Odor Mild

Odor threshold Not available.

pH (concentrated product) 3.7

pH in aqueous solution	4.5 (5% SOL.)
Melting point/freezing point	23 °F (-5 °C)
Initial boiling point and boiling range	> 212 °F (> 100 °C)
Flash point	> 200 °F (> 93 °C) P-M(CC)
Evaporation rate	< 1 (Ether = 1)
Flammability (solid, gas)	Not applicable.
Upper/lower flammability or explosive limits	
Flammability limit - lower (%)	Not available.
Flammability limit - upper (%)	Not available.
Explosive limit - lower (%)	Not available.
Explosive limit - upper (%)	Not available.
Vapor pressure	18 mm Hg
Vapor pressure temp.	70 °F (21 °C)
Vapor density	< 1 (Air = 1)
Relative density	1.31
Relative density temperature	70 °F (21 °C)
Solubility(ies)	
Solubility (water)	100 %
Partition coefficient (n-octanol/water)	Not available.
Auto-ignition temperature	Not available.
Decomposition temperature	Not available.
Viscosity	42 cps
Viscosity temperature	70 °F (21 °C)
Other information	
Explosive properties	Not explosive.
Oxidizing properties	Not oxidizing.
Pour point	28 °F (-2 °C)
Specific gravity	1.312
VOC	0 % (Calculated)

10. Stability and reactivity

Reactivity	May be corrosive to metals.
Chemical stability	Material is stable under normal conditions.
Possibility of hazardous reactions	Hazardous polymerization does not occur.
Conditions to avoid	Avoid temperatures exceeding the flash point. Contact with incompatible materials.
Incompatible materials	Strong oxidizing agents. Metals.
Hazardous decomposition products	Hydrogen chloride. Oxides of carbon and nitrogen.

11. Toxicological information

Information on likely routes of exposure

Inhalation	May cause irritation to the respiratory system. Prolonged inhalation may be harmful.
Skin contact	No adverse effects due to skin contact are expected.
Eye contact	Causes serious eye irritation.
Ingestion	Expected to be a low ingestion hazard.
Symptoms related to the physical, chemical and toxicological characteristics	Severe eye irritation. Symptoms may include stinging, tearing, redness, swelling, and blurred vision. May cause respiratory irritation.

Information on toxicological effects

Acute toxicity May cause respiratory irritation.

Product	Species	Test Results
KLARAID CDP1311 (CAS Mixture)		
Acute		
Dermal		
LD50	Rabbit	> 5000 mg/kg, (Calculated according to GHS additivity formula)
Oral		
LD50	Rat	> 5000 mg/kg, (Calculated according to GHS additivity formula)

Components	Species	Test Results
Aluminium chlorhydroxide (CAS 12042-91-0)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg
Oral		
LD50	Rat	> 2000 mg/kg
Epichlorohydrin-dimethylamine copolymer (CAS 25988-97-0)		
Acute		
Dermal		
LD50	Rabbit	> 2000 mg/kg

* Estimates for product may be based on additional component data not shown.

Skin corrosion/irritation Prolonged skin contact may cause temporary irritation.

Serious eye damage/eye irritation Causes serious eye irritation.

Respiratory or skin sensitization

Canada - Alberta OELs: Irritant

Aluminium chlorhydroxide (CAS 12042-91-0) Irritant

Respiratory sensitization This product is not expected to cause respiratory sensitization.

Skin sensitization This product is not expected to cause skin sensitization.

Germ cell mutagenicity No data available to indicate product or any components present at greater than 0.1% are mutagenic or genotoxic.

Carcinogenicity Not classified.

ACGIH Carcinogens

Aluminium chlorhydroxide (CAS 12042-91-0) A4 Not classifiable as a human carcinogen.

Canada - Manitoba OELs: carcinogenicity

Aluminium chlorhydroxide (CAS 12042-91-0) Not classifiable as a human carcinogen.

Reproductive toxicity This product is not expected to cause reproductive or developmental effects.

Specific target organ toxicity - single exposure May cause respiratory irritation.

Specific target organ toxicity - repeated exposure Not classified.

Aspiration hazard Based on available data, the classification criteria are not met.

Chronic effects Prolonged inhalation may be harmful.

12. Ecological information

Ecotoxicity

Product	Species	Test Results
KLARAID CDP1311 (CAS Mixture)		
LC50	Fathead Minnow	8.3 mg/L, Static Renewal Bioassay, 96 hour

Product		Species	Test Results
	NOEL	Fathead Minnow	3.1 mg/L, Static Renewal Bioassay, 96 hour
Aquatic			
Crustacea	LC50	Daphnia magna	6.3 mg/L, Static Renewal Bioassay, 48 hour
	NOEL	Daphnia magna	3.1 mg/L, Static Renewal Bioassay, 48 hour
Fish	LC50	Rainbow Trout	3.2 mg/L, Static Renewal Bioassay, 96 hour
	NOEL	Rainbow Trout	1.6 mg/L, Static Renewal Bioassay, 96 hour

Components		Species	Test Results
Epichlorohydrin-dimethylamine copolymer (CAS 25988-97-0)			
	EC50	Daphnia Magna	> 10 mg/l, 48 hour
	LC50	Zebra fish (Brachydanio rerio)	> 10 mg/l, 96 hour

Bioaccumulative potential No data available.

Mobility in soil No data available.

Other adverse effects No other adverse environmental effects (e.g. ozone depletion, photochemical ozone creation potential, endocrine disruption, global warming potential) are expected from this component.

Persistence and degradability

No data is available on the degradability of this product.

- **COD (mgO2/g)** 35 (calculated data)
- **BOD 5 (mgO2/g)** 1 (calculated data)
- **BOD 28 (mgO2/g)** 1 (calculated data)
- **Closed Bottle Test (% Degradation in 28 days)** 6 (calculated data)
- **Zahn-Wellens Test (% Degradation in 28 days)** 1 (calculated data)
- **TOC (mg C/g)** 15 (calculated data)

13. Disposal considerations

Disposal instructions Collect and reclaim or dispose in sealed containers at licensed waste disposal site. Dispose of contents/container in accordance with local/regional/national/international regulations.

Local disposal regulations Dispose in accordance with all applicable regulations.

Waste from residues / unused products Dispose of in accordance with local regulations. Empty containers or liners may retain some product residues. This material and its container must be disposed of in a safe manner (see: Disposal instructions).

Contaminated packaging Since emptied containers may retain product residue, follow label warnings even after container is emptied. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. Transport information

TDG

UN number UN3264

UN proper shipping name CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (ALUMINUM CHLORHYDROXIDE)

Transport hazard class(es)

Class 8

Subsidiary risk -

Packing group III

Environmental hazards Not available.

The goods described above have been classified using a combination of testing, technical data, calculations and manufacturer knowledge in accordance with Part 2, Classification. TDG Classification is valid for road or rail transport only. For shipment by air or water, refer to IATA or IMDG regulations.

DOT

Not regulated as a dangerous good.

Some containers may be exempt from Dangerous Goods/Hazmat Transport Regulations, please check BOL for exact container classification.

IMDG

UN number	UN3264
UN proper shipping name	CORROSIVE LIQUID, ACIDIC, INORGANIC, N.O.S. (ALUMINUM CHLORHYDROXIDE)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	
Marine pollutant	No.
EmS	F-A, S-B
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA

UN number	UN3264
UN proper shipping name	Corrosive liquid, acidic, inorganic, n.o.s. (ALUMINUM CHLORHYDROXIDE)
Transport hazard class(es)	
Class	8
Subsidiary risk	-
Packing group	III
Environmental hazards	No.
ERG Code	154
Special precautions for user	Read safety instructions, SDS and emergency procedures before handling.

IATA; IMDG; TDG

15. Regulatory information

Canadian regulations

Controlled Drugs and Substances Act

Not regulated.

Export Control List (CEPA 1999, Schedule 3)

Not listed.

Greenhouse Gases

Not listed.

Precursor Control Regulations

Not regulated.

Inventory status

Country(s) or region	Inventory name	On inventory (yes/no)*
Canada	Domestic Substances List (DSL)	Yes
Canada	Non-Domestic Substances List (NDSL)	No
United States & Puerto Rico	Toxic Substances Control Act (TSCA) Inventory	Yes

*A "Yes" indicates that all components of this product comply with the inventory requirements administered by the governing country(s)
A "No" indicates that one or more components of the product are not listed or exempt from listing on the inventory administered by the governing country(s).

16. Other information

Issue date Dec-12-2016

Revision date	May-13-2018
Version #	1.2
List of abbreviations	CAS: Chemical Abstract Service Registration Number TSRN indicates a Trade Secret Registry Number is used in place of the CAS number. ACGIH: American Conference of Governmental Industrial Hygienists NOEL: No Observed Effect Level STEL: Short Term Exposure Limit LC50: Lethal Concentration, 50% LD50: Lethal Dose, 50% TWA: Time Weighted Average BOD: Biochemical Oxygen Demand COD: Chemical Oxygen Demand TOC: Total Organic Carbon IATA: International Air Transport Association IMDG: International Maritime Dangerous Goods Code TLV: Threshold Limit Value
References:	No data available
Disclaimer	The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

APPENDIX C

Appendix C: Pond Analytical

CERTIFICATE OF ANALYSIS

Work Order	: **VA24B2281**	Page	: 1 of 5
Client	: **KBL Environmental Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact	: Mike Gamache	Account Manager	: Selam Worku
Address	: 13511 Vulcan Way A Division of CCS Inc. Richmond BC Canada V6V 1K4	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 4200IVSTF	Date Samples Received	: 30-May-2024 10:55
PO	: ----	Date Analysis Commenced	: 30-May-2024
C-O-C number	: 17-774945	Issue Date	: 31-May-2024 22:01
Sampler	: Mike Gamache		
Site	: ----		
Quote number	: KBL Environmetal BC Standing Offer 2024		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brooke Miller	Laboratory Analyst	Inorganics, Edmonton, Alberta
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Organics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances

LOR: Limit of Reporting (detection limit).

Unit	*Description*
µg/L	micrograms per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	*Description*
DLA	*Detection Limit adjusted for required dilution.*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	24SC001	24RP001	24RA001	----	----
					Client sampling date / time	29-May-2024 12:00	29-May-2024 11:30	29-May-2024 12:30	----	----
						VA24B2281-001	VA24B2281-002	VA24B2281-003	--------	--------
						Result	Result	Result	----	----
Physical Tests										
pH	----	E108/VA	0.10	pH units		7.86	7.73	7.67	----	----
Total Metals										
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		0.00044	0.00027	0.00147	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00121	0.00097	0.00147	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0552	0.0401	0.0531	----	----
Beryllium, total	7440-41-7	E420/VA	0.000020	mg/L		0.000030	0.000021	<0.000040 DLA	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		0.176	0.432	0.786	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		1.20	0.917	0.952	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.422	0.307	0.247	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.00220	0.00138	0.000692	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.00299	0.000968	0.00192	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		0.0123	0.0117	0.0460	----	----
Aggregate Organics										
Phenols, total (4AAP)	----	E562/EO	0.0010	mg/L		<0.0010	<0.0010	<0.0010	----	----
Volatile Organic Compounds [Fuels]										
Benzene	71-43-2	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Ethylbenzene	100-41-4	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Styrene	100-42-5	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Toluene	108-88-3	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Xylene, m+p-	179601-23-1	E611A/VA	0.40	µg/L		<0.40	<0.40	<0.40	----	----
Xylene, o-	95-47-6	E611A/VA	0.30	µg/L		<0.30	<0.30	<0.30	----	----
Xylenes, total	1330-20-7	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	----	----
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	<100	<100	----	----
F2 (C10-C16)	----	E601/VA	100	µg/L		140	<100	<100	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/VA	1.0	%		89.0	83.2	87.5	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		104	103	98.2	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	24SC001	24RP001	24RA001	----	----
					Client sampling date / time	29-May-2024 12:00	29-May-2024 11:30	29-May-2024 12:30	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA24B2281-001	VA24B2281-002	VA24B2281-003	--------	--------
						Result	Result	Result	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%		90.9	89.7	86.9	----	----
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%		95.9	95.3	97.5	----	----
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	E641A/VA	0.010	µg/L		<0.015	<0.010	<0.010	----	----
Acenaphthylene	208-96-8	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	----	----
Anthracene	120-12-7	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	----	----
Benz(a)anthracene	56-55-3	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	----	----
Benzo(a)pyrene	50-32-8	E641A/VA	0.0050	µg/L		<0.0050	<0.0050	<0.0050	----	----
Benzo(b+j)fluoranthene	n/a	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	----	----
Benzo(k)fluoranthene	207-08-9	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	----	----
Chrysene	218-01-9	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/VA	0.0050	µg/L		<0.0050	<0.0050	<0.0050	----	----
Fluoranthene	206-44-0	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	----	----
Fluorene	86-73-7	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	----	----
Naphthalene	91-20-3	E641A/VA	0.050	µg/L		<0.050	<0.050	<0.050	----	----
Phenanthrene	85-01-8	E641A/VA	0.020	µg/L		<0.020	<0.020	<0.020	----	----
Pyrene	129-00-0	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	----	----
B(a)P total potency equivalents [B(a)P TPE]	----	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	----	----
Polycyclic Aromatic Hydrocarbons Surrogates										
Chrysene-d12	1719-03-5	E641A/VA	0.1	%		98.8	106	93.8	----	----
Naphthalene-d8	1146-65-2	E641A/VA	0.1	%		78.8	81.0	84.1	----	----
Phenanthrene-d10	1517-22-2	E641A/VA	0.1	%		99.8	101	93.4	----	----
Polychlorinated Biphenyls										
Aroclor 1016	12674-11-2	E687/WT	0.020	µg/L		<0.020	<0.020	<0.020	----	----
Aroclor 1221	11104-28-2	E687/WT	0.020	µg/L		<0.020	<0.020	<0.020	----	----
Aroclor 1232	11141-16-5	E687/WT	0.020	µg/L		<0.020	<0.020	<0.020	----	----
Aroclor 1242	53469-21-9	E687/WT	0.020	µg/L		<0.020	<0.020	<0.020	----	----
Aroclor 1248	12672-29-6	E687/WT	0.020	µg/L		<0.020	<0.020	<0.020	----	----
Aroclor 1254	11097-69-1	E687/WT	0.020	µg/L		<0.020	<0.020	<0.020	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	24SC001	24RP001	24RA001	----	----
					Client sampling date / time	29-May-2024 12:00	29-May-2024 11:30	29-May-2024 12:30	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA24B2281-001	VA24B2281-002	VA24B2281-003	--------	--------
						Result	Result	Result	----	----
Polychlorinated Biphenyls										
Aroclor 1260	11096-82-5	E687/WT	0.020	µg/L		<0.020	<0.020	<0.020	----	----
Aroclor 1262	37324-23-5	E687/WT	0.020	µg/L		<0.020	<0.020	<0.020	----	----
Aroclor 1268	11100-14-4	E687/WT	0.020	µg/L		<0.020	<0.020	<0.020	----	----
Polychlorinated biphenyls [PCBs], total	----	E687/WT	0.060	µg/L		<0.060	<0.060	<0.060	----	----
Polychlorinated Biphenyls Surrogates										
Decachlorobiphenyl	2051-24-3	E687/WT	0.1	%		93.3	79.3	111	----	----
Tetrachloro-m-xylene	877-09-8	E687/WT	0.1	%		89.3	74.1	98.9	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24B2281**	Page	: 1 of 8
Client	: **KBL Environmental Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact	: Mike Gamache	Account Manager	: Selam Worku
Address	: 13511 Vulcan Way A Division of CCS Inc. Richmond BC Canada V6V 1K4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 4200IVSTF	Date Samples Received	: 30-May-2024 10:55
PO	: ----	Issue Date	: 31-May-2024 22:02
C-O-C number	: 17-774945		
Sampler	: Mike Gamache		
Site	: ----		
Quote number	: KBL Environmetal BC Standing Offer 2024		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) 24RA001	E562	29-May-2024	31-May-2024	28 days	2 days	✓	31-May-2024	28 days	2 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) 24RP001	E562	29-May-2024	31-May-2024	28 days	2 days	✓	31-May-2024	28 days	2 days	✓
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) 24SC001	E562	29-May-2024	31-May-2024	28 days	2 days	✓	31-May-2024	28 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 24RA001	E601	29-May-2024	31-May-2024	14 days	1 days	✓	31-May-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 24RP001	E601	29-May-2024	31-May-2024	14 days	2 days	✓	31-May-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) 24SC001	E601	29-May-2024	31-May-2024	14 days	2 days	✓	31-May-2024	40 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 24RA001	E581.VH+F1	29-May-2024	30-May-2024	14 days	1 days	✓	31-May-2024	14 days	2 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 24RP001	E581.VH+F1	29-May-2024	30-May-2024	14 days	1 days	✓	31-May-2024	14 days	2 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) 24SC001	E581.VH+F1	29-May-2024	30-May-2024	14 days	1 days	✓	31-May-2024	14 days	2 days	✓
Physical Tests : pH by Meter										
HDPE 24RA001	E108	29-May-2024	30-May-2024	0.25 hrs	28 hrs	× EHTR-FM	30-May-2024	0.25 hrs	28 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 24SC001	E108	29-May-2024	30-May-2024	0.25 hrs	28 hrs	× EHTR-FM	30-May-2024	0.25 hrs	28 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE 24RP001	E108	29-May-2024	30-May-2024	0.25 hrs	29 hrs	× EHTR-FM	30-May-2024	0.25 hrs	29 hrs	× EHTR-FM
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap 24RA001	E687	29-May-2024	31-May-2024	365 days	2 days	✓	31-May-2024	40 days	0 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap 24RP001	E687	29-May-2024	31-May-2024	365 days	2 days	✓	31-May-2024	40 days	0 days	✓
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap 24SC001	E687	29-May-2024	31-May-2024	365 days	2 days	✓	31-May-2024	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs in Water by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) 24RA001	E641A	29-May-2024	31-May-2024	14 days	1 days	✓	31-May-2024	40 days	0 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Polycyclic Aromatic Hydrocarbons : PAHs in Water by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
24RP001	E641A	29-May-2024	31-May-2024	14 days	2 days	✓	31-May-2024	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs in Water by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
24SC001	E641A	29-May-2024	31-May-2024	14 days	2 days	✓	31-May-2024	40 days	0 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
24RA001	E420	29-May-2024	31-May-2024	180 days	2 days	✓	31-May-2024	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
24RP001	E420	29-May-2024	31-May-2024	180 days	2 days	✓	31-May-2024	180 days	2 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
24SC001	E420	29-May-2024	31-May-2024	180 days	2 days	✓	31-May-2024	180 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate)										
24RA001	E611A	29-May-2024	30-May-2024	14 days	1 days	✓	31-May-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate)										
24RP001	E611A	29-May-2024	30-May-2024	14 days	1 days	✓	31-May-2024	14 days	2 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate)										
24SC001	E611A	29-May-2024	30-May-2024	14 days	1 days	✓	31-May-2024	14 days	2 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
BTEX by Headspace GC-MS	E611A	1467826	1	20	5.0	5.0	✓
pH by Meter	E108	1467920	1	3	33.3	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1469664	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1467911	1	4	25.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1467827	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	1467826	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1469995	2	10	20.0	5.0	✓
PAHs in Water by Hexane LVI GC-MS	E641A	1468141	1	18	5.5	5.0	✓
PCB Aroclors by GC-MS	E687	1468714	1	3	33.3	4.7	✓
pH by Meter	E108	1467920	1	3	33.3	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1469664	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1467911	1	4	25.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1467827	1	20	5.0	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	1467826	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1469995	2	10	20.0	5.0	✓
PAHs in Water by Hexane LVI GC-MS	E641A	1468141	1	18	5.5	5.0	✓
PCB Aroclors by GC-MS	E687	1468714	1	3	33.3	4.7	✓
Phenols (4AAP) in Water by Colorimetry	E562	1469664	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1467911	1	4	25.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1467827	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1467826	1	20	5.0	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1469664	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1467911	1	4	25.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1467827	1	20	5.0	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Edmonton	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
VH and F1 by Headspace GC-FID	E581.VH+F1 ALS Environmental - Vancouver	Water	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
CCME PHCs - F2-F4 by GC-FID	E601 ALS Environmental - Vancouver	Water	CCME PHC in Soil - Tier 1	Sample extracts are analyzed by GC-FID for CCME hydrocarbon fractions (F2-F4). Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
BTEX by Headspace GC-MS	E611A ALS Environmental - Vancouver	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs in Water by Hexane LVI GC-MS	E641A ALS Environmental - Vancouver	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
PCB Aroclors by GC-MS	E687 ALS Environmental - Waterloo	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Vancouver	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Vancouver	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: **VA24B2281**	Page	: 1 of 8
Client	: KBL Environmental Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Mike Gamache	Account Manager	: Selam Worku
Address	: 13511 Vulcan Way A Division of CCS Inc. Richmond BC Canada V6V 1K4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 4200IVSTF	Date Samples Received	: 30-May-2024 10:55
PO	: ----	Date Analysis Commenced	: 30-May-2024
C-O-C number	: 17-774945	Issue Date	: 31-May-2024 22:02
Sampler	: Mike Gamache		
Site	: ----		
Quote number	: KBL Environmetal BC Standing Offer 2024		
No. of samples received	: 3		
No. of samples analysed	: 3		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brooke Miller	Laboratory Analyst	Edmonton Inorganics, Edmonton, Alberta
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Jocelyn Kennedy	Department Manager - Semi-Volatile Organics	Waterloo Organics, Waterloo, Ontario
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Vancouver Organics, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1467920)											
VA24B2281-001	24SC001	pH	----	E108	0.10	pH units	7.86	7.90	0.508%	4%	----
Total Metals (QC Lot: 1467911)											
VA24B2332-001	Anonymous	Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00774	0.00773	0.0471%	20%	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00239	0.00238	0.754%	20%	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.133	0.128	3.81%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.018	0.018	0.0004	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.047	0.048	0.0002	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00117	0.00110	5.61%	20%	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.0105	0.0108	3.14%	20%	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000015	0.000014	0.0000007	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0461	0.0447	3.17%	20%	----
Aggregate Organics (QC Lot: 1469664)											
CG2407161-001	Anonymous	Phenols, total (4AAP)	----	E562	0.500	mg/L	6.14	6.37	3.74%	20%	----
Volatile Organic Compounds (QC Lot: 1467826)											
KS2401852-001	Anonymous	Benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1467827)											
KS2401852-001	Anonymous	F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.0%	30%	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1467911)						
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Aggregate Organics (QCLot: 1469664)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Volatile Organic Compounds (QCLot: 1467826)						
Benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611A	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 1467827)						
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Hydrocarbons (QCLot: 1468142)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
Hydrocarbons (QCLot: 1469995)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1468141)						
Acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	----
Anthracene	120-12-7	E641A	0.01	µg/L	<0.010	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	<0.010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1468141) - continued						
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	----
Chrysene	218-01-9	E641A	0.01	µg/L	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	----
Fluorene	86-73-7	E641A	0.01	µg/L	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	----
Naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	----
Pyrene	129-00-0	E641A	0.01	µg/L	<0.010	----
Polychlorinated Biphenyls (QCLot: 1468714)						
Aroclor 1016	12674-11-2	E687	0.02	µg/L	<0.020	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	<0.020	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	<0.020	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	<0.020	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	<0.020	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	<0.020	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	<0.020	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	<0.020	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	<0.020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1467920)									
pH	----	E108	----	pH units	7 pH units	99.6	98.0	102	----
Total Metals (QCLot: 1467911)									
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	95.2	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	99.3	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	94.1	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	93.0	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	96.5	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	96.5	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.4	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.0	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	97.6	80.0	120	----
Aggregate Organics (QCLot: 1469664)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	102	85.0	115	----
Volatile Organic Compounds (QCLot: 1467826)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	103	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	97.9	70.0	130	----
Styrene	100-42-5	E611A	0.5	µg/L	100 µg/L	101	70.0	130	----
Toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	100	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	100	70.0	130	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	99.5	70.0	130	----
Hydrocarbons (QCLot: 1467827)									
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	86.1	70.0	130	----
Hydrocarbons (QCLot: 1468142)									
F2 (C10-C16)	----	E601	100	µg/L	3540 µg/L	108	70.0	130	----
Hydrocarbons (QCLot: 1469995)									
F2 (C10-C16)	----	E601	100	µg/L	3540 µg/L	111	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1468141)									

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1468141) - continued									
Acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	117	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	124	60.0	130	----
Anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	121	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	111	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	110	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	116	60.0	130	----
Chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	126	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	121	60.0	130	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	122	60.0	130	----
Fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	115	60.0	130	----
Naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	117	50.0	130	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	124	60.0	130	----
Pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	121	60.0	130	----
Polychlorinated Biphenyls (QCLot: 1468714)									
Aroclor 1016	12674-11-2	E687	0.02	µg/L	0.2 µg/L	123	60.0	140	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	0.2 µg/L	123	60.0	140	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	0.2 µg/L	123	60.0	140	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	0.2 µg/L	123	60.0	140	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	0.2 µg/L	94.9	60.0	140	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	0.2 µg/L	114	60.0	140	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	0.2 µg/L	126	60.0	140	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	0.2 µg/L	126	60.0	140	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	0.2 µg/L	126	60.0	140	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1467911)										
VA24B2281-001	24SC001	Antimony, total	7440-36-0	E420	0.0181 mg/L	0.02 mg/L	90.5	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	----	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0373 mg/L	0.04 mg/L	93.2	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	----	ND	70.0	130	----
		Iron, total	7439-89-6	E420	1.87 mg/L	2 mg/L	93.6	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	----	ND	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0425 mg/L	0.04 mg/L	106	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		Zinc, total	7440-66-6	E420	0.372 mg/L	0.4 mg/L	92.9	70.0	130	----
Aggregate Organics (QCLot: 1469664)										
EO2404118-002	Anonymous	Phenols, total (4AAP)	----	E562	0.0211 mg/L	0.02 mg/L	105	75.0	125	----
Volatile Organic Compounds (QCLot: 1467826)										
KS2401852-001	Anonymous	Benzene	71-43-2	E611A	98.2 µg/L	100 µg/L	98.2	60.0	140	----
		Ethylbenzene	100-41-4	E611A	99.0 µg/L	100 µg/L	99.0	60.0	140	----
		Styrene	100-42-5	E611A	96.7 µg/L	100 µg/L	96.7	60.0	140	----
		Toluene	108-88-3	E611A	98.5 µg/L	100 µg/L	98.5	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	200 µg/L	200 µg/L	100	60.0	140	----
		Xylene, o-	95-47-6	E611A	97.8 µg/L	100 µg/L	97.8	60.0	140	----
Hydrocarbons (QCLot: 1467827)										
KS2401852-002	Anonymous	F1 (C6-C10)	----	E581.VH+F1	5240 µg/L	6310 µg/L	83.1	60.0	140	----

ALS Environmental
www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 - 774945

Page of

Report To	Contact and company name below will appear on the final report
Company:	KRL Environmental
Contact:	Mike Gamache
Phone:	403 370 2800
	Company address below will appear on the final report
Street:	3909 68 Ave
City/Province:	Leduc AB
Postal Code:	T9E 0Z4
Invoice To	Same as Report To [X] YES [ ] NO
	Copy of Invoice with Report [X] YES [ ] NO
Company:	
Contact:	

Report Format / Distribution	
Select Report Format:	[X] PDF [X] EXCEL [X] EDD (DIGITAL)
Quality Control (QC) Report with Report	[X] YES [ ] NO
[ ] Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	[X] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	ESdat@KRL.ca
Email 2	mgamache@KRL.ca
Email 3	BNowes@kbl.ca
Invoice Distribution	
Select Invoice Distribution:	[X] EMAIL [ ] MAIL [ ] FAX
Email 1 or Fax	accountspayable@kbl.ca
Email 2	mgamache@kbl.ca

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)	
Regular [R]	[ ] Standard TAT if received by 3 pm - business days - no surcharges apply
PRIORITY (Business Days) 4 day [P4-20%]	[ ]
3 day [P3-25%]	[ ]
2 day [P2-50%]	[ ]
EMERGENCY 1 Business day [E - 100%]	[ ]
Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]	[X]
Date and Time Required for all E&P TATs:	dd-mmm-yy hh:mm

For tests that can not be performed according to the service level selected, you will be contacted.

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	4200 IVSTF	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	
ALS Lab Work Order # (lab use only):		ALS Contact:	Sampler: Mike Gamache

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	pH	Metals (see Attached) Total	BTEX F1-F2	PCB	Phenols	PAHs	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	24SC001	May 29/24	12:00	H20	14	/	/	/	/	/	/		
	24KD001	May 29/24	11:30	H20	14	/	/	/	/	/	/		
	24RA001	May 29/24	12:30	H20	14	/	/	/	/	/	/		

Environmental Division
Vancouver
Work Order Reference
VA24B2281

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? [ ] YES [X] NO	See Attached parameter list to ensure all required parameters are reported.
Are samples for human consumption/ use? [ ] YES [X] NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen	[ ]	SIF Observations	Yes [ ]	No	[ ]
Ice Packs [X]	Ice Cubes [ ]	Custody seal intact	Yes [ ]	No	[ ]
Cooling Initiated	[ ]				

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				6			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: May 29	Time:	Received by:	Date:	Time:	Received by: JC	Date: 30 May 2024	Time: 1055am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

GENERAL TERMS AND CONDITIONS:

These terms and conditions are incorporated in and form part of the Agreement between ALS Group's Environmental Division and the party named in the Offer (the "Client").

1. Definitions. Capitalized Terms not defined in these Terms and Conditions have the definitions set out in the other Agreement documents.
2. The Services. ALS will provide the Services to the Client as described in the Offer and in any chain of custody form provided with any sample.
3. Prices. ALS may review and change all prices, fees, surcharges or other charges set out in the Agreement if there are changes to ALS's cost beyond ALS's control, including changes in legislative requirements, Client variations of sample numbers and Client requests for changes to standard reporting requirements. Notwithstanding Condition 3, all quotations expire after three years.
4. Payment Terms. The Client shall pay ALS within 30 days of the invoice date OAC. ALS may, for reasonable business reasons, require the Client to arrange for payment in advance.
5. Quotation Numbers. The Client shall provide the quotation number to ALS (where applicable) to ensure correct pricing.
6. Taxes. Applicable taxes are not included in prices. Applicable surcharges and additional fees will be added at the time of invoicing.
7. Quality Control. ALS has an extensive QA/QC program. Clients' samples are analyzed using approved, referenced procedures followed by thorough data validation prior to reporting of the analytical results.
8. Test Results. Results are obtained from analytical measurements that are subject to inherent variability. Measurement results reflect characteristics of submitted test samples at time of analysis. The Client is responsible for informing itself on the limitation of test results and acknowledges that test results are not guaranteed. When statements of conformity are requested on test reports (e.g. within Criteria Reports), measurement uncertainty is not applied to test results prior to the evaluation.
9. Standard of Care. ALS will use reasonable care and diligence as required by the laws of the province or territory where the sample is tested.
10. Storage. Where possible, ALS will store; soil and water samples for 45 days from date of receipt, tissue/biota samples for 6 months from date of receipt, air samples or re-usable media for 14 days from date of receipt, and microbiological samples for 3 days from date of receipt.
11. Holds. If the Client requests a sample to be placed on hold, ALS will store the samples according to paragraph 10, after which ALS will invoice the Client and discard the sample. Each sample is subject to a minimum $5.00 hold fee. Longer hold periods are available upon request. See paragraph 12.
12. Archives. If the Client requests a sample be archived, ALS will invoice in advance and store the sample for the period requested, after which ALS may discard the sample.
13. Legal Sample Handling Protocol. Legal sample handling protocol must be arranged before samples are collected. ALS charges a surcharge on the list price plus the hourly technologist or chemist rates for legal sample protocol. Additional charges will apply for samples that require storage by ALS.
14. Samples. The quality, condition, content and source of samples stored and tested are not known to ALS except as declared and described on the chain of custody form completed and submitted by the Client and accompanying the sample.
15. Risk of Loss. ALS will use reasonable care to protect samples during storage, however all samples are stored at the Client's risk and the Client is responsible for obtaining appropriate insurance, if desired. The Client acknowledges that during the performance of the Services samples may be altered, lost, damaged, or destroyed and the Client releases ALS from any claim the Client may have for any loss or damage to the sample.
16. Environmental. The Client must comply with all applicable environment legislation, including labeling all hazardous samples to comply with GHS and TDG regulations, and must provide appropriate Safety Data that include the nature of the hazard and a contact name and phone number to call for information. The Client will indemnify ALS for all loss or damages, including any fine or cost of complying with an order of any government authority, resulting from the Client's breach of this paragraph.
17. Hazardous Materials Disposal. ALS may return, at the Client's cost, hazardous material to the Client for disposal.
18. Hazardous Materials Surcharge. ALS may apply an additional surcharge for handling of hazardous samples or samples with Naturally Occurring Radioactive Materials (NORM), H2S, CN, etc.
19. Sample Containers. ALS may ship sample containers to the Client's location by the most cost effective means using ALS preferred courier suppliers, within the specified project timeline.
20. Additional Charges. ALS may charge the Client (a) its cost for emergency bottle shipments and shipments to and from a remote site, and (b) where pick up and delivery services are provided, subject in each instance to a minimum charge of $25.00.
21. Re-Tests. ALS reserves the right to re-test any samples that remain in its possession. Re-tests requested by the Client may be subject to charges.
22. Waiver. The Client is responsible for making any assessment regarding the suitability of the Services and the intended results for the Client's purposes and waives any claims against ALS it may have as a result of the interpretation of the results. The Client shall indemnify ALS for all claims made by any third party against ALS in respect of all losses however arising from the performance of the Services or the use of any report provided in the performance of the Services.
23. Limitation of Liability. In no event shall ALS be liable for any consequential, indirect, incidental, special, exemplary, or punitive damages, whether foreseeable or unforeseeable (including claims for loss of profits or revenue or losses caused by stoppage of other work or impairment of other assets), incurred by the Client arising out of breach or failure of express or implied warranty, breach of contract, breach of warranty, misrepresentation, negligence, strict liability in tort or otherwise. In any event, the liability of ALS to the Client shall be limited to the cost of testing the sample as requested in the chain of custody form under which the sample was originally deposited. For the purposes of this paragraph and paragraphs 8, 15, 16, 22 and 24, as applicable, "ALS" includes without limitations its directors, officers, employees and affiliates and the "Client" includes without limitation any third party that may have a claim against ALS through the Client.
24. Notice of Liability. Notwithstanding paragraph 23, ALS shall not be liable to the Client unless the Client provides notice in writing to ALS of such loss or damage, together with full particulars thereof, within 30 days of the Client's receipt of the report of the analysis of the sample giving rise to such liability. The provisions of this paragraph allocate the risk under the Agreement between the Client and ALS, and the fees to be paid by the Client to ALS reflect this allocation of risks and the limitations of liability in this Agreement.
25. Third Party Service Provider Indemnity. For testing not performed at ALS, and where the Client requires ALS to forward samples to a third party service provider, the Client indemnifies ALS against any breach of this Agreement, all liabilities or losses incurred in connection with the third party service provider, including but not limited to courier services, testing turn-around time, and any additional costs associated with such third party.
26. Third Party Service Provider Indemnity. If ALS is required to engage a third party service provider for whatever reason, the Client indemnifies ALS against any breach of this Agreement, liabilities, or losses incurred in connection with the third party service provider, including but not limited to courier services, testing turn-around time, and any additional costs associated with such third party.
27. Entire Agreement. The Agreement is the entire agreement between the parties and supersedes and takes precedence over any terms and conditions contained in any documentation provided by the Client. ALS's execution of any subsequent documentation from the Client only acknowledges receipt and not acceptance of any terms or conditions therein. If there is a conflict between these terms and conditions and any other Agreement document, these terms and conditions prevail.
28. Term. Providing the first batch of samples to which this tender refers is submitted within three months of the starting date of this quotation, the following prices, terms and conditions will remain firm until the closing date. This offer, and its terms and conditions will automatically lapse if the offer has not been accepted and samples not delivered to ALS by the Closing Date.
29. Termination. (a) Either party may terminate this Agreement for any reason by giving the other party thirty (30) days written notice (Notice Period). (b) If the Agreement is terminated pursuant to clause (a), then the Client must pay ALS for all Services performed up to the expiry of the Notice Period.

Quinn Dekking

From: Michel Gamache <MGamache@kbl.ca>
Sent: Tuesday, May 21, 2024 9:32 AM
To: Quinn Dekking
Subject: [EXTERNAL] - Surface water sampling bottle order

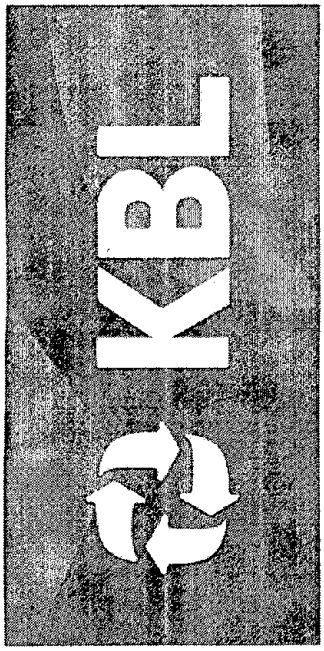
Follow Up Flag: Follow up
Flag Status: Flagged

Good morning Quinn,

I am heading up to Inuvik and will be there Monday May 27th. I need three sets of water sampling bottles for the below listed parameters. Is it possible to have these shipped to Inuvik? Where do you usually send them for pick up?

Parameter
pH
Antimony
Arsenic
Barium
Beryllium
Boron
Iron
Manganese
Selenium
Uranium
Zinc
Benzene

Toluene
Ethylbenzene
Xylenes
Styrene
F1
F2
Acenapthene
Acenaphthylene
Anthracene
Fluoranthene
Fluorene
Naphthalene
Phenanthrene
Pyrene
Carcinogenic PAHs (as B(a)P TPE)
Benz[a]anthracene
Benzo[b+j]fluoranthene
Benzo[k]fluoranthene
Benzo[a]pyrene
Chrysene
Dibenz[a,h]anthracene
Indeno[1,2,3-c,d]pyrene
Phenol
Polychlorinated biphenyls



Michel (Mike) Gamache P.Ag

Project Manager

C : 403-370-2800

3909, 68 Ave
Leduc, AB
T9E 0Z4

Kblenv.com

CERTIFICATE OF ANALYSIS

Work Order	:	**VA24C6155**		
Client	:	**KBL Environmental Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact	:	Mike Gamache	Account Manager	: Gulraj Dhanaua
Address	:	13511 Vulcan Way A Division of CCS Inc. Richmond British Columbia Canada V6V 1K4	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	:	----	Telephone	: +1 604 253 4188
Project	:	4200IVSTF	Date Samples Received	: 02-Oct-2024 10:50
PO	:	----	Date Analysis Commenced	: 03-Oct-2024
C-O-C number	:	17-775017	Issue Date	: 04-Oct-2024 13:08
Sampler	:	----		
Site	:	----		
Quote number	:	KBL Environmetal BC Standing Offer 2024		
No. of samples received	:	1		
No. of samples analysed	:	1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brooke Miller	Laboratory Analyst	Inorganics, Edmonton, Alberta
Cindy Tang	Team Leader - Inorganics	Inorganics, Burnaby, British Columbia
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Maya Urquhart	Lab Analyst	Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	*Description*
µg/L	micrograms per litre
pH units	pH units
mg/L	milligrams per litre

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Qualifiers

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
DLQ	Detection Limit raised due to co-eluting interference. Mass Spectrometry qualifier ion ratio did not meet acceptance criteria.

Analytical Results

Sub-Matrix: Water (Matrix: Water)				Client sample ID	SW24-001	----	----	----	----
				Client sampling date / time	01-Oct-2024 00:00	----	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	VA24C6155-001	----	----	----	----
					Result	----	----	----	----
Physical Tests									
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L	533	----	----	----	----
pH	----	E108/VA	0.10	pH units	8.14	----	----	----	----
Total Metals									
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L	1.74	----	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L	0.00038	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L	0.00248	----	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L	0.0549	----	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L	<0.000100	----	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L	<0.000050	----	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L	0.471	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L	0.0000590	----	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L	145	----	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L	0.000342	----	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L	0.00265	----	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L	0.00176	----	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L	0.00477	----	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L	3.23	----	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L	0.00152	----	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L	0.0268	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L	41.6	----	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L	0.285	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SW24-001	----	----	----	----
					Client sampling date / time	01-Oct-2024 00:00	----	----	----	----
						VA24C6155-001	----	----	----	----
						Result	----	----	----	----
Total Metals										
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		0.0000060	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.00242	----	----	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.00795	----	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		0.200	----	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		8.28	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00466	----	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.00204	----	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		2.54	----	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		0.000016	----	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		162	----	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.693	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		310	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	----	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		0.000031	----	----	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		0.00030	----	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		0.00032	----	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		<0.0123 DLM	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.00184	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		0.00670	----	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		0.0168	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	SW24-001	----	----	----	----
					Client sampling date / time	01-Oct-2024 00:00	----	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C6155-001	----	----	----	----
						Result	----	----	----	----
Total Metals										
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		0.00032	----	----	----	----
Aggregate Organics										
Phenols, total (4AAP)	----	E562/EO	0.0010	mg/L		<0.0010	----	----	----	----
Volatile Organic Compounds [Fuels]										
Benzene	71-43-2	E611A/VA	0.50	µg/L		<0.50	----	----	----	----
Ethylbenzene	100-41-4	E611A/VA	0.50	µg/L		<0.50	----	----	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A/VA	0.50	µg/L		<0.50	----	----	----	----
Styrene	100-42-5	E611A/VA	0.50	µg/L		<0.50	----	----	----	----
Toluene	108-88-3	E611A/VA	0.50	µg/L		<0.50	----	----	----	----
Xylene, m+p-	179601-23-1	E611A/VA	0.40	µg/L		<0.40	----	----	----	----
Xylene, o-	95-47-6	E611A/VA	0.30	µg/L		<0.30	----	----	----	----
Xylenes, total	1330-20-7	E611A/VA	0.50	µg/L		<0.50	----	----	----	----
BTEX, total	----	E611A/VA	1.0	µg/L		<1.0	----	----	----	----
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	----	----	----	----
F2 (C10-C16)	----	E601/VA	100	µg/L		<100	----	----	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/VA	1.0	%		85.5	----	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		102	----	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%		86.2	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SW24-001	----	----	----	----
					Client sampling date / time	01-Oct-2024 00:00	----	----	----	----
						VA24C6155-001	----	----	----	----
						Result	----	----	----	----
Volatile Organic Compounds Surrogates										
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%		98.0	----	----	----	----
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Acenaphthylene	208-96-8	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Acridine	260-94-6	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Anthracene	120-12-7	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Benz(a)anthracene	56-55-3	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Benzo(a)pyrene	50-32-8	E641A/VA	0.0050	µg/L		<0.0050	----	----	----	----
Benzo(b+j)fluoranthene	n/a	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Benzo(b+j+k)fluoranthene	n/a	E641A/VA	0.015	µg/L		<0.015	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Benzo(k)fluoranthene	207-08-9	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Chrysene	218-01-9	E641A/VA	0.010	µg/L		<0.016 DLCI	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/VA	0.0050	µg/L		<0.0050	----	----	----	----
Fluoranthene	206-44-0	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Fluorene	86-73-7	E641A/VA	0.010	µg/L		0.013	----	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/VA	0.010	µg/L		<0.010	----	----	----	----
Methylnaphthalene, 1-	90-12-0	E641A/VA	0.010	µg/L		<0.023 DLCI	----	----	----	----
Methylnaphthalene, 1+2-	----	E641A/VA	0.015	µg/L		<0.047	----	----	----	----
Methylnaphthalene, 2-	91-57-6	E641A/VA	0.010	µg/L		<0.041 DLQ	----	----	----	----
Naphthalene	91-20-3	E641A/VA	0.050	µg/L		<0.050	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID				
					SW24-001	----	----	----	----
					Client sampling date / time				
					01-Oct-2024 00:00	----	----	----	----
					VA24C6155-001	----	----	----	----
					Result	----	----	----	----
Polycyclic Aromatic Hydrocarbons									
Phenanthrene	85-01-8	E641A/VA	0.020	µg/L	<0.020	----	----	----	----
Pyrene	129-00-0	E641A/VA	0.010	µg/L	<0.019 DLQ	----	----	----	----
Quinoline	91-22-5	E641A/VA	0.050	µg/L	<0.150 DLCI	----	----	----	----
B(a)P total potency equivalents [B(a)P TPE]	----	E641A/VA	0.010	µg/L	<0.010	----	----	----	----
PAHs, high molecular weight (BC AWQ)	n/a	E641A/VA	0.030	µg/L	<0.036	----	----	----	----
PAHs, low molecular weight (BC AWQ)	n/a	E641A/VA	0.060	µg/L	<0.060	----	----	----	----
PAHs, total (CCME sewer 18)	n/a	E641A/VA	0.070	µg/L	<0.082	----	----	----	----
PAHs, total (EPA 16)	n/a	E641A/VA	0.065	µg/L	<0.068	----	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates									
Chrysene-d12	1719-03-5	E641A/VA	0.1	%	99.9	----	----	----	----
Naphthalene-d8	1146-65-2	E641A/VA	0.1	%	94.5	----	----	----	----
Phenanthrene-d10	1517-22-2	E641A/VA	0.1	%	105	----	----	----	----
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687/WT	0.020	µg/L	<0.020	----	----	----	----
Aroclor 1221	11104-28-2	E687/WT	0.020	µg/L	<0.020	----	----	----	----
Aroclor 1232	11141-16-5	E687/WT	0.020	µg/L	<0.020	----	----	----	----
Aroclor 1242	53469-21-9	E687/WT	0.020	µg/L	<0.020	----	----	----	----
Aroclor 1248	12672-29-6	E687/WT	0.020	µg/L	<0.020	----	----	----	----
Aroclor 1254	11097-69-1	E687/WT	0.020	µg/L	<0.020	----	----	----	----
Aroclor 1260	11096-82-5	E687/WT	0.020	µg/L	<0.020	----	----	----	----
Aroclor 1262	37324-23-5	E687/WT	0.020	µg/L	<0.020	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

					Client sample ID	SW24-001	----	----	----	----
					Client sampling date / time	01-Oct-2024 00:00	----	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C6155-001	----	----	----	----
						Result	----	----	----	----
Polychlorinated Biphenyls										
Aroclor 1268	11100-14-4	E687/WT	0.020	µg/L		<0.020	----	----	----	----
Polychlorinated biphenyls [PCBs], total	----	E687/WT	0.060	µg/L		<0.060	----	----	----	----
Polychlorinated Biphenyls Surrogates										
Decachlorobiphenyl	2051-24-3	E687/WT	0.1	%		108	----	----	----	----
Tetrachloro-m-xylene	877-09-8	E687/WT	0.1	%		90.2	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C6155**	Page	: 1 of 7
Client	: **KBL Environmental Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact	: Mike Gamache	Account Manager	: Gulraj Dhanaua
Address	: 13511 Vulcan Way A Division of CCS Inc. Richmond BC Canada V6V 1K4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 4200IVSTF	Date Samples Received	: 02-Oct-2024 10:50
PO	: ----	Issue Date	: 04-Oct-2024 13:08
C-O-C number	: 17-775017		
Sampler	: ----		
Site	: ----		
Quote number	: KBL Environmetal BC Standing Offer 2024		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid)										
SW24-001	E562	01-Oct-2024	04-Oct-2024	28 days	4 days	✓	04-Oct-2024	28 days	4 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
SW24-001	E601	01-Oct-2024	02-Oct-2024	14 days	2 days	✓	03-Oct-2024	40 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
SW24-001	E581.VH+F1	01-Oct-2024	02-Oct-2024	14 days	2 days	✓	03-Oct-2024	14 days	2 days	✓
Physical Tests : pH by Meter										
HDPE										
SW24-001	E108	01-Oct-2024	02-Oct-2024	0.25 hrs	45 hrs	× EHTR-FM	03-Oct-2024	0.25 hrs	56 hrs	× EHTR-FM
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap										
SW24-001	E687	01-Oct-2024	04-Oct-2024	365 days	3 days	✓	04-Oct-2024	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs in Water by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
SW24-001	E641A	01-Oct-2024	02-Oct-2024	14 days	2 days	✓	02-Oct-2024	40 days	0 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
SW24-001	E508	01-Oct-2024	03-Oct-2024	28 days	3 days	✓	03-Oct-2024	28 days	3 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
SW24-001	E420	01-Oct-2024	03-Oct-2024	180 days	3 days	✓	03-Oct-2024	180 days	3 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate)										
SW24-001	E611A	01-Oct-2024	02-Oct-2024	14 days	2 days	✓	03-Oct-2024	14 days	2 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
BTEX by Headspace GC-MS	E611A	1686770	1	15	6.6	5.0	✓
pH by Meter	E108	1686786	1	6	16.6	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1690821	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	1689311	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1688257	1	4	25.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1686771	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	1686770	1	15	6.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1686715	1	2	50.0	5.0	✓
PAHs in Water by Hexane LVI GC-MS	E641A	1686714	1	6	16.6	5.0	✓
PCB Aroclors by GC-MS	E687	1689980	1	1	100.0	4.7	✓
pH by Meter	E108	1686786	1	6	16.6	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1690821	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	1689311	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1688257	1	4	25.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1686771	1	16	6.2	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	1686770	1	15	6.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1686715	1	2	50.0	5.0	✓
PAHs in Water by Hexane LVI GC-MS	E641A	1686714	1	6	16.6	5.0	✓
PCB Aroclors by GC-MS	E687	1689980	1	1	100.0	4.7	✓
Phenols (4AAP) in Water by Colorimetry	E562	1690821	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	1689311	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1688257	1	4	25.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1686771	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1686770	1	15	6.6	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1690821	1	19	5.2	5.0	✓
Total Mercury in Water by CVAAS	E508	1689311	1	13	7.6	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1688257	1	4	25.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1686771	1	16	6.2	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Edmonton	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
VH and F1 by Headspace GC-FID	E581.VH+F1 ALS Environmental - Vancouver	Water	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
CCME PHCs - F2-F4 by GC-FID	E601 ALS Environmental - Vancouver	Water	CCME PHC in Soil - Tier 1	Sample extracts are analyzed by GC-FID for CCME hydrocarbon fractions (F2-F4). Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
BTEX by Headspace GC-MS	E611A ALS Environmental - Vancouver	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs in Water by Hexane LVI GC-MS	E641A ALS Environmental - Vancouver	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PCB Aroclors by GC-MS	E687 ALS Environmental - Waterloo	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Vancouver	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into a GC-MS-FID.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Vancouver	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: **VA24C6155**	Page	: 1 of 12
Client	: KBL Environmental Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Mike Gamache	Account Manager	: Gulraj Dhanaua
Address	: 13511 Vulcan Way A Division of CCS Inc. Richmond BC Canada V6V 1K4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 4200IVSTF	Date Samples Received	: 02-Oct-2024 10:50
PO	: ----	Date Analysis Commenced	: 02-Oct-2024
C-O-C number	: 17-775017	Issue Date	: 04-Oct-2024 13:08
Sampler	: ----		
Site	: ----		
Quote number	: KBL Environmetal BC Standing Offer 2024		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brooke Miller	Laboratory Analyst	Edmonton Inorganics, Edmonton, Alberta
Cindy Tang	Team Leader - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Waterloo Organics, Waterloo, Ontario
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Maya Urquhart	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Robin Weeks	Team Leader - Metals	Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1686786)											
VA24C6170-001	Anonymous	pH	----	E108	0.10	pH units	8.36	8.38	0.239%	4%	----
Total Metals (QC Lot: 1688257)											
VA24C6155-001	SW24-001	Aluminum, total	7429-90-5	E420	0.0030	mg/L	1.74	1.68	3.62%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00038	0.00038	0.000006	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00248	0.00242	2.60%	20%	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0549	0.0562	2.40%	20%	----
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	0.471	0.537	13.2%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000590	0.0000630	6.54%	20%	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	145	163	11.6%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000342	0.000382	11.3%	20%	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	0.00265	0.00260	0.00004	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.00176	0.00178	0.907%	20%	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00477	0.00470	0.00007	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	3.23	3.16	2.23%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.00152	0.00176	15.0%	20%	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0268	0.0278	3.30%	20%	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	41.6	40.8	1.88%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.285	0.286	0.288%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00242	0.00273	11.9%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00795	0.00804	1.15%	20%	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	0.200	0.224	0.024	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	8.28	8.09	2.31%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00466	0.00467	0.193%	20%	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.00204	0.00210	2.67%	20%	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	2.54	2.44	4.06%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	0.000016	0.000018	0.000002	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	162	159	2.40%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.693	0.761	9.26%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1688257) - continued											
VA24C6155-001	SW24-001	Sulfur, total	7704-34-9	E420	0.50	mg/L	310	297	4.25%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	0.000031	0.000032	0.000001	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	0.00030	0.00034	0.00004	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	0.00032	0.00036	0.00004	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.0123	mg/L	<0.0123	<0.0123	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.00184	0.00210	13.1%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00670	0.00663	1.10%	20%	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0168	0.0173	0.0005	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	0.00032	0.00035	0.00002	Diff <2x LOR	----
Total Metals (QC Lot: 1689311)											
VA24C6155-001	SW24-001	Mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000060	0.0000061	0.0000002	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1690821)											
WT2429290-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	0.0013	0.0015	0.0002	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1686770)											
KS2404033-001	Anonymous	Benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1686771)											
KS2404033-001	Anonymous	F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.0%	30%	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1688257)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1688257) - continued						
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 1689311)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Aggregate Organics (QCLot: 1690821)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Volatile Organic Compounds (QCLot: 1686770)						
Benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611A	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 1686715)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
Hydrocarbons (QCLot: 1686771)						
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1686714)						
Acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	----
Acridine	260-94-6	E641A	0.01	µg/L	<0.010	----
Anthracene	120-12-7	E641A	0.01	µg/L	<0.010	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	----
Chrysene	218-01-9	E641A	0.01	µg/L	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1686714) - continued						
Fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	----
Fluorene	86-73-7	E641A	0.01	µg/L	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	----
Naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	----
Pyrene	129-00-0	E641A	0.01	µg/L	<0.010	----
Quinoline	91-22-5	E641A	0.05	µg/L	<0.050	----
Polychlorinated Biphenyls (QCLot: 1689980)						
Aroclor 1016	12674-11-2	E687	0.02	µg/L	<0.020	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	<0.020	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	<0.020	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	<0.020	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	<0.020	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	<0.020	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	<0.020	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	<0.020	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	<0.020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1686786)									
pH	----	E108	----	pH units	7 pH units	101	98.0	102	----
Total Metals (QCLot: 1688257)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	91.4	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	110	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	95.9	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	95.5	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	98.4	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	99.7	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	92.6	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	99.0	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	103	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	95.0	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	90.6	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	92.8	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	92.5	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	106	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	100	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	93.3	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	94.2	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	107	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	91.4	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	93.0	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	90.9	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	95.1	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.8	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	102	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	96.5	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	98.8	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	84.6	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	106	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1688257) - continued									
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	103	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	100	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	94.9	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	90.8	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	99.6	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	98.1	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	94.6	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	87.5	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	99.3	80.0	120	----
Total Metals (QCLot: 1689311)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	96.2	80.0	120	----
Aggregate Organics (QCLot: 1690821)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	93.6	85.0	115	----
Volatile Organic Compounds (QCLot: 1686770)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	95.3	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	87.1	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	100 µg/L	98.1	70.0	130	----
Styrene	100-42-5	E611A	0.5	µg/L	100 µg/L	90.1	70.0	130	----
Toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	92.5	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	94.6	70.0	130	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	89.9	70.0	130	----
Hydrocarbons (QCLot: 1686715)									
F2 (C10-C16)	----	E601	100	µg/L	3540 µg/L	120	70.0	130	----
Hydrocarbons (QCLot: 1686771)									
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	87.3	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1686714)									
Acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
Acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	90.4	60.0	130	----
Anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	111	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	102	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	101	60.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1686714) - continued									
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	0.5 µg/L	106	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	104	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
Chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	108	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	106	60.0	130	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
Fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	99.7	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	95.1	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	102	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	110	60.0	130	----
Naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	105	50.0	130	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	106	60.0	130	----
Pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	101	60.0	130	----
Quinoline	91-22-5	E641A	0.05	µg/L	0.5 µg/L	100	60.0	130	----
Polychlorinated Biphenyls (QCLot: 1689980)									
Aroclor 1016	12674-11-2	E687	0.02	µg/L	0.2 µg/L	93.1	60.0	140	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	0.2 µg/L	93.1	60.0	140	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	0.2 µg/L	93.1	60.0	140	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	0.2 µg/L	93.1	60.0	140	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	0.2 µg/L	96.1	60.0	140	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	0.2 µg/L	88.6	60.0	140	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	0.2 µg/L	90.9	60.0	140	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	0.2 µg/L	90.9	60.0	140	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	0.2 µg/L	90.9	60.0	140	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1688257)										
VA24C6201-001	Anonymous	Aluminum, total	7429-90-5	E420	0.183 mg/L	0.2 mg/L	91.7	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0188 mg/L	0.02 mg/L	94.0	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	----	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0374 mg/L	0.04 mg/L	93.6	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		Boron, total	7440-42-8	E420	0.094 mg/L	0.1 mg/L	94.0	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00372 mg/L	0.004 mg/L	93.1	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.00989 mg/L	0.01 mg/L	98.9	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0386 mg/L	0.04 mg/L	96.6	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0185 mg/L	0.02 mg/L	92.5	70.0	130	----
		Copper, total	7440-50-8	E420	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		Iron, total	7439-89-6	E420	ND mg/L	----	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.0201 mg/L	0.02 mg/L	101	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0943 mg/L	0.1 mg/L	94.3	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	----	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0194 mg/L	0.02 mg/L	96.8	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0370 mg/L	0.04 mg/L	92.6	70.0	130	----
		Phosphorus, total	7723-14-0	E420	9.19 mg/L	10 mg/L	91.9	70.0	130	----
		Potassium, total	7440-09-7	E420	3.64 mg/L	4 mg/L	91.0	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0189 mg/L	0.02 mg/L	94.3	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0383 mg/L	0.04 mg/L	95.8	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	----	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	19.8 mg/L	20 mg/L	98.9	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00375 mg/L	0.004 mg/L	93.8	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0216 mg/L	0.02 mg/L	108	70.0	130	----
		Tin, total	7440-31-5	E420	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0370 mg/L	0.04 mg/L	92.4	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0189 mg/L	0.02 mg/L	94.3	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00377 mg/L	0.004 mg/L	94.3	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0960 mg/L	0.1 mg/L	96.0	70.0	130	----
		Zinc, total	7440-66-6	E420	0.361 mg/L	0.4 mg/L	90.3	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1689311)										
VA24C6201-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000892 mg/L	0 mg/L	89.2	70.0	130	----
Aggregate Organics (QCLot: 1690821)										
WT2429294-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0189 mg/L	0.02 mg/L	94.4	75.0	125	----
Volatile Organic Compounds (QCLot: 1686770)										
KS2404033-001	Anonymous	Benzene	71-43-2	E611A	92.3 µg/L	100 µg/L	N/A	60.0	140	----
		Ethylbenzene	100-41-4	E611A	78.6 µg/L	100 µg/L	N/A	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	98.1 µg/L	100 µg/L	N/A	60.0	140	----
		Styrene	100-42-5	E611A	84.2 µg/L	100 µg/L	N/A	60.0	140	----
		Toluene	108-88-3	E611A	85.0 µg/L	100 µg/L	N/A	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	180 µg/L	200 µg/L	N/A	60.0	140	----
		Xylene, o-	95-47-6	E611A	83.6 µg/L	100 µg/L	N/A	60.0	140	----
Hydrocarbons (QCLot: 1686771)										
KS2404033-002	Anonymous	F1 (C6-C10)	----	E581.VH+F1	5210 µg/L	6310 µg/L	N/A	60.0	140	----

ALS Environmental

www.alsglobal.com

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 - 775017

Page of

Report To	Contact and company name below will appear on the final report
Company:	KBL Environmental
Contact:	Mike Gamache
Phone:	403 370 2800
	Company address below will appear on the final report
Street:	3909 68th AVE
City/Province:	Leduc AB
Postal Code:	T9E 0Z4

Report Format / Distribution	
Select Report Format:	PDF, EXCEL, EDD (DIGITAL)
Quality Control (QC) Report with Report	YES, NO
Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	EMAIL, MAIL, FAX
Email 1 or Fax	Mgamache@kbl.ca
Email 2	bhowes@kbl.ca
Email 3	

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)	
Regular [R]	Standard TAT if received by 3 pm - business days - no surcharges apply
PRIORITY (Business Days) 4 day [P4-20%]	EMERGENCY 1 Business day [E - 100%]
3 day [P3-25%]	Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]
2 day [P2-50%]	
Date and Time Required for all E&P TATs:	dd-mmm-yy hh:mm
For tests that can not be performed according to the service level selected, you will be contacted.	

Invoice To	
	Same as Report To: YES, NO
	Copy of Invoice with Report: YES, NO
Company:	
Contact:	

Invoice Distribution	
Select Invoice Distribution:	EMAIL, MAIL, FAX
Email 1 or Fax	accountspayable@kbl.ca
Email 2	Mgamache@kbl.ca

Project Information	
ALS Account # / Quote #:	
Job #:	4200IVSTF
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)	
AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Lab Work Order # (lab use only): C6155

ALS Contact: Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	pH + Total metals	BTEX F1-F2	PAHs	Phenols	PCBs	SUSPECTED HAZARD (see Special Instructions)
	SW24-001	01-OCT-24		Water (W)	15	X	X	X	X	X	

SAMPLES ON HOLD

Environmental Division Vancouver
Work Order Reference
VA24C6155

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? YES, NO	(NO)
Are samples for human consumption/ use? YES, NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen		SIF Observations	Yes		No
Ice Packs / Cooling Initiated	Ice Cubes	Custody seal intact	Yes		No
			N/A		

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
	8

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date:	Time:	Received by:	Date:	Time:	Received by:	Date:	Time:
Mike Gamache	Oct 1, 2024	1400				JC	20CT24	1050am

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

APPENDIX D

Appendix D: Tabular Summaries of SNP Sampling

KBL

Table D1: Field parameters for groundwater at the KBL Inuvik Soil Treatment Facility - 2024

Monitoring Well	Sample Date	pH	Temperature °C	EC[1] µS/cm	DO[2] mg/L	ORP[3] mV	Comments
SNP0037-4	19-Jul-24						Frozen
	09-Oct-24						Dry
SNP0037-5	19-Jul-24	6.41	7.8	3,610.0	9.79	41.7	
	09-Oct-24						Destroyed from construction
SNP0037-6	19-Jul-24						Missing assumed destroyed
	09-Oct-24						
SNP0037-7	19-Jul-24	7.49	4.2	3,889	7.94	-46.5	
	09-Oct-24	7.23	3.1	3,895	1.8	-248.4	

Notes:

--- - Field screening not conducted

[1]- Field EC (specific electrical conductivity) corrected to 25 °C

[2]- Field DO (dissolved oxygen)

[3]- Field ORP (oxidation reduction potential)

KBL

Table D2: Inuvik Soil Treatment Facility Annual Groundwater Monitoring Results

			PHCs							BTEX			
			F1	EPH C10-C19	EPH C19-C32	F2	F3	F4	Oil and Grease	Benzene	Toluene	Ethylbenzene	Xylene Total
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L	µg/L	µg/L
Action levels[A]			9,100	5,313	1,638	1,300	538	775	13,250	690	83	11,000	18,000
Sample Code	**Date**	**Field ID**											
VA24B8024-001	**21 Jul 2024**	**SNP-0037-5**	<100	<250	<250	<100	<250	<250		<0.50	<0.50	<0.50	<0.50
VA24B8024-002	**21 Jul 2024**	**SNP-0037-7**	<100	370	<250	270	440	<250		7.30	3.17	5.66	6.07
VA24C7465-001	**09 Oct 2024**	**SNP-0037-7**	<100			270	520	320		9.27	3.00	5.59	4.64

Environmental Standards

A - Action levels per the Environmental Managemnet Plan

Table D2: Inuvik Soil Treatment Facility Annual Groundwater Monitoring Results

			Inorganics										
			Sulfur (As S)	Sulfur (As S) (filtered)	Total Dissolved Solids (Calc.)	Alkalinity (Carbonate as CaCO3)	Alkalinity (Bicarbonate as CaCO3)	Alkalinity (Hydroxide) as CaCO3	Alkalinity (total) as CaCO3	pH (Lab)	Electrical Conductivity (Lab)	Hardness as CaCO3	Hardness as CaCO3 (filtered)	Sulphate (filtered)
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	-	µS/cm	mg/L	mg/L	mg/L
Action levels[A]														
Sample Code	**Date**	**Field ID**												
VA24B8024-001	**21 Jul 2024**	**SNP-0037-5**	830	808	3,340	<1.0	320	<1.0	320	8.22	3,560	2,600	2,510	2,170
VA24B8024-002	**21 Jul 2024**	**SNP-0037-7**	153	173	2,370	<1.0	1,410	<1.0	1,410	7.60	3,690	1,670	1,650	339
VA24C7465-001	**09 Oct 2024**	**SNP-0037-7**	95.7	84						7.16		1680	1550	

Environmental Standards

A - Action levels per the Environmental Managemnet Plan

Table D2: Inuvik Soil Treatment Facility Annual Groundwater Monitoring Results

			Inorganics												
			Total Suspended Solids (Lab)	Anions Total (filtered)	Bromide	Cations Total (filtered)	Chloride (filtered)	Chemical Oxygen Demand	Fluoride	Ionic Balance (filtered)	Nitrate (as N)	Nitrite (as N)	phenolphthalein alkalinity	Sodium	Sodium (filtered)	Total Dissolved Solids (Lab)
			mg/L	meq/L	µg/L	meq/L	mg/L	mg/L	mg/L	%	mg/L	mg/L	µg/L	mg/L	mg/L	mg/L
Action levels[A]			3,000					547,500								
Sample Code	**Date**	**Field ID**														
VA24B8024-001	**21 Jul 2024**	**SNP-0037-5**	10.8	53.4	<1,000	54.7	66.3	42	<0.400	102	<0.100	<0.0200	<1,000	98.7	99	3,600
VA24B8024-002	**21 Jul 2024**	**SNP-0037-7**	62.2	43.8	3,380	49.6	303	304	<0.400	113	<0.100	<0.0200	<1,000	329	359	2,620
VA24C7465-001	**09 Oct 2024**	**SNP-0037-7**												394	386	

Environmental Standards

A - Action levels per the Environmental Managemnet Plan

Table D2: Inuvik Soil Treatment Facility Annual Groundwater Monitoring Results

					Salinity & Routine	Total Metals										
			TEH (C10-C50)	TEH (C16-C50)	Cation - Anion Balance (filtered)	Aluminium	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium (III+VI)	Cobalt	Copper	Iron
			ug/L	ug/L	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Action levels[A]						8,663	2,000	36	938	5	5,300	1	20	50	28	135,000
Sample Code	**Date**	**Field ID**														
VA24B8024-001	**21 Jul 2024**	**SNP-0037-5**	<400	<400	1.2	1.8	0.00033	0.00519	0.0631	0.000140	2.57	0.000130	0.00414	0.00316	0.00716	5.48
VA24B8024-002	**21 Jul 2024**	**SNP-0037-7**	710	440	6.21	11.1	0.00211	0.06040	0.559	0.000718	1.66	0.000680	0.02340	0.02270	0.03640	81.4
VA24C7465-001	**09 Oct 2024**	**SNP-0037-7**	1110	840		21.4	0.00316	0.121	0.916	0.00152	1.99	0.00161	0.0508	0.0505	0.0953	169

Environmental Standards

A - Action levels per the Environmental Managemnet Plan

Table D2: Inuvik Soil Treatment Facility Annual Groundwater Monitoring Results

			Total Metals									
			Lead	Manganese	Mercury	Molybdenum	Nickel	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	mg/L
Action levels[A]			36	7,263	0	73	47	8	0	1	10	100	230
Sample Code	**Date**	**Field ID**											
VA24B8024-001	**21 Jul 2024**	**SNP-0037-5**	0.00266	0.258	0.0000818	0.000524	0.0127	0.000429	0.000048	0.000049	1.84	0.00875	0.0253
VA24B8024-002	**21 Jul 2024**	**SNP-0037-7**	0.06020	1.84	0.0003150	0.00656	0.0663	0.00148	0.000273	0.000206	1.41	0.065	0.432
VA24C7465-001	**09 Oct 2024**	**SNP-0037-7**	0.167	2.64	0.0000561	0.0126	0.139	0.00266	0.000465	0.00525	3.19	0.134	0.876

Environmental Standards

A - Action levels per the Environmental Managemnet Plan

Table D2: Inuvik Soil Treatment Facility Annual Groundwater Monitoring Results

			Dissolved Metals										
			Aluminium (filtered)	Antimony (filtered)	Arsenic (filtered)	Barium (filtered)	Beryllium (filtered)	Boron (filtered)	Cadmium (filtered)	Chromium (III+VI) (filtered)	Cobalt (filtered)	Copper (filtered)	Iron (filtered)	Lead (filtered)
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Action levels[A]														
Sample Code	**Date**	**Field ID**												
VA24B8024-001	**21 Jul 2024**	**SNP-0037-5**	0.0280	<0.00020	0.00046	0.0122	<0.000100	2.53	0.0000614	<0.00100	0.0005	0.00184	0.022	<0.000100
VA24B8024-002	**21 Jul 2024**	**SNP-0037-7**	0.0202	0.00077	0.00689	0.171	<0.000100	1.86	<0.0000100	0.00142	0.00091	<0.00040	0.323	<0.000100
VA24C7465-001	**09 Oct 2024**	**SNP-0037-7**	0.0555	0.00057	0.0131	0.248	<0.000100	1.77	<0.0000050	0.00213	0.00042	0.00114	2.42	0.000106

Environmental Standards

A - Action levels per the Environmental Managemnet Plan

Table D2: Inuvik Soil Treatment Facility Annual Groundwater Monitoring Results

			Dissolved Metals										MAH
			Manganese (filtered)	Mercury (filtered)	Molybdenum (filtered)	Nickel (filtered)	Selenium (filtered)	Silver (filtered)	Thallium (filtered)	Uranium (filtered)	Vanadium (filtered)	Zinc (filtered)	Styrene
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	µg/L	mg/L	mg/L	µg/L
Action levels[A]													
Sample Code	**Date**	**Field ID**											
VA24B8024-001	**21 Jul 2024**	**SNP-0037-5**	0.0853	<0.0000050	0.000185	0.00777	0.000266	<0.000020	<0.000020	1.47	<0.00100	0.0065	<0.50
VA24B8024-002	**21 Jul 2024**	**SNP-0037-7**	0.775	<0.0000050	0.001880	0.00683	0.000514	<0.000020	<0.000020	0.340	0.00249	0.0050	<0.50
VA24C7465-001	**09 Oct 2024**	**SNP-0037-7**	0.850	<0.0000050	0.001410	0.00564	0.000628	<0.000010	<0.000010	0.115	0.00635	0.0034	<0.50

Environmental Standards

A - Action levels per the Environmental Managemnet Plan

Table D2: Inuvik Soil Treatment Facility Annual Groundwater Monitoring Results

			PAH													
			Benzo(b+j+k)fluoranthene	Methylnaphthalenes	Total PAH (CCME 18)	1-Methylnaphthalene	2-methylnaphthalene	Acenaphthene	Acenaphthylene	Acridine	Anthracene	Benz(a)anthracene	Benzo(a) pyrene	Benzo(b+j)fluoranthene	Benzo(g,h,i)perylene	Benzo(k)fluoranthene	Chrysene
			µg/L	mg/L	ug/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Action levels[A]																	
Sample Code	**Date**	**Field ID**															
VA24B8024-001	**21 Jul 2024**	**SNP-0037-5**															
VA24B8024-002	**21 Jul 2024**	**SNP-0037-7**															
VA24C7465-001	**09 Oct 2024**	**SNP-0037-7**	<0.022	0.00164	4.03	0.786	0.853	0.113	<0.020	0.098	<0.030	<0.010	<0.0200	<0.020	<0.010	<0.010	0.012

Environmental Standards

A - Action levels per the Environmental Managemnet Plan

Table D2: Inuvik Soil Treatment Facility Annual Groundwater Monitoring Results

			PAH											Phenols
			Dibenz(a,h)anthracene	Fluoranthene	Fluorene	Indeno(1,2,3-c,d)pyrene	Naphthalene	Phenanthrene	Pyrene	Quinoline	Benzo(a)pyrene (mid point)	Light Molecular Weight PAHs (sum)	Heavy Molecular Weight PAHs (sum)	PAHs (Sum of total)	Phenols (4AAP)
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L
Action levels[A]															
Sample Code	**Date**	**Field ID**													
VA24B8024-001	**21 Jul 2024**	**SNP-0037-5**													
VA24B8024-002	**21 Jul 2024**	**SNP-0037-7**													
VA24C7465-001	**09 Oct 2024**	**SNP-0037-7**	<0.0050	<0.050	0.150	<0.010	1.82	0.238	0.057	<0.050	0.015	2.32	0.069	2.39	25.3

Environmental Standards

A - Action levels per the Environmental Managemnet Plan

Table D2: Inuvik Soil Treatment Facility Annual Groundwater Monitoring Results

			PCBs									
			Arochlor 1016	Arochlor 1221	Arochlor 1232	Arochlor 1242	Arochlor 1248	Arochlor 1254	Arochlor 1260	Arochlor 1268	Aroclor 1262	PCBs (Sum of total)
			µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	µg/L	mg/L	µg/L	µg/L
Action levels[A]												
Sample Code	**Date**	**Field ID**										
VA24B8024-001	21 Jul 2024	SNP-0037-5										
VA24B8024-002	21 Jul 2024	SNP-0037-7										
VA24C7465-001	09 Oct 2024	SNP-0037-7	<0.038	<0.038	<0.038	<0.038	<0.038	<0.020	<0.050	<0.000050	<0.050	<0.123

Environmental Standards

A - Action levels per the Environmental Managemnet Plan

APPENDIX E

Appendix E: Laboratory Analytical of SNP Sampling

KBL

CERTIFICATE OF ANALYSIS

Work Order	: **VA24B8024**	Page	: 1 of 7
Client	: **KBL Environmental Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact	: Mike Gamache	Account Manager	: Selam Worku
Address	: 13511 Vulcan Way A Division of CCS Inc. Richmond BC Canada V6V 1K4	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 4200IVSTF	Date Samples Received	: 23-Jul-2024 12:30
PO	: ----	Date Analysis Commenced	: 24-Jul-2024
C-O-C number	: 20-974493	Issue Date	: 01-Aug-2024 16:58
Sampler	: ----		
Site	: ----		
Quote number	: KBL Environmetal BC Standing Offer 2024		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Anshim Anshim	Lab Assistant	Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Organics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, Burnaby, British Columbia
Owen Cheng		Metals, Burnaby, British Columbia

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.
Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances
LOR: Limit of Reporting (detection limit).

Unit	*Description*
-	no units
%	percent
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
meq/L	milliequivalents per litre
mg/L	milligrams per litre
pH units	pH units

<: less than.

>: greater than.

Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Workorder Comments

Sample(s)001 & 002(SNP-0037-5 & SNP-0037-7): Oil & Grease Container was not received at laboratory, but requested on Chain of Custody / analytical request form; subsample cannot be obtained from other containers to meet request. The requested analysis cannot be performed.

Qualifiers

Qualifier	*Description*
DLA	*Detection Limit adjusted for required dilution.*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP-0037-5	SNP-0037-7	----	----	----
					Client sampling date / time	21-Jul-2024 00:00	21-Jul-2024 00:00	----	----	----
						VA24B8024-001	VA24B8024-002	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
Alkalinity, bicarbonate (as CaCO3)	----	E290/VA	1.0	mg/L		320	1410	----	----	----
Alkalinity, carbonate (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	<1.0	----	----	----
Alkalinity, hydroxide (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	<1.0	----	----	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	<1.0	----	----	----
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L		320	1410	----	----	----
Conductivity	----	E100/VA	2.0	µS/cm		3560	3690	----	----	----
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		2510	1650	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		2600	1670	----	----	----
pH	----	E108/VA	0.10	pH units		8.22	7.60	----	----	----
Solids, total dissolved [TDS]	----	E162/VA	10	mg/L		3600	2620	----	----	----
Solids, total dissolved [TDS], calculated	----	EC103/VA	1.0	mg/L		3340	2370	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		10.8	62.2	----	----	----
Anions and Nutrients										
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L		<1.00 DLDS	3.38	----	----	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L		66.3	303	----	----	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L		<0.400 DLDS	<0.400 DLDS	----	----	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L		<0.100 DLDS	<0.100 DLDS	----	----	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L		<0.0200 DLDS	<0.0200 DLDS	----	----	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L		2170	339	----	----	----
Ion Balance										
Anion sum	----	EC101/VA	0.10	meq/L		53.4	43.8	----	----	----
Cation sum	----	EC101/VA	0.10	meq/L		54.7	49.6	----	----	----
Ion balance (cations/anions)	----	EC101/VA	0.010	%		102	113	----	----	----
Ion balance (APHA)	----	EC101/VA	0.01	%		1.20	6.21	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		1.80	11.1	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		0.00033	0.00211	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00519	0.0604	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	SNP-0037-5	SNP-0037-7	----	----	----
					Client sampling date / time	21-Jul-2024 00:00	21-Jul-2024 00:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA24B8024-001	VA24B8024-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0631	0.559	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		0.000140	0.000718	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000100 DLA	0.000173	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		2.57	1.66	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.000130	0.000680	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		528	178	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000425	0.00124	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		0.00414	0.0234	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		0.00316	0.0227	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00716	0.0364	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		5.48	81.4	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.00266	0.0602	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0321	0.0491	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		311	297	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.258	1.84	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		0.0000818	0.000315	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000524	0.00656	----	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.0127	0.0663	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		0.295	2.67	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		10.2	36.9	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00580	0.0186	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000429	0.00148	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		7.71	20.2	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		0.000048	0.000273	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		98.7	329	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		2.55	1.03	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		830	153	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00040 DLA	<0.00040 DLA	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		0.000049	0.000206	----	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		0.00090	0.00205	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		0.00049	0.00315	----	----	----

Analytical Results

Sub-Matrix: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP-0037-5	SNP-0037-7	----	----	----
					Client sampling date / time	21-Jul-2024 00:00	21-Jul-2024 00:00	----	----	----
						VA24B8024-001	VA24B8024-002	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.0326	0.0633	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00020 DLA	<0.00020 DLA	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.00184	0.00141	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		0.00875	0.0650	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		0.0253	0.432	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		0.00108	0.00186	----	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.0280	0.0202	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00020 DLA	0.00077	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00046	0.00689	----	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.0122	0.171	----	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		<0.000100	<0.000100	----	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000100 DLA	<0.000100 DLA	----	----	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		2.53	1.86	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		0.0000614	<0.0000100 DLA	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		471	154	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		0.000035	<0.000020 DLA	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00100 DLA	0.00142	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		0.00050	0.00091	----	----	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00184	<0.00040 DLA	----	----	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.022	0.323	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000100 DLA	<0.000100 DLA	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0297	0.0378	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		324	308	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.0853	0.775	----	----	----
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.000185	0.00188	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.00777	0.00683	----	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.100 DLA	0.100	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		9.78	37.8	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00329	0.0107	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	SNP-0037-5	SNP-0037-7	----	----	----
					Client sampling date / time	21-Jul-2024 00:00	21-Jul-2024 00:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA24B8024-001	VA24B8024-002	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		0.000266	0.000514	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		4.08	6.86	----	----	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000020 DLA	<0.000020 DLA	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		99.0	359	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		2.54	0.877	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		808	173	----	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00040 DLA	<0.00040 DLA	----	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000020 DLA	<0.000020 DLA	----	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00020 DLA	<0.00020 DLA	----	----	----
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00020 DLA	0.00022	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00060 DLA	<0.00090 DLM	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00020 DLA	<0.00020 DLA	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.00147	0.000340	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00100 DLA	0.00249	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		0.0065	0.0050	----	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00040 DLA	0.00157	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-		Laboratory	Laboratory	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Laboratory	Laboratory	----	----	----
Aggregate Organics										
Chemical oxygen demand [COD]	----	E559-L/VA	10	mg/L		42	304	----	----	----
Volatile Organic Compounds [Fuels]										
Benzene	71-43-2	E611A/VA	0.50	µg/L		<0.50	7.30	----	----	----
Ethylbenzene	100-41-4	E611A/VA	0.50	µg/L		<0.50	5.66	----	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Styrene	100-42-5	E611A/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Toluene	108-88-3	E611A/VA	0.50	µg/L		<0.50	3.17	----	----	----
Xylene, m+p-	179601-23-1	E611A/VA	0.40	µg/L		<0.40	3.07	----	----	----
Xylene, o-	95-47-6	E611A/VA	0.30	µg/L		<0.30	3.00	----	----	----
Xylenes, total	1330-20-7	E611A/VA	0.50	µg/L		<0.50	6.07	----	----	----
Hydrocarbons										
EPH (C10-C19)	----	E601A/VA	250	µg/L		<250	370	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	SNP-0037-5	SNP-0037-7	----	----	----
					Client sampling date / time	21-Jul-2024 00:00	21-Jul-2024 00:00	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		VA24B8024-001	VA24B8024-002	--------	--------	--------
						Result	Result	----	----	----
Hydrocarbons										
EPH (C19-C32)	----	E601A/VA	250	µg/L		<250	<250	----	----	----
F2 (C10-C16)	----	E601/VA	100	µg/L		<100	270	----	----	----
F3 (C16-C34)	----	E601/VA	250	µg/L		<250	440	----	----	----
F4 (C34-C50)	----	E601/VA	250	µg/L		<250	<250	----	----	----
TEH (C10-C50)	n/a	E601/VA	400	µg/L		<400	710	----	----	----
TEH (C16-C50)	----	E601/VA	400	µg/L		<400	440	----	----	----
VHw (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	<100	----	----	----
F1-BTEX	----	EC580/VA	100	µg/L		<100	<100	----	----	----
VPHw	----	EC580A/VA	100	µg/L		<100	<100	----	----	----
F1 (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	<100	----	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6	E601A/VA	1.0	%		84.6	84.1	----	----	----
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/VA	1.0	%		82.2	86.1	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		85.2	72.0	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%		92.7	92.2	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%		95.0	93.8	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

right solutions.
right partner.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24B8024**	Page	: 1 of 13
Client	: **KBL Environmental Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact	: Mike Gamache	Account Manager	: Selam Worku
Address	: 13511 Vulcan Way A Division of CCS Inc. Richmond BC Canada V6V 1K4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 4200IVSTF	Date Samples Received	: 23-Jul-2024 12:30
PO	: ----	Issue Date	: 01-Aug-2024 16:58
C-O-C number	: 20-974493		
Sampler	: ----		
Site	: ----		
Quote number	: KBL Environmetal BC Standing Offer 2024		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- No Quality Control Sample Frequency Outliers occur.

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) SNP-0037-5	E559-L	21-Jul-2024	----	----	----		29-Jul-2024	28 days	9 days	✓
Aggregate Organics : Chemical Oxygen Demand by Colourimetry (Low Level)										
Amber glass total (sulfuric acid) SNP-0037-7	E559-L	21-Jul-2024	----	----	----		29-Jul-2024	28 days	9 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE SNP-0037-5	E235.Br-L	21-Jul-2024	24-Jul-2024	28 days	4 days	✓	24-Jul-2024	28 days	4 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE SNP-0037-7	E235.Br-L	21-Jul-2024	24-Jul-2024	28 days	4 days	✓	24-Jul-2024	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE SNP-0037-5	E235.Cl	21-Jul-2024	24-Jul-2024	28 days	4 days	✓	24-Jul-2024	28 days	4 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE SNP-0037-7	E235.Cl	21-Jul-2024	24-Jul-2024	28 days	4 days	✓	24-Jul-2024	28 days	4 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE SNP-0037-5	E235.F	21-Jul-2024	24-Jul-2024	28 days	4 days	✓	24-Jul-2024	28 days	4 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times* Rec	*Holding Times* Actual	*Eval*	*Analysis Date*	*Holding Times* Rec	*Holding Times* Actual	*Eval*
Anions and Nutrients : Fluoride in Water by IC										
HDPE SNP-0037-7	E235.F	21-Jul-2024	24-Jul-2024	28 days	4 days	✓	24-Jul-2024	28 days	4 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE SNP-0037-5	E235.NO3-L	21-Jul-2024	24-Jul-2024	3 days	3 days	✓	24-Jul-2024	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE SNP-0037-7	E235.NO3-L	21-Jul-2024	24-Jul-2024	3 days	3 days	✓	24-Jul-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE SNP-0037-5	E235.NO2-L	21-Jul-2024	24-Jul-2024	3 days	3 days	✓	24-Jul-2024	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE SNP-0037-7	E235.NO2-L	21-Jul-2024	24-Jul-2024	3 days	3 days	✓	24-Jul-2024	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE SNP-0037-5	E235.SO4	21-Jul-2024	24-Jul-2024	28 days	4 days	✓	24-Jul-2024	28 days	4 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE SNP-0037-7	E235.SO4	21-Jul-2024	24-Jul-2024	28 days	4 days	✓	24-Jul-2024	28 days	4 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) SNP-0037-5	E509	21-Jul-2024	26-Jul-2024	28 days	5 days	✓	26-Jul-2024	28 days	5 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) SNP-0037-7	E509	21-Jul-2024	26-Jul-2024	28 days	5 days	✓	26-Jul-2024	28 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP-0037-5	E421	21-Jul-2024	24-Jul-2024	180 days	4 days	✓	28-Jul-2024	180 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP-0037-7	E421	21-Jul-2024	24-Jul-2024	180 days	4 days	✓	28-Jul-2024	180 days	7 days	✓
Hydrocarbons : BC PHCs - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP-0037-5	E601A	21-Jul-2024	30-Jul-2024	14 days	9 days	✓	31-Jul-2024	40 days	1 days	✓
Hydrocarbons : BC PHCs - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP-0037-7	E601A	21-Jul-2024	30-Jul-2024	14 days	9 days	✓	31-Jul-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP-0037-5	E601	21-Jul-2024	30-Jul-2024	14 days	9 days	✓	30-Jul-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP-0037-7	E601	21-Jul-2024	30-Jul-2024	14 days	9 days	✓	30-Jul-2024	40 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP-0037-5	E581.VH+F1	21-Jul-2024	30-Jul-2024	14 days	9 days	✓	31-Jul-2024	14 days	10 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP-0037-7	E581.VH+F1	21-Jul-2024	30-Jul-2024	14 days	9 days	✓	31-Jul-2024	14 days	10 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE SNP-0037-5	E290	21-Jul-2024	24-Jul-2024	14 days	4 days	✓	26-Jul-2024	14 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Alkalinity Species by Titration										
HDPE SNP-0037-7	E290	21-Jul-2024	24-Jul-2024	14 days	4 days	✓	26-Jul-2024	14 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP-0037-5	E100	21-Jul-2024	24-Jul-2024	28 days	4 days	✓	26-Jul-2024	28 days	5 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP-0037-7	E100	21-Jul-2024	24-Jul-2024	28 days	4 days	✓	26-Jul-2024	28 days	5 days	✓
Physical Tests : pH by Meter										
HDPE SNP-0037-5	E108	21-Jul-2024	24-Jul-2024	0.25 hrs	88 hrs	× EHTR-FM	26-Jul-2024	0.25 hrs	128 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP-0037-7	E108	21-Jul-2024	24-Jul-2024	0.25 hrs	88 hrs	× EHTR-FM	26-Jul-2024	0.25 hrs	128 hrs	× EHTR-FM
Physical Tests : TDS by Gravimetry										
HDPE SNP-0037-5	E162	21-Jul-2024	----	----	----		26-Jul-2024	7 days	5 days	✓
Physical Tests : TDS by Gravimetry										
HDPE SNP-0037-7	E162	21-Jul-2024	----	----	----		26-Jul-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP-0037-5	E160	21-Jul-2024	----	----	----		26-Jul-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP-0037-7	E160	21-Jul-2024	----	----	----		26-Jul-2024	7 days	5 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) SNP-0037-5	E508	21-Jul-2024	30-Jul-2024	28 days	10 days	✓	30-Jul-2024	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) SNP-0037-7	E508	21-Jul-2024	30-Jul-2024	28 days	10 days	✓	30-Jul-2024	28 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP-0037-5	E420	21-Jul-2024	27-Jul-2024	180 days	6 days	✓	30-Jul-2024	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP-0037-7	E420	21-Jul-2024	27-Jul-2024	180 days	6 days	✓	30-Jul-2024	180 days	10 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP-0037-5	E611A	21-Jul-2024	30-Jul-2024	14 days	9 days	✓	31-Jul-2024	14 days	10 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP-0037-7	E611A	21-Jul-2024	30-Jul-2024	14 days	9 days	✓	31-Jul-2024	14 days	10 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1562468	1	18	5.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1562476	1	10	10.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1571263	1	14	7.1	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1569843	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1562475	1	10	10.0	5.0	✓
Conductivity in Water	E100	1562469	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1565347	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1562925	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	1562474	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1562470	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1562471	1	19	5.2	5.0	✓
pH by Meter	E108	1562467	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1562477	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	1566692	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1572648	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1562966	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1566672	1	10	10.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1571261	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1562468	1	18	5.5	5.0	✓
BC PHCs - EPH by GC-FID	E601A	1570596	1	11	9.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1562476	1	10	10.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1571263	1	14	7.1	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1570599	1	2	50.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1569843	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1562475	1	10	10.0	5.0	✓
Conductivity in Water	E100	1562469	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1565347	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1562925	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	1562474	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1562470	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1562471	1	19	5.2	5.0	✓
pH by Meter	E108	1562467	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1562477	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	1566692	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1572648	1	20	5.0	5.0	✓

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Control Samples (LCS) - Continued							
Total Metals in Water by CRC ICPMS	E420	1562966	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1566672	1	10	10.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1571261	1	16	6.2	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1562468	1	18	5.5	5.0	✓
BC PHCs - EPH by GC-FID	E601A	1570596	1	11	9.0	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1562476	1	10	10.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1571263	1	14	7.1	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1570599	1	2	50.0	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1569843	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1562475	1	10	10.0	5.0	✓
Conductivity in Water	E100	1562469	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1565347	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1562925	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	1562474	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1562470	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1562471	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	1562477	1	10	10.0	5.0	✓
TDS by Gravimetry	E162	1566692	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1572648	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1562966	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1566672	1	10	10.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1571261	1	16	6.2	5.0	✓
Matrix Spikes (MS)							
Bromide in Water by IC (Low Level)	E235.Br-L	1562476	1	10	10.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1571263	1	14	7.1	5.0	✓
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L	1569843	1	20	5.0	5.0	✓
Chloride in Water by IC	E235.Cl	1562475	1	10	10.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1565347	1	10	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1562925	1	11	9.0	5.0	✓
Fluoride in Water by IC	E235.F	1562474	1	10	10.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1562470	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1562471	1	19	5.2	5.0	✓
Sulfate in Water by IC	E235.SO4	1562477	1	10	10.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1572648	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1562966	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1571261	1	16	6.2	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 ALS Environmental - Vancouver	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
TSS by Gravimetry	E160 ALS Environmental - Vancouver	Water	APHA 2540 D (mod)	Total Suspended Solids (TSS) are determined by filtering a sample through a glass fibre filter, following by drying of the filter at 104 ± 1°C, with gravimetric measurement of the filtered solids. Samples containing very high dissolved solid content (i.e. seawaters, brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
TDS by Gravimetry	E162 ALS Environmental - Vancouver	Water	APHA 2540 C (mod)	Total Dissolved Solids (TDS) are determined by filtering a sample through a glass fibre filter, with evaporation of the filtrate at 180 ± 2°C for 16 hours or to constant weight, with gravimetric measurement of the residue.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Vancouver	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Chemical Oxygen Demand by Colourimetry (Low Level)	E559-L ALS Environmental - Vancouver	Water	APHA 5220 D (mod)	Samples are analyzed using the closed reflux colourimetric method.
VH and F1 by Headspace GC-FID	E581.VH+F1 ALS Environmental - Vancouver	Water	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
CCME PHCs - F2-F4 by GC-FID	E601 ALS Environmental - Vancouver	Water	CCME PHC in Soil - Tier 1	Sample extracts are analyzed by GC-FID for CCME hydrocarbon fractions (F2-F4). Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
BC PHCs - EPH by GC-FID	E601A ALS Environmental - Vancouver	Water	BC MOE Lab Manual	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.
BTEX by Headspace GC-MS	E611A ALS Environmental - Vancouver	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.
Ion Balance using Dissolved Metals	EC101 ALS Environmental - Vancouver	Water	APHA 1030E	Cation Sum, Anion Sum, and Ion Balance are calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present. Ion Balance cannot be calculated accurately for waters with very low electrical conductivity (EC).
TDS in Water (Calculation)	EC103 ALS Environmental - Vancouver	Water	APHA 1030E (mod)	Total Dissolved Solids is calculated based on guidance from APHA Standard Methods (1030E Checking Correctness of Analysis). Dissolved species are used where available. Minor ions are included where data is present.
F1-BTEX	EC580 ALS Environmental - Vancouver	Water	CCME PHC in Soil - Tier 1	F1-BTEX is calculated as follows: F1-BTEX = F1 (C6-C10) minus benzene, toluene, ethylbenzene and xylenes (BTEX).
VPH: VH-BTEX-Styrene	EC580A ALS Environmental - Vancouver	Water	BC MOE Lab Manual (VPH in Water and Solids) (mod)	Volatile Petroleum Hydrocarbons (VPH) is calculated as follows: VPHw = Volatile Hydrocarbons (VH C6-C10) minus benzene, toluene, ethylbenzene, xylenes (BTEX) and styrene.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Vancouver	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Vancouver	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: **VA24B8024**	Page	: 1 of 17
Client	: KBL Environmental Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Mike Gamache	Account Manager	: Selam Worku
Address	: 13511 Vulcan Way A Division of CCS Inc. Richmond BC Canada V6V 1K4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 4200IVSTF	Date Samples Received	: 23-Jul-2024 12:30
PO	: ----	Date Analysis Commenced	: 24-Jul-2024
C-O-C number	: 20-974493	Issue Date	: 01-Aug-2024 16:58
Sampler	: ----		
Site	: ----		
Quote number	: KBL Environmetal BC Standing Offer 2024		
No. of samples received	: 2		
No. of samples analysed	: 2		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Anshim Anshim	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Organics, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, Burnaby, British Columbia
Owen Cheng		Vancouver Metals, Burnaby, British Columbia

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Physical Tests (QC Lot: 1562467)											
VA24B7851-001	Anonymous	pH	----	E108	0.10	pH units	8.32	8.32	0.00%	4%	----
Physical Tests (QC Lot: 1562468)											
VA24B7851-001	Anonymous	Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	179	180	0.447%	200%	----
		Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	4.6	4.8	4.26%	200%	----
		Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0.00%	200%	----
		Alkalinity, phenolphthalein (as CaCO3)	----	E290	1.0	mg/L	2.3	2.4	0.1	Diff <2x LOR	----
		Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	183	184	0.544%	20%	----
Physical Tests (QC Lot: 1562469)											
VA24B7851-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	12700	12800	0.313%	10%	----
Physical Tests (QC Lot: 1566672)											
VA24B7994-006	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1566692)											
VA24B7994-006	Anonymous	Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	<10	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1562470)											
VA24B7851-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1562471)											
VA24B7851-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0500	mg/L	<0.0500	<0.0500	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1562474)											
VA24B7883-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	<0.020	<0.020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1562475)											
VA24B7883-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	1.21	0.99	0.22	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1562476)											
VA24B7883-001	Anonymous	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1562477)											
VA24B7883-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	2.77	2.75	0.01	Diff <2x LOR	----
Total Metals (QC Lot: 1562966)											
KS2402851-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0283	0.0272	0.0011	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00014	0.00013	0.000004	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1562966) - continued											
KS2402851-001	Anonymous	Barium, total	7440-39-3	E420	0.00010	mg/L	0.0116	0.0115	1.01%	20%	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0000130	0.0000102	0.0000028	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	18.4	17.8	3.07%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.243	0.249	2.48%	20%	----
		Iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.00682	0.00682	0.110%	20%	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	3.17	3.08	3.01%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.00014	0.00013	0.000006	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.000831	0.000819	1.46%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00142	0.00136	0.00006	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	1.13	1.14	0.422%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00123	0.00126	0.00003	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000201	0.000241	0.000040	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	3.86	3.92	1.57%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	0.000023	0.000023	0.0000002	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	4.36	4.29	1.60%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.121	0.119	1.62%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	2.91	2.95	0.04	Diff <2x LOR	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	0.00025	0.00027	0.00002	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.000142	0.000138	3.06%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1562966) - continued											
KS2402851-001	Anonymous	Zinc, total	7440-66-6	E420	0.0030	mg/L	0.0200	0.0198	0.0002	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 1572648)											
VA24B8010-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1562925)											
VA24B8070-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0029	0.0027	0.0001	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00020	0.00019	0.00002	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0647	0.0617	4.79%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000130	0.0000098	0.0000031	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	55.4	53.4	3.67%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0010	mg/L	0.0105	0.0101	4.10%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.100	mg/L	19.9	20.1	0.836%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00138	0.00140	1.10%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00122	0.00120	1.05%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	2.00	mg/L	<2.00	<2.00	0	Diff <2x LOR	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00030	0.00036	0.00006	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.00642	0.00671	4.54%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.80	1.84	1.97%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	2.00	mg/L	2.16	2.13	0.036	Diff <2x LOR	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.203	0.205	1.13%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	20.7	20.5	1.08%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 1562925) - continued											
VA24B8070-001	Anonymous	Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000010	mg/L	0.00109	0.00108	0.463%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1565347)											
VA24B7294-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1569843)											
VA24B7851-001	Anonymous	Chemical oxygen demand [COD]	----	E559-L	40	mg/L	112	112	0.4	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1571263)											
VA24B8024-001	SNP-0037-5	Benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1571261)											
VA24B8014-001	Anonymous	F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.0%	30%	----
		VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.0%	30%	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1562468)						
Alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	<1.0	----
Physical Tests (QCLot: 1562469)						
Conductivity	----	E100	1	µS/cm	1.7	----
Physical Tests (QCLot: 1566672)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1566692)						
Solids, total dissolved [TDS]	----	E162	10	mg/L	<10	----
Anions and Nutrients (QCLot: 1562470)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1562471)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1562474)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1562475)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1562476)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1562477)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Total Metals (QCLot: 1562966)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1562966) - continued						
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 1572648)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1562925)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1562925) - continued						
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1562925) - continued						
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 1565347)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Aggregate Organics (QCLot: 1569843)						
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	<10	----
Volatile Organic Compounds (QCLot: 1571263)						
Benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611A	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 1570596)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----
Hydrocarbons (QCLot: 1570599)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
F3 (C16-C34)	----	E601	250	µg/L	<250	----
F4 (C34-C50)	----	E601	250	µg/L	<250	----
Hydrocarbons (QCLot: 1571261)						
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1562467)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1562468)									
Alkalinity, phenolphthalein (as CaCO3)	----	E290	1	mg/L	229 mg/L	111	75.0	125	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	103	85.0	115	----
Physical Tests (QCLot: 1562469)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	99.2	90.0	110	----
Physical Tests (QCLot: 1566672)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	96.3	85.0	115	----
Physical Tests (QCLot: 1566692)									
Solids, total dissolved [TDS]	----	E162	10	mg/L	1000 mg/L	98.2	85.0	115	----
Anions and Nutrients (QCLot: 1562470)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1562471)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1562474)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	103	90.0	110	----
Anions and Nutrients (QCLot: 1562475)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1562476)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	105	85.0	115	----
Anions and Nutrients (QCLot: 1562477)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
Total Metals (QCLot: 1562966)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	105	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	109	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	106	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.1	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.4	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.6	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1562966) - continued									
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	103	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	102	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	104	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	95.9	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	98.2	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	93.2	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	109	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	105	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	110	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	104	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.8	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	103	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	99.9	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	106	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	106	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	106	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	102	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	95.7	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	101	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	103	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	97.9	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	97.8	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	106	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	104	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	100	80.0	120	----
Total Metals (QCLot: 1572648)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	95.7	80.0	120	----
Dissolved Metals (QCLot: 1562925)									

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1562925) - continued									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	104	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	104	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	99.2	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.8	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.8	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	96.4	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	103	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.5	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	99.0	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	101	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	104	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	96.6	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	99.8	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	96.1	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	99.0	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	99.9	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.1	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.4	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	104	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	100	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	97.6	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.4	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	102	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	96.7	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	97.0	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	94.9	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
					Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1562925) - continued									
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.6	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	97.5	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	94.8	80.0	120	----
Aggregate Organics (QCLot: 1569843)									
Chemical oxygen demand [COD]	----	E559-L	10	mg/L	100 mg/L	108	85.0	115	----
Volatile Organic Compounds (QCLot: 1571263)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	101	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	96.6	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	100 µg/L	99.1	70.0	130	----
Styrene	100-42-5	E611A	0.5	µg/L	100 µg/L	98.2	70.0	130	----
Toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	102	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	99.0	70.0	130	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	94.9	70.0	130	----
Hydrocarbons (QCLot: 1570596)									
EPH (C10-C19)	----	E601A	250	µg/L	6490 µg/L	103	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3360 µg/L	104	70.0	130	----
Hydrocarbons (QCLot: 1570599)									
F2 (C10-C16)	----	E601	100	µg/L	3540 µg/L	103	70.0	130	----
F3 (C16-C34)	----	E601	250	µg/L	7050 µg/L	95.8	70.0	130	----
F4 (C34-C50)	----	E601	250	µg/L	5050 µg/L	103	70.0	130	----
Hydrocarbons (QCLot: 1571261)									
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	81.0	70.0	130	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	78.7	70.0	130	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1562470)										
VA24B7851-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	252 mg/L	250 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1562471)										
VA24B7851-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	50.3 mg/L	50 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1562474)										
VA24B7883-002	Anonymous	Fluoride	16984-48-8	E235.F	1.05 mg/L	1 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1562475)										
VA24B7883-002	Anonymous	Chloride	16887-00-6	E235.Cl	105 mg/L	100 mg/L	105	75.0	125	----
Anions and Nutrients (QCLot: 1562476)										
VA24B7883-002	Anonymous	Bromide	24959-67-9	E235.Br-L	0.531 mg/L	0.5 mg/L	106	75.0	125	----
Anions and Nutrients (QCLot: 1562477)										
VA24B7883-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	105 mg/L	100 mg/L	105	75.0	125	----
Total Metals (QCLot: 1562966)										
KS2402851-002	Anonymous	Aluminum, total	7429-90-5	E420	0.184 mg/L	0.2 mg/L	92.2	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0179 mg/L	0.02 mg/L	89.7	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0190 mg/L	0.02 mg/L	94.8	70.0	130	----
		Barium, total	7440-39-3	E420	0.0180 mg/L	0.02 mg/L	90.1	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0370 mg/L	0.04 mg/L	92.4	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00895 mg/L	0.01 mg/L	89.5	70.0	130	----
		Boron, total	7440-42-8	E420	0.090 mg/L	0.1 mg/L	89.9	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00375 mg/L	0.004 mg/L	93.7	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.00948 mg/L	0.01 mg/L	94.8	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0369 mg/L	0.04 mg/L	92.4	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0180 mg/L	0.02 mg/L	89.9	70.0	130	----
		Copper, total	7440-50-8	E420	ND mg/L	----	ND	70.0	130	----
		Iron, total	7439-89-6	E420	1.85 mg/L	2 mg/L	92.4	70.0	130	----
		Lead, total	7439-92-1	E420	ND mg/L	----	ND	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0890 mg/L	0.1 mg/L	89.0	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0188 mg/L	0.02 mg/L	94.1	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0370 mg/L	0.04 mg/L	92.6	70.0	130	----
		Phosphorus, total	7723-14-0	E420	9.60 mg/L	10 mg/L	96.0	70.0	130	----
		Potassium, total	7440-09-7	E420	3.69 mg/L	4 mg/L	92.2	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0179 mg/L	0.02 mg/L	89.5	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0380 mg/L	0.04 mg/L	94.9	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1562966) - continued										
KS2402851-002	Anonymous	Silicon, total	7440-21-3	E420	9.08 mg/L	10 mg/L	90.8	70.0	130	----
		Silver, total	7440-22-4	E420	0.00379 mg/L	0.004 mg/L	94.7	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	19.0 mg/L	20 mg/L	94.8	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.0379 mg/L	0.04 mg/L	94.7	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00343 mg/L	0.004 mg/L	85.8	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0190 mg/L	0.02 mg/L	95.0	70.0	130	----
		Tin, total	7440-31-5	E420	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0371 mg/L	0.04 mg/L	92.9	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0179 mg/L	0.02 mg/L	89.5	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00351 mg/L	0.004 mg/L	87.7	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0938 mg/L	0.1 mg/L	93.8	70.0	130	----
		Zinc, total	7440-66-6	E420	0.378 mg/L	0.4 mg/L	94.4	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0352 mg/L	0.04 mg/L	88.0	70.0	130	----
Total Metals (QCLot: 1572648)										
VA24B8010-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000826 mg/L	0 mg/L	82.6	70.0	130	----
Dissolved Metals (QCLot: 1562925)										
VA24B8080-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.201 mg/L	0.2 mg/L	100	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	----	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0400 mg/L	0.04 mg/L	100.0	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00974 mg/L	0.01 mg/L	97.4	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.095 mg/L	0.1 mg/L	95.1	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00389 mg/L	0.004 mg/L	97.2	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00976 mg/L	0.01 mg/L	97.6	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0394 mg/L	0.04 mg/L	98.6	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0188 mg/L	0.02 mg/L	93.9	70.0	130	----
		Iron, dissolved	7439-89-6	E421	2.01 mg/L	2 mg/L	100	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0975 mg/L	0.1 mg/L	97.5	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0380 mg/L	0.04 mg/L	95.0	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.3 mg/L	10 mg/L	103	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.80 mg/L	4 mg/L	94.9	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0197 mg/L	0.02 mg/L	98.4	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0384 mg/L	0.04 mg/L	96.1	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	9.18 mg/L	10 mg/L	91.8	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Dissolved Metals (QCLot: 1562925) - continued										
VA24B8080-001	Anonymous	Silver, dissolved	7440-22-4	E421	0.00380 mg/L	0.004 mg/L	95.1	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	----	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	----	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	21.4 mg/L	20 mg/L	107	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0401 mg/L	0.04 mg/L	100	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00378 mg/L	0.004 mg/L	94.6	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0378 mg/L	0.04 mg/L	94.6	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0189 mg/L	0.02 mg/L	94.5	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00374 mg/L	0.004 mg/L	93.6	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0999 mg/L	0.1 mg/L	99.9	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.379 mg/L	0.4 mg/L	94.9	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
Dissolved Metals (QCLot: 1565347)										
VA24B7326-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000916 mg/L	0 mg/L	91.6	70.0	130	----
Aggregate Organics (QCLot: 1569843)										
VA24B8262-002	Anonymous	Chemical oxygen demand [COD]	----	E559-L	113 mg/L	100 mg/L	113	75.0	125	----
Volatile Organic Compounds (QCLot: 1571263)										
VA24B8024-001	SNP-0037-5	Benzene	71-43-2	E611A	88.7 µg/L	100 µg/L	88.7	60.0	140	----
		Ethylbenzene	100-41-4	E611A	84.2 µg/L	100 µg/L	84.2	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	87.2 µg/L	100 µg/L	87.2	60.0	140	----
		Styrene	100-42-5	E611A	85.4 µg/L	100 µg/L	85.4	60.0	140	----
		Toluene	108-88-3	E611A	88.7 µg/L	100 µg/L	88.7	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	173 µg/L	200 µg/L	86.6	60.0	140	----
		Xylene, o-	95-47-6	E611A	84.2 µg/L	100 µg/L	84.2	60.0	140	----
Hydrocarbons (QCLot: 1571261)										
VA24B8024-001	SNP-0037-5	F1 (C6-C10)	----	E581.VH+F1	4480 µg/L	6310 µg/L	71.0	60.0	140	----
		VHw (C6-C10)	----	E581.VH+F1	4360 µg/L	6310 µg/L	69.0	60.0	140	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 20 - 974493

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Page of

Report To	Contact and company name below will appear on the final report
Company:	KBL Environmental
Contact:	Mike Gamache
Phone:	403 302 2800
	Company address below will appear on the final report
Street:	3909 68 Ave
City/Province:	Leduc AB
Postal Code:	T9E 0Z4

Invoice To		
	Same as Report To	☒ YES ☐ NO
	Copy of Invoice with Report	☒ YES ☐ NO
Company:		
Contact:		

Reports / Recipients	
Select Report Format:	☒ PDF ☒ EXCEL ☒ EDD (DIGITAL)
Merge QC/QCI Reports with COA	☒ YES ☐ NO ☐ N/A
☐ Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	☒ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	mgamache@kbl.ca
Email 2	bhood@kbl.ca
Email 3	esdat_CA+kbleesdatlabsync.net

Invoice Recipients	
Select Invoice Distribution:	☒ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax	mgamache@kbl.ca
Email 2	accountspayable@kbl.ca

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#:
Job #:	4200IUSTF	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (ALS use only): B 8024 | ALS Contact: | Sampler:

Turnaround Time (TAT) Requested
☒ Routine [R] if received by 3pm M-F - no surcharges apply
☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum
☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum
☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum
☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum
☐ Same day [E2] if received by 10am M-S - 200% rush surcharge. Additional fees may apply to rush requests on weekends, statutory holidays and non-routine tests

AFFIX ALS BARCODE LABEL HERE (ALS use only)

Date and Time Required for all E&P TATs: dd-mmm-yy hh:mm am/pm

For all tests with rush TATs requested, please contact your AM to confirm availability.

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Total Metals	Dissolved Metals	CCME Hydrocarbons	BTEX	COD	EPH	TSS	TDS	Oil+Grease	Routine	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	SNP-0037-5	21-Jul-24		H2O	16	X	X	X	X	X	X	X	X	X	X			
	SNP-0037-7	21-Jul-24		H2O	16	X	X	X	X	X	X	X	X	X	X			

Environmental Division
Vancouver
Work Order Reference
VA24B8024

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use) — electing from drop-down below

Are samples taken from a Regulated DW System? ☐ YES ☒ NO

Are samples for human consumption/ use? ☐ YES ☒ NO

SAMPLE RECEIPT DETAILS (ALS use only)

Cooling Method: ☐ NONE ☐ ICE ☑ ICE PACKS ☐ FROZEN ☐ COOLING INITIATED

Submission Comments identified on Sample Receipt Notification: ☐ YES ☐ NO

Cooler Custody Seals Intact: ☐ YES ☐ N/A Sample Custody Seals Intact: ☐ YES ☐ N/A

INITIAL COOLER TEMPERATURES °C				FINAL COOLER TEMPERATURES °C			
				10.5 C			

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT RECEPTION (ALS use only)		
Released by: MGamache	Date: July 21/24	Time:	Received by:	Date:	Time:	Received by:	Date: 23rd July	Time: 12:30 pm

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

AUG 2020 FRONT

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

CERTIFICATE OF ANALYSIS

Work Order	: **VA24C7465**		
Client	: **KBL Environmental Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact	: Mike Gamache	Account Manager	: Gulraj Dhanaua
Address	: 13511 Vulcan Way A Division of CCS Inc. Richmond British Columbia Canada V6V 1K4	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 4200 IVSTF	Date Samples Received	: 11-Oct-2024 16:00
PO	: ----	Date Analysis Commenced	: 16-Oct-2024
C-O-C number	: 17-775019	Issue Date	: 25-Oct-2024 13:47
Sampler	: ----		
Site	: ----		
Quote number	: KBL Environmetal BC Standing Offer 2024		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Surrogate Control Limits

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
Brooke Miller	Laboratory Analyst	Inorganics, Edmonton, Alberta
Cynthia Bauer	Organic Supervisor	Organics, Calgary, Alberta
Danielle Gravel	Supervisor - Semi-Volatile Instrumentation	Organics, Waterloo, Ontario
Erin Sanchez		Metals, Burnaby, British Columbia
Ghazaleh Khanmirzaei	Analyst	Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Nik Perkio	Senior Analyst	Metals, Waterloo, Ontario
Owen Cheng		Metals, Burnaby, British Columbia
Sorina Motea	Laboratory Analyst	Organics, Calgary, Alberta

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Please refer to Quality Control Interpretive report (QCI) for information regarding Holding Time compliance.

Key: CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances.
LOR: Limit of Reporting (detection limit).

Unit	*Description*
µg/L	micrograms per litre
pH units	pH units
mg/L	milligrams per litre
-	no units

<: less than.
>: greater than.
Surrogate: An analyte that is similar in behavior to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED on SRN or QCI Report, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Sample Comments

Sample	*Client Id*	*Comment*
VA24C7465-001	SNP-0037-7	RRR: Surrogate recovery is outside ALS DQO. Detection limits for affected compounds have been raised accordingly.
VA24C7465-001	SNP-0037-7	Water sample(s) for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	Description
DLCI	Detection Limit Raised: Chromatographic interference due to co-elution.
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).
RRR	Refer to report comments for issues regarding this analysis.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP-0037-7	----	----	----	----
					Client sampling date / time	09-Oct-2024 00:00	----	----	----	----
						VA24C7465-001	----	----	----	----
						Result	----	----	----	----
Physical Tests										
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		1550	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/WT	0.60	mg/L		1680	----	----	----	----
pH	----	E108/VA	0.10	pH units		7.16	----	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/WT	0.0030	mg/L		21.4 DLHC	----	----	----	----
Antimony, total	7440-36-0	E420/WT	0.00010	mg/L		0.00316 DLHC	----	----	----	----
Arsenic, total	7440-38-2	E420/WT	0.00010	mg/L		0.121 DLHC	----	----	----	----
Barium, total	7440-39-3	E420/WT	0.00010	mg/L		0.916 DLHC	----	----	----	----
Beryllium, total	7440-41-7	E420/WT	0.000100	mg/L		0.00152 DLHC	----	----	----	----
Bismuth, total	7440-69-9	E420/WT	0.000050	mg/L		<0.000500 DLHC	----	----	----	----
Boron, total	7440-42-8	E420/WT	0.010	mg/L		1.99 DLHC	----	----	----	----
Cadmium, total	7440-43-9	E420/WT	0.0000050	mg/L		0.00161 DLHC	----	----	----	----
Calcium, total	7440-70-2	E420/WT	0.050	mg/L		196 DLHC	----	----	----	----
Cesium, total	7440-46-2	E420/WT	0.000010	mg/L		0.00276 DLHC	----	----	----	----
Chromium, total	7440-47-3	E420/WT	0.00050	mg/L		0.0508 DLHC	----	----	----	----
Cobalt, total	7440-48-4	E420/WT	0.00010	mg/L		0.0505 DLHC	----	----	----	----
Copper, total	7440-50-8	E420/WT	0.00050	mg/L		0.0953 DLHC	----	----	----	----
Iron, total	7439-89-6	E420/WT	0.010	mg/L		169 DLHC	----	----	----	----
Lead, total	7439-92-1	E420/WT	0.000050	mg/L		0.167 DLHC	----	----	----	----
Lithium, total	7439-93-2	E420/WT	0.0010	mg/L		0.0748 DLHC	----	----	----	----
Magnesium, total	7439-95-4	E420/WT	0.0050	mg/L		288 DLHC	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID				
					SNP-0037-7	----	----	----	----
					Client sampling date / time				
					09-Oct-2024 00:00	----	----	----	----
					VA24C7465-001	----	----	----	----
					Result	----	----	----	----
Total Metals									
Manganese, total	7439-96-5	E420/WT	0.00010	mg/L	2.64 DLHC	----	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L	0.0000561	----	----	----	----
Molybdenum, total	7439-98-7	E420/WT	0.000050	mg/L	0.0126 DLHC	----	----	----	----
Nickel, total	7440-02-0	E420/WT	0.00050	mg/L	0.139 DLHC	----	----	----	----
Phosphorus, total	7723-14-0	E420/WT	0.050	mg/L	4.35 DLHC	----	----	----	----
Potassium, total	7440-09-7	E420/WT	0.050	mg/L	40.8 DLHC	----	----	----	----
Rubidium, total	7440-17-7	E420/WT	0.00020	mg/L	0.0316 DLHC	----	----	----	----
Selenium, total	7782-49-2	E420/WT	0.000050	mg/L	0.00266 DLHC	----	----	----	----
Silicon, total	7440-21-3	E420/WT	0.10	mg/L	34.2 DLHC	----	----	----	----
Silver, total	7440-22-4	E420/WT	0.000010	mg/L	0.000737 DLHC	----	----	----	----
Sodium, total	7440-23-5	E420/WT	0.050	mg/L	394 DLHC	----	----	----	----
Strontium, total	7440-24-6	E420/WT	0.00020	mg/L	1.25 DLHC	----	----	----	----
Sulfur, total	7704-34-9	E420/WT	0.50	mg/L	95.7 DLHC	----	----	----	----
Tellurium, total	13494-80-9	E420/WT	0.00020	mg/L	<0.00200 DLHC	----	----	----	----
Thallium, total	7440-28-0	E420/WT	0.000010	mg/L	0.000465 DLHC	----	----	----	----
Thorium, total	7440-29-1	E420/WT	0.00010	mg/L	0.00521 DLHC	----	----	----	----
Tin, total	7440-31-5	E420/WT	0.00010	mg/L	0.00525 DLHC	----	----	----	----
Titanium, total	7440-32-6	E420/WT	0.00030	mg/L	0.121 DLHC	----	----	----	----
Tungsten, total	7440-33-7	E420/WT	0.00010	mg/L	<0.00100 DLHC	----	----	----	----
Uranium, total	7440-61-1	E420/WT	0.000010	mg/L	0.00319 DLHC	----	----	----	----
Vanadium, total	7440-62-2	E420/WT	0.00050	mg/L	0.134 DLHC	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID				
					SNP-0037-7	----	----	----	----
					Client sampling date / time				
					09-Oct-2024 00:00	----	----	----	----
					VA24C7465-001	----	----	----	----
					Result	----	----	----	----
Total Metals									
Zinc, total	7440-66-6	E420/WT	0.0030	mg/L	0.876 DLHC	----	----	----	----
Zirconium, total	7440-67-7	E420/WT	0.00020	mg/L	0.00261 DLHC	----	----	----	----
Dissolved Metals									
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L	0.0555	----	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L	0.00057	----	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L	0.0131	----	----	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L	0.248	----	----	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L	<0.000100	----	----	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L	<0.000050	----	----	----	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L	1.77	----	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L	<0.0000050	----	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L	162	----	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L	0.000019	----	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L	0.00213	----	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L	0.00042	----	----	----	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L	0.00114	----	----	----	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L	2.42	----	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L	0.000106	----	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L	0.0395	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L	278	----	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L	0.850	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP-0037-7	----	----	----	----
					Client sampling date / time	09-Oct-2024 00:00	----	----	----	----
						VA24C7465-001	----	----	----	----
						Result	----	----	----	----
Dissolved Metals										
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.00141	----	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.00564	----	----	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		0.847	----	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		41.9	----	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.0118	----	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		0.000628	----	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		8.04	----	----	----	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	----	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		386	----	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.974	----	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		84.0	----	----	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	----	----	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	----	----	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	----	----	----	----
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		0.00053	----	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		0.00294	----	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		0.00010	----	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000115	----	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		0.00635	----	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		0.0034	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP-0037-7	----	----	----
					Client sampling date / time	09-Oct-2024 00:00	----	----	----	----
					VA24C7465-001	----	----	----	----
					Result	----	----	----	----
Dissolved Metals										
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		0.00216	----	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-		Field	----	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Field	----	----	----	----
Aggregate Organics										
Phenols, total (4AAP)	----	E562/EO	0.0010	mg/L		0.0253	----	----	----	----
Volatile Organic Compounds [Fuels]										
Benzene	71-43-2	E611A/VA	0.50	µg/L		9.27	----	----	----	----
Ethylbenzene	100-41-4	E611A/VA	0.50	µg/L		5.59	----	----	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A/VA	0.50	µg/L		<0.50	----	----	----	----
Styrene	100-42-5	E611A/VA	0.50	µg/L		<0.50	----	----	----	----
Toluene	108-88-3	E611A/VA	0.50	µg/L		3.00	----	----	----	----
Xylene, m+p-	179601-23-1	E611A/VA	0.40	µg/L		2.68	----	----	----	----
Xylene, o-	95-47-6	E611A/VA	0.30	µg/L		1.96	----	----	----	----
Xylenes, total	1330-20-7	E611A/VA	0.50	µg/L		4.64	----	----	----	----
BTEX, total	----	E611A/VA	1.0	µg/L		22.5	----	----	----	----
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	----	----	----	----
F2 (C10-C16)	----	E601/CG	100	µg/L		270	----	----	----	----
F3 (C16-C34)	----	E601/CG	250	µg/L		520	----	----	----	----
F4 (C34-C50)	----	E601/CG	250	µg/L		320	----	----	----	----
TEH (C10-C50)	n/a	E601/CG	400	µg/L		1110	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP-0037-7	----	----	----	----
					Client sampling date / time	09-Oct-2024 00:00	----	----	----	----
						VA24C7465-001	----	----	----	----
						Result	----	----	----	----
Hydrocarbons										
TEH (C16-C50)	----	E601/CG	400	µg/L		840	----	----	----	----
VHw (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	----	----	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/CG	1.0	%		84.9	----	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		91.2	----	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%		86.2	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%		95.4	----	----	----	----
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	E641A/CG	0.010	µg/L		0.113	----	----	----	----
Acenaphthylene	208-96-8	E641A/CG	0.010	µg/L		<0.020 DLCI	----	----	----	----
Acridine	260-94-6	E641A/CG	0.010	µg/L		0.098	----	----	----	----
Anthracene	120-12-7	E641A/CG	0.010	µg/L		<0.030 DLCI	----	----	----	----
Benz(a)anthracene	56-55-3	E641A/CG	0.010	µg/L		<0.010	----	----	----	----
Benzo(a)pyrene	50-32-8	E641A/CG	0.0050	µg/L		<0.0200 DLCI	----	----	----	----
Benzo(b+j)fluoranthene	n/a	E641A/CG	0.010	µg/L		<0.020 DLCI	----	----	----	----
Benzo(b+j+k)fluoranthene	n/a	E641A/CG	0.015	µg/L		<0.022	----	----	----	----
Benzo(g,h,i)perylene	191-24-2	E641A/CG	0.010	µg/L		<0.010	----	----	----	----
Benzo(k)fluoranthene	207-08-9	E641A/CG	0.010	µg/L		<0.010	----	----	----	----
Chrysene	218-01-9	E641A/CG	0.010	µg/L		0.012	----	----	----	----
Dibenz(a,h)anthracene	53-70-3	E641A/CG	0.0050	µg/L		<0.0050	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID				
					SNP-0037-7	----	----	----	----
					Client sampling date / time				
					09-Oct-2024 00:00	----	----	----	----
					VA24C7465-001	----	----	----	----
					Result	----	----	----	----
Polycyclic Aromatic Hydrocarbons									
Fluoranthene	206-44-0	E641A/CG	0.010	µg/L	<0.050 DLCI	----	----	----	----
Fluorene	86-73-7	E641A/CG	0.010	µg/L	0.150	----	----	----	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/CG	0.010	µg/L	<0.010	----	----	----	----
Methylnaphthalene, 1-	90-12-0	E641A/CG	0.010	µg/L	0.786	----	----	----	----
Methylnaphthalene, 1+2-	----	E641A/CG	0.015	µg/L	1.64	----	----	----	----
Methylnaphthalene, 2-	91-57-6	E641A/CG	0.010	µg/L	0.853	----	----	----	----
Naphthalene	91-20-3	E641A/CG	0.050	µg/L	1.82	----	----	----	----
Phenanthrene	85-01-8	E641A/CG	0.020	µg/L	0.238	----	----	----	----
Pyrene	129-00-0	E641A/CG	0.010	µg/L	0.057	----	----	----	----
Quinoline	91-22-5	E641A/CG	0.050	µg/L	<0.050	----	----	----	----
B(a)P total potency equivalents [B(a)P TPE]	----	E641A/CG	0.010	µg/L	0.015	----	----	----	----
PAHs, high molecular weight (BC AWQ)	n/a	E641A/CG	0.030	µg/L	0.069	----	----	----	----
PAHs, low molecular weight (BC AWQ)	n/a	E641A/CG	0.060	µg/L	2.32	----	----	----	----
PAHs, total (CCME sewer 18)	n/a	E641A/CG	0.070	µg/L	4.03	----	----	----	----
PAHs, total (EPA 16)	n/a	E641A/CG	0.065	µg/L	2.39	----	----	----	----
Polycyclic Aromatic Hydrocarbons Surrogates									
Chrysene-d12	1719-03-5	E641A/CG	0.1	%	69.4	----	----	----	----
Naphthalene-d8	1146-65-2	E641A/CG	0.1	%	85.5	----	----	----	----
Phenanthrene-d10	1517-22-2	E641A/CG	0.1	%	71.6	----	----	----	----
Polychlorinated Biphenyls									
Aroclor 1016	12674-11-2	E687/WT	0.020	µg/L	<0.038 DLM	----	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

					Client sample ID	SNP-0037-7	----	----	----	----
					Client sampling date / time	09-Oct-2024 00:00	----	----	----	----
Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit		VA24C7465-001	----	----	----	----
						Result	----	----	----	----
Polychlorinated Biphenyls										
Aroclor 1221	11104-28-2	E687/WT	0.020	µg/L		<0.038 DLM	----	----	----	----
Aroclor 1232	11141-16-5	E687/WT	0.020	µg/L		<0.038 DLM	----	----	----	----
Aroclor 1242	53469-21-9	E687/WT	0.020	µg/L		<0.038 DLM	----	----	----	----
Aroclor 1248	12672-29-6	E687/WT	0.020	µg/L		<0.038 DLM	----	----	----	----
Aroclor 1254	11097-69-1	E687/WT	0.020	µg/L		<0.020	----	----	----	----
Aroclor 1260	11096-82-5	E687/WT	0.020	µg/L		<0.050 RRR	----	----	----	----
Aroclor 1262	37324-23-5	E687/WT	0.020	µg/L		<0.050 RRR	----	----	----	----
Aroclor 1268	11100-14-4	E687/WT	0.020	µg/L		<0.050 RRR	----	----	----	----
Polychlorinated biphenyls [PCBs], total	----	E687/WT	0.060	µg/L		<0.123	----	----	----	----
Polychlorinated Biphenyls Surrogates										
Decachlorobiphenyl	2051-24-3	E687/WT	0.1	%		43.1 RRR	----	----	----	----
Tetrachloro-m-xylene	877-09-8	E687/WT	0.1	%		97.8	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.

ALS Canada Ltd.

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **VA24C7465**	Page	: 1 of 10
Client	: **KBL Environmental Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact	: Mike Gamache	Account Manager	: Gulraj Dhanaua
Address	: 13511 Vulcan Way A Division of CCS Inc. Richmond BC Canada V6V 1K4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 4200 IVSTF	Date Samples Received	: 11-Oct-2024 16:00
PO	: ----	Issue Date	: 25-Oct-2024 13:47
C-O-C number	: 17-775019		
Sampler	: ----		
Site	: ----		
Quote number	: KBL Environmetal BC Standing Offer 2024		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO: Data Quality Objective.
LOR: Limit of Reporting (detection limit).
RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- Test sample Surrogate recovery outliers exist for all regular sample matrices - please see following pages for full details.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- Analysis Holding Time Outliers exist - please see following pages for full details.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.

Regular Sample Surrogates

Sub-Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
Polychlorinated Biphenyls Surrogates	VA24C7465-001	SNP-0037-7	Decachlorobiphenyl	2051-24-3	43.1 %	50.0-140 %	Recovery less than lower data quality objective

Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Aggregate Organics : Phenols (4AAP) in Water by Colorimetry										
Amber glass total (sulfuric acid) SNP-0037-7	E562	09-Oct-2024	21-Oct-2024	28 days	12 days	✓	21-Oct-2024	28 days	12 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) SNP-0037-7	E509	09-Oct-2024	24-Oct-2024	0 hrs	361 hrs	× UCP	24-Oct-2024	0 hrs	361 hrs	× UCP
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP-0037-7	E421	09-Oct-2024	22-Oct-2024	180 days	14 days	✓	24-Oct-2024	180 days	15 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP-0037-7	E601	09-Oct-2024	21-Oct-2024	14 days	13 days	✓	21-Oct-2024	40 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP-0037-7	E581.VH+F1	09-Oct-2024	19-Oct-2024	14 days	11 days	✓	19-Oct-2024	14 days	11 days	✓
Physical Tests : pH by Meter										
HDPE SNP-0037-7	E108	09-Oct-2024	15-Oct-2024	0.25 hrs	163 hrs	× EHTR-FM	15-Oct-2024	0.25 hrs	163 hrs	× EHTR-FM
Polychlorinated Biphenyls : PCB Aroclors by GC-MS										
Amber glass/Teflon lined cap SNP-0037-7	E687	09-Oct-2024	17-Oct-2024	365 days	9 days	✓	18-Oct-2024	40 days	1 days	✓

Matrix: **Water**

Evaluation: × = Holding time exceedance ; ✓ = Within Holding Time

Analyte Group : Analytical Method / Container / Client Sample ID(s)	*Method*	*Sampling Date*	*Extraction / Preparation*				*Analysis*			
			Preparation Date	*Holding Times*		*Eval*	*Analysis Date*	*Holding Times*		*Eval*
				Rec	*Actual*			*Rec*	*Actual*	
Polycyclic Aromatic Hydrocarbons : PAHs in Water by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate)										
SNP-0037-7	E641A	09-Oct-2024	21-Oct-2024	14 days	13 days	✓	21-Oct-2024	40 days	0 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved)										
SNP-0037-7	E508	09-Oct-2024	23-Oct-2024	28 days	14 days	✓	23-Oct-2024	28 days	14 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved)										
SNP-0037-7	E420	09-Oct-2024	18-Oct-2024	180 days	9 days	✓	18-Oct-2024	180 days	9 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate)										
SNP-0037-7	E611A	09-Oct-2024	19-Oct-2024	14 days	11 days	✓	19-Oct-2024	14 days	11 days	✓

Legend & Qualifier Definitions

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended

Rec. HT: ALS recommended hold time (see units).

UCP: Unsuitable Container and/or Preservative used (invalidates standard hold time). Maximum hold time of zero applied. Test results may be biased low / unreliable, and may not meet regulatory requirements.

Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water**

Evaluation: × = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
BTEX by Headspace GC-MS	E611A	1718990	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1727667	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1720704	1	19	5.2	5.0	✓
pH by Meter	E108	1710044	0	14	0.0	5.0	×
Phenols (4AAP) in Water by Colorimetry	E562	1720514	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1725242	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1715730	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1718991	1	6	16.6	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	1718990	1	11	9.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1720210	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1727667	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1720704	1	19	5.2	5.0	✓
PAHs in Water by Hexane LVI GC-MS	E641A	1720209	1	16	6.2	5.0	✓
PCB Aroclors by GC-MS	E687	1714311	1	11	9.0	4.7	✓
pH by Meter	E108	1710044	1	14	7.1	5.0	✓
Phenols (4AAP) in Water by Colorimetry	E562	1720514	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1725242	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1715730	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1718991	1	6	16.6	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	1718990	1	11	9.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1720210	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1727667	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1720704	1	19	5.2	5.0	✓
PAHs in Water by Hexane LVI GC-MS	E641A	1720209	1	16	6.2	5.0	✓
PCB Aroclors by GC-MS	E687	1714311	1	11	9.0	4.7	✓
Phenols (4AAP) in Water by Colorimetry	E562	1720514	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1725242	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1715730	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1718991	1	6	16.6	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1718990	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1727667	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1720704	1	19	5.2	5.0	✓

Matrix: **Water**

Evaluation: × = *QC frequency outside specification*; ✓ = *QC frequency within specification.*

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Matrix Spikes (MS) - Continued							
Phenols (4AAP) in Water by Colorimetry	E562	1720514	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1725242	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1715730	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1718991	1	6	16.6	5.0	✓

Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
Total Metals in Water by CRC ICPMS	E420 ALS Environmental - Waterloo	Water	EPA 200.2/6020B (mod)	Water samples are digested with nitric and hydrochloric acids, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Dissolved Metals in Water by CRC ICPMS	E421 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 6020B (mod)	Water samples are filtered (0.45 um), preserved with nitric acid, and analyzed by Collision/Reaction Cell ICPMS. Method Limitation (re: Sulfur): Sulfide and volatile sulfur species may not be recovered by this method.
Total Mercury in Water by CVAAS	E508 ALS Environmental - Vancouver	Water	EPA 1631E (mod)	Water samples undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS
Dissolved Mercury in Water by CVAAS	E509 ALS Environmental - Vancouver	Water	APHA 3030B/EPA 1631E (mod)	Water samples are filtered (0.45 um), preserved with HCl, then undergo a cold-oxidation using bromine monochloride prior to reduction with stannous chloride, and analyzed by CVAAS.
Phenols (4AAP) in Water by Colorimetry	E562 ALS Environmental - Edmonton	Water	EPA 9066	This automated method is based on the distillation of phenol and subsequent reaction of the distillate with alkaline ferricyanide (K3Fe(CN)6) and 4-amino-antipyrine (4-AAP) to form a red complex which is measured colorimetrically.
VH and F1 by Headspace GC-FID	E581.VH+F1 ALS Environmental - Vancouver	Water	BC MOE Lab Manual / CCME PHC in Soil - Tier 1 (mod)	Volatile Hydrocarbons (VH and F1) is analyzed by static headspace GC-FID. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law. Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
CCME PHCs - F2-F4 by GC-FID	E601 ALS Environmental - Calgary	Water	CCME PHC in Soil - Tier 1	Sample extracts are analyzed by GC-FID for CCME hydrocarbon fractions (F2-F4). Analytical methods for CCME Petroleum Hydrocarbons (PHCs) are validated to comply fully with the Reference Method for the Canada-Wide Standard for PHC. Unless qualified, all required quality control criteria of the CCME PHC method have been met, including response factor and linearity requirements.
BTEX by Headspace GC-MS	E611A ALS Environmental - Vancouver	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
PAHs in Water by Hexane LVI GC-MS	E641A ALS Environmental - Calgary	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
PCB Aroclors by GC-MS	E687 ALS Environmental - Waterloo	Water	EPA 8270E (mod)	PCB Aroclors are analyzed by GC-MS
Dissolved Hardness (Calculated)	EC100 ALS Environmental - Vancouver	Water	APHA 2340B	"Hardness (as CaCO3), dissolved" is calculated from the sum of dissolved Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations.
Hardness (Calculated) from Total Ca/Mg	EC100A ALS Environmental - Waterloo	Water	APHA 2340B	"Hardness (as CaCO3), from total Ca/Mg" is calculated from the sum of total Calcium and Magnesium concentrations, expressed in $CaCO_3$ equivalents. "Total Hardness" refers to the sum of Calcium and Magnesium Hardness. Hardness is normally or preferentially calculated from dissolved Calcium and Magnesium concentrations, because it is a property of water due to dissolved divalent cations. Hardness from total Ca/Mg is normally comparable to Dissolved Hardness in non-turbid waters.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO_3.
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Vancouver	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into a GC-MS-FID.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Calgary	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.
Pesticides, PCB, and Neutral Extractable Chlorinated Hydrocarbons Extraction	EP660 ALS Environmental - Waterloo	Water	EPA 3511 (mod)	Samples are extracted from aqueous sample using an organic solvent liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: **VA24C7465**	Page	: 1 of 16
Client	: KBL Environmental Ltd.	Laboratory	: ALS Environmental - Vancouver
Contact	: Mike Gamache	Account Manager	: Gulraj Dhanaua
Address	: 13511 Vulcan Way A Division of CCS Inc. Richmond BC Canada V6V 1K4	Address	: 8081 Lougheed Highway Burnaby, British Columbia Canada V5A 1W9
Telephone	: ----	Telephone	: +1 604 253 4188
Project	: 4200 IVSTF	Date Samples Received	: 11-Oct-2024 16:00
PO	: ----	Date Analysis Commenced	: 15-Oct-2024
C-O-C number	: 17-775019	Issue Date	: 25-Oct-2024 13:47
Sampler	: ----		
Site	: ----		
Quote number	: KBL Environmetal BC Standing Offer 2024		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Matrix Spike (MS) Report; Recovery and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

Signatories	*Position*	*Laboratory Department*
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Sorina Motea	Laboratory Analyst	Calgary Organics, Calgary, Alberta

General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.
CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
DQO = Data Quality Objective.
LOR = Limit of Reporting (detection limit).
RPD = Relative Percent Difference
# = Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Total Metals (QC Lot: 1715730)											
FJ2403126-006	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Beryllium, total	7440-41-7	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	<0.010	<0.010	0	Diff <2x LOR	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	<0.10	<0.10	0	Diff <2x LOR	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Total Metals (QC Lot: 1715730) - continued											
FJ2403126-006	Anonymous	Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00030	mg/L	<0.00030	<0.00030	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	<0.000010	<0.000010	0	Diff <2x LOR	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	<0.0030	<0.0030	0	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 1725242)											
VA24C7418-010	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1720704)											
VA24C7791-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00050	mg/L	0.00063	0.00065	0.00002	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00050	mg/L	0.00306	0.00316	0.00009	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00050	mg/L	0.0167	0.0172	3.00%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.050	mg/L	1.70	1.64	3.16%	20%	----
		Cadmium, dissolved	7440-43-9	E421	0.0000250	mg/L	<0.0000250	<0.0000250	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.250	mg/L	293	296	0.917%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Chromium, dissolved	7440-47-3	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00100	mg/L	0.00586	0.00579	0.00007	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
		Lead, dissolved	7439-92-1	E421	0.000250	mg/L	<0.000250	<0.000250	0	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0050	mg/L	0.0170	0.0170	0.00002	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0250	mg/L	398	406	1.95%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00050	mg/L	0.0184	0.0185	0.448%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000250	mg/L	0.0620	0.0621	0.276%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00250	mg/L	0.00409	0.00416	0.00007	Diff <2x LOR	----
		Phosphorus, dissolved	7723-14-0	E421	0.250	mg/L	<0.250	<0.250	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.250	mg/L	34.9	35.1	0.613%	20%	----

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	*Client sample ID*	*Analyte*	*CAS Number*	*Method*	*LOR*	*Unit*	*Original Result*	*Duplicate Result*	*RPD(%) or Difference*	*Duplicate Limits*	*Qualifier*
Dissolved Metals (QC Lot: 1720704) - continued											
VA24C7791-001	Anonymous	Rubidium, dissolved	7440-17-7	E421	0.00100	mg/L	0.00764	0.00730	0.00034	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000250	mg/L	0.00738	0.00685	7.50%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.250	mg/L	6.78	6.52	3.94%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.250	mg/L	800	801	0.0941%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00100	mg/L	6.99	6.90	1.25%	20%	----
		Sulfur, dissolved	7704-34-9	E421	2.50	mg/L	1370	1370	0.00204%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00150	mg/L	<0.00150	<0.00150	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000050	mg/L	0.00520	0.00518	0.390%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00250	mg/L	<0.00250	<0.00250	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1727667)											
FJ2403158-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1720514)											
BF2400395-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1718990)											
VA24C4770-001	Anonymous	Benzene	71-43-2	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611A	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611A	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611A	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
Hydrocarbons (QC Lot: 1718991)											
VA24C7361-007	Anonymous	F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.0%	30%	----
		VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	<100	0.0%	30%	----

Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1715730)						
Aluminum, total	7429-90-5	E420	0.003	mg/L	<0.0030	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	<0.00010	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	<0.00010	----
Barium, total	7440-39-3	E420	0.0001	mg/L	<0.00010	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	<0.000020	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	<0.000050	----
Boron, total	7440-42-8	E420	0.01	mg/L	<0.010	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	<0.0000050	----
Calcium, total	7440-70-2	E420	0.05	mg/L	<0.050	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	<0.000010	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	<0.00050	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	<0.00010	----
Copper, total	7440-50-8	E420	0.0005	mg/L	<0.00050	----
Iron, total	7439-89-6	E420	0.01	mg/L	<0.010	----
Lead, total	7439-92-1	E420	0.00005	mg/L	<0.000050	----
Lithium, total	7439-93-2	E420	0.001	mg/L	<0.0010	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	<0.0050	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	<0.00010	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	<0.000050	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	<0.00050	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	<0.050	----
Potassium, total	7440-09-7	E420	0.05	mg/L	<0.050	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	<0.00020	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	<0.000050	----
Silicon, total	7440-21-3	E420	0.1	mg/L	<0.10	----
Silver, total	7440-22-4	E420	0.00001	mg/L	<0.000010	----
Sodium, total	7440-23-5	E420	0.05	mg/L	<0.050	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	<0.00020	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	<0.50	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	<0.00020	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	<0.000010	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1715730) - continued						
Thorium, total	7440-29-1	E420	0.0001	mg/L	<0.00010	----
Tin, total	7440-31-5	E420	0.0001	mg/L	<0.00010	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	<0.00030	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	<0.00010	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	<0.000010	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	<0.00050	----
Zinc, total	7440-66-6	E420	0.003	mg/L	<0.0030	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	<0.00020	----
Total Metals (QCLot: 1725242)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1720704)						
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	<0.0010	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	<0.00010	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	<0.00010	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	<0.00010	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	<0.000020	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	<0.000050	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	<0.010	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	<0.0000050	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	<0.050	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	<0.000010	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	<0.00050	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	<0.00010	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	<0.00020	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	<0.010	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	<0.000050	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	<0.0010	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	<0.0050	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	<0.00010	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	<0.000050	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	<0.00050	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	<0.050	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	<0.050	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	<0.00020	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	<0.000050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1720704) - continued						
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	<0.050	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	<0.000010	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	<0.050	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	<0.00020	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	<0.50	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	<0.00020	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	<0.000010	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	<0.00010	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	<0.00010	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	<0.00030	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	<0.00010	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	<0.000010	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	<0.00050	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	<0.0010	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	<0.00020	----
Dissolved Metals (QCLot: 1727667)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Aggregate Organics (QCLot: 1720514)						
Phenols, total (4AAP)	----	E562	0.001	mg/L	<0.0010	----
Volatile Organic Compounds (QCLot: 1718990)						
Benzene	71-43-2	E611A	0.5	µg/L	<0.50	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	<0.50	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	<0.50	----
Styrene	100-42-5	E611A	0.5	µg/L	<0.50	----
Toluene	108-88-3	E611A	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 1718991)						
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Hydrocarbons (QCLot: 1720210)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
F3 (C16-C34)	----	E601	250	µg/L	<250	----
F4 (C34-C50)	----	E601	250	µg/L	<250	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1720209)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1720209) - continued						
Acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	----
Acridine	260-94-6	E641A	0.01	µg/L	<0.010	----
Anthracene	120-12-7	E641A	0.01	µg/L	<0.010	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	----
Chrysene	218-01-9	E641A	0.01	µg/L	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	----
Fluorene	86-73-7	E641A	0.01	µg/L	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	----
Naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	----
Pyrene	129-00-0	E641A	0.01	µg/L	<0.010	----
Quinoline	91-22-5	E641A	0.05	µg/L	<0.050	----
Polychlorinated Biphenyls (QCLot: 1714311)						
Aroclor 1016	12674-11-2	E687	0.02	µg/L	<0.020	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	<0.020	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	<0.020	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	<0.020	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	<0.020	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	<0.020	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	<0.020	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	<0.020	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	<0.020	----

Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1710044)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Total Metals (QCLot: 1715730)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	0.1 mg/L	95.0	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	0.05 mg/L	104	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	0.05 mg/L	106	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.012 mg/L	103	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.005 mg/L	98.0	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	0.05 mg/L	100	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	0.05 mg/L	98.7	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.005 mg/L	100	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	2.5 mg/L	99.8	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.002 mg/L	101	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.012 mg/L	101	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.012 mg/L	100.0	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.012 mg/L	99.3	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	0.05 mg/L	99.5	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.025 mg/L	102	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.012 mg/L	99.8	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	2.5 mg/L	109	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.012 mg/L	100	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.012 mg/L	102	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.025 mg/L	100	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	0.5 mg/L	101	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	2.5 mg/L	98.0	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.005 mg/L	101	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	0.05 mg/L	100	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	0.5 mg/L	103	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.005 mg/L	93.4	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	2.5 mg/L	104	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.012 mg/L	104	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	2.5 mg/L	94.1	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.005 mg/L	103	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Total Metals (QCLot: 1715730) - continued									
Thallium, total	7440-28-0	E420	0.00001	mg/L	0.05 mg/L	103	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.005 mg/L	99.4	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.025 mg/L	99.5	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.012 mg/L	96.3	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.005 mg/L	100	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0 mg/L	104	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.025 mg/L	102	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.025 mg/L	99.8	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.005 mg/L	99.4	80.0	120	----
Total Metals (QCLot: 1725242)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	87.7	80.0	120	----
Dissolved Metals (QCLot: 1720704)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.4	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	95.6	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	98.3	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	93.8	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.0	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.6	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	98.5	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	97.9	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	99.8	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	97.0	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	95.5	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	93.7	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	88.7	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	98.4	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	102	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	97.6	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	97.3	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.9	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	95.3	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	104	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	98.1	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	95.7	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1720704) - continued									
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	96.3	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	102	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	93.0	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	102	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	99.2	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	117	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	94.0	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.6	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	96.5	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.9	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.0	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	95.4	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	100	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	97.5	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	95.8	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	99.7	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	99.2	80.0	120	----
Aggregate Organics (QCLot: 1720514)									
Phenols, total (4AAP)	----	E562	0.001	mg/L	0.02 mg/L	101	85.0	115	----
Volatile Organic Compounds (QCLot: 1718990)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	88.7	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	86.0	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	100 µg/L	96.8	70.0	130	----
Styrene	100-42-5	E611A	0.5	µg/L	100 µg/L	83.6	70.0	130	----
Toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	88.8	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	100	70.0	130	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	90.6	70.0	130	----
Hydrocarbons (QCLot: 1718991)									
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	86.9	70.0	130	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	90.7	70.0	130	----
Hydrocarbons (QCLot: 1720210)									
F2 (C10-C16)	----	E601	100	µg/L	3830 µg/L	78.6	70.0	130	----
F3 (C16-C34)	----	E601	250	µg/L	7950 µg/L	76.6	70.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Target Concentration	LCS	Low	High	Qualifier
Hydrocarbons (QCLot: 1720210) - continued									
F4 (C34-C50)	----	E601	250	µg/L	4220 µg/L	76.5	70.0	130	----
Polycyclic Aromatic Hydrocarbons (QCLot: 1720209)									
Acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	100	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	98.1	60.0	130	----
Acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	92.2	60.0	130	----
Anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	114	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	105	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	114	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	106	60.0	130	----
Chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	108	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	106	60.0	130	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	112	60.0	130	----
Fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	111	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	84.3	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	96.0	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	107	60.0	130	----
Naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	104	50.0	130	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	108	60.0	130	----
Pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	111	60.0	130	----
Quinoline	91-22-5	E641A	0.05	µg/L	0.5 µg/L	85.8	60.0	130	----
Polychlorinated Biphenyls (QCLot: 1714311)									
Aroclor 1016	12674-11-2	E687	0.02	µg/L	0.2 µg/L	128	60.0	140	----
Aroclor 1221	11104-28-2	E687	0.02	µg/L	0.2 µg/L	128	60.0	140	----
Aroclor 1232	11141-16-5	E687	0.02	µg/L	0.2 µg/L	128	60.0	140	----
Aroclor 1242	53469-21-9	E687	0.02	µg/L	0.2 µg/L	128	60.0	140	----
Aroclor 1248	12672-29-6	E687	0.02	µg/L	0.2 µg/L	116	60.0	140	----
Aroclor 1254	11097-69-1	E687	0.02	µg/L	0.2 µg/L	120	60.0	140	----
Aroclor 1260	11096-82-5	E687	0.02	µg/L	0.2 µg/L	128	60.0	140	----
Aroclor 1262	37324-23-5	E687	0.02	µg/L	0.2 µg/L	128	60.0	140	----
Aroclor 1268	11100-14-4	E687	0.02	µg/L	0.2 µg/L	128	60.0	140	----

Matrix Spike (MS) Report

A Matrix Spike (MS) is a randomly selected intra-laboratory replicate sample that has been fortified (spiked) with test analytes at known concentration, and processed in an identical manner to test samples. Matrix Spikes provide information regarding analyte recovery and potential matrix effects. MS DQO exceedances due to sample matrix may sometimes be unavoidable; in such cases, test results for the associated sample (or similar samples) may be subject to bias. ND – Recovery not determined, background level >= 1x spike level.

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1715730)										
VA24C7105-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0918 mg/L	0.1 mg/L	91.8	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0529 mg/L	0.05 mg/L	106	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0529 mg/L	0.05 mg/L	106	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	----	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.00460 mg/L	0.005 mg/L	92.1	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0468 mg/L	0.05 mg/L	93.6	70.0	130	----
		Boron, total	7440-42-8	E420	0.046 mg/L	0.05 mg/L	92.2	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00488 mg/L	0.005 mg/L	97.6	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.00255 mg/L	0.002 mg/L	102	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0124 mg/L	0.012 mg/L	99.1	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0119 mg/L	0.012 mg/L	95.2	70.0	130	----
		Copper, total	7440-50-8	E420	0.0116 mg/L	0.012 mg/L	93.0	70.0	130	----
		Iron, total	7439-89-6	E420	ND mg/L	----	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.0240 mg/L	0.025 mg/L	96.0	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0110 mg/L	0.012 mg/L	88.1	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	ND mg/L	----	ND	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0126 mg/L	0.012 mg/L	101	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0236 mg/L	0.025 mg/L	94.6	70.0	130	----
		Phosphorus, total	7723-14-0	E420	0.500 mg/L	0.5 mg/L	99.9	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	----	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.00511 mg/L	0.005 mg/L	102	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0512 mg/L	0.05 mg/L	102	70.0	130	----
		Silicon, total	7440-21-3	E420	ND mg/L	----	ND	70.0	130	----
		Silver, total	7440-22-4	E420	0.00442 mg/L	0.005 mg/L	88.5	70.0	130	----
		Sodium, total	7440-23-5	E420	ND mg/L	----	ND	70.0	130	----
		Strontium, total	7440-24-6	E420	ND mg/L	----	ND	70.0	130	----
		Sulfur, total	7704-34-9	E420	ND mg/L	----	ND	70.0	130	----
		Tellurium, total	13494-80-9	E420	0.00491 mg/L	0.005 mg/L	98.2	70.0	130	----
		Thallium, total	7440-28-0	E420	0.0479 mg/L	0.05 mg/L	95.7	70.0	130	----
		Thorium, total	7440-29-1	E420	0.00501 mg/L	0.005 mg/L	100	70.0	130	----
		Tin, total	7440-31-5	E420	0.0247 mg/L	0.025 mg/L	98.7	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0125 mg/L	0.012 mg/L	100	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.00500 mg/L	0.005 mg/L	99.9	70.0	130	----
		Uranium, total	7440-61-1	E420	ND mg/L	----	ND	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0253 mg/L	0.025 mg/L	101	70.0	130	----
		Zinc, total	7440-66-6	E420	ND mg/L	----	ND	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.00493 mg/L	0.005 mg/L	98.5	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Total Metals (QCLot: 1725242)										
VA24C7418-011	Anonymous	Mercury, total	7439-97-6	E508	0.0000888 mg/L	0 mg/L	88.8	70.0	130	----
Dissolved Metals (QCLot: 1720704)										
VA24C7791-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	1.01 mg/L	1 mg/L	101	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0972 mg/L	0.1 mg/L	97.2	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.103 mg/L	0.1 mg/L	103	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0936 mg/L	0.1 mg/L	93.6	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.0466 mg/L	0.05 mg/L	93.2	70.0	130	----
		Boron, dissolved	7440-42-8	E421	ND mg/L	----	ND	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.0197 mg/L	0.02 mg/L	98.3	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0509 mg/L	0.05 mg/L	102	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.195 mg/L	0.2 mg/L	97.6	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0951 mg/L	0.1 mg/L	95.1	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0894 mg/L	0.1 mg/L	89.4	70.0	130	----
		Iron, dissolved	7439-89-6	E421	9.23 mg/L	10 mg/L	92.3	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0932 mg/L	0.1 mg/L	93.2	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.492 mg/L	0.5 mg/L	98.3	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0971 mg/L	0.1 mg/L	97.1	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0995 mg/L	0.1 mg/L	99.5	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.185 mg/L	0.2 mg/L	92.7	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	50.1 mg/L	50 mg/L	100	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	----	ND	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0979 mg/L	0.1 mg/L	97.9	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.206 mg/L	0.2 mg/L	103	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	51.1 mg/L	50 mg/L	102	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.0189 mg/L	0.02 mg/L	94.4	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	----	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	----	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	----	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.0178 mg/L	0.02 mg/L	89.0	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0978 mg/L	0.1 mg/L	97.8	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0963 mg/L	0.1 mg/L	96.3	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.205 mg/L	0.2 mg/L	102	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0965 mg/L	0.1 mg/L	96.5	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.504 mg/L	0.5 mg/L	101	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	1.93 mg/L	2 mg/L	96.5	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.203 mg/L	0.2 mg/L	102	70.0	130	----
Dissolved Metals (QCLot: 1727667)										
FJ2403158-002	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000966 mg/L	0 mg/L	96.6	70.0	130	----

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Aggregate Organics (QCLot: 1720514)										
FC2402867-001	Anonymous	Phenols, total (4AAP)	----	E562	0.0199 mg/L	0.02 mg/L	99.3	75.0	125	----
Volatile Organic Compounds (QCLot: 1718990)										
VA24C7322-001	Anonymous	Benzene	71-43-2	E611A	87.4 µg/L	100 µg/L	87.4	60.0	140	----
		Ethylbenzene	100-41-4	E611A	86.7 µg/L	100 µg/L	86.7	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	99.7 µg/L	100 µg/L	99.7	60.0	140	----
		Styrene	100-42-5	E611A	88.7 µg/L	100 µg/L	88.7	60.0	140	----
		Toluene	108-88-3	E611A	85.8 µg/L	100 µg/L	85.8	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	181 µg/L	200 µg/L	90.7	60.0	140	----
		Xylene, o-	95-47-6	E611A	85.5 µg/L	100 µg/L	85.5	60.0	140	----
Hydrocarbons (QCLot: 1718991)										
VA24C7361-008	Anonymous	F1 (C6-C10)	----	E581.VH+F1	5350 µg/L	6310 µg/L	84.8	60.0	140	----
		VHw (C6-C10)	----	E581.VH+F1	5010 µg/L	6310 µg/L	79.4	60.0	140	----

Chain of Custody (COC) / Analytical Request Form

ALS Environmental
www.alsglobal.com

Canada Toll Free: 1 800 668 9878

Affix ALS barcode label here (lab use only)

COC Number: 17 - 775019

Page of

Report To	Contact and company name below will appear on the final report
Company:	KBL Environmental
Contact:	Mike Gamache
Phone:	403 370 2800
	Company address below will appear on the final report
Street:	3909 68th AVE
City/Province:	Ledue AB
Postal Code:	T9E 0Z4

Report Format / Distribution	
Select Report Format:	PDF EXCEL EDD (DIGITAL)
Quality Control (QC) Report with Report	YES NO
Compare Results to Criteria on Report - provide details below if box checked	
Select Distribution:	EMAIL MAIL FAX
Email 1 or Fax	mgamache@kbl.ca
Email 2	
Email 3	

Select Service Level Below - Contact your AM to confirm all E&P TATs (surcharges may apply)	
Regular [R]	Standard TAT if received by 3 pm - business days - no surcharges apply
PRIORITY (Business Days) 4 day [P4-20%]	EMERGENCY 1 Business day [E - 100%]
3 day [P3-25%]	Same Day, Weekend or Statutory holiday [E2 -200% (Laboratory opening fees may apply)]
2 day [P2-50%]	
Date and Time Required for all E&P TATs:	dd-mmm-yy hh:mm
For tests that can not be performed according to the service level selected, you will be contacted.	

Invoice To		
	Same as Report To	YES NO
	Copy of Invoice with Report	YES NO
Company:		
Contact:		

Invoice Distribution	
Select Invoice Distribution:	EMAIL MAIL FAX
Email 1 or Fax	accountspayable@kbl.ca
Email 2	mgamache@kbl.ca

Project Information		Oil and Gas Required Fields (client use)	
ALS Account # / Quote #:		AFE/Cost Center:	PO#
Job #:	4200IVST	Major/Minor Code:	Routing Code:
PO / AFE:		Requisitioner:	
LSD:		Location:	

ALS Lab Work Order # (lab use only):	ALS Contact:	Sampler:

Analysis Request

Indicate Filtered (F), Preserved (P) or Filtered and Preserved (F/P) below

ALS Sample # (lab use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Pyl + Total metals	Dissolved Metals	BTEX F1-F2	PAHs	Phenol	PCB	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	SNP-0037-7	Oct 9, 24		A20	14	X	X	X	X	X	X		

Environmental Division
Vancouver
Work Order Reference
VA24C7465

Telephone : +1 604 253 4188

Drinking Water (DW) Samples[1] (client use)	Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)
Are samples taken from a Regulated DW System? YES NO	Unfiltered, Limited Volume of Filtered water in Mercury Bottle
Are samples for human consumption/ use? YES NO	

SAMPLE CONDITION AS RECEIVED (lab use only)

Frozen		SIF Observations	Yes / No
Ice Packs	Ice Cubes	Custody seal intact	Yes / No
Cooling Initiated			

INITIAL COOLER TEMPERATURES °C	FINAL COOLER TEMPERATURES °C
	1.0

SHIPMENT RELEASE (client use)			INITIAL SHIPMENT RECEPTION (lab use only)			FINAL SHIPMENT RECEPTION (lab use only)		
Released by:	Date: Oct 10/24	Time:	Received by:	Date:	Time:	Received by: DS	Date: 11-OCT	Time: 4 pm

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2018 FRONT

1. If any water samples are taken from a **Regulated Drinking Water (DW) System**, please submit using an **Authorized DW COC form**.

White Paper Co. 604 951-3900

APPENDIX F

Appendix F: Internal Inspection Reports

KBL Environmental LTD.

C2: Monthly Inspection Checklist

Inuvik Soils and Water Treatment Facility

Date (MM/DD/YY): 06/08/24 Time: 12:00

Inspector: Mike Gamache Weather: Sunny +17C

Current activities on site: None

Discharging to sump? NA Freeboard in Sump

Water in Cell? Yes Freeboard in Water Cell 1m

Soil on Pad? Yes

Treated water tank in use? no # of TW tanks

Review Maintenance Log (Y/N) Outstanding work order (Y/N)

Site Conditions		OK (✓or N/A)	Needs Attention (✓)	Entered in Maintenance Log (Y/N, Initial)	Comment
Access	Gate in working order	✓			
	Signage visible	✓			
Spill Kit	On site	✓			
	Lid secured	✓			
	Contents checked	✓			
Storage Shed	Locked	NA			
	PPE available	NA			
	Trash pump in containment	NA			
	Pump fuel in containment	NA			
	Soil amendments in containment	NA			
	Water licence	✓			
	Management plans	✓			
	MSDSs	✓			
	Sample kit contents checked	✓			
Wildlife	Observed on site	✓			Heavy bear traffic noted based on tracks
	Damage to facility		✓		Minor damage to liner near waterline at north side of pond
Facility Grounds	Evidence of spills		✓		Previous release from pond still visible
	Rutting	✓			Soft conditions
	Ice	✓			
	Biopile erosion	✓			
Soil Pad	Berm stability	✓			Minor erosion rilles where pond is overflowing at SE corner
	Drainage system working		✓		Plugged with sandbags and soil to prevent further overflow
Water Cell	Berm stability	✓			
	Liner visible		✓		Minor damage to liner at water interface needs liner tape
	Filter cloth on pump intake	NA			
Slurry Bin	Freeboard	NA	✓		
	Debris	NA			
	Staining near ramp	NA			

Additional Comments:

Some water pumped into pond, approximately 120m^3 of water pumped into truck and moved to off-site tanks until liner can be repaired, on-site tanks replaced, and treatment trailer moved to site.

KBL Environmental LTD.

C2: Monthly Inspection Checklist

Inuvik Soils and Water Treatment Facility

Date (MM/DD/YY): 10/9/24 Time: 16:00
Inspector: Mike Gamache Weather: Overcast +1C
Current activities on site: None
Discharging to sump? NA Freeboard in Sump
Water in Cell? Yes Freeboard in Water Cell >1m
Soil on Pad? Yes
Emergency water tank in use? no # of TW tanks
Review Maintenance Log (Y/N) Outstanding work order (Y/N)

Site Conditions		OK (✓or N/A)	Needs Attention (✓)	Entered in Maintenance Log (Y/N, Initial)	Comment
Access	Gate in working order	✓			
	Signage visible	✓			
Spill Kit	On site	✓			
	Lid secured	✓			
	Contents checked	✓			
Storage Shed	Locked	✓			
	PPE available	✓			
	Trash pump in containment	✓			
	Pump fuel in containment	✓			
	Soil amendments in containment	✓			
	Water licence	✓			
	Management plans	✓			
	MSDSs	✓			
	Sample kit contents checked	✓			
Wildlife	Observed on site	✓			
	Damage to facility	✓			
Facility Grounds	Evidence of spills	✓			
	Rutting	✓			Minor rutting
	Ice	✓			Some on pond
	Biopile erosion	✓			
Soil Pad	Berm stability	✓			
	Drainage system working		✓		Plugged with sandbags and soil to prevent further overflow
Water Cell	Berm stability	✓			
	Liner visible	✓			New liner installed and refilling pond with water from off site tank storage and water sequestered in soil cell.
	Filter cloth on pump intake	✓			
Slurry Bin	Freeboard	NA			
	Debris	NA			
	Staining near ramp	NA			
Tanks	Condition of tanks	✓			New tanks installed, fill lines and hose connections installed
Water treatment trailer	Condition of trailer	✓			New trailer arrived on site, carbon tanks charged
	Filter inventory adequate	✓			3 boxes of sediment filters and 3 boxes of hydrocarbon filters

Additional Comments: New liner installed by Western Tank and Liner. New tanks delivered and installed by Northwind. Water from off-site temp storage trucked to site and started filling new pond. New water treatment trailer arrived on site and writer began hydrating carbon tanks in preparation to treat pond water.

KBL Environmental LTD.

C2: Monthly Inspection Checklist

Inuvik Soils and Water Treatment Facility

Date (MM/DD/YY): 04/12/24 Time: 12:00
Inspector: Jesse Harder Weather: Sunny -10C
Current activities on site: None
Discharging to sump? NA Freeboard in Sump
Water in Cell? Yes Frozen Freeboard in Water Cell
Soil on Pad? Yes
Treated water tank in use? No # of TW tanks
Review Maintenance Log (Y/N) Outstanding work order (Y/N)

Site Conditions		OK (✓or N/A)	Needs Attention (✓)	Entered in Maintenance Log (Y/N, Initial)	Comment
Access	Gate in working order	✓			
	Signage visible	✓			
Spill Kit	On site	✓			
	Lid secured	✓			
	Contents checked	✓			
Storage Shed	Locked	NA			
	PPE available	NA			
	Trash pump in containment	NA			
	Pump fuel in containment	NA			
	Soil amendments in containment	NA			
	Water licence	✓			
	Management plans	✓			
	MSDSs	✓			
	Sample kit contents checked	NA			
Wildlife	Observed on site	✓			
	Damage to facility	✓			
Facility Grounds	Evidence of spills	✓			
	Rutting	NA			Snow covered
	Ice	✓			Pond and access frozen
	Biopile erosion	✓			Snow covered
Soil Pad	Berm stability	✓			
	Drainage system working	NA			
Water Cell	Berm stability	✓			
	Liner visible	NA			Snow covered
	Filter cloth on pump intake	NA			
Slurry Bin	Freeboard	✓			Unknown, snow covering pond to top
	Debris	NA			Snow covered
	Staining near ramp	NA			Snow covered

Additional Comments:
Area is snow covered and frozen

KBL Environmental LTD.

C2: Monthly Inspection Checklist

Inuvik Soils and Water Treatment Facility

Date (MM/DD/YY): 08/14/24 Time: 12:00
Inspector: Mike Gamache Weather: Sunny +20C
Current activities on site: None
Discharging to sump? NA Freeboard in Sump
Water in Cell? Yes Freeboard in Water Cell >1m
Soil on Pad? Yes
Treated water tank in use? Yes 3 tamp pillow tanks # of TW tanks
Review Maintenance Log (Y/N) Outstanding work order (Y/N)

Site Conditions		OK (✓or N/A)	Needs Attention (✓)	Entered in Maintenance Log (Y/N, Initial)	Comment
Access	Gate in working order	✓			
	Signage visible	✓			
Spill Kit	On site	✓			
	Lid secured	✓			
	Contents checked	✓			
Storage Shed	Locked	✓			
	PPE available	✓			
	Trash pump in containment	✓			
	Pump fuel in containment	✓			
	Soil amendments in containment	✓			
	Water licence	✓			
	Management plans	✓			
	MSDSs	✓			
	Sample kit contents checked	✓			
Wildlife	Observed on site	✓			Heavy bear traffic noted based on tracks
	Damage to facility		✓		Bears continue to pull fencing down – KBL continues to repair as required
Facility Grounds	Evidence of spills	✓			
	Rutting	✓			Minor rutting
	Ice	✓			
	Biopile erosion	✓			
Soil Pad	Berm stability	✓			Minor erosion rills where pond is overflowing at SE corner, vegetation coming in ok to stabilize
	Drainage system working		✓		Plugged with sandbags and soil to prevent further overflow
Water Cell	Berm stability	✓			
	Liner visible		✓		New liner on order to replace damaged one
	Filter cloth on pump intake	✓			Using water from cell to treat biopiles with surfactant
Slurry Bin	Freeboard	NA			
	Debris	NA			
	Staining near ramp	NA			

Additional Comments: Temp pillow tanks chewed and clawed by bears leading to unauthorized release of effluent to ground. Approximately 50m3 of water released. No water made it to waterbodies, all was absorbed into the ground. Spill notification made to KBL and regulator. Samples taken and results will be reported in spill report. Temp pillow tanks emptied into soil cell and used as

treatment water for mixing surfactant in treating biopiles.

KBL Environmental LTD.

C2: Monthly Inspection Checklist

Inuvik Soils and Water Treatment Facility

Date (MM/DD/YY): 07/14/24 Time: 12:00
Inspector: Mike Gamache Weather: Sunny +29C
Current activities on site: None
Discharging to sump? NA Freeboard in Sump
Water in Cell? Yes Freeboard in Water Cell >1m
Soil on Pad? Yes
Treated water tank in use? no # of TW tanks
Review Maintenance Log (Y/N) Outstanding work order (Y/N)

Site Conditions		OK (✓or N/A)	Needs Attention (✓)	Entered in Maintenance Log (Y/N, Initial)	Comment
Access	Gate in working order	✓			
	Signage visible	✓			
Spill Kit	On site	✓			
	Lid secured	✓			
	Contents checked	✓			
Storage Shed	Locked	✓			Seacan arrived on site for storage of KBL equipment
	PPE available	✓			
	Trash pump in containment	✓			
	Pump fuel in containment	✓			
	Soil amendments in containment	✓			
	Water licence	✓			
	Management plans	✓			
	MSDSs	✓			
	Sample kit contents checked	✓			
Wildlife	Observed on site	✓			Heavy bear traffic noted based on tracks
	Damage to facility		✓		Major damage to liner noted below the water line that became evident when drawing down pond to conduct minor liner repair. Large tear and failed welds visible
Facility Grounds	Evidence of spills	✓			
	Rutting	✓			Minor rutting
	Ice	✓			
	Biopile erosion	✓			In process of windrowing piles
Soil Pad	Berm stability	✓			Minor erosion rills where pond is overflowing at SE corner, vegetation coming ok to stabilize
	Drainage system working		✓		Plugged with sandbags and soil to prevent further overflow
Water Cell	Berm stability	✓			
	Liner visible		✓		Liner will require full drain and replacement
	Filter cloth on pump intake	✓			Pumping water from cell into temporary containment (3 pillow tanks ~80m^3 capacity total) to draw cell down below damaged areas
Slurry Bin	Freeboard	NA			
	Debris	NA			
	Staining near ramp	NA			

Additional Comments:

During liner inspection and water treatment writer noted potential damage to cell liner below water line. Writer started drawing down pond into temp storage tanks and major damage to liner was discovered. Writer continued to draw down pond to below the damaged areas. Water will stay in temp storage tanks until liner can be replaced. Approximately ½ of the biopile was treated with surfactant and piled in windrows for maximum exposure to air and UV.

KBL Environmental LTD.

C2: Monthly Inspection Checklist

Inuvik Soils and Water Treatment Facility

Date (MM/DD/YY): 05/27/24 Time: 16:00
Inspector: Mike Gamache Weather: Sunny +13C
Current activities on site: None
Discharging to sump? NA Freeboard in Sump
Water in Cell? Yes Freeboard in Water Cell None
Soil on Pad? Yes
Treated water tank in use? no # of TW tanks
Review Maintenance Log (Y/N) Outstanding work order (Y/N)

Site Conditions		OK (✓or N/A)	Needs Attention (✓)	Entered in Maintenance Log (Y/N, Initial)	Comment
Access	Gate in working order	✓			
	Signage visible	✓			
Spill Kit	On site	✓			
	Lid secured	✓			
	Contents checked	✓			
Storage Shed	Locked	NA			
	PPE available	NA			
	Trash pump in containment	NA			
	Pump fuel in containment	NA			
	Soil amendments in containment	NA			
	Water licence	✓			
	Management plans	✓			
	MSDSs	✓			
	Sample kit contents checked	NA			
Wildlife	Observed on site	✓			Heavy bear traffic noted based on tracks
	Damage to facility		✓		Minor damage to liner near waterline at north side of pond
Facility Grounds	Evidence of spills		✓		Pond overflowing due to snow melt
	Rutting	✓			Soft conditions
	Ice	NA			
	Biopile erosion	✓			
Soil Pad	Berm stability	✓			Minor erosion rilles where pond is overflowing at SE corner
	Drainage system working		✓		Plugged with sandbags and soil to prevent further overflow
Water Cell	Berm stability	✓			
	Liner visible		✓		Minor damage to liner at water interface needs liner tape
	Filter cloth on pump intake	NA			
Slurry Bin	Freeboard		✓		Pump truck to arrive morning of the 28th to draw down pond
	Debris	✓			
	Staining near ramp	✓			

Additional Comments:

Pond was overflowing off SW corner of facility. Notification was made to regulator and KBL. Pump-down of pond to start in the morning and sampling of release area soil and ponded water.