April 14, 2025

AlecSandra Macdonald
Regulatory Specialist
Gwich'in Land and Water Board
Alex Moses-Greenland Building
105 Veterans Way
Inuvik, NT X0E 0T0

RE: Submission of 2024 Annual Report and Annual Management Plan Revisions for the Inuvik Airport Type B Water Licence G23L8-002

Dear Ms. Macdonald,

The Government of Northwest Territories – Department of Infrastructure is submitting the 2024 annual report and annual management plan revisions in accordance with the Type B Water Licence G23L8-002 (the licence), revised November 21, 2024.

The annual report was prepared as per Schedules 1 and 2 of the licence and the management plans were reviewed as per Part B, Condition 9. The following management plans were revised as a result of the review:

- Erosion and Sediment Control Plan (Version 1.2);
- Environmental Monitoring Plan (Version 1.3); and
- Spill Contingency Plan (Version 1.2).

The appended conformance table demonstrates how the contents of the report meet the conditions and requirements of the licence and includes a summary of the revisions made to the management plans.

Should you have any questions or concerns, please contact me at (867) 777-2467 or by email at Jason_MacNeil@gov.nt.ca.

Sincerely,

Jason MacNeil
Regional Airport Manager, Inuvik Mike Zubko Airport
Department of Infrastructure
Government of Northwest Territories

Attached:

- Conformance Table
- 2024 Annual Report
- Erosion and Sediment Control Plan (Version 1.2);
- Environmental Monitoring Plan (Version 1.3); and
- Spill Contingency Plan (Version 1.2).

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

Conformance Table – G23L8-002 Water Licence 2024 Annual Report Submission

Condition Number	Requirement	Plan Title	Summary of Changes/Plans
Part B, Condition 9	GNWT–INF to conduct an annual review of all approved plans and make any revisions necessary to reflect changes in operations, contact information, or other details.	Engagement Plan and Record (Version 1.1)	• Reviewed and determined that no revision was necessary.
		Environmental Monitoring Plan (Version 1.3)	• Proposed to remove SNP 7 and SNP 2 because runoff has been directed towards SNP 8 and SNP 1; • Proposed to remove SNP 3 because there is no distinct drainage path from the airport to this location; • Updated introduction and project description; • Revised figure; and • Added alternate reference location on Chii Zhìt Van during unsafe ice conditions in the spring.
		Erosion and Sediment Control Plan (Version 1.2)	• Updated project description; and • Included plans for ongoing ditch monitoring and mitigations.
		Spill Contingency Plan (Version 1.2)	• Updated remaining construction activities; and • Removed contractor-specific information so that it can be personalized by the contractors that are awarded future contracts.

Condition Number	Requirement	Plan Title	Summary of Changes/Plans
Part B, Condition 14	GNWT–INF to comply with the Surveillance Network Program in Schedule 1.	Inuvik Airport Drainage Upgrades, 2024 Annual Report, Water Licence G23L8-002	• Included data collected in the annual report as per Schedule 1 of the licence.
Part B, Condition 17	GNWT–INF to submit an annual water licence report as per requirements of Schedule 2, Condition 1 and Schedule 1 no later than March 31 every year.	Inuvik Airport Drainage Upgrades, 2024 Annual Report, Water Licence G23L8-002	• Developed as per Schedule 2 of the licence; and • Provided conformity table in Table 2-1 of the report.
Part B, Condition 23	GNWT–INF to submit a TK / TLU Study within 6 months of licence issuance	TK/ TLU Study	• Submitted TK / TLU study to the GLWB on July 29, 2024 and it was approved by the GLWB on November 21, 2024.

GLWB – Gwich'in Land and Water Board; GNWT – Government of Northwest Territories; INF – Department of Infrastructure; SNP – Surveillance Network Program; TK – Traditional Knowledge; TLU – Traditional Land Use.

Associated Engineering | GLOBAL PERSPECTIVE. LOCAL FOCUS.

REPORT

Government of Northwest Territories
Department of Infrastructure

Inuvik Airport Drainage Upgrades
2024 Annual Report
Water Licence G23L8-002

APRIL 2025

SUBMITTED TO:
GWICH'IN LAND AND WATER BOARD

EXECUTIVE SUMMARY

The Government of Northwest Territories (GNWT) – Department of Infrastructure (INF) retained Associated Engineering (B.C.) Ltd. to prepare the 2024 annual report for Type B Water Licence G23L8-002 issued by the Gwich'in Land and Water Board (GLWB) on September 23, 2023.

This annual report summarizes the project activities completed in 2024, the activities completed under the approved management plans, results of the monitoring conducted as per the Surveillance Network Program and the environmental monitoring plan, and updates made to the management plans.

GNWT–INF is completing infrastructure upgrades and constructing a 914 m runway extension (the project) at the Inuvik Mike Zubko Airport (Inuvik Airport), located approximately 12 km east of Inuvik, NT. The project includes necessary upgrades to the drainage system which did not function properly in its previous condition and would not support future upgrades to the airport or changes in precipitation anticipated due to climate change. The drainage upgrades changed the paths and discharge locations of runoff from the Inuvik Airport and surrounding upland areas.

In 2024, defined ditches were constructed to the east, west, and south of the airport, directing runoff to Chii Zhìt Van (also known as Dolomite Lake and Airport Lake) and the unnamed lake referred to as East Lake, at locations called outfalls. Other construction activities in 2024 primarily involved hauling granular material to the east and west ends of the runway for the extension and installing culverts across taxiways and access road entries.

A summary of the contents of this report is as follows:

- Minor updates were made to the approved management plans;
- No spills were reportable to the NWT 24-hour Spill Line;
- The Traditional Land Use Review report was submitted to the GLWB on July 30, 2024;
- Freshet, summer, and fall water and sediment samples were collected in 2024;
- Water quality results met applicable guidelines except turbidity, total suspended solids, and several metals at some locations;
- Sediment quality results met applicable guidelines except arsenic at all locations; and
- Turbidity exceedances in May from the newly constructed ditches during freshet were reported to the GNWT Water Resources Inspector.

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LIST OF ABBREVIATIONS

Abbreviation	Definition
BTEX	Benzene, toluene, ethylbenzene, xylenes
$CBOD_5$	Carbonaceous biochemical oxygen demand
CEMP	Construction environmental management plan
CCME	Canadian Council of Ministers of the Environment
D	discharge (runoff) water location
DCH	Department of Culture and Heritage
DFO	Fisheries and Oceans Canada
DOC	dissolved organic carbon
DOT	Department of Transportation
ECC	Department of Environment and Climate Change
ECCC	Environment and Climate Change Canada
EMP	environmental monitoring plan
ESC	erosion and sediment control
ESCM	erosion and sediment control manual
F	fraction
FEQG	Federal Environmental Quality Guidelines
FWQG	Federal Water Quality Guidelines
GLWB	Gwich'in Land and Water Board
GNWT	Government of Northwest Territories
GTC	Gwich'in Tribal Council
INF	Department of Infrastructure
ISQG FAL	CCME Interim Sediment Quality Guidelines for the Protection of Freshwater Aquatic Life
LR	Department of Lands and Resources
OF	outfall
QEP	qualified environmental professional
QA/QC	quality assurance/quality control

Abbreviation	Definition
RPD	relative percent difference
RW	receiving water
SNP	Surveillance Network Program
SQGEHH	CCME Soil Quality Guidelines for the Protection of Environmental and Human Health
TLU	Traditional Land Use
TSS	total suspended solids
VPHw	Volatile petroleum hydrocarbons in water
WQG FAL	Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life

1 INTRODUCTION

The Government of Northwest Territories (GNWT) – Department of Infrastructure (INF) is completing infrastructure upgrades and constructing a 914 m runway extension (the project) at the Inuvik Mike Zubko Airport (Inuvik Airport), located approximately 12 km east of Inuvik, NT (Figure 1-1). The project includes necessary upgrades to the drainage system directing runoff through defined ditches to Chii Zhìt Van (also known as Dolomite Lake and Airport Lake) and the unnamed pothole lake referred to as East Lake, at locations called outfalls (OF).

The project activities are permitted under a five-year Type B Water Licence G23L8-002 (the licence) issued by the Gwich'in Land and Water Board (GLWB) on September 23, 2023 for the deposit of waste during construction, under the *Mackenzie Valley Resource Management Act* (SC 1998, c. 25) and the *Northwest Territories Waters Act* (SC 1992, c. 39) and regulations. The licence permits the construction of the drainage ditches, airport operations, and future maintenance of the ditches; it expires September 22, 2028. In 2024, the GLWB revised the licence on March 11 and on November 21 to correct administrative errors.

GNWT–INF retained Associated Engineering (B.C). Ltd. (Associated) to prepare the annual report for submission to the GLWB on their behalf. This report is organized into two main sections; Section 2 includes a summary of the annual report requirements as per Schedule 2 of the licence, and Sections 3 and 4 summarizes the monitoring conducted in 2024 and the results of the monitoring as per Schedule 1 of the SNP.

1.1 Background

Infrastructure upgrades at the Inuvik Airport have been ongoing since late 2019. Construction of the drainage ditches began in January 2024 during frozen conditions and were completed in June 2024. Other construction activities completed in 2024 included hauling and placing granular material on the east and west ends of the runway for the extension. Additional construction activities at the Inuvik Airport are planned for the next four years with completion in 2029.

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Associated Engineering

Government of Northwest Territories

LEGEND

Airport Property

AE PROJECT NO.	2020-2886
SCALE	1:50,000
COORD. SYSTEM	NAD 1983 UTM ZONE 8N
DATE	2024-10-01
REV	00
DRAWN BY	MS
CHECKED BY	CM

FIGURE 1-1
PROJECT LOCATION

GOVERNMENT OF NORTHWEST TERRITORIES - DEPARTMENT OF INFRASTRUCTURE

INUVIK MIKE ZUBKO AIRPORT RUNWAY 06-24 EXTENSION

2 ANNUAL REPORT SUMMARY

This report summarizes the environmental measures that were implemented, and project activities that occurred, in 2024 in accordance with the licence and approved management plans. Table 2-1 presents the annual report requirements listed under Schedule 2 of the licence, and the corresponding section of this report.

Table 2-1 G23L8-002 Schedule 2 Annual Water Licence Report Conditions

Condition	Section
The annual water licence report shall include, but not be limited to, the following information about activities conducted during the previous calendar year:	
a) A brief summary of Project activities.	2.1
b) An updated Project schedule.	2.2
c) A summary of engagement activities conducted in accordance with the approved Engagement Plan, referred to in Part B, Condition 18 of this Licence.	2.3
d) A summary of activities conducted in accordance with the approved spill contingency plan, referred to in Part H, Condition 2 of this Licence, including: a. A list and description of all Unauthorized Discharges, including the date, NWT spill number, volume, location, summary of the circumstances and follow-up actions taken, and status (i.e., open or closed), in accordance with the reporting requirements in Part H, Condition 4 of this licence; and b. An outline of any spill training administered.	2.4
e) A summary of activities conducted in accordance with the approved waste management plan, referred to in Part F, Condition 2 of the licence.	2.5
f) A summary of activities conducted in accordance with the approved erosion and sediment management plan, referred to in Part F, Condition 3 of the licence.	2.6
g) A summary of activities conducted in accordance with the approved environmental management plan, referred to in Part F, Condition 4 of the licence.	2.7
h) A summary of any updates or revisions to the spill contingency plan, engagement plan, waste management plan, erosion and sediment management plan, and/or environmental management plan conducted under the annual review referred to in Part B Condition 9 of the licence.	2.8
i) A summary of how any Traditional Knowledge, referred to in Part B Condition 4, was incorporated into decision making.	2.9
j) A list of any non-compliance(s) with the conditions of this licence, or any directive from the Board pursuant to the conditions of this licence.	2.10
k) A summary of actions taken to address concerns, non-compliance, or deficiencies in any reports filed by an Inspector.	2.11

Condition	Section
l) A summary of any studies requested by the Board, and/or a brief description of any future studies planned; and	2.12
m) Any other details requested by the Board by December 31 of the year being reported.	2.13

A summary of the sampling conducted as per the SNP in Schedule 1 of the licence is provided in Sections 3 and 4.

2.1 Project Activities

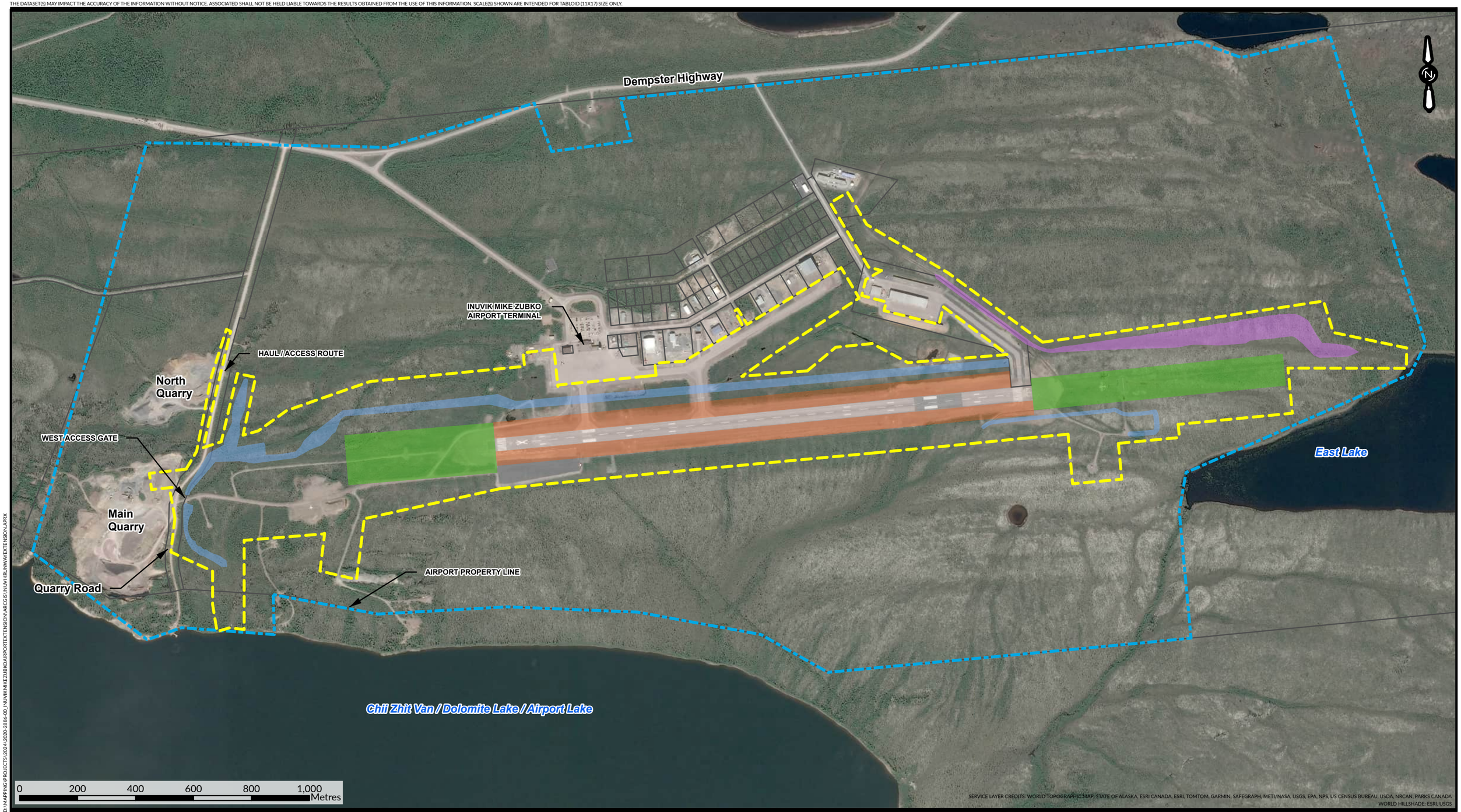
In 2024, construction activities were conducted on the east and west ends of the runway, and on the drainage ditches (Figure 2-1). The project activities primarily included the following:

- Hauled granular material from the quarry to the east and west ends of the runway for the extension;
- Excavated east embankment for the runway extension and infilled with granular material;
- Excavated the east and west ditches, lined with filter fabric, placed screened rock, and installed check dams;
- Graded the runway safety area adjacent to the existing runway;
- Hauled, stockpiled, and graded excavated materials to locations within the airside property; and
- Installed culverts across taxiways and access road entries.

GNWT–INF retained Delta North Alliance Inc. as the main contractor for the embankment construction and stormwater drainage work. GNWT–INF retained Associated to conduct the water quality sampling in 2024 (Sections 3 and 4).

2.2 Project Schedule

Clearing and groundworks for the new east and west ditches began in January 2024 and was mostly completed in April 2024, except for a few culverts which were installed by the end of June 2024. In 2025, no airfield construction activities are scheduled. Blasting and aggregate production in the quarry may begin in the fall of 2025 and continue through to 2026. Airfield paving and electrical upgrades are scheduled to occur between 2026 and 2029.



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Associated Engineering

Government of Northwest Territories

LEGEND

- Approximate Project Footprint
- Approximate Project Area
- Runway Extension
- Runway Safety Area
- Eastward Ditch
- Westward Ditch

AE PROJECT NO.	2020-2886
SCALE	1:12,000
COORD. SYSTEM	NAD 1983 UTM ZONE 8N
DATE	2025-03-13
REV	00
DRAWN BY	MS
CHECKED BY	CM

FIGURE 2-1
PROJECT CONSTRUCTION AREAS IN 2024

GOVERNMENT OF NORTHWEST TERRITORIES - DEPARTMENT OF INFRASTRUCTURE

INUVIK MIKE ZUBKO AIRPORT RUNWAY 06-24 EXTENSION

2.3 Engagement Activities

A summary of the engagement activities that were conducted pre-application (before May 31, 2023) is included in the engagement plan and record that was submitted with the water licence application (Associated 2023a). A summary of the engagement activities conducted in 2024 is provided in Section 2.3.2 (Associated 2024a).

2.3.1 Primary Potentially Affected Parties and Regulators

As per the engagement plan, engagement activities post-issuance of the water licence are conducted with the following primary potentially affected parties:

- GNWT – Environment and Climate Change (ECC);
- Gwich'in Tribal Council (GTC);
- GTC – Department of Culture and Heritage (DCH);
- Gwich'in Renewable Resources Board;
- Inuvialuit Environmental Impact Screening Committee;
- Inuvik Native Band;
- Nihtat Gwich'in Council;
- Nihtat Gwich'in Renewable Resources Council;
- Town of Inuvik; and
- The public (in select cases).

GNWT also engages with the following regulators:

- Fisheries and Oceans Canada (DFO);
- Gwich'in Land and Water Board;
- Transport Canada – Aerodromes and Air Navigation; and
- Transport Canada – Navigation Protection Program.

2.3.2 2024 Engagement Record

A summary of the engagement activities conducted in 2024 is provided in Table 2-2.

Table 2-2 Engagement Activities Conducted in 2024

Activity Licence Condition	Party	Details	Timing
Notification of construction Part B, Condition 3; DFO letter of advice	DFO: Fish Habitat Protection Program; and Kaela Middleton, Biologist Environmental Impact Screening Committee: Michel Lindsey, Coordinator GLWB: AlecSandra Macdonald, Regulatory Specialist GNWT–ECC: Lloyd Gruben, Water Resources Inspector; Donald Arey, Land and Water Superintendent; and Norman Snowshoe, Superintendent, Wildlife and Forest Management GTC: Peter Csicsai, former Director, Lands and Resources; and Sharon Snowshoe, Director, Cultural Heritage Gwich'in Land Use Planning Board: Susan McKenzie, Executive Director/Land Use Planner Gwich'in Renewable Resources Board: LeighAnn Williams-Jones Inuvik Native Band: Band manager Nihtat Gwich'in Council: Kelly McLeod, President; and Chris Smith, Director Nihtat Gwich'in Renewable Resources Council: rrc@nihtatgwichin.ca Town of Inuvik: Senior administrative officer	Notified primary potentially affected parties of the upcoming construction of the drainage ditches anticipated to begin on January 15, 2024.	January 5, 2024
No Interference with Navigation Notification of Work	Transport Canada, Navigation Protection Program: Common Project Search registry	Submitted a No Interference with Navigation Notification of Work on the Common Project Search Registry (#9639). Posted a public notice of the work on the drainage ditches inside the airport terminal building.	January 5, 2024
Approval of material source Part B, Condition 2	GNWT–ECC: Lloyd Gruben, Water Resources Inspector	Approved the use of the rock from the quarry near the Inuvik Airport for use in the drainage ditches.	January 11, 2024
TK / TLU study approach Part B, Condition 23 and Annex A Concordance Table	GTC–DCH: Kristi Benson, Heritage Specialist GTC–LR: Alicia McRae, Land and Resources Coordinator	Discussed GTC TK research agreement, cabin owner contact information, and site visit timing and logistics.	February 14, 2024

Activity Licence Condition	Party	Details	Timing
TK / TLU study approach Part B, Condition 23 and Annex A Concordance Table	GTC–DCH: Kristi Benson, Heritage Specialist; Sharon Snowshoe, Director of Culture and Heritage; GTC–LR: Willard Hagen, Director, Land and Resources Coordinator; and Kanda Gnama, Transboundary Specialist	Discussed who to contact about suggestions for who to conduct one-on-one interviews with, planning for the information session, and next steps.	April 19, 2024
TK / TLU study approach Part B, Condition 23 and Annex A Concordance Table	Anonymous Indigenous and non-Indigenous participants	Developed an online community survey to learn how a larger number of people use the area of Airport Lake. The survey was available by link and QR code and was displayed on a poster at the airport terminal building and select locations throughout Inuvik.	May 12 to June 30, 2024
TK / TLU study approach Part B, Condition 23 and Annex A Concordance Table	Anonymous Indigenous and non-Indigenous participants	Delivered an in-person presentation to those interested in learning more about the project and monitoring activities and discussed and scheduled the one-on-one interviews.	May 13, 2024
TK / TLU study approach Part B, Condition 23 and Annex A Concordance Table	Anonymous Indigenous and non-Indigenous participants	IEG interviewed participants in-person between May 15 and 17, 2024, and virtually on June 26, 2024 to obtain information on how they use and have used the area of Airport Lake.	May 15-17 and June 26, 2024
Confirm requirements for deviations to the SNP	GLWB: AlecSandra Macdonald, Regulatory Specialist	Confirmed what the notification process is in terms of deviations from the SNP (e.g., alternative reference locations due to access limitations during ice off). AlecSandra mentioned that the rationale can be included in the annual report and recommended reaching out the Inspector to discuss changes in sampling locations.	May 27, 2024
Notification of turbidity level exceedances due to erosion and sediment transport during freshet and discussed changes of sampling locations	DFO: Fish Habitat Protection Program; and Kaela Middleton, Biologist GNWT–ECC: Lloyd Gruben, Water Resources Inspector	Notified the Inspector and the Fish Habitat Protection Program of turbidity exceedances greater than CCME guidelines in East Lake due to erosion and sediment transport from the side slopes of the East Ditch due to larger snowpack, rainfall, and snow stockpiles from construction. Also notified the Inspector of the challenges with installing additional erosion and sediment control measures due to the wet and muddy conditions restricting access to the area, and frozen ground. Discussed the inability to record DO field measurements and to meet the short CBOD holding times during the freshet sampling program due to cargo delays. Mentioned how Associated was not able to collect samples from SNP3 due to conditions and timing and requested that the next sample be collected at the summer sampling event. The Inspector indicated that they would like us to collect it sooner than the next sampling event.	May 29, 2024
TK / TLU study approach Part B, Condition 23 and Annex A Concordance Table	GTC–DCH: Kristi Benson, Heritage Specialist	GTC–DCH reviewed the draft TK / TLU review report and provided comments which were incorporated into the final report before submission to the GLWB.	July 16, 2024

CBOD – carbonaceous biochemical oxygen demand; DCH – Department of Culture and Heritage; DFO – Fisheries and Oceans Canada; ECC – Department of Environment and Climate Change; GLWB – Gwich'in Land and Water Board; GNWT – Government of Northwest Territories; GTC – Gwich'in Tribal Council; IEG – Integral Ecology Group; LR – Department of Lands and Resources; TK – Traditional Knowledge; TLU – Traditional Land Use

2.3.3 Activities that Prompt Engagement and Engagement Approach

The activities that would trigger engagement and the method of engagement that GNWT committed to in the engagement plan, along with a summary of what was conducted in 2024 is provided in Table 2-3.

Table 2-3 Water Licence Engagement Activities Conducted Under the Engagement Plan

Engagement Trigger	Primary Purpose	Primary Method	Primary Participants	Engagement Conducted in 2024
Start and completion of construction activities for the west ditch to Airport Lake, and the east ditch to East Lake	To advise potentially affected parties of construction activities	Verbal and/or written notification	Potentially affected parties identified as primary potentially affected parties, Fisheries and Oceans Canada, and Transport Canada – Navigation Protection Program	Construction began on January 15, 2024. Notifications were submitted on January 5, 2024.
Temporary access restrictions to public places, such as Airport Lake	To advise potentially affected parties and the public of temporary closures that might affect access to public places	Verbal and/or written notification	Primary potentially affected parties and the public	Signage was posted on the Community Access Road to notify the community of potential blasting activities. The road was not closed for significant amounts of time. Security guards were stationed at the north and south ends of the road approximately 15 minutes prior to each blast event to stop traffic until blasting activities were finished.
Amendments to the water licence	To advise potentially affected parties of the amendments and allow an opportunity for them to provide feedback	Verbal and/or written notification	GLWB and primary potentially affected parties	N/A – The licence was only amended to change the status of the environmental monitoring plan and make some administrative updates to SNP coordinates.

Engagement Trigger	Primary Purpose	Primary Method	Primary Participants	Engagement Conducted in 2024
Renewal of the water licence	To advise potentially affected parties of GNWT–INF's intention to renew the water licence	Verbal and/or written notification	GLWB and primary potentially affected parties	N/A – The water licence expires September 22, 2028.
Occurrence of reportable spills	To advise affected parties and the public of spills if surface water is impacted	Verbal and/or written notification	NWT Spill Line, GNWT–ECC water resource officer, potentially affected parties identified as primary potentially affected parties, and the public if water resources are impacted and a risk to the public or the environment is identified	N/A – There were no reportable spills in 2024.
Other	To discuss any concerns or other topics that may arise during Inuvik Airport operations	Written, verbal, or as required by affected parties	Gwich'in Tribal Council, or any organization or individual	The Nihtat Gwich'in Council asked a series of questions about the processes around monitoring on July 16, 2024. Associated responded on behalf of GNWT on July 18, 2024.

Engagement triggers, primary purpose, primary method, and primary participants are those outlined in the project's engagement plan and record (Associated 2024a). ECC – Department of Environment and Climate Change; GLWB – Gwich'in Land and Water Board; GNWT – Government of Northwest Territories; INF – Department of Infrastructure; N/A – not applicable.

2.4 Spill Contingency Plan

A summary of the updates made to the spill contingency plan is provided in Section 2.8.1.

2.4.1 Spill Contingency Plan Activities

The contractor followed the approved spill contingency plan (Associated 2024b). They appended it to their construction environmental management plan (CEMP) and added company- and site-specific spill prevention and response procedures and contact information to their CEMP. In general, spill contingency activities up to September 2024 were as follows:

- Fuel was stored in double-walled containment tanks in the north quarry, which is where most refuelling activities occur;
- Mobile fuelling from mobile lube trucks was conducted at least 100 m away from watercourses;

- No fuel, chemicals, wastes, or other deleterious substances were stored within 100 m of the ordinary high-water mark of waterbodies; and
- Maintenance activities were conducted at the quarry.

2.4.2 Unauthorized, Reportable Discharges

There were no reportable spills reported to the NWT 24-Hour Spill Line in 2024.

2.4.3 Spill Training

The contractor included spill training in their Health, Safety, and Environmental orientation. Topics included reporting all spills to their supervisor and advising employees of spill kit locations.

2.5 Waste Management Plan

Waste management activities were included in the water licence application form and no formal waste management plan was submitted or approved. Associated confirmed with AlecSandra Macdonald that due to the size and scope of the project, a summary of waste activities can be included in the annual reports, and that no additional submission of a waste management plan is necessary (A. Macdonald, personal communication, 2023).

The contractor's CEMP includes methods for waste management. The types of wastes that are generated during construction activities and how they were managed in 2024 is summarized in Table 2-4. There was no active construction from late-September to the end of 2024.

Table 2-4 Waste Management Summary January to September 2024

Type of Waste	Storage	Disposal
General construction waste	Waste bins near the site office at main quarry	Inuvik Solid Waste Disposal Facility
Construction hazardous waste (e.g., oily rags, empty oil drums, used oil)[1]	In the maintenance shop at the main quarry	Waste oil drums – recycled at Northwind Used oil – recycled at Northwind in their oil-fired burner Oily rags and absorbent pads – incinerated at Northwind Hydrocarbon contaminated soil – Inuvik Soil Treatment Facility
Airport general waste	Waste bins at or near the airport terminal building	Inuvik Solid Waste Disposal Facility

Type of Waste	Storage	Disposal
Hazardous waste at the airport (e.g., oily rags, empty oil drums, used oil)	Each hangar occupant is responsible for storage	Each hangar occupant is responsible for disposal
Deicing chemicals[1]	Inside the old Canadian North cargo shop	Used at the airport property when required

Prevention of total suspended solids (TSS) in surface water is discussed in the ESC section, Section 2.6.

2.6 Erosion and Sediment Control Plan

A summary of the ESC mitigations that are included in the ESC plan (Associated 2024c) and the measures that were implemented for the project in 2024 are provided in Table 2-5.

Table 2-5 General Erosion and Sediment Control Measures Implemented in 2024

Mitigation Measure	Performance Summary
Scheduling: • Phased construction to reduce the area of soil disturbance and perform progressive reclamation as applicable. • Minimize excavation into permafrost. • Plan construction scheduling in winter to minimize thermal disturbance. • Not complete drainage and grading work in areas that have the potential for erosion and sediment transport to water during periods of heavy precipitation and run-off.	Construction of the east and west ditches was primarily completed in the winter (between January and April 2024) when the ground was still frozen. There were no opportunities for progressive reclamation due to ground conditions and access issues.
Minimize disturbance: • Not destroy, remove, or clear vegetation to the extent greater than necessary to perform the work and maintain vegetative buffer strips, where possible. • Clearly mark vegetation clearing limits and soil excavation limits to avoid unnecessary removal and damage of vegetation and soil. • Identify and mark sensitive features within and adjacent to project boundaries.	The drainage design for the east and west ditches was updated in January 2024 to provide a larger buffer of undisturbed vegetation between the ditch outfalls and the lakes, for erosion and sediment control. Fill and excavation limits were clearly marked beforehand.

Mitigation Measure	Performance Summary
Protect areas: • Characterized by poor drainage, standing water, and areas where run-off drains towards waterbodies from erosion and sediment transport.	Organic and soil overburden piles were strategically stockpiled away from drainage ditches in areas where the runoff from the piles will infiltrate to vegetated areas.
Disturbed slopes: • Roughen disturbed slopes as per the GNWT–DOT and GNWT–INF ESC manual best management practice #27.[1]	This was not possible due to construction being completed when ground conditions were frozen followed by saturated soils and permafrost.
Dewatering and water discharge: • Intakes elevated to minimize sediment intake. • Use rock sumps. • Pumps outfitted with screens per DFO Freshwater Intake End-of-Pipe Fish Screen Guidelines in fish-bearing waters. • If water is discharged on land, dissipate it over a well-vegetated area with the use of energy dissipation devices.	Dewatering discharges were pumped onto vegetated areas. Water was not pumped from fish-bearing waterbodies.
Restoration: • Restore bare areas with a native seed mix and/or soil bioengineering.	Select areas of the east ditch were seeded in August 2024. Difficulties with access due to wet and soft soils limited the timing that seeding could be placed. In September 2024, Associated observed vegetation naturally regenerating in some areas of the east ditch and west ditch and vegetation growing from the seeding in August.
ESC measures: • Properly installed. • Stored on site to address environmental emergencies.	Ditches were constructed in the winter during frozen ground conditions. During freshet and summer, ground conditions did not allow for the installation of conventional (e.g., silt fences) erosion and sediment control measures. Prior to installing culverts, the contractor installed check dams and discharged the pumped water either on an undisturbed, vegetated area, or in the constructed ditch downstream of the work area.

Mitigation Measure	Performance Summary
Inspections: • Regular inspections. • Maintenance.	Inspections were completed in 2024. In response to stormwater that was seeping through the south side of the west ditch, additional rock was added to reinforce the berm. Additional rock check dams were also added in the west ditch to help slow water velocity and allow sediment to settle. Maintenance of the east ditch was difficult due to access limitations from the soft ground.
Wind and dust erosion: • Cover haul trucks and drive at low speeds. • Spray water on transport routes.	Contractor watered the roads when dust generation was a concern.
Equipment washing: • Performed off site. • In an area where deleterious substances will not enter watercourses.	Construction equipment was washed in the quarry in a location where wash water will not flow to Airport Lake.
Material stockpiles: • Soil and overburden stockpiled in a manner where sediment will not enter watercourses.	Overburden is stockpiled in areas where runoff flows to vegetated areas.

Mitigation measures are from the project's erosion and sediment control plan (Associated 2024c). [1] Sources: GNWT–DOT 2013, GNWT–INF 2023. DFO – Fisheries and Oceans Canada; DOT – Department of Transportation; ESC – erosion and sediment control; GNWT – Government of Northwest Territories; INF – Department of Infrastructure

Work nearest to the water bodies occurred in the winter months when ground conditions and water were frozen.

Based on the water quality results from 2024 and the ditches appearing to stabilize, the approach to ESC in 2025 will involve continuing to monitor water quality and the condition of the ditches to confirm that they are stabilizing. Temporary ESC measures will be installed in problem areas, if required, and additional areas will be seeded. The water quality and ditch condition results in 2025 will inform whether any additional, permanent, and more costly ESC prescriptions will need to be assigned and addressed prior to freshet 2026.

2.7 Environmental Monitoring Plan

A summary of activities conducted under the approved environmental monitoring plan (EMP) Version 1.1 (Associated 2023d) and Version 1.2 (Associated 2024d) in 2024 is provided in Sections 3 and 4. A summary of the updates made to the EMP is provided in Section 2.8.5.

2.8 Management Plan Updates

A summary of the updates made during the annual review of the management plans is provided in the following sections for each plan. The revised plans will be submitted to the GLWB at the same time as this annual report.

2.8.1 Spill Contingency Plan

Minor updates were made to the spill contingency plan (Version 1.2); a summary of the updates is as follows:

- Removed contractor-specific contact information; and
- Removed contractor-specific spill response equipment and locations.

2.8.2 Engagement Plan

No updates were required to be made to the engagement plan. Therefore, no revision will be submitted to the GLWB and Version 1.1 remains relevant.

2.8.3 Waste Management Plan

A formal waste management plan is not required. Annual waste management activities will be summarized in the annual reports each year.

2.8.4 Erosion and Sediment Control Plan

The updates made to Version 1.2 of the ESC plan are summarized as follows:

- Included a summary of the condition of the ditches during and at the end of the 2024 snow-free season and ESC measures implemented; and
- Included the approach to ESC in 2025 (a year with no other earthwork activities scheduled) including:
  - Continuing to monitor water quality as per the conditions in the water licence;
  - Broadcast seeding select areas of the ditches;
  - Procuring and storing temporary ESC measures; and
  - Installing temporary ESC measures in select areas, as necessary.

2.8.5 Environmental Monitoring Plan

The updates made to Version 1.3 of the EMP are summarized as follows:

- Updated the introduction and project description;
- Removed (proposed) the following three sampling locations:
  - SNP2-RW and SNP7-D because runoff no longer flows down this ditch, and
  - SNP-3 because there is no direct discharge path from the airport to this location; and
- Included alternative reference location on Airport Lake (SNP5-RW-a) during unsafe ice conditions in the spring.

2.9 Traditional Knowledge

A research agreement in accordance with the Gwich'in Traditional Knowledge Research Policy (GTC–DCH 2004) was signed between the GTC–DCH and GNWT–INF on March 6, 2024. In collaboration with the GTC–DCH, a Traditional

Land Use (TLU) review was completed in July 2024 (Dyck et al. 2024) and submitted to the GLWB for review and approval on July 30, 2024. The GLWB approved the TLU review on November 21, 2024.

A list of the recommendations made in the TLU review report and details on how the recommendations will be addressed or reasons for why they will not be is provided in Table 2-6.

Table 2-6 Traditional Land Use Review Recommendations and Actions

Recommendation[1]	Response
Section 5.1: a) More rigorous water testing and water quality tracking for Chii Zhìt Van would be beneficial b) Interested in receiving spill contingency planning and reporting c) Suggested testing for acid rock drainage around the drainage ditches	Section 5.1: a) Water quality testing is completed three times per year as per the SNP of the water licence which is a standard frequency for stormwater systems b) Spill contingency plans are available on the GLWB public registry. However, GNWT can send them to individuals if they are requested c) Quarry rock was tested for acid rock drainage before it was used in the drainage ditches and results indicate that the concentration of leachable metals, including arsenic, were below the GNWT leachate disposal standards for solid waste criteria. Water and sediment are analyzed for metals every year.
Section 5.2: a) Communication and transparency about airport operations could be improved between the airport authority and local Chii Zhìt Van community (i.e., dedicated social media page or website) to provide environmental monitoring information or project-related updates b) Improve signage on airport expansion activities for cabin owners and community members	Section 5.2: a) GNWT has a dedicated website to provide project-related updates with construction updates posted three times per year (GNWT 2024).[1] GNWT is also willing to add any interested parties to the overall project stakeholder distribution list. Environmental monitoring information is uploaded to the GLWB public registry. If requested by interested parties, GNWT could host an annual or semi-annual stakeholder update meeting for specific agencies or individuals that are interested. b) Project information signage is posted at the airport terminal building. As the recommendations in the TLU report are anonymous, GNWT welcomes clarifications on the signage improvements. If specific recommendations for improvements to construction or traffic signage are requested, GNWT will consider updating these.

[1] Website available at: https://www.inf.gov.nt.ca/en/projects/inuvik-airport-improvement-projects.

Recommendation[1]	Response
Section 5.3: a) Improve existing recreational facilities at the Chii Zhìt Van boat launch (e.g., dedicated recreation area, new boat launch, picnic area, improved parking)	Section 5.3: a) Improvements to the boat launch area are outside the boundaries of the Commissioner's land held under reserve by the Inuvik Airport by the GNWT – Department of Lands. The suggested improvements are outside of the scope of the project and the authority of the GNWT–INF
Section 5.4: a) Maintain access to the boat launch road	Section 5.4: a) GNWT–INF does not intend to restrict access to the boat launch road, except for temporary closures to ensure the safety of the public during quarry blasting
Section 5.5: a) Implement waste disposal systems and community education on waste disposal, organize cleanup efforts and enforce regulations requiring property owners to clean up burned structures and debris, and strengthen enforcement mechanisms	Section 5.5: a) The management of waste, monitoring, and enforcement efforts are outside of the scope of the project and authority of GNWT–INF

[1] Section numbers refer to the sections in the Traditional Land Use Review report. GLWB – Gwich'in Land and Water Board; GNWT – Government of Northwest Territories; INF – Department of Infrastructure; SNP – Surveillance Network Program; TLU – Traditional Land Use Review

2.10 Non-Compliance

The Board did not file any non-compliances for the conditions of the licence and did not issue any directives in 2024. An Inspector did not file any reports that had concerns, non-compliance, or deficiencies in 2024. On behalf of GNWT–INF, Associated notified the Inspector on May 29, 2024 of turbidity exceedances in East Lake and of the challenges with installing additional temporary ESC measures due to the wet and muddy conditions (L. Gruben, personal communication, 2024).

2.11 Actions to Address Concerns, Non-Compliance, or Deficiencies Filed by an Inspector

Associated collected additional samples and turbidity measurements in response to elevated turbidity levels during freshet 2024 to document the changes in turbidity and potential impacts to the receiving environment. While discussions were had in May and June 2024 about installing ESC measures, the wet and muddy conditions and frozen ground at the east ditch prevented the deployment of typical temporary ESC measures that would be effective in this situation. In August 2024, a grass seed mix was broadcast seeded at select locations along the slopes and some of the gullies in the east ditch as an ESC mitigation measure. In September 2024, Associated observed vegetation growing on some of the slopes and in the gullies both from the hand seeding in August and from natural regeneration which implies that the ditches are beginning to stabilize. Two additional check dams were also installed in the west ditch to slow the flow of water and assist with allowing sediment to settle out in the ditch.

2.12 Future Studies

No future studies are currently planned.

2.13 Other Details

No other details were requested by the Board by December 31, 2024.

3 WATER AND SEDIMENT QUALITY MONITORING METHODS

The SNP in Schedule 1 of the licence includes the requirements for sampling locations, frequency, and parameters that are to be analyzed. The licence also requires that GNWT–INF follow the approved EMP. Associated conducted water sampling in May, June, July, and September 2024, and collected sediment samples in September 2024.

3.1 Sampling Locations

The water quality monitoring locations, description of each location, and coordinates are provided in Table 3-1, and the locations are illustrated in Figure 3-1. Additional samples were collected from the receiving water of Airport Lake at the location where East Creek (which drains East Lake) enters Airport Lake (EC–RW) in response to elevated turbidity levels in East Lake. Samples from the old west ditch (OF_02.5) (SNP 2 and SNP 7) were not collected after freshet because runoff from the airport was directed to the new west ditch at OF_02. An additional reference location was added (SNP5-RW-a) on the north shore of Airport Lake during the freshet sampling event due to safety concerns (i.e., thin ice) with reaching SNP5 on the south shore during ice off.

Table 3-1 Surface Water Monitoring Locations

SNP Station	Site Location	Sample ID	Description	Coordinates	
				Latitude	Longitude
SNP 1	OF_02	SNP1 – RW	Airport Lake Receiving water, new west ditch alignment	68.297538°	-133.527786°
SNP 2[1]	OF_02.5	SNP2 – RW	Airport Lake Receiving water, existing west ditch	68.297652°	-133.531902°
SNP 3	OF_03	SNP3 – RW	Airport Lake Receiving water, east runway discharge path	68.296248°	-133.489171°
SNP 4	OF_04	SNP4 – RW	East Lake Receiving water, east ditch	68.304775°	-133.428650°

SNP Station	Site Location	Sample ID	Description	Coordinates	
				Latitude	Longitude
SNP 5	Reference – DL	SNP5-RW	Airport Lake Receiving water, reference location	68.287745°	-133.509020°
N/A	Alternate reference – DL	SNP5-RW-a	Airport Lake Receiving water, alternate reference location	68.29458°	-133.47792°
SNP 6	Reference - EL	SNP6-RW	East Lake Receiving water, reference location	68.305064°	-133.425194°
SNP 7[1]	Runoff OF_02.5	SNP7-D	Airport Lake Runoff, existing west ditch	68.297797°	-133.527882°
SNP 8	Runoff OF_02	SNP8-D	Airport Lake Runoff, new west ditch location	68.297894°	-133.531969°
N/A	OF_01	OF1-RW[2]	Airport Lake Receiving water, southwest of quarry	68.299964°	-133.544373°
N/A	OF_01	OF1-D[2]	Airport Lake Runoff, west quarry ravine	68.300088°	-133.544078°
N/A	N/A	EC–RW[3]	Airport Lake Receiving water, East Creek discharge from East Lake to Airport Lake	68.29112°	-133.47158°

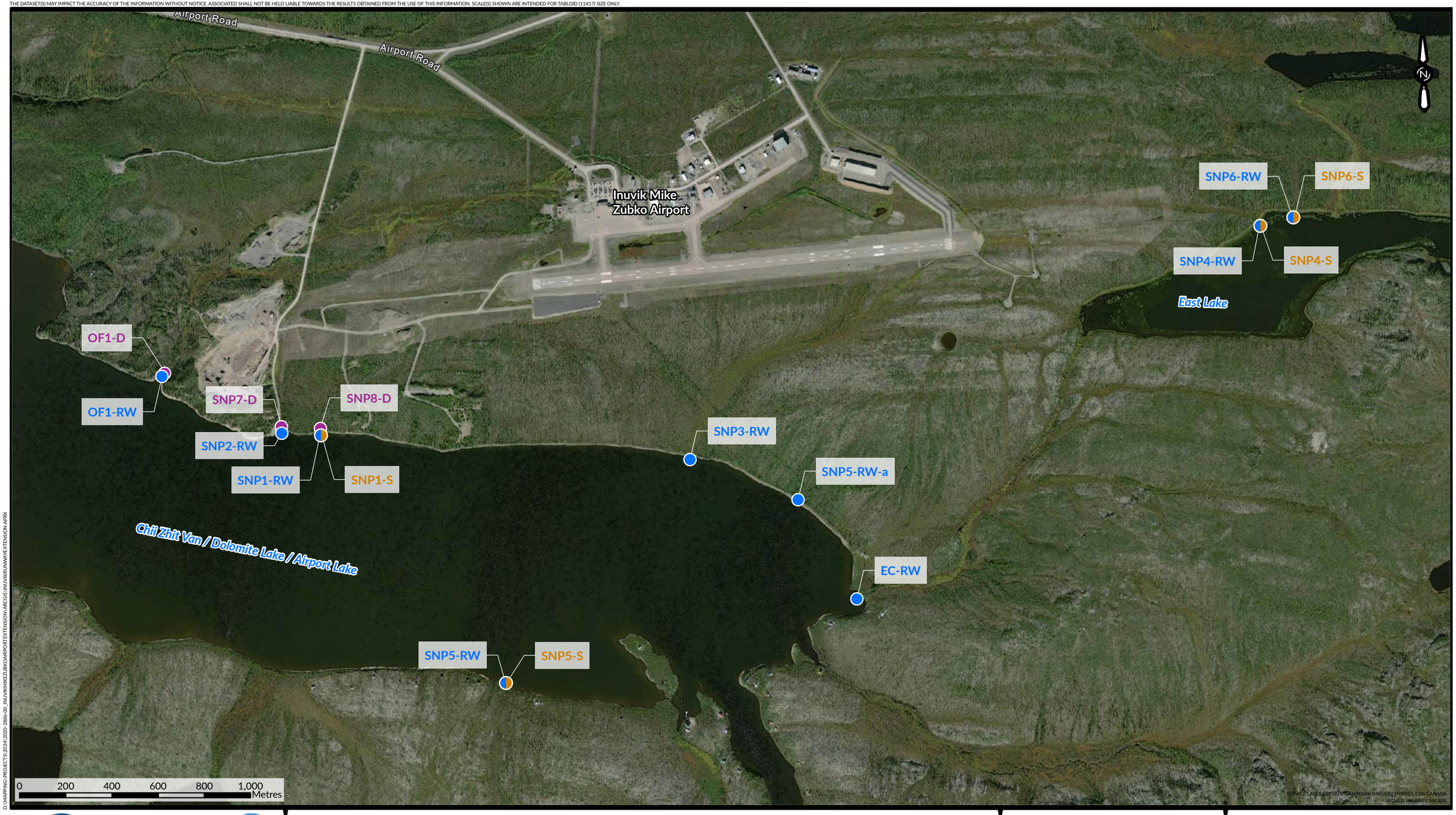
[1] Samples were not collected from SNP2 and SNP7 after the May sampling event because water from the airport was being directed to the newly constructed west ditch. [2] Runoff from the quarry is not part of the licence but is included in this report because sampling was conducted at the same time as the samples collected for the SNP. [3] EC-RW is not included in the licence but it was added during freshet 2024 for due diligence purposes. DL – Dolomite Lake; E – East Lake; ID – identification; N/A – not applicable; OF – outfall; RO – runoff; SNP – Surveillance Network Program.

The sediment monitoring locations, description of each location, and coordinates are provided in Table 3-2, and the locations are illustrated in Figure 3-1. A sediment sample was not collected from the reference location on East Lake (SNP 6) because the ground is made up of purely organic vegetation which would not be suitable for analysis.

Table 3-2 Sediment Monitoring Locations

SNP Station	Site Location	Sample ID	Description	Coordinates		Sample Description
				Latitude	Longitude	
SNP 1	OF_02	SNP1 – Sediment	Airport Lake Receiving environment, new west ditch alignment	68.297538°	-133.527786°	Fine sand and sediment
SNP 4	OF_04	SNP4 – Sediment	East Lake Receiving environment, new west ditch alignment	68.304775°	-133.428650°	Fine sand and sediment
SNP 5	Reference – DL	SNP5 – Sediment	Airport Lake Receiving environment, reference	68.287745°	-133.509020°	Fine sand and sediment collected from between large rocks
SNP 6	Reference - EL	SNP6 – Sediment	East Lake Receiving environment, reference	68.305064°	-133.425194°	Could not collect due to no sediment and purely organic vegetation

ID – identification; N/A – not applicable; OF – outfall; SNP – Surveillance Network Program



D:\MAPPING\PROJECTS\2024\2020-2886-00_INUVIKMIKEZUBKOAIRPORTEXTENSION\ARCGIS\INUVIKRUNWAYEXTENSION.APRX

Associated Engineering

Government of Northwest Territories

LEGEND

- Runoff Water Sample
- Receiving Water Sample
- Receiving Water and Sediment Sample

AE PROJECT NO.	2020-2886
SCALE	1:15,000
COORD. SYSTEM	NAD 1983 UTM ZONE 8N
DATE	2024-10-01
REV	00
DRAWN BY	MS
CHECKED BY	CM

FIGURE 3-1
SAMPLING LOCATIONS

GOVERNMENT OF NORTHWEST TERRITORIES - DEPARTMENT OF INFRASTRUCTURE

INUVIK MIKE ZUBKO AIRPORT RUNWAY 06-24 EXTENSION 2024 ANNUAL REPORT

3.2 Sampling Methods

3.2.1 Water

The parameters that were analyzed in the receiving and runoff water samples are listed in Table 3-3.

Samples were collected following the Protocols Manual for Water Sampling in Canada (CCME 2011) and a sampling guide created specifically for this project (Associated 2024e). The freshet samples were collected on May 25 and 26, 2024 and shipped on May 27, 2024 due to an unexpected closure of Canadian North air cargo. Follow-up samples were collected on June 4, 2024 from select locations and shipped on June 5, 2024. The summer samples were collected on July 28, 2024 and shipped on July 29, 2024. The Airport Lake and East Lake fall samples were collected on September 17 and September 18, 2024, respectively and shipped the day following the sample date. Samples that were shipped the following day were stored in a refrigerator and packed in a cooler with icepacks before shipment via chain-of-custody protocol with Canadian North air cargo. The samples were shipped to the ALS Canada Ltd. (a CALA accredited laboratory) depot in Yellowknife.

Associated could not measure dissolved oxygen in the field on May 25 and 26, 2024 due to equipment shipping delays.

Table 3-3 Receiving and Runoff Monitoring Parameters Analyzed in 2024

Group	Parameters
Field parameters	pH, temperature, conductivity, dissolved oxygen, and turbidity
Lab general and inorganic parameters	pH, conductivity, hardness, TSS, turbidity, and $CBOD_5$
Total and dissolved metals	aluminum, antimony, arsenic barium, beryllium, bismuth, boron, cadmium, calcium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, mercury, molybdenum, nickel, phosphorous, potassium, rubidium, selenium, silicon, silver, sodium, strontium, sulfur, tellurium, thallium, thorium, tin, titanium, tungsten, uranium, vanadium, zinc, zirconium
Hydrocarbons	Benzene, ethylbenzene, styrene, toluene, xylenes F1 (C6-C10), F2 (C10-C16), F3 (C16-C34), F4 (C34-C50), VPHw (C6-C10), F1-BTEX, VPHw
Miscellaneous organic substances	methyl-ter-butyl ether
Glycols	Ethylene glycol

BTEX – benzene, toluene, ethylbenzene, xylenes; $CBOD_5$ – carbonaceous biochemical oxygen demand; F – fraction; TSS – total suspended solids; VPHw – volatile petroleum hydrocarbons in water.

3.2.2 Sediment

Sediment sample collection generally followed the British Columbia Field Sampling Manual, Part D2 – Sediment Sampling (Government of British Columbia 2020). Associated used a hand-held trowel to collect the sediment samples, as per Section 3.1 of the manual. Sediment samples were collected at the same locations as the receiving water lake

samples after the water samples were collected. Care was taken to include fine-grained material in the samples and to remove large pieces of vegetation and rocks. Associated could not collect a sediment sample from SNP6 in East Lake because only organic vegetation was present; no sediment could be collected.

3.3 Applicable Water and Sediment Quality Guidelines

Results were compared to the following guidelines:

- Water chemistry – Canadian FEQG (Government of Canada 2021 and 2023);
- Water chemistry – the Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Aquatic Life (WQG FAL), where applicable (CCME 1999a, CCME 2024);
- Water chemistry for glycol – Environment and Climate Change Canada glycol guidelines (ECCC glycol) for federal airports (ECCC 1994); and
- Sediment chemistry – CCME Interim Sediment Quality Guidelines for the Protection of Freshwater Aquatic Life (ISQG FAL) (CCME 1999b).

The CCME WQG FAL maximum levels for turbidity and TSS are dependent on the concentration of suspended sediments or turbidity at the background locations (i.e., clear flow or high flow) and the exposure time (i.e., short term or long term). The short-term guideline is based on a maximum increase at one time for 24 hours or less and the long-term guideline for clear flow conditions is based on a maximum average increase over a longer period of time (e.g., 30 days). Compliance with long-term guidelines is typically assessed by calculating the average concentration over a specific period (i.e., five samples in 30 days). The long-term guidelines are more stringent than the short-term guidelines because they are designed to protect from repeated or ongoing exposure. For screening purposes, the results measured from these sampling events were compared to the chronic guidelines even though only three to four samples were collected throughout the year.

Turbidity and TSS guidelines are determined based on allowable change from a background or reference location. For the analysis in East Lake, SNP4-RW was compared to SNP6-RW. For Airport Lake, sites SNP-2RW, OF1-RW, SNP1-RW, EC-RW, and SNP3-RW were compared to SNP5-RW or SNP5-RW-a. The purpose of sampling the drainage sites (OF1-D, SNP7-D, and SNP8-D) is to follow the ECCC glycol guidelines for federal airports to assess for glycol in surface water. Turbidity, TSS, and other general parameters are analyzed in these samples for general comparison purposes, but they do not have representative reference locations; therefore, turbidity and TSS guidelines are not assessed for these sites.

Table 3-4 summarizes the short-term and long-term guideline values for each flow condition. For these sampling events, the background water results met the definition of clear flow for both turbidity and TSS and results were compared to the short-term and long-term guidelines.

Table 3-4 CCME Water Quality Guidelines for the Protection of Aquatic Life: Turbidity and Total Suspended Solids

Parameter	Short-Term Guideline (<24 hours)	Long-Term Guideline (>24 hours to 30 days)
Turbidity	Clear flow (background <8 NTU) • Maximum increase of 8 NTU from background at any one time High flow or turbid waters (background >8 NTU) • Maximum increase of 8 NTU from background at any one time when background is between 8 and 80 NTU • Maximum increase of 10% from background when background is >80 NTU	Clear flow (background <8 NTU) • Maximum average increase of 2 NTU from background High flow or turbid waters (background >8 NTU) • Maximum increase of 8 NTU from background at any one time when background is between 8 and 80 NTU • Maximum increase of 10% from background when background is >80 NTU
Total suspended solids	Clear flow (background <25 mg/L) • Maximum increase of 25 mg/L from background at any one time High flow (background >25 mg/L) • Maximum increase of 25 mg/L from background at any one time when background is between 25 and 250 mg/L • Maximum increase of 10% from background when background is >250 mg/L	Clear flow (background <25 mg/L) • Maximum average increase of 5 mg/L from background High flow or turbid waters (>25 mg/L) • Maximum increase of 25 mg/L from background at any one time when background is between 25 and 250 mg/L • Maximum increase of 10% from background when background is >250 mg/L

Source: CCME 1999a. CCME – Canadian Council of Ministers of the Environment; NTU – nephelometric turbidity units

The FEQG Sediment Quality Guidelines (Government of Canada 2021) does not have any published guidelines for the parameters that were analyzed for sediment; therefore, results were not compared to this guideline.

All water and sediment quality results were uploaded from the laboratory directly to Wireless Water™ Database Management Services. The results were automatically tabulated and compared with the CCME WQG FAL and FWQGs, except for turbidity and TSS, which were manually compared to the reference locations. Associated manually added the ECCC glycol guidelines to the tabulated results and compared the results to the guidelines to determine exceedances.

3.4 Quality Assurance and Quality Control

Associated collected one duplicate sample per main sampling event (i.e., freshet, summer, and fall), for a total of three duplicate samples.

The quality assurance/quality control (QA/QC) measures applied as part of the sampling program included cleaning and calibrating instruments before sampling, wearing nitrile gloves, and collecting a field duplicate sample. Collection and analysis of duplicate samples provides information on the combined (field and analytical) precision of the sampling and analytical program. The individual analytical results for each parameter of the duplicate pair were compared, and the relative percent difference (RPD) value was calculated for each parameter pair as follows:

$$RPD = \left(\frac{(|a - b|)}{\left(\frac{a + b}{2}\right)} \right) \times 100$$

where *a* and *b* are duplicate pair values in identical units.

An RPD value of 20% or less is generally considered acceptable, whereas an RPD value greater than 20% may indicate a problem with either sampling or analysis (BC MOE 2013). This limit may vary depending on the analysis involved and the concentration of the analyte. The RPD value also tends to increase as the result approaches the detection limit. Therefore, the use of this threshold is restricted to duplicate pair values that are greater than five times their detection limit (BC MOE 2013).

In addition to the collection of the duplicate samples, a trip blank sample was collected on July 27, 2024 and field blank samples were collected on May 25 and September 16, 2024. Trip blanks are bottles of deionized water in sealed containers that are provided by the laboratory. These are taken into the field and remain in sample coolers during sampling; they are not opened. Field blank samples are deionized water provided by the laboratory, but these samples are handled the same way as water samples. Bottles are filled in the field using the same procedure for the samples being collected. Results for both sample types are compared to the analytical results expected for deionized water.

3.5 Construction and Visual Inspections

Construction turbidity measurements were recorded bi-weekly starting at the end of May through July when flows were higher and during construction activities that may have impacted water quality.

4 RESULTS AND DISCUSSION

The water and sediment quality results for the freshet, summer, and fall sampling events are presented below.

4.1 Water – Sampling Events

In 2024, most parameters met applicable guidelines, except for turbidity, TSS, and several metals. All exceeding metals results only exceeded the chronic guidelines and were below acute guidelines. Results for petroleum hydrocarbons and glycols were below the detection limit at all sampling locations. All the results, tabulated and compared to applicable guidelines, are provided in Table A-1 in Appendix A, and laboratory reports are in Appendix B. The exceedances by location and parameter are summarized in Table 4-1. The discharge sites are not included in Table 4-1 because there were no glycol exceedances and general parameter results are not compared to reference locations.

Table 4-1 Water Quality Guideline Exceedances in 2024

Parameter	EC-RW	OF1-RW	SNP2-RW	SNP3-RW	SNP4-RW	SNP5-RW-a	SNP6-RW
Turbidity	X	X			X		
Total suspended solids	X				X		
Total aluminum	X	X	X	X	X		
Total arsenic	X				X		
Total cadmium	X						
Total chromium	X				X		
Total cobalt	X				X		
Total copper	X			X	X		
Total iron	X	X		X	X	X	X
Total lead	X				X		
Total mercury	X				X		
Dissolved aluminum					X		
Dissolved iron	X				X		X

Underlined X indicates an exceedance of the CCME WQG FAL. Green X indicates an exceedance of the FEQG. Underlined and green X indicates both guidelines were exceeded.

4.1.1 Turbidity and Total Suspended Solids

The CCME WQG FAL guidelines for turbidity and TSS are based on changes from background levels and exposure times. The receiving water samples were compared to the applicable reference location on each lake (i.e., SNP 5-RW or SNP5-RW-a for Airport Lake and SNP 6-RW for East Lake). Water at the reference locations met the definition for "clear flow" for turbidity and TSS for all sample events. Results greater than 8 NTU and 25 mg/L from the reference locations for turbidity and TSS, respectively, were recorded as CCME WQG FAL short-term (acute) exceedances, and results greater than 2 NTU and 5 mg/L for turbidity and TSS, respectively, were recorded as CCME WQG FAL long-term (chronic) exceedances. The chronic guidelines are more stringent than the acute guidelines because they are designed to protect from repeated or ongoing exposure. Compliance with chronic guidelines is typically assessed by calculating the average concentration over a specified period (i.e., five samples in 30 days). For screening purposes, individual concentrations were compared to the long-term guidelines even though only three to four samples were collected from each location over a five-month period.

In May 2024, field and lab-analysed turbidity and TSS greatly exceeded the CCME WQG FAL acute and chronic guidelines at SNP4-RW and OF1-RW, where results were between 1.2 to 290 times higher than the background level. Turbidity at OF1-RW exceeded only the chronic guideline in May.

The June 2024 field turbidity at SNP4-RW likely exceeded guidelines in the duplicate sample, although no background measurements were collected for this additional sampling event. Field turbidity was notably higher than the lab-analysed turbidity (283.5 NTU compared to 9.32 NTU), suggesting that the high field turbidity is likely the result of sampling error (e.g., the sampler stirring up sediment when wading to collect the sample). Additionally, the other sample in the duplicate pair had very low turbidity and TSS.

In July 2024, field-measured turbidity exceeded the chronic guideline at SNP4-RW. Field and lab-analysed turbidity and TSS at EC–RW exceeded the acute and chronic guidelines in July with results 508, 75, and 47 times higher than the background level, respectively. The results from the July sampling event at EC–RW were likely influenced by the strong wind and wave action stirring up sediment in the bay that the samples were incorrectly collected from and were not representative of the water flowing from East Creek.

In September 2024, field and lab-analysed turbidity at EC–RW slightly exceeded the chronic guideline (0.8 NTU over background).

While we do not have background data from freshet 2023 to compare the freshet 2024 results to, given the condition of the ditches that were constructed prior to freshet 2024, erosion and sediment transport from the recently constructed ditches contributed to the turbidity and TSS exceedances in East Lake at SNP4-RW during freshet in May and June 2024. At SNP4-RW, lab-analysed turbidity decreased from 1,360 NTU on May 25, 2024 to 9.32 NTU on June 4, 2024 and met guidelines in July and September (<1.5 NTU) suggesting that sediment loading from the recently constructed ditch had decreased and the ditches were stabilizing. In June, lab turbidity at EC-RW (where water from East Lake flows into Dolomite Lake) was similar to the turbidity levels in East Lake at SNP4-RW, 11.4 NTU. In September, lab turbidity at SNP4-RW and EC-RW was low at 1.24 NTU and 3.76 NTU, respectively.

4.1.2 Metals

In East Lake, the reference site (SNP6-RW) exceeded the chronic CCME WQG FAL in May 2024 for total and dissolved iron (668 µg/L and 448 µg/L, respectively, with a guideline of 300 µg/L). The May 2024 sample at SNP4-RW exceeded the CCME WQG FAL for total aluminum, total arsenic, total chromium, total copper, total iron, total lead, total mercury, dissolved aluminum, and dissolved iron. The result for total iron was 121 times higher than the chronic CCME WQG FAL (36,300 µg/L compared to 300 µg/L) and the result for total aluminum was 159 times higher than the chronic CCME WQG FAL, which is calculated based on pH (15,900 µg/L compared to 100 µg/L). Total aluminum, total chromium, total cobalt, and total iron also exceeded the chronic FEQG. The metal exceedances at SNP4-RW are assumed to be a result of the increase in suspended sediment from the construction of the east ditch because there were no metal exceedances at that location in July or September.

In Airport Lake, the reference site samples (SNP5–RW and SNP5–RW–a) met applicable guidelines for all parameters in 2024 except total iron in May (400 µg/L) at SNP5-RWa, which exceeded the chronic CCME WQG FAL. In May, OF1-RW exceeded the chronic CCME WQG FAL for total aluminum and total iron and SNP2-RW exceeded the chronic guideline for total aluminum. The June 2024 sample at SNP3-RW exceeded the CCME WQG FAL for total aluminum, total copper, and total iron. In June 2024, EC-RW sample exceeded the chronic CCME WQG FAL for total

aluminum, total iron, and dissolved iron. In July, the EC-RW sample (although not representative of the water that flows from East Lake during this event because of the incorrect sampling location) exceeded the chronic CCME WQG FAL for total aluminum, total arsenic, total cadmium, total chromium, total copper, total iron, total lead, and total mercury and also exceeded the chronic FEQG for total aluminum, total chromium, total cobalt, and total iron. Both total aluminum and total iron were 47 times higher than their respective guidelines and the dissolved parameters were below guidelines. In September, the EC-RW sample only exceeded the chronic CCME WQG FAL for total iron.

The FEQG for dissolved copper is determined using the biotic ligand model (ECCC 2021). Dissolved copper FEQGs were determined using the simplified calculation, which is based on temperature, pH, DOC, and hardness. All dissolved copper results were below their respective FEQG in 2024.

Overall, the 2024 results had more metals exceedances than the background samples collected in October 2023; however, more sampling events were completed in 2024 and samples were only collected in the fall in 2023 and not during freshet or summer rain events. Aside from the sample at EC–RW in July 2024 (not representative due to wind and wave action in the bay) and SNP4–RW in East Lake, the exceeding parameters were similar in both years (i.e. iron and aluminum). Exceedances that occurred in 2023 but not in 2024 include total aluminum and total iron at SNP1-RW (this site was not sampled after May 2024 because runoff is now directed to SNP2-RW) and SNP5-RW. Total iron was also exceeded at EC-D in 2023, but this discharge site was not sampled in 2024.

4.2 Water – Construction Turbidity

The contractor constructed the ditches when ground conditions were frozen; therefore, construction turbidity measurements were not collected because there was no runoff in the ditches during construction.

4.3 Sediment – Sampling Event

All sediment sample results met the ISQG – FAL guidelines except for arsenic. The ISQG – FAL for arsenic (5.9 µg/g) was exceeded at all sites SNP 1-S, SNP4-S, and SNP 5-S, including the reference site on Airport Lake. The results for the arsenic exceedances are provided in Table 4-2. All the results, tabulated and compared to applicable guidelines, are provided in Table A-2 in Appendix A, and the laboratory reports are provided in Appendix B.

Table 4-2 Sediment Quality Parameter Exceedance of Guidelines in 2023 and 2024

Sample ID	Sediment Arsenic Concentrations (µg/g)	
	Oct. 2023 (Background)	Fall 2024
SNP1 – S	**18.1**	**11.8**
SNP4 – S	3.31	**12.4**
SNP5 – S	**14.8**	**10.3**

Sample ID	Sediment Arsenic Concentrations (µg/g)	
	Oct. 2023 (Background)	Fall 2024
SNP6 – S[1]	**14.4**	-

The symbol '-' indicates that a sediment sample was not collected from SNP6 because only organic vegetation was present. **Bold** results indicate an exceedance of the Canadian Council of Ministers of the Environment (CCME) Interim Sediment Quality Guidelines for the Protection of Freshwater Aquatic Life (ISQG FAL) (CCME 1999b).

4.4 Quality Assurance and Quality Control

Two duplicate samples were collected at SNP1–RW (May 26 and September 16, 2024) and one duplicate sample was collected at SNP4–RW (July 28, 2024). When values less than five times their respective detection limit were removed, the calculated RPD ranged from 0-77.8% with an average of 5.2%. For the duplicate samples collected on May 26, 2024, all results met the applicable thresholds (Section 3.4) except dissolved manganese, which had an RPD of 77.8%. The July 28, 2024 duplicate sample results met the applicable thresholds except total aluminum with an RPD of 60.1%, total manganese with an RPD of 24.5%, and dissolved manganese with an RPD of 34.8%. The September 16, 2024 duplicate sample results met the applicable thresholds except total iron with an RPD of 23.6%.

Overall, the QA/QC results indicated acceptable precision of the analytical data aside from the select results discussed here. However, results of the duplicate samples from dissolved manganese in May and total aluminum in July had RPDs above 40% and thus interpretation for these parameters should proceed with caution. Further information about the laboratory's QA/QC is provided in the laboratory reports (Appendix B).

Results from the trip and field blank samples were consistent with the results expected for deionized water (i.e., all results were below detection) except for the September field blank, which had detectable results for total copper (1.13 µg/L, 2.3 times the detection limit), dissolved copper (0.96 µg/L, 4.8 times the detection limit), and dissolved sodium (0.069 µg/L, 1.4 times the detection limit). These detections may be a result of contamination in the field or laboratory analysis, however all other results for all other parameters were below their respective detection limit.

4.5 Summary

4.5.1 Water

In 2024, most parameters met applicable guidelines, except for turbidity, TSS, and several metals at two sites in East Lake and four sites in Airport Lake. Most notably, aluminum and iron have been measured at elevated concentrations above applicable guidelines, similar to the results of the background sampling event in October 2023 before the new ditches were constructed (Associated 2024f). Results for petroleum hydrocarbons and glycols were below the detection limit at all sampling locations in 2024.

As noted in Section 4.1.1, high suspended sediment was noted in the July EC–RW sample from wind and wave action in the bay, which likely contributed to these elevated total metals concentrations. The metals exceedances at SNP4–RW on May 25 and June 4 were influenced by sediment transport from the newly constructed east ditch during freshet.

In June 2024, additional water samples were collected at SNP4–RW in East Lake and EC–RW in Airport Lake at the location where water from East Creek flows into Airport Lake. Lab-analysed turbidity at SNP4–RW decreased from May to September from 1,360 NTU on May 25 to 9.3 NTU on June 4, 1.3 NTU on July 28, and 1.24 NTU on September 17. Samples were collected at the EC–RW location at the two subsequent sampling events in 2024 to monitor any potential impacts from East Lake on Airport Lake. Lab-analysed turbidity decreased from June to September (July excluded because not representative) from 78.2 NTU on June 4 to 3.76 NTU on September 16.

In September 2024, all parameters met applicable guidelines except for a minor exceedance of the long-term turbidity guidelines (0.8 NTU) and an exceedance of total iron (71 µg/L above the long-term guideline) at EC–RW.

4.5.2 Sediment

Arsenic exceeded guidelines in the samples collected from all sampling locations, including the reference location on Airport Lake. The concentration of arsenic in sediment at SNP 4 in 2024 is higher than it was in 2023, likely because the sample in 2023 contained only organic vegetation. Arsenic concentrations at SNP4 in East Lake in 2024 are consistent with the concentrations of arsenic at the reference location on Airport Lake. Arsenic concentrations at SNP2 were only 1.5 µg/g higher than the concentration of arsenic at the reference location on Airport Lake (SNP 5).

Background arsenic concentrations in sediment in the Inuvik area are not publicly available. However, arsenic concentrations in soil in the Inuvik area are known to exceed CCME Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (SQGEHH) (CCME 1997) (12 mg/kg) (GNWT–ECC 2022). Stantec conducted a review of the arsenic background concentrations in soil in the Inuvik area (2020). The review showed that the mean arsenic concentrations in soil around the developed areas of Inuvik (town) were approximately four times higher than the concentrations in soil from regional background locations separate from the developed area of town (Stantec 2020). This was attributed to the use of fill materials sourced from local borrow pits and quarries where arsenic concentrations are naturally elevated in construction. However, arsenic concentrations in some of the soil samples collected outside developed areas of Inuvik still exceeded the SQGEHH, indicating that there are naturally occurring elevated levels of arsenic in the area. A summary of the calculated statistics for arsenic concentrations in soil in the Inuvik area are provided in Table 4-3.

Table 4-3 Concentrations of Arsenic in Soil in the Inuvik Area (Stantec 2020)

Location	Arsenic in soil (mg/kg)		
	Minimum	Maximum	Mean
Inuvik town	1.7	141	48
Inuvik regional background	2.0	37	12
Combined	**1.7**	**141**	**40**

Source: Stantec 2020.

Based on the results of Stantec's study (2020), GNWT–ECC assigned ambient background soil concentrations for Inuvik at 50 mg/kg in the draft Remediation Soil Quality Guidelines for Arsenic for Yellowknife and Inuvik (2022).

While concentrations of arsenic in soil cannot be directly compared to concentrations of arsenic in sediment, it is likely that arsenic is also naturally elevated in the sediment in the Inuvik area.

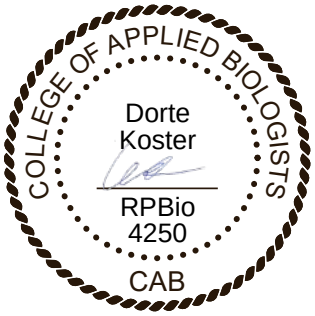
CLOSURE

This report was prepared for the Government of Northwest Territories – Department of Infrastructure to summarize the activities conducted under Water Licence G23L8-002 in 2024 as required by Schedule 1 and Schedule 2 of the licence in a format acceptable for submission to the Gwich'in Land and Water Board.

The services provided by Associated Engineering (B.C.) Ltd. in the preparation of this report were conducted in a manner consistent with the level of skill ordinarily exercised by members of the profession currently practicing under similar conditions. No other warranty expressed or implied is made.

Respectfully submitted,

Associated Engineering (B.C.) Ltd.



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APPENDIX A – WATER AND SEDIMENT QUALITY SUMMARY TABLES

Legend for Table A-1
Inuvik Mike Zubko Airport Water Licence G23L8-002 Water Quality Results (2024)

<	Less than reported detection limit
Calc	Calculated guideline or standard. The guideline or standard is dependent on the value of one or more other analytes, a calculated from a formula or table.
CCME AL (LT)	CCME. Canadian water quality guidelines for the protection of freshwater aquatic life, long-term exposure guidelines.
CCME AL (ST)	CCME. Canadian water quality guidelines for the protection of freshwater aquatic life, short-term exposure guidelines.
FEQG AL (LT)	Federal environmental water quality guidelines for the protection of freshwater aquatic life (long-term)
FEQG AL (ST)	Federal environmental water quality guidelines for the protection of freshwater aquatic life (short-term)
N	Narrative type of guideline or standard, or Result Note.
NG	No Guideline
CCME AL (LT)	Highlighted value exceeds CCME AL (LT)
FEQG AL (ST)	Double-bordered value exceeds FEQG AL (ST)
CCME AL (ST)	Double-underlined value exceeds CCME AL (ST)
FEQG AL (LT)	Bolded value exceeds FEQG AL (LT)

Table A-1 - Inuvik Mike Zubko Airport Water Licence G23L8-002 Water Quality Results (2024)

Analyte	Unit	Guideline				Sampling Location	East Creek-RW	East Creek-RW	OF1-D	OF1-D	OF1-D	OF1-D	OF1-D	OF1-RW	OF1-RW	OF1-RW	SNP1-RW	SNP1-RW	SNP1-RW
						Date Sampled	04-Jun-24	28-Jul-24	26-May-24	26-May-24	28-Jul-24	16-Sep-24	16-Sep-24	26-May-24	28-Jul-24	16-Sep-24	26-May-24	26-May-24	28-Jul-24
						Lab Sample ID	YL2400600-002	YL2401025-011	YL2401534-005	YL2400513-005	YL2400513-008	YL2401025-010	YL2401534-008	YL2401534-010	YL2400513-004	YL2401025-009	YL2401534-007	YL2400513-001	YL2400513-006	YL2401025-002
						Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Duplicate	Normal
		CCME AL (LT)	CCME AL (ST)	**FEQG AL (LT)**	FEQG AL (ST)														
Field Results																			
Conductivity	µS/cm	NG	NG	NG	NG		95.4	302	308.1	790	-	317.8	1781	-	290	312.1	310.3	280	280	299.8
Oxidation reduction potential	mV	NG	NG	NG	NG		140.2	78.1	204.3	-	-	67.7	231.2	-	-	66.5	205.1	-	-	60.3
Dissolved oxygen	mg/L	min 5.500 [1.1]	NG	NG	NG		11.47	9.51	10.8	-	-	9.21	11.57	-	-	9.13	10.71	-	-	9.05
pH		6.5 - 9	NG	NG	NG		7.11	8.17	7.8	8.14	-	8.17	7.6	-	7.39	8.15	7.9	7.83	7.83	8.3
Temperature	°C	N [1.2]	NG	NG	NG		6.8	14.9	10.4	1.3	-	17.8	4.6	-	1.9	18.3	10.7	1.7	1.7	18.8
Turbidity	NTU	N [1.3]	NG	NG	NG		9.16	66.01	4.2	304	-	2.27	1.2	-	10.8	-0.09	1.1	4.76	4.76	0.03
Lab Results																				
General and Inorganic Parameters																				
5-d Carbonaceous BOD	mg/L	NG	NG	NG	NG		0	5	2	0	-	0	<4.0	-	0	0	0	0	0	0
Dissolved organic carbon	mg/L	NG	NG	NG	NG		19.2	10.0	10.8	16.6	-	10.2	11.8	-	16.7	10.1	10.1	15.3	16.6	8.95
Conductivity	µS/cm	NG	NG	NG	NG		101	278	299	687	-	291	1660	-	232	277	297	227	230	274
pH		6.5 - 9	NG	NG	NG		7.60	8.00	8.01	7.94	-	8.14	8.10	-	7.84	8.11	8.07	7.77	7.83	8.10
Total suspended solids	mg/L	N [1.4]	NG	NG	NG		35.7	308	7.0	152	-	3.5	<3.0	-	11.6	<3.0	<3.0	<3.0	3.8	<3.0
Turbidity	NTU	N [1.5]	NG	NG	NG		11.4	78.2	3.76	224	-	2.50	0.31	-	7.76	1.28	1.24	3.32	3.58	1.12
Total Metals																				
Aluminum (total)	µg/L	Calc [1.6]	NG	Calc [3.1]	NG		376	**4650**	69.4	-	-	-	-	-	193	23.7	24.0	87.0	89.9	33.3
Antimony (total)	µg/L	NG	NG	NG	NG		<0.10	0.23	<0.10	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic (total)	µg/L	5.0 [1.7]	NG	NG	NG		0.67	5.57	0.52	-	-	-	-	-	0.48	0.47	0.48	0.40	0.38	0.50
Barium (total)	µg/L	NG	NG	NG	NG		32.7	218	62.9	-	-	-	-	-	39.8	54.4	65.0	39.3	38.4	56.0
Beryllium (total)	µg/L	NG	NG	NG	NG		<0.100	0.337	<0.100	-	-	-	-	-	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
Bismuth (total)	µg/L	NG	NG	NG	NG		<0.050	0.084	<0.050	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Boron (total)	µg/L	1500 [1.8]	29000	NG	NG		11	31	19	-	-	-	-	-	15	18	20	14	13	18
Cadmium (total)	µg/L	Calc [1.9]	Calc [2.1]	NG	NG		0.0080	0.286	0.0072	-	-	-	-	-	0.0077	<0.0050	0.0056	0.0083	0.0071	0.0063
Calcium (total)	mg/L	NG	NG	NG	NG		13.7	40.8	38.7	-	-	-	-	-	28.0	29.7	37.6	28.1	27.7	30.5
Cesium (total)	µg/L	NG	NG	NG	NG		0.180	0.798	0.014	-	-	-	-	-	0.060	<0.010	<0.010	0.025	0.024	<0.010
Chromium (total)	µg/L	1.0 [1.10]	NG	5 [3.2]	NG		0.69	**7.84**	<0.50	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cobalt (total)	µg/L	NG	NG	Calc [3.3]	NG		0.36	**6.02**	0.11	-	-	-	-	-	0.19	<0.10	<0.10	0.11	0.11	<0.10
Copper (total)	µg/L	Calc [1.11]	NG	NG	NG		1.88	15.7	1.51	-	-	-	-	-	1.60	1.32	1.33	1.20	1.19	1.34
Hardness (as CaCO3), from total Ca/Mg	mg/L	NG	NG	NG	NG		47.4	156	147	-	-	-	-	-	101	118	143	101	100	120
Iron (total)	µg/L	300	NG	Calc [3.4]	NG		1420	**14000**	371	-	-	-	-	-	398	62	53	223	218	84
Lead (total)	µg/L	Calc [1.12]	NG	NG	NG		0.430	7.19	0.138	-	-	-	-	-	0.195	<0.050	<0.050	0.083	0.089	<0.050
Lithium (total)	µg/L	NG	NG	NG	NG		2.2	14.1	7.2	-	-	-	-	-	4.7	6.8	7.8	4.6	4.6	6.5
Magnesium (total)	mg/L	NG	NG	NG	NG		3.20	13.2	12.3	-	-	-	-	-	7.52	10.6	11.9	7.42	7.52	10.6
Manganese (total)	µg/L	NG	NG	NG	NG		36.5	659	30.1	-	-	-	-	-	34.0	5.23	5.93	29.7	29.5	6.20
Mercury (total)	µg/L	0.026 [1.13]	NG	NG	NG		0.0062	0.0293	<0.0050	-	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Molybdenum (total)	µg/L	73	NG	NG	NG		0.105	0.884	0.776	-	-	-	-	-	0.522	0.686	0.771	0.519	0.497	0.660
Nickel (total)	µg/L	Calc [1.14]	NG	NG	NG		1.65	18.6	1.25	-	-	-	-	-	1.38	1.08	1.14	1.12	1.09	1.13
Phosphorus (total, by ICPMS/ICPOES)	µg/L	N [1.15]	NG	NG	NG		<50	327	<50	-	-	-	-	-	<50	<50	<50	<50	<50	<50
Potassium (total)	µg/L	NG	NG	NG	NG		915	1680	1170	-	-	-	-	-	1140	1050	1180	1090	1070	1060
Rubidium (total)	µg/L	NG	NG	NG	NG		1.33	7.71	0.77	-	-	-	-	-	0.94	0.68	0.73	0.74	0.72	0.59
Selenium (total)	µg/L	1.0	NG	NG	NG		0.070	0.636	0.142	-	-	-	-	-	0.145	0.162	0.163	0.120	0.154	0.154
Silicon (total, as Si)	µg/L	NG	NG	NG	NG		1360	7280	1140	-	-	-	-	-	1550	1130	1130	1340	1310	1180
Silver (total)	µg/L	0.25	NG	NG	NG		<0.010	0.071	<0.010	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (total)	mg/L	NG	NG	NG	NG		2.31	11.8	14.1	-	-	-	-	-	7.87	12.9	15.4	7.98	7.87	11.8
Strontium (total)	µg/L	NG	NG	NG	NG		26.7	201	158	-	-	-	-	-	108	161	170	114	114	150
Sulphur (total)	µg/L	NG	NG	NG	NG		5440	14600	15300	-	-	-	-	-	11600	14300	14600	11400	10800	14100
Tellurium (total)	µg/L	NG	NG	NG	NG		<0.20	<0.20	<0.20	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (total)	µg/L	0.8	NG	NG	NG		<0.010	0.092	<0.010	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Thorium (total)	µg/L	NG	NG	NG	NG		<0.10	0.56	<0.10	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (total)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Titanium (total)	µg/L	NG	NG	NG	NG		3.10	26.8	0.96	-	-	-	-	-	3.13	0.40	0.31	1.59	1.53	0.49
Tungsten (total)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium (total)	µg/L	15 [1.16]	33 [2.2]	NG	NG		0.034	0.943	0.357	-	-	-	-	-	0.322	0.364	0.356	0.287	0.292	0.368
Vanadium (total)	µg/L	NG	NG	120	NG		1.31	14.1	<0.50	-	-	-	-	-	0.57	<0.50	<0.50	<0.50	<0.50	<0.50
Zinc (total)	µg/L	NG	NG	NG	NG		10.4	49.7	<3.0	-	-	-	-	-	5.2	<3.0	<3.0	<3.0	<3.0	<3.0
Zirconium (total)	µg/L	NG	NG	NG	NG		<0.20	0.55	<0.20	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dissolved Metals																				

Table A-1 - Inuvik Mike Zubko Airport Water Licence G23L8-002 Water Quality Results (2024)

Analyte	Unit	Guideline				Sampling Location	East Creek-RW	East Creek-RW	East Creek-RW	OF1-D	OF1-D	OF1-D	OF1-D	OF1-D	OF1-RW	OF1-RW	OF1-RW	SNP1-RW	SNP1-RW	SNP1-RW
						Date Sampled	04-Jun-24	28-Jul-24	16-Sep-24	26-May-24	26-May-24	28-Jul-24	16-Sep-24	16-Sep-24	26-May-24	28-Jul-24	16-Sep-24	26-May-24	26-May-24	28-Jul-24
						Lab Sample ID	YL2400600-002	YL2401025-011	YL2401534-005	YL2400513-005	YL2400513-008	YL2401025-010	YL2401534-008	YL2401534-010	YL2400513-004	YL2401025-009	YL2401534-007	YL2400513-001	YL2400513-006	YL2401025-002
						Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Duplicate	Normal
		CCME AL (LT)	CCME AL (ST)	**FEQG AL (LT)**	FEQG AL (ST)															
Aluminum (dissolved)	µg/L	Calc [1.17]	NG	Calc [3.5]	NG		27.5	10.4	10.9	-	-	-	-	-	15.1	5.4	3.6	12.9	13.9	5.6
Antimony (dissolved)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic (dissolved)	µg/L	5.0 [1.18]	NG	NG	NG		0.36	0.45	0.45	-	-	-	-	-	0.28	0.39	0.42	0.28	0.28	0.41
Barium (dissolved)	µg/L	NG	NG	NG	NG		25.5	50.2	57.2	-	-	-	-	-	37.0	52.4	55.4	36.5	38.5	52.4
Beryllium (dissolved)	µg/L	NG	NG	NG	NG		<0.100	<0.100	<0.100	-	-	-	-	-	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
Bismuth (dissolved)	µg/L	NG	NG	NG	NG		<0.050	<0.050	<0.050	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Boron (dissolved)	µg/L	1500 [1.19]	29000	NG	NG		<10	19	17	-	-	-	-	-	13	19	18	12	12	19
Cadmium (dissolved)	µg/L	Calc [1.20]	Calc [2.3]	NG	NG		<0.0050	<0.0050	<0.0050	-	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	0.0054	<0.0050
Calcium (dissolved)	mg/L	NG	NG	NG	NG		12.8	33.3	33.3	-	-	-	-	-	25.4	32.5	33.4	24.4	25.1	33.0
Cesium (dissolved)	µg/L	NG	NG	NG	NG		<0.010	<0.010	<0.010	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chromium (dissolved)	µg/L	1.0 [1.21]	NG	5 [3.6]	NG		<0.50	<0.50	<0.50	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cobalt (dissolved)	µg/L	NG	NG	Calc [3.7]	NG		0.13	<0.10	<0.10	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Copper (dissolved)	µg/L	Calc [1.22]	NG	Calc [3.8]	NG		1.04	1.15	1.30	-	-	-	-	-	1.32	1.22	1.26	1.04	1.10	1.23
Hardness (as CaCO3), dissolved	mg/L	NG	NG	NG	NG		44.6	123	123	-	-	-	-	-	96.3	122	122	94.0	94.7	123
Iron (dissolved)	µg/L	300	NG	Calc [3.9]	NG		448	54	178	-	-	-	-	-	83	21	17	79	81	19
Lead (dissolved)	µg/L	Calc [1.23]	NG	Calc [3.10]	NG		0.066	<0.050	<0.050	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Lithium (dissolved)	µg/L	NG	NG	NG	NG		1.6	7.0	6.8	-	-	-	-	-	4.0	7.3	7.4	4.0	4.0	7.1
Magnesium (dissolved)	mg/L	NG	NG	NG	NG		3.06	9.79	9.69	-	-	-	-	-	7.98	9.98	9.35	8.03	7.78	9.91
Manganese (dissolved)	µg/L	Calc [1.24]	Calc [2.4]	NG	NG		25.2	40.7	22.1	-	-	-	-	-	4.31	0.55	1.93	6.96	3.06	0.42
Mercury (dissolved)	µg/L	0.026 [1.25]	NG	NG	NG		0.0055	<0.0050	<0.0050	-	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Molybdenum (dissolved)	µg/L	73	NG	NG	NG		0.094	0.695	0.742	-	-	-	-	-	0.500	0.675	0.728	0.488	0.472	0.662
Nickel (dissolved)	µg/L	Calc [1.26]	NG	NG	NG		0.93	1.03	1.06	-	-	-	-	-	0.97	0.99	1.02	0.95	0.94	1.02
Phosphorus (dissolved, by ICPMS/ICPOES)	µg/L	N [1.27]	NG	NG	NG		<50	<50	<50	-	-	-	-	-	<50	<50	<50	<50	<50	<50
Potassium (dissolved)	µg/L	NG	NG	NG	NG		797	1020	1130	-	-	-	-	-	1060	1060	1130	1030	1050	1060
Rubidium (dissolved)	µg/L	NG	NG	NG	NG		0.33	0.44	0.64	-	-	-	-	-	0.55	0.56	0.66	0.58	0.55	0.61
Selenium (dissolved)	µg/L	1.0	NG	NG	NG		<0.050	0.157	0.143	-	-	-	-	-	0.138	0.159	0.171	0.120	0.157	0.224
Silicon (dissolved, as Si)	µg/L	NG	NG	NG	NG		742	987	1020	-	-	-	-	-	1150	989	1060	1140	1140	929
Silver (dissolved)	µg/L	0.25	NG	NG	NG		<0.010	<0.010	<0.010	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (dissolved)	mg/L	NG	NG	NG	NG		2.21	11.0	12.0	-	-	-	-	-	7.97	12.0	13.0	7.89	7.78	11.2
Strontium (dissolved)	µg/L	NG	NG	2500 [3.11]	NG		27.5	155	166	-	-	-	-	-	114	161	167	116	114	158
Sulphur (dissolved)	µg/L	NG	NG	NG	NG		4960	13600	14100	-	-	-	-	-	11400	13700	13800	10900	11100	13000
Tellurium (dissolved)	µg/L	NG	NG	NG	NG		<0.20	<0.20	<0.20	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (dissolved)	µg/L	0.8	NG	NG	NG		<0.010	<0.010	<0.010	-	-	-	-	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Thorium (dissolved)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (dissolved)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Titanium (dissolved)	µg/L	NG	NG	NG	NG		1.14	0.41	<0.30	-	-	-	-	-	0.44	<0.30	<0.30	<0.30	<0.30	<0.30
Tungsten (dissolved)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium (dissolved)	µg/L	15 [1.28]	33 [2.5]	NG	NG		0.017	0.349	0.378	-	-	-	-	-	0.319	0.335	0.382	0.292	0.299	0.334
Vanadium (dissolved)	µg/L	NG	NG	120 [3.12]	NG		<0.50	<0.50	<0.50	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Zinc (dissolved)	µg/L	Calc [1.29]	Calc [2.6]	NG	NG		5.6	<1.0	<1.0	-	-	-	-	-	2.5	<1.0	<1.0	1.5	1.5	<1.0
Zirconium (dissolved)	µg/L	NG	NG	NG	NG		<0.20	<0.20	<0.20	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Glycols																				
Ethylene glycol	mg/L	192.000	NG	NG	NG		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Petroleum Hydrocarbons																				
Benzene	µg/L	370	NG	590	6000		-	<0.50	<0.50	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	µg/L	90	NG	130	1900		-	<0.50	<0.50	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
F1 (C6-C10)	µg/L	NG	NG	NG	NG		-	<100	<100	-	-	-	-	-	<100	<100	<100	<100	<100	<100
F1-BTEX	µg/L	NG	NG	NG	NG		-	<100	<100	-	-	-	-	-	<100	<100	<100	<100	<100	<100
F2 (>C10-C16)	µg/L	NG	NG	NG	NG		-	<300	<300	-	-	-	-	-	<300	<300	<300	<300	<300	<300
F3 (>C16-C34)	µg/L	NG	NG	NG	NG		-	<300	<300	-	-	-	-	-	<300	<300	<300	<300	<300	<300
F4 (>C34-C50)	µg/L	NG	NG	NG	NG		-	<300	<300	-	-	-	-	-	<300	<300	<300	<300	<300	<300
Methyl tert-butyl ether (MTBE)	µg/L	10000	NG	NG	NG		-	<0.50	<0.50	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene	µg/L	2.0	NG	30	3000		-	<0.50	<0.50	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
VHw6-10	µg/L	NG	NG	NG	NG		-	<100	<100	-	-	-	-	-	<100	<100	<100	<100	<100	<100
VPHw	µg/L	NG	NG	NG	NG		-	<100	<100	-	-	-	-	-	<100	<100	<100	<100	<100	<100
m,p-Xylene	µg/L	NG	NG	NG	NG		-	<0.40	<0.40	-	-	-	-	-	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
o-Xylene	µg/L	NG	NG	NG	NG		-	<0.30	<0.30	-	-	-	-	-	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Xylenes (total)	µg/L	NG	NG	120	1700		-	<0.50	<0.50	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds																				
Styrene	µg/L	72	NG	NG	NG		-	<0.50	<0.50	-	-	-	-	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Table A-1 - Inuvik Mike Zubko Airport Water Licence G23L8-002 Water Quality Results (2024)

Analyte	Unit	Guideline				Sampling Location	SNP1-RW	SNP1-RW	SNP2-RW	SNP3-RW	SNP3-RW	SNP3-RW	SNP4-RW	SNP4-RW	SNP4-RW	SNP4-RW	SNP4-RW	SNP5-RW	SNP5-RW	SNP5-RW-a
						Date Sampled	16-Sep-24	16-Sep-24	25-May-24	04-Jun-24	28-Jul-24	16-Sep-24	25-May-24	04-Jun-24	28-Jul-24	28-Jul-24	17-Sep-24	28-Jul-24	16-Sep-24	26-May-24
						Lab Sample ID	YL2401534-002	YL2401534-003	YL2401534-001	YL2400600-003	YL2401025-003	YL2401534-006	YL2401534-002	YL2400600-001	YL2401025-004	YL2401025-008	YL2401538-004	YL2401025-005	YL2401534-004	YL2400513-002
						Sample Type	Normal	Duplicate	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Duplicate	Normal	Normal	Normal	Normal
		CCME AL (LT)	CCME AL (ST)	**FEQG AL (LT)**	FEQG AL (ST)															
Field Results																				
Conductivity	µS/cm	NG	NG	NG	NG		331.8	331.8	330	175.2	298.8	305.5	240	58.3	255.9	255.9	231.6	298.7	304.9	210
Oxidation reduction potential	mV	NG	NG	NG	NG		149	149	-	144	60.4	201.9	-	100	59.7	59.7	226	74.5	172.3	-
Dissolved oxygen	mg/L	min 5.500 [1.1]	NG	NG	NG		10.59	10.59	-	11.61	9.2	10.55	-	9.5	8.83	8.83	10.66	9.3	10.78	-
pH		6.5 - 9	NG	NG	NG		8.08	8.08	7.77	7.17	8.42	7.78	8.13	7.51	7.67	7.67	7.73	8.37	7.86	7.13
Temperature	°C	N [1.2]	NG	NG	NG		10.5	10.5	1.4	4	19.5	10.6	3.0	5.4	16.9	16.9	9	18.2	10.7	1.4
Turbidity	NTU	N [1.3]	NG	NG	NG		2.5	2.5	6.75	5.04	-0.2	1	916	283.5	2.19	2.19	-	0.13	1.4	9.13
Lab Results																				
General and Inorganic Parameters																				
5-d Carbonaceous BOD	mg/L	NG	NG	NG	NG		3	2	0	0	0	0	0	0	0	0	0	0	0	0
Dissolved organic carbon	mg/L	NG	NG	NG	NG		9.82	9.58	13.7	16.4	9.08	9.92	27.7	16.5	14.0	14.5	13.9	10.3	9.22	19.5
Conductivity	µS/cm	NG	NG	NG	NG		298	293	262	185	272	291	182	57.1	176	183	226	274	290	169
pH		6.5 - 9	NG	NG	NG		8.05	7.98	7.87	7.90	8.14	8.08	6.94	7.21	7.62	7.70	7.71	8.11	8.03	7.67
Total suspended solids	mg/L	N [1.4]	NG	NG	NG		<3.0	3.2	3.3	5.9	<3.0	<3.0	1780	9.9	4.9	<3.0	<3.0	4.1	<3.0	<3.0
Turbidity	NTU	N [1.5]	NG	NG	NG		0.78	0.71	4.92	9.28	1.16	0.66	1360	9.32	1.30	1.40	1.24	1.66	0.97	3.38
Total Metals																				
Aluminum (total)	µg/L	Calc [1.6]	NG	Calc [3.1]	NG		42.5	37.7	119	255	25.0	14.9	**15900**	359	27.0	50.2	19.1	39.7	16.2	73.7
Antimony (total)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.18	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic (total)	µg/L	5.0 [1.7]	NG	NG	NG		0.47	0.46	0.42	0.51	0.49	0.43	12.2	0.42	0.44	0.43	0.35	0.52	0.44	0.36
Barium (total)	µg/L	NG	NG	NG	NG		61.8	62.6	47.1	42.6	57.0	61.5	392	20.4	33.8	31.8	40.5	54.0	62.9	34.1
Beryllium (total)	µg/L	NG	NG	NG	NG		<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	0.805	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
Bismuth (total)	µg/L	NG	NG	NG	NG		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.306	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Boron (total)	µg/L	1500 [1.8]	29000	NG	NG		20	19	17	13	18	19	57	<10	20	21	26	18	19	11
Cadmium (total)	µg/L	Calc [1.9]	Calc [2.1]	NG	NG		0.0074	0.0069	0.0072	0.0138	0.0066	0.0059	0.161	<0.0050	<0.0050	<0.0050	<0.0050	0.0074	0.0055	0.0050
Calcium (total)	mg/L	NG	NG	NG	NG		36.6	37.7	31.9	22.2	30.1	36.9	27.4	7.84	19.0	18.6	23.5	31.7	36.2	20.9
Cesium (total)	µg/L	NG	NG	NG	NG		0.017	0.013	0.046	0.061	<0.010	<0.010	8.56	0.207	0.013	0.024	0.012	<0.010	<0.010	0.019
Chromium (total)	µg/L	1.0 [1.10]	NG	5 [3.2]	NG		<0.50	<0.50	<0.50	0.50	<0.50	<0.50	**26.6**	0.60	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cobalt (total)	µg/L	NG	NG	Calc [3.3]	NG		<0.10	<0.10	0.13	0.26	<0.10	<0.10	**14.2**	0.29	<0.10	<0.10	<0.10	<0.10	<0.10	0.15
Copper (total)	µg/L	Calc [1.11]	NG	NG	NG		1.72	1.75	1.40	2.37	1.32	1.28	30.8	1.04	0.82	0.81	0.61	1.29	1.33	1.00
Hardness (as CaCO3), from total Ca/Mg	mg/L	NG	NG	NG	NG		139	142	115	83.5	116	142	105	26.5	71.4	70.7	88.8	120	139	75.2
Iron (total)	µg/L	300	NG	Calc [3.4]	NG		90	71	296	617	66	30	**36300**	920	253	304	158	93	36	440
Lead (total)	µg/L	Calc [1.12]	NG	NG	NG		0.064	0.050	0.129	0.326	<0.050	<0.050	17.9	0.295	<0.050	0.061	<0.050	<0.050	<0.050	0.065
Lithium (total)	µg/L	NG	NG	NG	NG		7.5	7.6	5.7	3.4	6.4	7.4	41.8	1.5	4.8	5.2	7.2	6.6	7.3	3.1
Magnesium (total)	mg/L	NG	NG	NG	NG		11.6	11.7	8.68	6.82	10.0	12.1	8.93	1.68	5.82	5.90	7.31	10.0	11.8	5.58
Manganese (total)	µg/L	NG	NG	NG	NG		7.18	6.45	25.6	45.4	5.58	5.08	346	27.3	7.55	9.66	6.95	5.87	4.95	59.8
Mercury (total)	µg/L	0.026 [1.13]	NG	NG	NG		<0.0050	<0.0050	<0.0050	0.0058	<0.0050	<0.0050	0.131	0.0062	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0051
Molybdenum (total)	µg/L	73	NG	NG	NG		0.793	0.787	0.591	0.467	0.680	0.734	0.577	0.076	0.104	0.113	0.108	0.671	0.779	0.306
Nickel (total)	µg/L	Calc [1.14]	NG	NG	NG		1.16	1.19	1.23	1.56	1.11	1.08	37.3	1.15	0.98	1.04	0.99	1.14	1.12	1.00
Phosphorus (total, by ICPMS/ICPOES)	µg/L	N [1.15]	NG	NG	NG		<50	<50	<50	<50	<50	<50	610	<50	<50	<50	<50	<50	<50	<50
Potassium (total)	µg/L	NG	NG	NG	NG		1270	1180	1190	1010	1050	1140	4880	787	984	990	1160	1040	1140	1020
Rubidium (total)	µg/L	NG	NG	NG	NG		0.72	0.76	0.86	1.08	0.70	0.76	31.3	1.20	0.59	0.66	0.60	0.66	0.74	0.68
Selenium (total)	µg/L	1.0	NG	NG	NG		0.150	0.163	0.169	0.113	0.167	0.148	0.989	0.051	0.092	0.116	0.058	0.169	0.152	0.113
Silicon (total, as Si)	µg/L	NG	NG	NG	NG		1070	1110	1480	1460	1120	1100	25700	1060	440	530	270	1120	1120	1160
Silver (total)	µg/L	0.25	NG	NG	NG		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.111	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (total)	mg/L	NG	NG	NG	NG		14.2	15.0	10.4	5.92	11.6	14.1	7.64	1.38	7.19	7.38	11.6	11.8	15.0	4.73
Strontium (total)	µg/L	NG	NG	NG	NG		161	167	125	102	154	162	140	18.0	55.5	56.2	63.9	156	164	74.2
Sulphur (total)	µg/L	NG	NG	NG	NG		14900	14600	14300	8460	13800	14700	21100	2700	14100	15100	21200	13500	15300	6790
Tellurium (total)	µg/L	NG	NG	NG	NG		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (total)	µg/L	0.8	NG	NG	NG		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.199	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Thorium (total)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	4.22	<0.20	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (total)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.14	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Titanium (total)	µg/L	NG	NG	NG	NG		0.62	0.54	2.11	5.04	<0.30	<0.30	61.5	<4.80	0.66	1.01	0.60	0.60	<0.30	1.44
Tungsten (total)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium (total)	µg/L	15 [1.16]	33 [2.2]	NG	NG		0.370	0.360	0.322	0.294	0.362	0.360	0.960	0.029	0.034	0.041	0.032	0.368	0.361	0.149
Vanadium (total)	µg/L	NG	NG	120	NG		<0.50	<0.50	<0.50	0.85	<0.50	<0.50	43.1	1.03	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Zinc (total)	µg/L	NG	NG	NG	NG		5.9	5.5	<3.0	15.1	<3.0	<3.0	117	5.2	<3.0	<3.0	<3.0	<3.0	<3.0	3.9
Zirconium (total)	µg/L	NG	NG	NG	NG		<0.20	<0.20	<0.20	0.21	<0.20	<0.20	0.68	0.27	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Dissolved Metals																				

Table A-1 - Inuvik Mike Zubko Airport Water Licence G23L8-002 Water Quality Results (2024)

Analyte	Unit	Guideline CCME AL (LT)	Guideline CCME AL (ST)	Guideline **FEQG AL (LT)**	Guideline FEQG AL (ST)	Sampling Location	SNP1-RW	SNP1-RW	SNP2-RW	SNP3-RW	SNP3-RW	SNP3-RW	SNP4-RW	SNP4-RW	SNP4-RW	SNP4-RW	SNP4-RW	SNP5-RW	SNP5-RW	SNP5-RW-a
						Date Sampled	16-Sep-24	16-Sep-24	25-May-24	04-Jun-24	28-Jul-24	16-Sep-24	25-May-24	04-Jun-24	28-Jul-24	28-Jul-24	17-Sep-24	28-Jul-24	16-Sep-24	26-May-24
						Lab Sample ID	YL2401534-002	YL2401534-003	YL2400512-001	YL2400600-003	YL2401025-003	YL2401534-006	YL2400512-002	YL2400600-001	YL2401025-004	YL2401025-008	YL2401538-004	YL2401025-005	YL2401534-004	YL2400513-002
						Sample Type	Normal	Duplicate	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Duplicate	Normal	Normal	Normal	Normal
Aluminum (dissolved)	µg/L	Calc [1.17]	NG	Calc [3.5]	NG		4.1	5.4	8.8	22.8	6.2	3.1	114	140	12.4	12.5	6.3	6.3	3.3	12.9
Antimony (dissolved)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Arsenic (dissolved)	µg/L	5.0 [1.18]	NG	NG	NG		0.39	0.42	0.32	0.35	0.39	0.36	0.49	0.28	0.36	0.35	0.32	0.40	0.42	0.26
Barium (dissolved)	µg/L	NG	NG	NG	NG		55.9	56.4	42.8	37.8	52.3	55.7	14.9	16.8	31.3	30.8	37.9	52.6	56.7	31.3
Beryllium (dissolved)	µg/L	NG	NG	NG	NG		<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100	<0.100
Bismuth (dissolved)	µg/L	NG	NG	NG	NG		<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Boron (dissolved)	µg/L	1500 [1.19]	29000	NG	NG		18	18	15	10	18	18	29	<10	22	22	25	17	18	<10
Cadmium (dissolved)	µg/L	Calc [1.20]	Calc [2.3]	NG	NG		<0.0050	<0.0050	<0.0050	0.0083	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0053	<0.0050
Calcium (dissolved)	mg/L	NG	NG	NG	NG		33.0	33.2	30.0	21.2	32.1	32.9	19.6	7.79	20.6	20.8	23.3	31.0	33.4	20.1
Cesium (dissolved)	µg/L	NG	NG	NG	NG		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.046	0.057	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chromium (dissolved)	µg/L	1.0 [1.21]	NG	5 [3.6]	NG		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Cobalt (dissolved)	µg/L	NG	NG	Calc [3.7]	NG		<0.10	<0.10	<0.10	0.11	<0.10	<0.10	0.78	0.16	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Copper (dissolved)	µg/L	Calc [1.22]	NG	Calc [3.8]	NG		1.47	1.51	1.18	1.70	1.20	1.22	1.61	0.69	0.74	0.71	0.64	1.21	1.32	0.90
Hardness (as CaCO3), dissolved	mg/L	NG	NG	NG	NG		122	123	112	80.6	120	122	66.5	25.8	75.3	74.9	84.9	118	123	73.8
Iron (dissolved)	µg/L	300	NG	Calc [3.9]	NG		19	19	62	205	18	18	442	445	184	172	130	21	16	202
Lead (dissolved)	µg/L	Calc [1.23]	NG	Calc [3.10]	NG		<0.050	<0.050	<0.050	0.073	<0.050	<0.050	0.172	0.134	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Lithium (dissolved)	µg/L	NG	NG	NG	NG		7.2	7.3	5.1	3.0	6.8	7.0	5.1	1.3	5.7	5.7	7.5	6.5	7.0	2.8
Magnesium (dissolved)	mg/L	NG	NG	NG	NG		9.68	9.80	9.01	6.72	9.64	9.58	4.26	1.55	5.79	5.58	6.49	9.89	9.70	5.74
Manganese (dissolved)	µg/L	Calc [1.24]	Calc [2.4]	NG	NG		2.00	2.06	3.63	27.1	0.36	1.88	103	20.7	9.25	6.51	6.06	0.42	1.61	18.3
Mercury (dissolved)	µg/L	0.026 [1.25]	NG	NG	NG		<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.0078	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Molybdenum (dissolved)	µg/L	73	NG	NG	NG		0.748	0.728	0.606	0.432	0.651	0.721	0.120	0.152	0.106	0.112	0.113	0.727	0.723	0.278
Nickel (dissolved)	µg/L	Calc [1.26]	NG	NG	NG		1.03	1.05	0.99	1.09	0.99	0.99	2.08	0.77	0.98	0.93	0.95	1.03	0.99	0.85
Phosphorus (dissolved, by ICPMS/ICPOES)	µg/L	N [1.27]	NG	NG	NG		<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50	<50
Potassium (dissolved)	µg/L	NG	NG	NG	NG		1110	1130	1130	945	1020	1090	2880	660	980	965	1220	1020	1130	987
Rubidium (dissolved)	µg/L	NG	NG	NG	NG		0.62	0.67	0.61	0.47	0.60	0.59	0.77	0.61	0.58	0.58	0.68	0.55	0.58	0.52
Selenium (dissolved)	µg/L	1.0	NG	NG	NG		0.212	0.151	0.148	0.117	0.200	0.172	0.126	<0.050	0.103	0.110	0.073	0.176	0.187	0.077
Silicon (dissolved, as Si)	µg/L	NG	NG	NG	NG		1020	1030	1240	977	941	1050	754	676	358	356	223	950	1070	981
Silver (dissolved)	µg/L	0.25	NG	NG	NG		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.130	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Sodium (dissolved)	mg/L	NG	NG	NG	NG		12.6	12.8	10.3	5.72	11.1	12.4	7.90	1.29	8.03	7.34	11.0	11.0	12.6	4.82
Strontium (dissolved)	µg/L	NG	NG	2500 [3.11]	NG		168	168	129	102	153	166	70.3	17.1	59.1	61.4	71.5	156	166	70.3
Sulphur (dissolved)	µg/L	NG	NG	NG	NG		14100	14000	13000	7900	13000	13600	20200	2700	15100	14000	20300	12800	14300	6630
Tellurium (dissolved)	µg/L	NG	NG	NG	NG		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Thallium (dissolved)	µg/L	0.8	NG	NG	NG		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Thorium (dissolved)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tin (dissolved)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Titanium (dissolved)	µg/L	NG	NG	NG	NG		<0.30	<0.30	<0.30	0.86	<0.30	<0.30	4.48	4.76	0.32	<0.30	<0.30	<0.30	<0.30	<0.30
Tungsten (dissolved)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Uranium (dissolved)	µg/L	15 [1.28]	33 [2.5]	NG	NG		0.391	0.393	0.340	0.268	0.335	0.393	0.074	0.019	0.044	0.040	0.032	0.327	0.396	0.146
Vanadium (dissolved)	µg/L	NG	NG	120 [3.12]	NG		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Zinc (dissolved)	µg/L	Calc [1.29]	Calc [2.6]	NG	NG		2.4	2.4	1.2	9.2	<1.0	<1.0	4.8	3.7	<1.0	<1.0	1.7	<1.0	<1.0	3.0
Zirconium (dissolved)	µg/L	NG	NG	NG	NG		<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.40	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Glycols																				
Ethylene glycol	mg/L	192.000	NG	NG	NG		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Petroleum Hydrocarbons																				
Benzene	µg/L	370	NG	590	6000		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	µg/L	90	NG	130	1900		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
F1 (C6-C10)	µg/L	NG	NG	NG	NG		<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100
F1-BTEX	µg/L	NG	NG	NG	NG		<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100
F2 (>C10-C16)	µg/L	NG	NG	NG	NG		<300	<300	<300	<300	<300	<300	<300	-	<300	<300	<300	<300	<300	<300
F3 (>C16-C34)	µg/L	NG	NG	NG	NG		<300	<300	<300	<300	<300	<300	<300	-	<300	<300	<300	<300	<300	<300
F4 (>C34-C50)	µg/L	NG	NG	NG	NG		<300	<300	<300	<300	<300	<300	<300	-	<300	<300	<300	<300	<300	<300
Methyl tert-butyl ether (MTBE)	µg/L	10000	NG	NG	NG		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Toluene	µg/L	2.0	NG	30	3000		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
VHw6-10	µg/L	NG	NG	NG	NG		<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100
VPHw	µg/L	NG	NG	NG	NG		<100	<100	<100	<100	<100	<100	<100	-	<100	<100	<100	<100	<100	<100
m,p-Xylene	µg/L	NG	NG	NG	NG		<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	-	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
o-Xylene	µg/L	NG	NG	NG	NG		<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	-	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Xylenes (total)	µg/L	NG	NG	120	1700		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Volatile Organic Compounds																				
Styrene	µg/L	72	NG	NG	NG		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50

Table A-1 - Inuvik Mike Zubko Airport Water Licence G23L8-002 Water Quality Results (2024)

Analyte	Unit	Guideline				Sampling Location	SNP6-RW	SNP6-RW	SNP6-RW	SNP7-D	SNP7-D	SNP8-D	SNP8-D	SNP8-D	SNP8-D	SNP8-D	SNP8-D
						Date Sampled	25-May-24	28-Jul-24	17-Sep-24	25-May-24	25-May-24	26-May-24	26-May-24	28-Jul-24	28-Jul-24	16-Sep-24	16-Sep-24
						Lab Sample ID	YL2400512-003	YL2401025-006	YL2401538-006	YL2400512-004	YL2400512-006	YL2400513-003	YL2400513-007	YL2401025-007	YL2401025-012	YL2401534-001	YL2401534-009
						Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
		CCME AL (LT)	CCME AL (ST)	**FEQG AL (LT)**	FEQG AL (ST)												
Field Results																	
Conductivity	µS/cm	NG	NG	NG	NG		40	180.5	227.3	700	-	900	-	2582	2604	2512	-
Oxidation reduction potential	mV	NG	NG	NG	NG		-	72.6	231.3	-	-	-	-	90.5	106.4	51.8	-
Dissolved oxygen	mg/L	min 5.500 [1.1]	NG	NG	NG		-	8.80	10.85	-	-	-	-	9.98	9.9	11.18	-
pH		6.5 - 9	NG	NG	NG		7.30	7.66	7.49	7.91	-	8.05	-	7.92	7.93	7.81	-
Temperature	°C	N [1.2]	NG	NG	NG		0.9	18.4	9.5	0.7	-	1.6	-	10.5	10.6	6.3	-
Turbidity	NTU	N [1.3]	NG	NG	NG		3.16	0.12	-	11.5	-	1461	-	1.6	5.68	12	-
Lab Results																	
General and Inorganic Parameters																	
5-d Carbonaceous BOD	mg/L	NG	NG	NG	NG		0	0	0	0	-	0	-	0	3	<2.0	-
Dissolved organic carbon	mg/L	NG	NG	NG	NG		28.3	14.0	15.5	19.0	-	19.2	-	18.8	20.0	17.3	-
Conductivity	µS/cm	NG	NG	NG	NG		33.1	167	223	600	-	778	-	2370	2370	2370	-
pH		6.5 - 9	NG	NG	NG		6.51	7.65	7.78	7.98	-	7.92	-	8.22	8.22	8.05	-
Total suspended solids	mg/L	N [1.4]	NG	NG	NG		<3.0	<3.0	<3.0	7.7	-	120	-	3.1	3.5	21.4	-
Turbidity	NTU	N [1.5]	NG	NG	NG		2.90	1.08	1.16	8.23	-	103	-	1.98	1.70	7.97	-
Total Metals																	
Aluminum (total)	µg/L	Calc [1.6]	NG	Calc [3.1]	NG		74.4	24.5	20.6	-	-	-	-	-	-	-	-
Antimony (total)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	-	-	-
Arsenic (total)	µg/L	5.0 [1.7]	NG	NG	NG		0.22	0.41	0.36	-	-	-	-	-	-	-	-
Barium (total)	µg/L	NG	NG	NG	NG		12.8	31.8	39.9	-	-	-	-	-	-	-	-
Beryllium (total)	µg/L	NG	NG	NG	NG		<0.100	<0.100	<0.100	-	-	-	-	-	-	-	-
Bismuth (total)	µg/L	NG	NG	NG	NG		<0.050	<0.050	<0.050	-	-	-	-	-	-	-	-
Boron (total)	µg/L	1500 [1.8]	29000	NG	NG		<10	19	25	-	-	-	-	-	-	-	-
Cadmium (total)	µg/L	Calc [1.9]	Calc [2.1]	NG	NG		<0.0050	<0.0050	<0.0050	-	-	-	-	-	-	-	-
Calcium (total)	mg/L	NG	NG	NG	NG		5.18	18.9	23.1	-	-	-	-	-	-	-	-
Cesium (total)	µg/L	NG	NG	NG	NG		0.026	0.012	0.014	-	-	-	-	-	-	-	-
Chromium (total)	µg/L	1.0 [1.10]	NG	5 [3.2]	NG		<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
Cobalt (total)	µg/L	NG	NG	Calc [3.3]	NG		0.12	<0.10	<0.10	-	-	-	-	-	-	-	-
Copper (total)	µg/L	Calc [1.11]	NG	NG	NG		0.71	0.77	0.69	-	-	-	-	-	-	-	-
Hardness (as CaCO3), from total Ca/Mg	mg/L	NG	NG	NG	NG		17.0	70.0	87.6	-	-	-	-	-	-	-	-
Iron (total)	µg/L	300	NG	Calc [3.4]	NG		668	260	178	-	-	-	-	-	-	-	-
Lead (total)	µg/L	Calc [1.12]	NG	NG	NG		0.079	<0.050	<0.050	-	-	-	-	-	-	-	-
Lithium (total)	µg/L	NG	NG	NG	NG		<1.0	4.6	7.0	-	-	-	-	-	-	-	-
Magnesium (total)	mg/L	NG	NG	NG	NG		0.978	5.53	7.28	-	-	-	-	-	-	-	-
Manganese (total)	µg/L	NG	NG	NG	NG		29.1	7.59	5.69	-	-	-	-	-	-	-	-
Mercury (total)	µg/L	0.026 [1.13]	NG	NG	NG		0.0123	<0.0050	<0.0050	-	-	-	-	-	-	-	-
Molybdenum (total)	µg/L	73	NG	NG	NG		<0.050	0.101	0.107	-	-	-	-	-	-	-	-
Nickel (total)	µg/L	Calc [1.14]	NG	NG	NG		0.70	0.95	1.02	-	-	-	-	-	-	-	-
Phosphorus (total, by ICPMS/ICPOES)	µg/L	N [1.15]	NG	NG	NG		<50	<50	<50	-	-	-	-	-	-	-	-
Potassium (total)	µg/L	NG	NG	NG	NG		1180	981	1140	-	-	-	-	-	-	-	-
Rubidium (total)	µg/L	NG	NG	NG	NG		0.86	0.69	0.58	-	-	-	-	-	-	-	-
Selenium (total)	µg/L	1.0	NG	NG	NG		0.062	0.109	0.080	-	-	-	-	-	-	-	-
Silicon (total, as Si)	µg/L	NG	NG	NG	NG		570	500	300	-	-	-	-	-	-	-	-
Silver (total)	µg/L	0.25	NG	NG	NG		<0.010	<0.010	<0.010	-	-	-	-	-	-	-	-
Sodium (total)	mg/L	NG	NG	NG	NG		0.576	6.60	11.2	-	-	-	-	-	-	-	-
Strontium (total)	µg/L	NG	NG	NG	NG		10.5	54.2	65.1	-	-	-	-	-	-	-	-
Sulphur (total)	µg/L	NG	NG	NG	NG		<500	13600	20200	-	-	-	-	-	-	-	-
Tellurium (total)	µg/L	NG	NG	NG	NG		<0.20	<0.20	<0.20	-	-	-	-	-	-	-	-
Thallium (total)	µg/L	0.8	NG	NG	NG		<0.010	<0.010	<0.010	-	-	-	-	-	-	-	-
Thorium (total)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	-	-	-
Tin (total)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	-	-	-
Titanium (total)	µg/L	NG	NG	NG	NG		1.00	0.50	0.52	-	-	-	-	-	-	-	-
Tungsten (total)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	-	-	-
Uranium (total)	µg/L	15 [1.16]	33 [2.2]	NG	NG		<0.010	0.031	0.032	-	-	-	-	-	-	-	-
Vanadium (total)	µg/L	NG	NG	120	NG		<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
Zinc (total)	µg/L	NG	NG	NG	NG		5.2	<3.0	<3.0	-	-	-	-	-	-	-	-
Zirconium (total)	µg/L	NG	NG	NG	NG		<0.20	<0.20	<0.20	-	-	-	-	-	-	-	-
Dissolved Metals																	

Table A-1 - Inuvik Mike Zubko Airport Water Licence G23L8-002 Water Quality Results (2024)

Analyte	Unit	Guideline				Sampling Location	SNP6-RW	SNP6-RW	SNP6-RW	SNP7-D	SNP7-D	SNP8-D	SNP8-D	SNP8-D	SNP8-D	SNP8-D	SNP8-D
						Date Sampled	25-May-24	28-Jul-24	17-Sep-24	25-May-24	25-May-24	26-May-24	26-May-24	28-Jul-24	28-Jul-24	16-Sep-24	16-Sep-24
						Lab Sample ID	YL2400512-003	YL2401025-006	YL2401538-006	YL2400512-004	YL2400512-006	YL2400513-003	YL2400513-007	YL2401025-007	YL2401025-012	YL2401534-001	YL2401534-009
						Sample Type	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
		CCME AL (LT)	CCME AL (ST)	**FEQG AL (LT)**	FEQG AL (ST)												
Aluminum (dissolved)	µg/L	Calc [1.17]	NG	Calc [3.5]	NG		41.9	11.8	12.9	-	-	-	-	-	-	-	-
Antimony (dissolved)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	-	-	-
Arsenic (dissolved)	µg/L	5.0 [1.18]	NG	NG	NG		0.19	0.38	0.32	-	-	-	-	-	-	-	-
Barium (dissolved)	µg/L	NG	NG	NG	NG		11.6	30.0	36.1	-	-	-	-	-	-	-	-
Beryllium (dissolved)	µg/L	NG	NG	NG	NG		<0.100	<0.100	<0.100	-	-	-	-	-	-	-	-
Bismuth (dissolved)	µg/L	NG	NG	NG	NG		<0.050	<0.050	<0.050	-	-	-	-	-	-	-	-
Boron (dissolved)	µg/L	1500 [1.19]	29000	NG	NG		<10	18	24	-	-	-	-	-	-	-	-
Cadmium (dissolved)	µg/L	Calc [1.20]	Calc [2.3]	NG	NG		0.0061	<0.0050	<0.0050	-	-	-	-	-	-	-	-
Calcium (dissolved)	mg/L	NG	NG	NG	NG		4.85	19.2	23.0	-	-	-	-	-	-	-	-
Cesium (dissolved)	µg/L	NG	NG	NG	NG		<0.010	<0.010	<0.010	-	-	-	-	-	-	-	-
Chromium (dissolved)	µg/L	1.0 [1.21]	NG	5 [3.6]	NG		<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
Cobalt (dissolved)	µg/L	NG	NG	Calc [3.7]	NG		0.10	<0.10	<0.10	-	-	-	-	-	-	-	-
Copper (dissolved)	µg/L	Calc [1.22]	NG	Calc [3.8]	NG		0.66	0.74	0.70	-	-	-	-	-	-	-	-
Hardness (as CaCO3), dissolved	mg/L	NG	NG	NG	NG		16.3	69.9	84.4	-	-	-	-	-	-	-	-
Iron (dissolved)	µg/L	300	NG	Calc [3.9]	NG		452	182	149	-	-	-	-	-	-	-	-
Lead (dissolved)	µg/L	Calc [1.23]	NG	Calc [3.10]	NG		<0.050	<0.050	<0.050	-	-	-	-	-	-	-	-
Lithium (dissolved)	µg/L	NG	NG	NG	NG		<1.0	4.7	7.2	-	-	-	-	-	-	-	-
Magnesium (dissolved)	mg/L	NG	NG	NG	NG		1.01	5.33	6.56	-	-	-	-	-	-	-	-
Manganese (dissolved)	µg/L	Calc [1.24]	Calc [2.4]	NG	NG		26.5	3.73	4.03	-	-	-	-	-	-	-	-
Mercury (dissolved)	µg/L	0.026 [1.25]	NG	NG	NG		0.0093	<0.0050	<0.0050	-	-	-	-	-	-	-	-
Molybdenum (dissolved)	µg/L	73	NG	NG	NG		<0.050	0.096	0.107	-	-	-	-	-	-	-	-
Nickel (dissolved)	µg/L	Calc [1.26]	NG	NG	NG		0.59	1.00	0.93	-	-	-	-	-	-	-	-
Phosphorus (dissolved, by ICPMS/ICPOES)	µg/L	N [1.27]	NG	NG	NG		<50	<50	<50	-	-	-	-	-	-	-	-
Potassium (dissolved)	µg/L	NG	NG	NG	NG		1170	970	1180	-	-	-	-	-	-	-	-
Rubidium (dissolved)	µg/L	NG	NG	NG	NG		0.75	0.58	0.60	-	-	-	-	-	-	-	-
Selenium (dissolved)	µg/L	1.0	NG	NG	NG		<0.050	0.121	0.098	-	-	-	-	-	-	-	-
Silicon (dissolved, as Si)	µg/L	NG	NG	NG	NG		448	374	260	-	-	-	-	-	-	-	-
Silver (dissolved)	µg/L	0.25	NG	NG	NG		<0.010	<0.010	<0.010	-	-	-	-	-	-	-	-
Sodium (dissolved)	mg/L	NG	NG	NG	NG		0.635	6.44	10.8	-	-	-	-	-	-	-	-
Strontium (dissolved)	µg/L	NG	NG	2500 [3.11]	NG		10.9	54.6	68.7	-	-	-	-	-	-	-	-
Sulphur (dissolved)	µg/L	NG	NG	NG	NG		<500	13200	19100	-	-	-	-	-	-	-	-
Tellurium (dissolved)	µg/L	NG	NG	NG	NG		<0.20	<0.20	<0.20	-	-	-	-	-	-	-	-
Thallium (dissolved)	µg/L	0.8	NG	NG	NG		<0.010	<0.010	<0.010	-	-	-	-	-	-	-	-
Thorium (dissolved)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	-	-	-
Tin (dissolved)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	-	-	-
Titanium (dissolved)	µg/L	NG	NG	NG	NG		0.34	<0.30	0.43	-	-	-	-	-	-	-	-
Tungsten (dissolved)	µg/L	NG	NG	NG	NG		<0.10	<0.10	<0.10	-	-	-	-	-	-	-	-
Uranium (dissolved)	µg/L	15 [1.28]	33 [2.5]	NG	NG		<0.010	0.027	0.036	-	-	-	-	-	-	-	-
Vanadium (dissolved)	µg/L	NG	NG	120 [3.12]	NG		<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
Zinc (dissolved)	µg/L	Calc [1.29]	Calc [2.6]	NG	NG		4.7	1.1	<1.0	-	-	-	-	-	-	-	-
Zirconium (dissolved)	µg/L	NG	NG	NG	NG		<0.20	<0.20	<0.20	-	-	-	-	-	-	-	-
Glycols																	
Ethylene glycol	mg/L	192.000	NG	NG	NG		<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
Petroleum Hydrocarbons																	
Benzene	µg/L	370	NG	590	6000		<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
Ethylbenzene	µg/L	90	NG	130	1900		<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
F1 (C6-C10)	µg/L	NG	NG	NG	NG		<100	<100	<100	-	-	-	-	-	-	-	-
F1-BTEX	µg/L	NG	NG	NG	NG		<100	<100	<100	-	-	-	-	-	-	-	-
F2 (>C10-C16)	µg/L	NG	NG	NG	NG		<300	<300	<300	-	-	-	-	-	-	-	-
F3 (>C16-C34)	µg/L	NG	NG	NG	NG		<300	<300	<300	-	-	-	-	-	-	-	-
F4 (>C34-C50)	µg/L	NG	NG	NG	NG		<300	<300	<300	-	-	-	-	-	-	-	-
Methyl tert-butyl ether (MTBE)	µg/L	10000	NG	NG	NG		<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
Toluene	µg/L	2.0	NG	30	3000		<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
VHw6-10	µg/L	NG	NG	NG	NG		<100	<100	<100	-	-	-	-	-	-	-	-
VPHw	µg/L	NG	NG	NG	NG		<100	<100	<100	-	-	-	-	-	-	-	-
m,p-Xylene	µg/L	NG	NG	NG	NG		<0.40	<0.40	<0.40	-	-	-	-	-	-	-	-
o-Xylene	µg/L	NG	NG	NG	NG		<0.30	<0.30	<0.30	-	-	-	-	-	-	-	-
Xylenes (total)	µg/L	NG	NG	120	1700		<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-
Volatile Organic Compounds																	
Styrene	µg/L	72	NG	NG	NG		<0.50	<0.50	<0.50	-	-	-	-	-	-	-	-

Guideline Notes for Table A-1
Inuvik Mike Zubko Airport Water Licence G23L8-002 Water Quality Results (2024)

1. Notes for Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines (CWQG) for the Protection of Freshwater Aquatic life, Long-Term Exposure guidelines (CCME AL (LT))
General Notes:
The CCME AL provide both a long-term exposure guideline, and short-term exposure guideline for some analytes. Only the long-term exposure guidelines are included in this criteria set.
Note 1.1 for dissolved oxygen:
Dissolved oxygen guideline minimum: For warm-water biota: early life stages = 6000 µg/L For warm-water biota: other life stages = 5500 µg/L For cold-water biota: early life stages = 9500 µg/L For cold-water biota: other life stages = 6500 µg/L
Note 1.2 for temperature:
Thermal Stratification: Thermal additions to receiving waters should be such that thermal stratification and subsequent turnover dates are not altered from those existing prior to the addition of heat from artificial origins. Maximum Weekly Average Temperature: Thermal additions to receiving waters should be such that the maximum weekly average temperature is not exceeded. Short-term Exposure to Extreme Temperature: Thermal additions to receiving waters should be such that the short-term exposures to maximum temperatures are not exceeded. Exposures should not be so lengthy or frequent as to adversely affect the important species.
Note 1.3 for turbidity:
Water quality guideline for turbidity is as follows. Clear flow: Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period). High flow or turbid waters: Maximum increase of 8 NTUs from background levels at any one time when background levels are between 8 and 80 NTUs. Should not increase more than 10% of background levels when background is >80 NTUs.
Note 1.4 for total suspended solids:
Water quality guideline for suspended sediments is as follows. Clear flow: Maximum increase of 25 mg/L from background levels for any short-term exposure (e.g., 24-h period). Maximum average increase of 5 mg/L from background levels for longer term exposures (e.g., inputs lasting between 24 h and 30 d). High flow: Maximum increase of 25 mg/L from background levels at any time when background levels are between 25 and 250 mg/L. Should not increase more than 10% of background levels when background is >250 mg/L.
Note 1.5 for turbidity:
Water quality guideline for turbidity is as follows. Clear flow: Maximum increase of 8 NTUs from background levels for a short-term exposure (e.g., 24-h period). Maximum average increase of 2 NTUs from background levels for a longer term exposure (e.g., 30-d period). High flow or turbid waters: Maximum increase of 8 NTUs from background levels at any one time when background levels are between 8 and 80 NTUs. Should not increase more than 10% of background levels when background is >80 NTUs.
Note 1.6 for aluminum (total):
The guideline for aluminum is: 5 µg/L when pH is less than 6.5 100 µg/L when pH is greater than or equal to 6.5
Note 1.7 for arsenic (total):
Guideline is for total arsenic.
Note 1.8 for boron (total):
The Short-Term Exposure Guideline is 29 mg/L. The Long-Term Exposure Guideline is 1.5 mg/L.
Note 1.9 for cadmium (total):
The long-term guideline for cadmium is determined on a site-specific basis according to the local water hardness. The guideline for total cadmium in µg/L is determined as follows for long-term exposure: 1. If hardness (as $CaCO_3$) is less than 17 mg/L then maximum is 0.04 µg/L 2. If hardness (as $CaCO_3$) is from 17 to 280 mg/L then maximum is based on equation: 10 raised to the power of {0.83[log(hardness)] - 2.46} 3. If hardness (as $CaCO_3$) is greater than 280 mg/L then maximum is 0.37 µg/L.
Note 1.10 for chromium (total):
CCME guideline for freshwater aquatic life is 0.0010 mg/L for chromium VI. CCME interim guideline for freshwater aquatic life is 0.0089 mg/L for chromium III. The guideline of 0.0010 mg/L was used, in this report, to identify exceedances for dissolved chromium, and total chromium as a means for determining the potential for exceeding the chromium VI and/or chromium III guidelines.

WIRELESS WATER

Note 1.11 for copper (total):
The guideline for copper in µg/L is determined as follows: When the water hardness is 0 to < 82 mg/L, the CWQG is 2 µg/L At hardness ≥82 to ≤180 mg/L the CWQG is calculated using the equation: e raised to the power of {0.8545[ln(hardness)]-1.465} * 0.2 µg/L At hardness >180 mg/L, the CWQG is 4 µg/L Where water hardness is reported as mg/L $CaCO_3$. If the water hardness is unknown, the CWQG is 2 µg/L
Note 1.12 for lead (total):
The guideline for lead in µg/L is determined as follows: When the hardness is 0 to ≤ 60 mg/L, the CWQG is 1 µg/L At hardness > 60 to ≤ 180 mg/L the CWQG is calculated using the equation: e raised to the power of {1.273[ln(hardness)] - 4.705} At hardness >180 mg/L, the CWQG is 7 µg/L Where water hardness is reported as mg/L $CaCO_3$. If the water hardness is unknown, the CWQG is 1 µg/L
Note 1.13 for mercury (total):
May not prevent accumulation of methylmercury in aquatic life, therefore, may not protect wildlife that consume aquatic life; see fact sheet for details. Consult also the appropriate Canadian Tissue Residue Guideline for the Protection of Wildlife Consumers of Aquatic Biota.
Note 1.14 for nickel (total):
The guideline for nickel in µg/L is determined as follows: When the water hardness is 0 to ≤ 60 mg/L, the CWQG is 25 µg/L At hardness > 60 to ≤ 180 mg/L the CWQG is calculated using the equation: e raised to the power of {0.76[ln(hardness)] + 1.06} At hardness >180 mg/L, the CWQG is 150 µg/L Where water hardness is reported as mg/L $CaCO_3$. If the water hardness is unknown, the CWQG is 25 µg/L
Note 1.15 for phosphorus (total, by ICPMS/ICPOES):
Canadian Guidance Framework for Phosphorus is for developing phosphorus guidelines (does not provide guidance on other freshwater nutrients). It provides Trigger Ranges for Total Phosphorus (see Guidance Framework for Phosphorus factsheet): ultra-oligotrophic <4 µg/L; oligotrophic 4-10 µg/L; mesotrophic 10-20 µg/L; meso-eutrophic 20-35 µg/L; eutrophic 35-100 µg/L; hyper-eutrophic >100 µg/L
Note 1.16 for uranium (total):
The Short-Term Exposure Guideline is 33 µg/L. The Long-Term Exposure Guideline is 15 µg/L. The guidelines are for total recoverable, unfiltered analyses.
Note 1.17 for aluminum (dissolved):
The guideline for aluminum is: 5 µg/L when pH is less than 6.5 100 µg/L when pH is greater than or equal to 6.5
Note 1.18 for arsenic (dissolved):
Guideline is for total arsenic.
Note 1.19 for boron (dissolved):
The Short-Term Exposure Guideline is 29 mg/L. The Long-Term Exposure Guideline is 1.5 mg/L.
Note 1.20 for cadmium (dissolved):
The long-term guideline for cadmium is determined on a site-specific basis according to the local water hardness. The guideline for total cadmium in µg/L is determined as follows for long-term exposure: 1. If hardness (as $CaCO_3$) is less than 17 mg/L then maximum is 0.04 µg/L 2. If hardness (as $CaCO_3$) is from 17 to 280 mg/L then maximum is based on equation: 10 raised to the power of {0.83[log(hardness)] - 2.46} 3. If hardness (as $CaCO_3$) is greater than 280 mg/L then maximum is 0.37 µg/L.
Note 1.21 for chromium (dissolved):
CCME guideline for freshwater aquatic life is 0.0010 mg/L for chromium VI. CCME interim guideline for freshwater aquatic life is 0.0089 mg/L for chromium III. The guideline of 0.0010 mg/L was used, in this report, to identify exceedances for dissolved chromium, and total chromium as a means for determining the potential for exceeding the chromium VI and/or chromium III guidelines.
Note 1.22 for copper (dissolved):

The guideline for copper in µg/L is determined as follows:
When the water hardness is 0 to < 82 mg/L, the CWQG is 2 µg/L
At hardness ≥82 to ≤180 mg/L the CWQG is calculated using the equation:
e raised to the power of {0.8545[ln(hardness)]-1.465} * 0.2 µg/L
At hardness >180 mg/L, the CWQG is 4 µg/L
Where water hardness is reported as mg/L $CaCO_3$.
If the water hardness is unknown, the CWQG is 2 µg/L

Note 1.23 for lead (dissolved):

The guideline for lead in µg/L is determined as follows:
When the hardness is 0 to ≤ 60 mg/L, the CWQG is 1 µg/L
At hardness > 60 to ≤ 180 mg/L the CWQG is calculated using the equation:
e raised to the power of {1.273[ln(hardness)] - 4.705}
At hardness >180 mg/L, the CWQG is 7 µg/L
Where water hardness is reported as mg/L $CaCO_3$.
If the water hardness is unknown, the CWQG is 1 µg/L

Note 1.24 for manganese (dissolved):

The guideline for dissolved manganese varies as a function of pH and hardness (as $CaCO_3$). The lookup table is based on results for Hardness (as $CaCO_3$), dissolved. / (CCME Update 2019)

Note 1.25 for mercury (dissolved):

May not prevent accumulation of methylmercury in aquatic life, therefore, may not protect wildlife that consume aquatic life; see fact sheet for details.
Consult also the appropriate Canadian Tissue Residue Guideline for the Protection of Wildlife Consumers of Aquatic Biota.

Note 1.26 for nickel (dissolved):

The guideline for nickel in µg/L is determined as follows:
When the water hardness is 0 to ≤ 60 mg/L, the CWQG is 25 µg/L
At hardness > 60 to ≤ 180 mg/L the CWQG is calculated using the equation:
e raised to the power of {0.76[ln(hardness)] + 1.06}
At hardness >180 mg/L, the CWQG is 150 µg/L
Where water hardness is reported as mg/L $CaCO_3$.
If the water hardness is unknown, the CWQG is 25 µg/L

Note 1.27 for phosphorus (dissolved, by ICPMS/ICPOES):

Canadian Guidance Framework for Phosphorus is for developing phosphorus guidelines (does not provide guidance on other freshwater nutrients). It provides trigger ranges for total phosphorus (see Guidance Framework for Phosphorus factsheet):
ultra-oligotrophic <4 µg/L;
oligotrophic 4-10 µg/L;
mesotrophic 10-20 µg/L;
meso-eutrophic 20-35 µg/L;
eutrophic 35-100 µg/L;
hyper-eutrophic >100 µg/L

Note 1.28 for uranium (dissolved):

The Short-Term Exposure Guideline is 33 µg/L. The Long-Term Exposure Guideline is 15 µg/L. The guidelines are for total recoverable, unfiltered analyses.

Note 1.29 for zinc (dissolved):

The long-term exposure guideline (CWQG) is for dissolved zinc (µg/L) and is calculated using the following equation: CWQG = exp(0.947[ln(hardness (as $CaCO_3$) mg/L] - 0.815[pH] + 0.398[ln(DOC mg/L)] + 4.625). The CWQG equation is valid between dissolved hardness (as $CaCO_3$) 23.4 and 399 mg/L, pH 6.5 and 8.13 and dissolved organic carbon (DOC) 0.3 to 22.9 mg/L. If results are outside these equation limits, then the value of the closest equation limit is used in the formula calculation.

2. Notes for CCME CWQG for the Protection of Freshwater Aquatic Life, Short-Term Exposure guidelines (CCME AL (ST))

General Notes:

The CCME CWQG for the Protection of Freshwater Aquatic Life provide both a Long-Term Exposure guideline, and Short-Term Exposure guideline for some analytes. Only the Short-Term Exposure guidelines are included in this criteria set.

Note 2.1 for cadmium (total):

The short-term benchmark for cadmium is determined on a site-specific basis according to the local water hardness. The benchmark for total cadmium in µg/L is determined as follows for short-term exposure:
1. If hardness (as $CaCO_3$) is less than 5.3 mg/L then maximum is 0.11 µg/L
2. If hardness (as $CaCO_3$) is from 5.3 to 360 mg/L then maximum is based on equation:
10 raised to the power of {1.016[log(hardness)] - 1.71}
3. If hardness (as $CaCO_3$) is greater than 360 mg/L then maximum is 7.7 µg/L.

Note 2.2 for uranium (total):
The guideline is for total recoverable, unfiltered analyses.
Note 2.3 for cadmium (dissolved):
The short-term benchmark for cadmium is determined on a site-specific basis according to the local water hardness. The benchmark for total cadmium in µg/L is determined as follows for short-term exposure: 1. If hardness (as $CaCO_3$) is less than 5.3 mg/L then maximum is 0.11 µg/L 2. If hardness (as $CaCO_3$) is from 5.3 to 360 mg/L then maximum is based on equation: 10 raised to the power of {1.016[log(hardness)] - 1.71} 3. If hardness (as $CaCO_3$) is greater than 360 mg/L then maximum is 7.7 µg/L.
Note 2.4 for manganese (dissolved):
The short-term benchmark for dissolved manganese in µg/L is calculated using the equation: e raised to the power of { 0.878[ln(hardness)] + 4.76 } Where water hardness is reported as mg/L $CaCO_3$. The benchmark equation is valid between hardness 25 and 250 mg/L. When the hardness is 0 to < 25 mg/L, the benchmark is 1,970 µg/L. At hardness >250 mg/L, the benchmark is 14,882 µg/L.
Note 2.5 for uranium (dissolved):
The guideline is for total recoverable, unfiltered analyses.
Note 2.6 for zinc (dissolved):
The short-term benchmark is for dissolved zinc (µg/L) and is calculated using the following equation: Short-term benchmark= exp(0.833[ln(hardness (as $CaCO_3$) mg/L)] + 0.240[ln(DOC mg/L)] + 0.526). The short-term benchmark equation is valid between hardness (as $CaCO_3$) 13.8 and 250.5 mg/L and from DOC 0.3 to 17.3 mg/L. If results are outside these equation limits, then the value of the closest equation limit is used in the formula calculation.
3. Notes for Federal Environmental Water Quality guidelines for the protection of freshwater aquatic life (Long-term) (FEQG AL (LT))
General Notes:
These guidelines set a concentration so that if a given chemical is at or below the FEQG threshold, there is low likelihood of direct adverse effects from the chemical on aquatic life exposed via the water. FEQG guidelines are developed for substances for which CCME guidelines do not yet exist or are not reasonably expected to be updated in the near future. / There are two types of water quality guidelines: the short-term benchmark, and the long-term guideline. Only the long-term guidelines are included in this criteria set.
Note 3.1 for aluminum (total):
The guideline is for total aluminum and is found using the following equation: exp([0.645 × ln(DOC)] + [2.255 × ln(hardness)] + [1.995 × pH] + [-0.284 × (ln(hardness) × pH)] -9.898) where the guideline is in µg/L units, hardness is measured as CaCO3 equivalents in mg/L, pH is in standard units, and DOC (dissolved organic carbon) is in mg/L. Results for hardness (as $CaCO_3$), from total Ca/Mg are used in the calculation for aluminum (total). The equation is valid for hardness concentrations from 10 to 430 mg/L, pH from 6 to 8.7, and DOC from 0.08 to 12.3 mg/L. Any results that are outside of these ranges are automatically rounded to the upper or lower bounds. If site-specific water hardness, pH or DOC is not known, use the corresponding lower limits for the valid range. Reference: Federal Environmental Quality Guidelines, Aluminium, Environment and Climate Change Canada, August 2022.
Note 3.2 for chromium (total):
The FEQG water quality guideline for freshwater aquatic life is 5 µg/L for hexavalent chromium. The guideline of 5 µg/L was used in this report to identify exceedances for total chromium as a means for determining the potential for exceeding the hexavalent chromium guideline.
Note 3.3 for cobalt (total):
The freshwater aquatic life long-term guideline is for total cobalt and is determined on a site-specific basis according to the local water hardness. The guideline for total cobalt in µg/L is determined by the following equation: e raised to the power of {0.414[ln(hardness)] – 1.887}. Hardness (as $CaCO_3$), from total Ca/Mg in mg/L is used in the formula. If results for hardness (as $CaCO_3$), from total Ca/Mg are not available then results for hardness (as $CaCO_3$), dissolved are used. Since the slope relating hardness to toxicity was based on a study conducted over hardness levels from 52-396 mg/L, the FWQG should not be extrapolated beyond this hardness range. Accordingly, the minimum and maximum FWQG for cobalt at water hardness levels of 52 and 396 mg/L are 0.78 and 1.80 µg/L, respectively. Reference: Federal Environmental Quality Guidelines, Cobalt, Environment Canada, May 2017.
Note 3.4 for iron (total):
The freshwater aquatic life long-term guideline is for total iron (µg/L) and is calculated using the following equation: exp(0.671[ln(DOC)] + 0.171[pH] +5.586). DOC is dissolved organic carbon in mg/L. The equation is valid between DOC 0.3 to 9.9 mg/L and pH from 6.1 to 8.1. If results are outside these equation limits, then the value of the closest equation limit is used in the formula calculation. Reference: Federal Environmental Quality Guidelines, Iron, Environment and Climate Change Canada, May 2019.

Note 3.5 for aluminum (dissolved):
The guideline is for total aluminum and is found using the following equation: exp([0.645 × ln(DOC)] + [2.255 × ln(hardness)] + [1.995 × pH] + [-0.284 × (ln(hardness) × pH)] -9.898) where the guideline is in µg/L units, hardness is measured as $CaCO_3$ equivalents in mg/L, pH is in standard units, and DOC (dissolved organic carbon) is in mg/L. Results for hardness (as $CaCO_3$), dissolved are used in the calculation for aluminum (dissolved). The equation is valid for hardness concentrations from 10 to 430 mg/L, pH from 6 to 8.7, and DOC from 0.08 to 12.3 mg/L. Any results that are outside of these ranges are automatically rounded to the upper or lower bounds. If site-specific water hardness, pH or DOC is not known, use the corresponding lower limits for the valid range. Reference: Federal Environmental Quality Guidelines, Aluminium, Environment and Climate Change Canada, August 2022.
Note 3.6 for chromium (dissolved):
The FEQG water quality guideline for freshwater aquatic life is 5 µg/L for hexavalent chromium. The guideline of 5 µg/L was used in this report to identify exceedances for dissolved chromium as a means for determining the potential for exceeding the hexavalent chromium guideline.
Note 3.7 for cobalt (dissolved):
The freshwater aquatic life long-term guideline is for total cobalt and is determined on a site-specific basis according to the local water hardness. The guideline for dissolved cobalt in µg/L is determined by the following equation: e raised to the power of {0.414[ln(hardness)] – 1.887}. Hardness (as $CaCO_3$), dissolved in mg/L is used in the formula. If results for hardness (as $CaCO_3$), dissolved are not available then results for hardness (as $CaCO_3$), from total Ca/Mg are used. Since the slope relating hardness to toxicity was based on a study conducted over hardness levels from 52-396 mg/L, the FWQG should not be extrapolated beyond this hardness range. Accordingly, the minimum and maximum FWQG for cobalt at water hardness levels of 52 and 396 mg/L are 0.78 and 1.80 µg/L, respectively. Reference: Federal Environmental Quality Guidelines, Cobalt, Environment Canada, May 2017.
Note 3.8 for copper (dissolved):
This guideline is based on multiple dependent analytes and is not currently calculated in this software application. The long-term water quality guideline for freshwater aquatic life for dissolved copper is calculated using the Biotic Ligand Model Tool. The BLM tool and manual can be obtained by emailing: EC.RQE-EQG.EC@Canada.ca. A FWQG calculator is also provided for users; this calculator is intended to be a simple and conservative screening tool and is available at a website link on page 14 of the reference, Federal Environmental Quality Guidelines, Copper, Environment and Climate Change Canada, April 2021.
Note 3.9 for iron (dissolved):
The freshwater aquatic life long-term guideline is for total iron (µg/L) and is calculated using the following equation: exp(0.671[ln(DOC)] + 0.171[pH] +5.586). DOC is dissolved organic carbon in mg/L. The equation is valid between DOC 0.3 to 9.9 mg/L and pH from 6.1 to 8.1. If results are outside these equation limits, then the value of the closest equation limit is used in the formula calculation. Reference: Federal Environmental Quality Guidelines, Iron, Environment and Climate Change Canada, May 2019.
Note 3.10 for lead (dissolved):
The freshwater aquatic life long-term guideline is for dissolved lead (µg/L) and is calculated using the following equation: exp(0.514[ln(DOC)] + 0.214[ln(hardness)] + 0.4354). DOC (dissolved organic carbon) in mg/L and hardness (as $CaCO_3$), dissolved in mg/L are used in the equation. The equation is valid between DOC 0.5 to 31.5 mg/L and hardness from 4.7 to 511 mg/L. If results are outside these equation limits, then the value of the closest equation limit is used in the formula calculation. Reference: Federal Environmental Quality Guidelines, Lead, Environment and Climate Change Canada, July 2020. Updated July 2024.
Note 3.11 for strontium (dissolved):
Given that dissolved strontium concentrations are approximately equivalent to total strontium concentrations, this guideline can be compared to total strontium concentrations when dissolved strontium concentrations are unavailable. While hardness was shown to be a toxicity modifying factor for strontium (Nautilus Environmental 2013), there are insufficient data on the relationship between hardness and strontium toxicity to develop a factor for adjusting strontium toxicity according to hardness at this time.
Note 3.12 for vanadium (dissolved):
Guideline is for total vanadium.
4. Notes for Federal Environmental Water Quality guidelines for the protection of freshwater aquatic life (Short-term) (FEQG AL (ST))
General Notes:
These guidelines set a concentration so that if a given chemical is at or below the FEQG threshold, there is low likelihood of direct adverse effects from the chemical on aquatic life exposed via the water. FEQG guidelines are developed for substances for which CCME guidelines do not yet exist or are not reasonably expected to be updated in the near future. / There are two types of water quality guidelines: the short-term benchmark, and the long-term guideline. Only the short-term benchmarks are included in this criteria set.

Legend for Table A-2
Inuvik Mike Zubko Airport Water Licence G23L8-002 Sediment Quality Results (2024)

<	Less than reported detection limit
CCME	Canadian Council of Ministers of the Environment
CCME Sediment FAL	CCME Canadian sediment quality guidelines for the protection of freshwater aquatic life
NG	No Guideline
CCME Sediment FAL	Highlighted value exceeds CCME Sediment FAL

Table A-2 - Inuvik Mike Zubko Airport Water Licence G23L8-002 Sediment Quality Results (2024)

		Sampling Location	SNP1-Sediment	SNP4-Sediment	SNP5-Sediment
		Date Sampled	16-Sep-24	17-Sep-24	16-Sep-24
		Lab Sample ID	YL2401538-001	YL2401538-005	YL2401538-002
		Sample Type	Normal	Normal	Normal
Analyte	**Unit**	**Guideline**			
		CCME Sediment FAL			
Lab Results					
General					
pH (in 2:1 water:soil mixture)		NG	8.42	7.06	7.74
Metals					
Aluminum	µg/g	NG	5420	13300	11700
Antimony	µg/g	NG	0.24	0.34	0.54
Arsenic	µg/g	5.9	**11.8**	**12.4**	**10.3**
Barium	µg/g	NG	95.6	312	213
Beryllium	µg/g	NG	0.42	0.78	0.72
Bismuth	µg/g	NG	<0.20	0.20	<0.20
Boron	µg/g	NG	8.2	14.3	10.4
Cadmium	µg/g	0.6	0.060	0.290	0.528
Calcium	µg/g	NG	6060	13100	22500
Chromium	µg/g	37.3	12.0	23.1	19.5
Cobalt	µg/g	NG	7.70	12.6	11.5
Copper	µg/g	35.7	11.4	26.0	23.2
Iron	µg/g	NG	23500	28800	25800
Lead	µg/g	35.0	9.16	14.6	12.6
Lithium	µg/g	NG	13.7	24.1	19.9
Magnesium	µg/g	NG	2720	4650	12500
Manganese	µg/g	NG	243	348	380
Mercury	µg/g	0.17	0.0363	0.0872	0.0646
Molybdenum	µg/g	NG	0.76	1.05	1.18
Nickel	µg/g	NG	17.6	34.6	32.1
Phosphorus	µg/g	NG	400	556	588
Potassium	µg/g	NG	1040	1930	1820
Selenium	µg/g	NG	0.59	1.05	0.74
Silver	µg/g	NG	<0.10	0.11	0.11
Sodium	µg/g	NG	222	332	226
Strontium	µg/g	NG	32.0	73.3	47.6
Sulphur	µg/g	NG	1200	3000	2900
Thallium	µg/g	NG	0.063	0.158	0.211
Tin	µg/g	NG	<2.0	<2.0	<2.0

Table A-2 - Inuvik Mike Zubko Airport Water Licence G23L8-002 Sediment Quality Results (2024)

		Sampling Location	SNP1-Sediment	SNP4-Sediment	SNP5-Sediment
		Date Sampled	16-Sep-24	17-Sep-24	16-Sep-24
		Lab Sample ID	YL2401538-001	YL2401538-005	YL2401538-002
		Sample Type	Normal	Normal	Normal
Analyte	**Unit**	**Guideline**			
		CCME Sediment FAL			
Titanium	µg/g	NG	39.5	11.4	17.2
Tungsten	µg/g	NG	<0.50	<0.50	<0.50
Uranium	µg/g	NG	0.431	1.29	1.04
Vanadium	µg/g	NG	20.4	37.5	34.3
Zinc	µg/g	123.0	58.8	86.1	103
Zirconium	µg/g	NG	3.5	7.2	2.8

Guideline Notes for Table A-2
Inuvik Mike Zubko Airport Water Licence G23L8-002 Sediment Quality Results (2024)

Notes for Canadian Council of Ministers of the Environment (CCME) Canadian Sediment Quality Guidelines for the protection of freshwater aquatic life (CCME Sediment FAL)
General Notes:
The CCME Sediment FAL provide Interim Sediment Quality Guidelines (ISQGs) and Probable Effect Levels (PELs). The ISQG have been used in this report.

APPENDIX B – LABORATORY REPORTS

ALS Canada Ltd.

right solutions. right partner.

CERTIFICATE OF ANALYSIS

Work Order	: **YL2400513**	Page	: 1 of 13
Amendment	: **3**		
Client	: **Associated Engineering Ltd.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: Unit 201, 5103 48 St. Yellowknife NT Canada X1A 1N5	Address	: 314 Old Airport Road, Unit 116 Yellowknife NT Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: Inuvik Airport Water Licence Monitoring	Date Samples Received	: 28-May-2024 09:30
PO	: 2020-2886.055.505	Date Analysis Commenced	: 28-May-2024
C-O-C number	: ----	Issue Date	: 11-Jun-2024 14:04
Sampler	: Caitlin McKenzie		
Site	: ----		
Quote number	: YL24-ASEG100-001		
No. of samples received	: 8		
No. of samples analysed	: 8		

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*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
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
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Oliver Gregg	Client Services Supervisor	External Subcontracting, Yellowknife, Northwest Territories
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
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
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(001, 002 & 006) : Water sample for VOC analysis contained > 5% headspace. Results may be biased low.

Sample Comments

Sample	Client Id	*Comment*
YL2400513-001	SNP1-RW	Water samples for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
YL2400513-002	SNP5-RW-A	Water samples for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
YL2400513-004	OF1-RW	Water samples for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

YL2400513-006	SNP9-RW	Water samples for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	*Description*
SUR-ND	*Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.*

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP1-RW	SNP5-RW-A	SNP8-D "a"	OF1-RW	OF1-D "a"
					Client sampling date / time	26-May-2024 11:15	26-May-2024 14:30	26-May-2024 10:45	26-May-2024 12:40	26-May-2024 12:20
						YL2400513-001	YL2400513-002	YL2400513-003	YL2400513-004	YL2400513-005
						Result	Result	Result	Result	Result
Physical Tests										
Conductivity	----	E100/VA	2.0	µS/cm		227	169	778	232	687
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		94.0	73.8	----	96.3	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		101	75.2	----	101	----
pH	----	E108/VA	0.10	pH units		7.77	7.67	7.92	7.84	7.94
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		<3.0	<3.0	120	11.6	152
Turbidity	----	E121/VA	0.10	NTU		3.32	3.38	103	7.76	224
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		15.3	19.5	19.2	16.7	16.6
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		0.0870	0.0737	----	0.193	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	<0.00010	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00040	0.00036	----	0.00048	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0393	0.0341	----	0.0398	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	<0.000100	----	<0.000100	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	<0.000050	----	<0.000050	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		0.014	0.011	----	0.015	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.0000083	0.0000050	----	0.0000077	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		28.1	20.9	----	28.0	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000025	0.000019	----	0.000060	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	<0.00050	----	<0.00050	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		0.00011	0.00015	----	0.00019	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00120	0.00100	----	0.00160	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		0.223	0.440	----	0.398	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.000083	0.000065	----	0.000195	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0046	0.0031	----	0.0047	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		7.42	5.58	----	7.52	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.0297	0.0598	----	0.0340	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	0.0000051	----	<0.0000050	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000519	0.000306	----	0.000522	----

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP1-RW	SNP5-RW-A	SNP8-D "a"	OF1-RW	OF1-D "a"
					Client sampling date / time	26-May-2024 11:15	26-May-2024 14:30	26-May-2024 10:45	26-May-2024 12:40	26-May-2024 12:20
						YL2400513-001	YL2400513-002	YL2400513-003	YL2400513-004	YL2400513-005
						Result	Result	Result	Result	Result
Total Metals										
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.00112	0.00100	----	0.00138	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	<0.050	----	<0.050	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		1.09	1.02	----	1.14	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00074	0.00068	----	0.00094	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000120	0.000113	----	0.000145	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		1.34	1.16	----	1.55	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	<0.000010	----	<0.000010	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		7.98	4.73	----	7.87	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.114	0.0742	----	0.108	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		11.4	6.79	----	11.6	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	<0.00020	----	<0.00020	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	<0.000010	----	<0.000010	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	<0.00010	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	<0.00010	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.00159	0.00144	----	0.00313	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	<0.00010	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000287	0.000149	----	0.000322	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	<0.00050	----	0.00057	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		<0.0030	0.0039	----	0.0052	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	<0.00020	----	<0.00020	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.0129	0.0129	----	0.0151	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	<0.00010	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00028	0.00026	----	0.00028	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.0365	0.0313	----	0.0370	----
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		<0.000100	<0.000100	----	<0.000100	----
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	<0.000050	----	<0.000050	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		0.012	<0.010	----	0.013	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	<0.0000050	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		24.4	20.1	----	25.4	----

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP1-RW	SNP5-RW-A	SNP8-D "a"	OF1-RW	OF1-D "a"
					Client sampling date / time	26-May-2024 11:15	26-May-2024 14:30	26-May-2024 10:45	26-May-2024 12:40	26-May-2024 12:20
						YL2400513-001	YL2400513-002	YL2400513-003	YL2400513-004	YL2400513-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		<0.000010	<0.000010	----	<0.000010	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	<0.00050	----	<0.00050	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	<0.00010	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00104	0.00090	----	0.00132	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.079	0.202	----	0.083	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	<0.000050	----	<0.000050	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0040	0.0028	----	0.0040	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		8.03	5.74	----	7.98	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.00696	0.0183	----	0.00431	----
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	<0.0000050	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.000488	0.000278	----	0.000500	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.00095	0.00085	----	0.00097	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	<0.050	----	<0.050	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		1.03	0.987	----	1.06	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00058	0.00052	----	0.00055	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		0.000120	0.000077	----	0.000138	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		1.14	0.981	----	1.15	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	<0.000010	----	<0.000010	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		7.89	4.82	----	7.97	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.116	0.0703	----	0.114	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		10.9	6.63	----	11.4	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	<0.00020	----	<0.00020	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	<0.000010	----	<0.000010	----
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	<0.00010	----
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	<0.00010	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	<0.00030	----	0.00044	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	<0.00010	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000292	0.000146	----	0.000319	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	<0.00050	----	<0.00050	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		0.0015	0.0030	----	0.0025	----

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP1-RW	SNP5-RW-A	SNP8-D "a"	OF1-RW	OF1-D "a"
					Client sampling date / time	26-May-2024 11:15	26-May-2024 14:30	26-May-2024 10:45	26-May-2024 12:40	26-May-2024 12:20
						YL2400513-001	YL2400513-002	YL2400513-003	YL2400513-004	YL2400513-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	<0.00020	----	<0.00020	----
Dissolved mercury filtration location	----	EP509/VA	-	-		Laboratory	Laboratory	----	Laboratory	----
Dissolved metals filtration location	----	EP421/VA	-	-		Laboratory	Laboratory	----	Laboratory	----
Aggregate Organics										
Carbonaceous biochemical oxygen demand [CBOD]	----	CBOD5/1Y	2	mg/L		0	0	0	0	0
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	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	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	300	µg/L		<300	<300	----	<300	----
F3 (C16-C34)	----	E601/VA	300	µg/L		<300	<300	----	<300	----
F4 (C34-C50)	----	E601/VA	300	µg/L		<300	<300	----	<300	----
VHw (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	<100	----	<100	----
F1-BTEX	----	EC580/VA	100	µg/L		<100	<100	----	<100	----
VPHw	----	EC580A/VA	100	µg/L		<100	<100	----	<100	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/VA	1.0	%		84.4	94.4	----	86.2	----
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		76.8	72.3	----	98.0	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%		87.8	87.8	----	88.0	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	SNP1-RW	SNP5-RW-A	SNP8-D "a"	OF1-RW	OF1-D "a"
					Client sampling date / time	26-May-2024 11:15	26-May-2024 14:30	26-May-2024 10:45	26-May-2024 12:40	26-May-2024 12:20
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400513-001	YL2400513-002	YL2400513-003	YL2400513-004	YL2400513-005
						Result	Result	Result	Result	Result
Volatile Organic Compounds Surrogates										
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%		99.6	99.0	----	99.7	----
Glycols										
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
Glycols Surrogates										
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%		89.2	89.9	90.6	98.0	96.7

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: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP9-RW	SNP8-D "b"	OF1-D "b"	----	----
					Client sampling date / time	26-May-2024 11:15	26-May-2024 11:15	26-May-2024 12:50	----	----
						YL2400513-006	YL2400513-007	YL2400513-008	--------	--------
						Result	Result	Result	----	----
Physical Tests										
Conductivity	----	E100/VA	2.0	µS/cm		230	----	----	----	----
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		94.7	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		100	----	----	----	----
pH	----	E108/VA	0.10	pH units		7.83	----	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		3.8	----	----	----	----
Turbidity	----	E121/VA	0.10	NTU		3.58	----	----	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		16.6	----	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		0.0899	----	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00038	----	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0384	----	----	----	----
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		0.013	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.0000071	----	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		27.7	----	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000024	----	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	----	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		0.00011	----	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00119	----	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		0.218	----	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.000089	----	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0046	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		7.52	----	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.0295	----	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000497	----	----	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.00109	----	----	----	----

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP9-RW	SNP8-D "b"	OF1-D "b"	----	----
					Client sampling date / time	26-May-2024 11:15	26-May-2024 11:15	26-May-2024 12:50	----	----
						YL2400513-006	YL2400513-007	YL2400513-008	--------	--------
						Result	Result	Result	----	----
Total Metals										
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	----	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		1.07	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00072	----	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000154	----	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		1.31	----	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	----	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		7.87	----	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.114	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		10.8	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	----	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	----	----	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.00153	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000292	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	----	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		<0.0030	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	----	----	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.0139	----	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	----	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00028	----	----	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.0385	----	----	----	----
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		0.012	----	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		0.0000054	----	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		25.1	----	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		<0.000010	----	----	----	----

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP9-RW	SNP8-D "b"	OF1-D "b"	----	----
					Client sampling date / time	26-May-2024 11:15	26-May-2024 11:15	26-May-2024 12:50	----	----
						YL2400513-006	YL2400513-007	YL2400513-008	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	----	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		<0.00010	----	----	----	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00110	----	----	----	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.081	----	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	----	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0040	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		7.78	----	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.00306	----	----	----	----
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.000472	----	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.00094	----	----	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	----	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		1.05	----	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00055	----	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		0.000157	----	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		1.14	----	----	----	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	----	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		7.78	----	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.114	----	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		11.1	----	----	----	----
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		<0.00010	----	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	----	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	----	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000299	----	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	----	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		0.0015	----	----	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	SNP9-RW	SNP8-D "b"	OF1-D "b"	----	----
					Client sampling date / time	26-May-2024 11:15	26-May-2024 11:15	26-May-2024 12:50	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400513-006	YL2400513-007	YL2400513-008	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
Dissolved mercury filtration location	----	EP509/VA	-	-		Laboratory	----	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Laboratory	----	----	----	----
Aggregate Organics										
Carbonaceous biochemical oxygen demand [CBOD]	----	CBOD5/1Y	2	mg/L		0	----	----	----	----
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	----	----	----	----
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	----	----	----	----
F2 (C10-C16)	----	E601/VA	300	µg/L		<300	----	----	----	----
F3 (C16-C34)	----	E601/VA	300	µg/L		<300	----	----	----	----
F4 (C34-C50)	----	E601/VA	300	µg/L		<300	----	----	----	----
VHw (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	----	----	----	----
F1-BTEX	----	EC580/VA	100	µg/L		<100	----	----	----	----
VPHw	----	EC580A/VA	100	µg/L		<100	----	----	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/VA	1.0	%		86.5	----	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		106	----	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%		89.2	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%		99.0	----	----	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	SNP9-RW	SNP8-D "b"	OF1-D "b"	----	----
					Client sampling date / time	26-May-2024 11:15	26-May-2024 11:15	26-May-2024 12:50	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400513-006	YL2400513-007	YL2400513-008	--------	--------
						Result	Result	Result	----	----
Glycols										
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L		<5.0	<5.0	<5.0	----	----
Glycols Surrogates										
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%		101	97.7	62.9 SUR-ND	----	----

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.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **YL2400513**	Page	: 1 of 17
Amendment	: **3**		
Client	: **Associated Engineering Ltd.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: Unit 201, 5103 48 St. Yellowknife NT Canada X1A 1N5	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: Inuvik Airport Water Licence Monitoring	Date Samples Received	: 28-May-2024 09:30
PO	: 2020-2886.055.505	Issue Date	: 11-Jun-2024 14:10
C-O-C number	: ----		
Sampler	: Caitlin McKenzie		
Site	: ----		
Quote number	: YL24-ASEG100-001		
No. of samples received	: 8		
No. of samples analysed	: 8		

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

- No Quality Control Sample Frequency Outliers occur.

Regular Sample Surrogates

Sub-Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
Glycols Surrogates	YL2400513-008	OF1-D "b"	Propanediol, 1,3-	504-63-2	62.9 %	70.0-130 %	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 : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h]										
SNP5-RW-A	CBOD5	26-May-2024	----	----	----		28-May-2024	48 hrs	44 hrs	✓
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h]										
OF1-D "a"	CBOD5	26-May-2024	----	----	----		28-May-2024	48 hrs	46 hrs	✓
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h]										
OF1-RW	CBOD5	26-May-2024	----	----	----		28-May-2024	48 hrs	46 hrs	✓
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h]										
SNP1-RW	CBOD5	26-May-2024	----	----	----		28-May-2024	48 hrs	47 hrs	✓
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h]										
SNP9-RW	CBOD5	26-May-2024	----	----	----		28-May-2024	48 hrs	47 hrs	✓
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h]										
SNP8-D "a"	CBOD5	26-May-2024	----	----	----		28-May-2024	48 hrs	48 hrs	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved)										
SNP5-RW-A	E509	26-May-2024	04-Jun-2024	0 hrs	204 hrs	× UCP	04-Jun-2024	0 hrs	204 hrs	× UCP

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 Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) OF1-RW	E509	26-May-2024	04-Jun-2024	0 hrs	206 hrs	× UCP	04-Jun-2024	0 hrs	206 hrs	× UCP
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) SNP1-RW	E509	26-May-2024	04-Jun-2024	0 hrs	208 hrs	× UCP	04-Jun-2024	0 hrs	208 hrs	× UCP
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) SNP9-RW	E509	26-May-2024	04-Jun-2024	0 hrs	208 hrs	× UCP	04-Jun-2024	0 hrs	208 hrs	× UCP
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) OF1-RW	E421	26-May-2024	03-Jun-2024	180 days	8 days	✓	04-Jun-2024	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP5-RW-A	E421	26-May-2024	03-Jun-2024	180 days	8 days	✓	04-Jun-2024	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP1-RW	E421	26-May-2024	03-Jun-2024	180 days	9 days	✓	04-Jun-2024	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP9-RW	E421	26-May-2024	03-Jun-2024	180 days	9 days	✓	04-Jun-2024	180 days	9 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial OF1-D "a"	E680E	26-May-2024	31-May-2024	7 days	5 days	✓	01-Jun-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial OF1-D "b"	E680E	26-May-2024	31-May-2024	7 days	5 days	✓	01-Jun-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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial OF1-RW	E680E	26-May-2024	31-May-2024	7 days	5 days	✓	01-Jun-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP1-RW	E680E	26-May-2024	31-May-2024	7 days	5 days	✓	01-Jun-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP5-RW-A	E680E	26-May-2024	31-May-2024	7 days	5 days	✓	01-Jun-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP8-D "a"	E680E	26-May-2024	31-May-2024	7 days	5 days	✓	01-Jun-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP8-D "b"	E680E	26-May-2024	31-May-2024	7 days	5 days	✓	01-Jun-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP9-RW	E680E	26-May-2024	31-May-2024	7 days	5 days	✓	01-Jun-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP5-RW-A	E601	26-May-2024	04-Jun-2024	14 days	8 days	✓	04-Jun-2024	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) OF1-RW	E601	26-May-2024	04-Jun-2024	14 days	9 days	✓	04-Jun-2024	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP1-RW	E601	26-May-2024	04-Jun-2024	14 days	9 days	✓	04-Jun-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
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP9-RW	E601	26-May-2024	04-Jun-2024	14 days	9 days	✓	04-Jun-2024	40 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) OF1-RW	E581.VH+F1	26-May-2024	02-Jun-2024	14 days	7 days	✓	02-Jun-2024	14 days	7 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP1-RW	E581.VH+F1	26-May-2024	02-Jun-2024	14 days	7 days	✓	02-Jun-2024	14 days	7 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP5-RW-A	E581.VH+F1	26-May-2024	02-Jun-2024	14 days	7 days	✓	02-Jun-2024	14 days	7 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP9-RW	E581.VH+F1	26-May-2024	02-Jun-2024	14 days	7 days	✓	02-Jun-2024	14 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) OF1-D "a"	E358-L	26-May-2024	31-May-2024	3 days	5 days	× EHT	31-May-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) OF1-RW	E358-L	26-May-2024	31-May-2024	3 days	5 days	× EHT	31-May-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) SNP1-RW	E358-L	26-May-2024	31-May-2024	3 days	5 days	× EHT	31-May-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) SNP5-RW-A	E358-L	26-May-2024	31-May-2024	3 days	5 days	× EHT	31-May-2024	28 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
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved)										
SNP8-D "a"	E358-L	26-May-2024	31-May-2024	3 days	5 days	× EHT	31-May-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved)										
SNP9-RW	E358-L	26-May-2024	31-May-2024	3 days	5 days	× EHT	31-May-2024	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE										
SNP5-RW-A	E100	26-May-2024	04-Jun-2024	28 days	8 days	✓	04-Jun-2024	28 days	9 days	✓
Physical Tests : Conductivity in Water										
HDPE										
OF1-D "a"	E100	26-May-2024	04-Jun-2024	28 days	9 days	✓	04-Jun-2024	28 days	9 days	✓
Physical Tests : Conductivity in Water										
HDPE										
OF1-RW	E100	26-May-2024	04-Jun-2024	28 days	9 days	✓	04-Jun-2024	28 days	9 days	✓
Physical Tests : Conductivity in Water										
HDPE										
SNP1-RW	E100	26-May-2024	04-Jun-2024	28 days	9 days	✓	04-Jun-2024	28 days	9 days	✓
Physical Tests : Conductivity in Water										
HDPE										
SNP8-D "a"	E100	26-May-2024	04-Jun-2024	28 days	9 days	✓	04-Jun-2024	28 days	9 days	✓
Physical Tests : Conductivity in Water										
HDPE										
SNP9-RW	E100	26-May-2024	04-Jun-2024	28 days	9 days	✓	04-Jun-2024	28 days	9 days	✓
Physical Tests : pH by Meter										
HDPE										
SNP5-RW-A	E108	26-May-2024	04-Jun-2024	0.25 hrs	203 hrs	× EHTR-FM	04-Jun-2024	0.25 hrs	212 hrs	× EHTR-FM

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 : pH by Meter										
HDPE OF1-D "a"	E108	26-May-2024	04-Jun-2024	0.25 hrs	205 hrs	× EHTR-FM	04-Jun-2024	0.25 hrs	214 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE OF1-RW	E108	26-May-2024	04-Jun-2024	0.25 hrs	205 hrs	× EHTR-FM	04-Jun-2024	0.25 hrs	214 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP1-RW	E108	26-May-2024	04-Jun-2024	0.25 hrs	206 hrs	× EHTR-FM	04-Jun-2024	0.25 hrs	215 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP9-RW	E108	26-May-2024	04-Jun-2024	0.25 hrs	206 hrs	× EHTR-FM	04-Jun-2024	0.25 hrs	215 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP8-D "a"	E108	26-May-2024	04-Jun-2024	0.25 hrs	207 hrs	× EHTR-FM	04-Jun-2024	0.25 hrs	216 hrs	× EHTR-FM
Physical Tests : TSS by Gravimetry										
HDPE OF1-D "a"	E160	26-May-2024	----	----	----		02-Jun-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE OF1-RW	E160	26-May-2024	----	----	----		02-Jun-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP1-RW	E160	26-May-2024	----	----	----		02-Jun-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP5-RW-A	E160	26-May-2024	----	----	----		02-Jun-2024	7 days	7 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 : TSS by Gravimetry										
HDPE SNP8-D "a"	E160	26-May-2024	----	----	----		02-Jun-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP9-RW	E160	26-May-2024	----	----	----		02-Jun-2024	7 days	7 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE OF1-D "a"	E121	26-May-2024	----	----	----		01-Jun-2024	3 days	6 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE OF1-RW	E121	26-May-2024	----	----	----		01-Jun-2024	3 days	6 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP1-RW	E121	26-May-2024	----	----	----		01-Jun-2024	3 days	6 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP5-RW-A	E121	26-May-2024	----	----	----		01-Jun-2024	3 days	6 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP8-D "a"	E121	26-May-2024	----	----	----		01-Jun-2024	3 days	6 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP9-RW	E121	26-May-2024	----	----	----		01-Jun-2024	3 days	6 days	× EHT
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) OF1-RW	E508	26-May-2024	02-Jun-2024	28 days	7 days	✓	03-Jun-2024	28 days	8 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*	
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP1-RW	E508	26-May-2024	02-Jun-2024	28 days	7 days	✓	03-Jun-2024	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP5-RW-A	E508	26-May-2024	02-Jun-2024	28 days	7 days	✓	03-Jun-2024	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP9-RW	E508	26-May-2024	02-Jun-2024	28 days	7 days	✓	03-Jun-2024	28 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) OF1-RW	E420	26-May-2024	01-Jun-2024	180 days	6 days	✓	03-Jun-2024	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP1-RW	E420	26-May-2024	01-Jun-2024	180 days	6 days	✓	03-Jun-2024	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP5-RW-A	E420	26-May-2024	01-Jun-2024	180 days	6 days	✓	03-Jun-2024	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP9-RW	E420	26-May-2024	01-Jun-2024	180 days	6 days	✓	03-Jun-2024	180 days	8 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) OF1-RW	E611A	26-May-2024	02-Jun-2024	14 days	7 days	✓	02-Jun-2024	14 days	7 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP1-RW	E611A	26-May-2024	02-Jun-2024	14 days	7 days	✓	02-Jun-2024	14 days	7 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	
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate)										
SNP5-RW-A	E611A	26-May-2024	02-Jun-2024	14 days	7 days	✓	02-Jun-2024	14 days	7 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate)										
SNP9-RW	E611A	26-May-2024	02-Jun-2024	14 days	7 days	✓	02-Jun-2024	14 days	7 days	✓

Legend & Qualifier Definitions

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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	1471694	1	20	5.0	5.0	✓
Conductivity in Water	E100	1473926	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1474005	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1469505	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1470175	1	17	5.8	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1469644	1	17	5.8	5.0	✓
pH by Meter	E108	1473925	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1472115	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1469687	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1471782	2	23	8.7	5.0	✓
Turbidity by Nephelometry	E121	1471567	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1471693	1	17	5.8	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	1471694	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1473594	1	10	10.0	5.0	✓
Conductivity in Water	E100	1473926	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1474005	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1469505	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1470175	1	17	5.8	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1469644	1	17	5.8	5.0	✓
pH by Meter	E108	1473925	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1472115	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1469687	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1471782	2	23	8.7	5.0	✓
Turbidity by Nephelometry	E121	1471567	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1471693	1	17	5.8	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	1471694	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1473594	1	10	10.0	5.0	✓
Conductivity in Water	E100	1473926	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1474005	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1469505	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1470175	1	17	5.8	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1469644	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	1472115	1	17	5.8	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*
Method Blanks (MB) - Continued							
Total Metals in Water by CRC ICPMS	E420	1469687	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1471782	2	23	8.7	5.0	✓
Turbidity by Nephelometry	E121	1471567	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1471693	1	17	5.8	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1471694	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1474005	1	8	12.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1469505	1	19	5.2	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1470175	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	1472115	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1469687	1	19	5.2	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1471693	1	17	5.8	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
Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day	CBOD5 Taiga Environmental Laboratory - 4601 - 52nd Avenue P.O. BOX 1500 Yellowknife Northwest Territories Canada X1A 2R3	Water	SM5210B	Sample was diluted, seeded, and incubated at specified temperature for 5 days. Dissolved oxygen is measured initially and after incubation, and the CBOD is computed from the difference between initial and final DO.
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.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
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.
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
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.
Glycols (4 analytes) by GC-FID	E680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Derivatized glycols are analyzed by GC-FID.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CaCO3 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.
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 for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Glycols Extraction and Derivatization (BC Only)	EP680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Aqueous sample is derivatized and extracted with orgaic solvent.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **YL2400513**	Page	: 1 of 17
Amendment	: **3**		
Client	: Associated Engineering Ltd.	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: Unit 201, 5103 48 St. Yellowknife NT Canada X1A 1N5	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: Inuvik Airport Water Licence Monitoring	Date Samples Received	: 28-May-2024 09:30
PO	: 2020-2886.055.505	Date Analysis Commenced	: 28-May-2024
C-O-C number	: ----	Issue Date	: 11-Jun-2024 14:03
Sampler	: Caitlin McKenzie		
Site	: ----		
Quote number	: YL24-ASEG100-001		
No. of samples received	: 8		
No. of samples analysed	: 8		

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*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
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
Monica Ko	Lab Assistant	Vancouver Inorganics, Burnaby, British Columbia
Oliver Gregg	Client Services Supervisor	Taiga Environmental Laboratory External Subcontracting, Yellowknife, Northwest Territories
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: 1471567)											
VA24B2537-001	Anonymous	Turbidity	----	E121	0.10	NTU	4.72	4.60	2.57%	15%	----
Physical Tests (QC Lot: 1471781)											
VA24B1866-004	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	15.2	13.8	1.4	Diff <2x LOR	----
Physical Tests (QC Lot: 1471782)											
YL2400513-004	OF1-RW	Solids, total suspended [TSS]	----	E160	3.0	mg/L	11.6	9.8	1.8	Diff <2x LOR	----
Physical Tests (QC Lot: 1473925)											
VA24B2588-001	Anonymous	pH	----	E108	0.10	pH units	8.30	8.28	0.241%	4%	----
Physical Tests (QC Lot: 1473926)											
VA24B2588-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	722	739	2.33%	10%	----
Organic / Inorganic Carbon (QC Lot: 1470175)											
VA24B2385-004	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.60	0.79	0.19	Diff <2x LOR	----
Total Metals (QC Lot: 1469687)											
VA24B2306-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	41.2 µg/L	0.0389	5.74%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.23 µg/L	0.00024	0.000006	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.55 µg/L	0.00054	0.00001	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	10.6 µg/L	0.0104	1.48%	20%	----
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	846 µg/L	0.863	1.96%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0439 µg/L	0.0000411	0.0000028	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	85600 µg/L	89.4	4.32%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.098 µg/L	0.000101	0.000003	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.50 µg/L	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.76 µg/L	0.00076	0.000005	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.62 µg/L	0.00061	0.000009	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	740 µg/L	0.744	0.600%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.104 µg/L	0.000121	0.000017	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	3.6 µg/L	0.0038	0.0002	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	79200 µg/L	81.1	2.27%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	264 µg/L	0.263	0.568%	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: 1469687) - continued											
VA24B2306-001	Anonymous	Molybdenum, total	7439-98-7	E420	0.000050	mg/L	3.08 µg/L	0.00318	3.41%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	2.95 µg/L	0.00293	0.00002	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	2160 µg/L	2.21	2.34%	20%	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	37600 µg/L	37.6	0.229%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	32.0 µg/L	0.0311	3.06%	20%	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	<0.050 µg/L	0.000074	0.000024	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	6330 µg/L	6.09	3.86%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.010 µg/L	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	154000 µg/L	158	2.48%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	405 µg/L	0.418	3.12%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	117000 µg/L	115	1.07%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.010 µg/L	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	0.18 µg/L	0.00019	0.0000008	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00120	mg/L	<1.20 µg/L	<0.00120	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	0.14 µg/L	0.00015	0.00001	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.319 µg/L	0.000335	4.90%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	6.56 µg/L	0.00659	0.392%	20%	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	9.0 µg/L	0.0086	0.0004	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 1472115)											
VA24B2522-008	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000067	0.0000081	0.0000014	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1469505)											
YL2400512-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0088	0.0085	0.0003	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	0.00032	0.00031	0.000008	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0428	0.0426	0.358%	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	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.015	0.015	0.00009	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	30.0	29.3	2.25%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	<0.000010	<0.000010	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*
Dissolved Metals (QC Lot: 1469505) - continued											
YL2400512-001	Anonymous	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	0.00118	0.00117	0.00001	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.062	0.062	0.0008	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	0.0051	0.0049	0.0001	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	9.01	9.23	2.42%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00363	0.00361	0.425%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000606	0.000573	5.54%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00099	0.00096	0.00002	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	0.050	mg/L	1.13	1.14	0.815%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00061	0.00057	0.00004	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000148	0.000182	0.000034	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.24	1.17	6.09%	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	0.050	mg/L	10.3	10.2	1.12%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.129	0.131	1.42%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	13.0	13.2	1.69%	20%	----
		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	0.000340	0.000342	0.609%	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	0.0012	0.0012	0.00003	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1474005)											
VA24B2583-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1471694)											
VA24B1595-001	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	----

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*
Volatile Organic Compounds (QC Lot: 1471694) - continued											
VA24B1595-001	Anonymous	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: 1471693)											
VA24B1595-001	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%	----
Glycols (QC Lot: 1469644)											
VA24B1914-004	Anonymous	Ethylene glycol	107-21-1	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----

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: 1471567)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1471781)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1471782)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1473926)						
Conductivity	----	E100	1	µS/cm	1.1	----
Organic / Inorganic Carbon (QCLot: 1470175)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 1469687)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1469687) - continued						
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: 1472115)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1469505)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1469505) - continued						
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	----
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: 1474005)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds (QCLot: 1471694)						
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: 1471693)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Hydrocarbons (QCLot: 1471693) - continued						
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Hydrocarbons (QCLot: 1473594)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
F3 (C16-C34)	----	E601	250	µg/L	<250	----
F4 (C34-C50)	----	E601	250	µg/L	<250	----
Glycols (QCLot: 1469644)						
Ethylene glycol	107-21-1	E680E	5	mg/L	<5.0	----

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: 1471567)									
Turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 1471781)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	97.2	85.0	115	----
Physical Tests (QCLot: 1471782)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	100	85.0	115	----
Physical Tests (QCLot: 1473925)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1473926)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	98.7	90.0	110	----
Organic / Inorganic Carbon (QCLot: 1470175)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	104	80.0	120	----
Total Metals (QCLot: 1469687)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.8	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	91.3	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	100.0	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	99.2	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	104	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	97.0	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.5	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.5	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	109	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	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: 1469687) - continued									
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.7	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	106	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.7	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	95.9	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	87.0	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.8	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	94.7	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.4	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.8	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	95.2	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	95.7	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.1	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.5	80.0	120	----
Total Metals (QCLot: 1472115)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	95.7	80.0	120	----
Dissolved Metals (QCLot: 1469505)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.9	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	89.1	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.5	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.7	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.0	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.0	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: 1469505) - continued									
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.5	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.3	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.9	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	91.5	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	95.6	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.9	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	96.9	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	108	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.4	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.5	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	97.1	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.6	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	97.8	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.6	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.2	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	99.5	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.4	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	99.6	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	97.9	80.0	120	----
Volatile Organic Compounds (QCLot: 1471694)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	96.4	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	95.9	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	100 µg/L	101	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	99.0	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	100	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
Volatile Organic Compounds (QCLot: 1471694) - continued									
Xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	93.9	70.0	130	----
Hydrocarbons (QCLot: 1471693)									
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	81.8	70.0	130	----
Hydrocarbons (QCLot: 1473594)									
F2 (C10-C16)	----	E601	100	µg/L	3540 µg/L	111	70.0	130	----
F3 (C16-C34)	----	E601	250	µg/L	7050 µg/L	107	70.0	130	----
F4 (C34-C50)	----	E601	250	µg/L	5050 µg/L	109	70.0	130	----
Glycols (QCLot: 1469644)									
Ethylene glycol	107-21-1	E680E	5	mg/L	25 mg/L	89.8	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
Organic / Inorganic Carbon (QCLot: 1470175)										
VA24B2385-005	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	5.07 mg/L	5 mg/L	101	70.0	130	----
Total Metals (QCLot: 1469687)										
VA24B2306-002	Anonymous	Aluminum, total	7429-90-5	E420	0.185 mg/L	0.2 mg/L	92.6	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0192 mg/L	0.02 mg/L	96.3	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	0.0179 mg/L	0.02 mg/L	89.3	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00897 mg/L	0.01 mg/L	89.7	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	----	ND	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00371 mg/L	0.004 mg/L	92.8	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.00958 mg/L	0.01 mg/L	95.8	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		Copper, total	7440-50-8	E420	0.0169 mg/L	0.02 mg/L	84.6	70.0	130	----
		Iron, total	7439-89-6	E420	1.79 mg/L	2 mg/L	89.6	70.0	130	----
		Lead, total	7439-92-1	E420	0.0179 mg/L	0.02 mg/L	89.7	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0995 mg/L	0.1 mg/L	99.5	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	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0352 mg/L	0.04 mg/L	87.9	70.0	130	----
		Phosphorus, total	7723-14-0	E420	9.93 mg/L	10 mg/L	99.3	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	----	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	ND mg/L	----	ND	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		Silicon, total	7440-21-3	E420	10.5 mg/L	10 mg/L	105	70.0	130	----
		Silver, total	7440-22-4	E420	0.00380 mg/L	0.004 mg/L	95.1	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	0.0377 mg/L	0.04 mg/L	94.4	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00346 mg/L	0.004 mg/L	86.4	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		Tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00367 mg/L	0.004 mg/L	91.8	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 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: 1469687) - continued										
VA24B2306-002	Anonymous	Zinc, total	7440-66-6	E420	0.370 mg/L	0.4 mg/L	92.4	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
Total Metals (QCLot: 1472115)										
YL2400512-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000940 mg/L	0 mg/L	94.0	70.0	130	----
Dissolved Metals (QCLot: 1469505)										
YL2400512-003	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.190 mg/L	0.2 mg/L	95.1	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00941 mg/L	0.01 mg/L	94.1	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.086 mg/L	0.1 mg/L	85.7	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00977 mg/L	0.01 mg/L	97.7	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.4	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0908 mg/L	0.1 mg/L	90.8	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	----	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.00 mg/L	10 mg/L	100.0	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.71 mg/L	4 mg/L	92.9	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	10.1 mg/L	10 mg/L	101	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	2.00 mg/L	2 mg/L	100.0	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	19.6 mg/L	20 mg/L	97.8	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0980 mg/L	0.1 mg/L	98.0	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.386 mg/L	0.4 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
Dissolved Metals (QCLot: 1469505) - continued										
YL2400512-003	Anonymous	Zirconium, dissolved	7440-67-7	E421	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
Dissolved Metals (QCLot: 1474005)										
YL2400512-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000922 mg/L	0 mg/L	92.2	70.0	130	----
Volatile Organic Compounds (QCLot: 1471694)										
VA24B1866-001	Anonymous	Benzene	71-43-2	E611A	98.7 µg/L	100 µg/L	98.7	60.0	140	----
		Ethylbenzene	100-41-4	E611A	96.4 µg/L	100 µg/L	96.4	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	102 µg/L	100 µg/L	102	60.0	140	----
		Styrene	100-42-5	E611A	104 µg/L	100 µg/L	104	60.0	140	----
		Toluene	108-88-3	E611A	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	198 µg/L	200 µg/L	99.2	60.0	140	----
		Xylene, o-	95-47-6	E611A	95.8 µg/L	100 µg/L	95.8	60.0	140	----
Hydrocarbons (QCLot: 1471693)										
VA24B1866-002	Anonymous	F1 (C6-C10)	----	E581.VH+F1	5200 µg/L	6310 µg/L	82.5	60.0	140	----
		VHw (C6-C10)	----	E581.VH+F1	5260 µg/L	6310 µg/L	83.3	60.0	140	----

YL2400513

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME: 28/05/2024	DATE/TIME:	DATE/TIME:

3.3°C

CLIENT:	Associated Engineering (BC) Ltd.	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☐ Standard TAT (List due date): ☐ Non Standard or urgent TAT (List due date):
PROJECT:	Inuvik Airport Water Licence Monitoring		
SITE:	Inuvik Airport		
PURCHASE ORDER NO.:	2020-2886.055.505		
PROJECT MANAGER:	Louie Ibalo, Caitlin McKenzie	CONTACT PH: 867-687-2854	ALS QUOTE NO: YL24-ASEG100-001
SAMPLER:	C. McKenzie	SAMPLER MOBILE: 867-687-2854	
EMAIL REPORTS TO:	[illegible]	EMAIL INVOICE TO: [illegible]	

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: Invoice to be addressed as: Associated Engineering (BC) Ltd. Attn: Accounts Payable 500, 9888 Jasper Avenue Edmonton, AB T5J 5C6

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))		MATRIX:	CONTAINER INFORMATION		ANALYSIS REQUIRED										Additional Information
SAMPLE	Sample Identification (This description will appear on the report)	DATE / TIME (dd-mm-yyyy)	MATRIX	TOTAL CONTAINERS	Receiving Water	Runoff Water	Sediment	Soil Fertility								Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	SNP1 – RW	05/26/24 11:45am	W	14	X											not filtered
	~~SNP2 – RW~~		W													
	~~SNP3 – RW~~		W													
	~~SNP4 – RW~~		W													
	SNP5 – RW "a"	05/26/24 2:30pm	W	14	X											not filtered
	~~SNP6 – RW~~		W													
	SNP7 – D		W													
	SNP8 – D "a"	05/26/24 10:45am	W	7		X										glycol first set, "a", no filter only nutrients, not filtered
	OF1 – RW	05/26/24 12:40pm	W	13												
	OF1 – D "a"	05/26/24 12:30pm	W	7		X										
	SNP8-RW	05/26/24 11:50am	W	13	X											only 1 nutrients, not filtered
	~~Field blank~~		W													
	~~Trip blank~~		W													
	SNP8-D "b"	05/26/24 11:45am	W	2		X										glycol second set "b"
	OF1-D "b"	05/26/24 12:30pm	W	2		X										"
			TOTAL	5												

Environmental Division
Yellowknife
Work Order Reference
YL2400513

Telephone : +1 867 873 5593

ALS Canada Ltd.

CERTIFICATE OF ANALYSIS

Work Order	: **YL2400512**	Page	: 1 of 8
Amendment	: **1**		
Client	: **Associated Engineering Ltd.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: Unit 201, 5103 48 St. Yellowknife NT Canada X1A 1N5	Address	: 314 Old Airport Road, Unit 116 Yellowknife NT Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: Inuvik Airport Water Licence Monitoring	Date Samples Received	: 28-May-2024 09:35
PO	: 2020-2886.055.505	Date Analysis Commenced	: 28-May-2024
C-O-C number	: ----	Issue Date	: 10-Jun-2024 08:27
Sampler	: C.McKenzie		
Site	: Inuvik Airport		
Quote number	: YL24-ASEG100-001		
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*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
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
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Oliver Gregg	Client Services Supervisor	External Subcontracting, Yellowknife, Northwest Territories
Owen Cheng		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*
-	no units
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
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.

Sample Comments

Sample	Client Id	*Comment*
YL2400512-001	SNP2-RW	Water samples for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
YL2400512-002	SNP4-RW	Water samples for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
YL2400512-003	SNP6-RW	Water samples for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.
YL2400512-005	Field Blank	Water samples for dissolved mercury analysis was not submitted in glass or PTFE container with HCl preservative. Results may be biased low.

Qualifiers

Qualifier	*Description*

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	SNP2-RW	SNP4-RW	SNP6-RW	SNP7-D "a"	Field Blank
					Client sampling date / time	25-May-2024 20:50	25-May-2024 16:20	25-May-2024 17:30	25-May-2024 20:00	25-May-2024 21:30
						YL2400512-001	YL2400512-002	YL2400512-003	YL2400512-004	YL2400512-005
						Result	Result	Result	Result	Result
Physical Tests										
Conductivity	----	E100/VA	2.0	µS/cm		262	182	33.1	600	<2.0
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		112	66.5	16.3	----	<0.60
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		115	105	17.0	----	<0.60
pH	----	E108/VA	0.10	pH units		7.87	6.94	6.51	7.98	5.65
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		3.3	1780	<3.0	7.7	<3.0
Turbidity	----	E121/VA	0.10	NTU		4.92	1360	2.90	8.23	<0.10
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		13.7	27.7	28.3	19.0	<0.50
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		0.119	15.9	0.0744	----	<0.0030
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	0.00018	<0.00010	----	<0.00010
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00042	0.0122	0.00022	----	<0.00010
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0471	0.392	0.0128	----	<0.00010
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	0.000805	<0.000100	----	<0.000100
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	0.000306	<0.000050	----	<0.000050
Boron, total	7440-42-8	E420/VA	0.010	mg/L		0.017	0.057	<0.010	----	<0.010
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.0000072	0.000161	<0.0000050	----	<0.0000050
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		31.9	27.4	5.18	----	<0.050
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000046	0.00856	0.000026	----	<0.000010
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	0.0266	<0.00050	----	<0.00050
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		0.00013	0.0142	0.00012	----	<0.00010
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00140	0.0308	0.00071	----	<0.00050
Iron, total	7439-89-6	E420/VA	0.010	mg/L		0.296	36.3	0.668	----	<0.010
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.000129	0.0179	0.000079	----	<0.000050
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0057	0.0418	<0.0010	----	<0.0010
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		8.68	8.93	0.978	----	<0.0050
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.0256	0.346	0.0291	----	<0.00010
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	0.000131	0.0000123	----	<0.0000050
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000591	0.000577	<0.000050	----	<0.000050

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP2-RW	SNP4-RW	SNP6-RW	SNP7-D "a"	Field Blank
					Client sampling date / time	25-May-2024 20:50	25-May-2024 16:20	25-May-2024 17:30	25-May-2024 20:00	25-May-2024 21:30
						YL2400512-001	YL2400512-002	YL2400512-003	YL2400512-004	YL2400512-005
						Result	Result	Result	Result	Result
Total Metals										
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.00123	0.0373	0.00070	----	<0.00050
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	0.610	<0.050	----	<0.050
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		1.19	4.88	1.18	----	<0.050
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00086	0.0313	0.00086	----	<0.00020
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000169	0.000989	0.000062	----	<0.000050
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		1.48	25.7	0.57	----	<0.10
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	0.000111	<0.000010	----	<0.000010
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		10.4	7.64	0.576	----	<0.050
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.125	0.140	0.0105	----	<0.00020
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		14.3	21.1	<0.50	----	<0.50
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	<0.00020
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	0.000199	<0.000010	----	<0.000010
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	0.00422	<0.00010	----	<0.00010
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	0.00014	<0.00010	----	<0.00010
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.00211	0.0615	0.00100	----	<0.00030
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	<0.00010
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000322	0.000960	<0.000010	----	<0.000010
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	0.0431	<0.00050	----	<0.00050
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		<0.0030	0.117	0.0052	----	<0.0030
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	0.00068	<0.00020	----	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.0088	0.114	0.0419	----	<0.0010
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	<0.00010
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00032	0.00049	0.00019	----	<0.00010
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.0428	0.0149	0.0116	----	<0.00010
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		<0.000100	<0.000100	<0.000100	----	<0.000100
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	<0.000050
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		0.015	0.029	<0.010	----	<0.010
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		<0.0000050	<0.0000050	0.0000061	----	<0.0000050
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		30.0	19.6	4.85	----	<0.050

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP2-RW	SNP4-RW	SNP6-RW	SNP7-D "a"	Field Blank
					Client sampling date / time	25-May-2024 20:50	25-May-2024 16:20	25-May-2024 17:30	25-May-2024 20:00	25-May-2024 21:30
						YL2400512-001	YL2400512-002	YL2400512-003	YL2400512-004	YL2400512-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		<0.000010	0.000046	<0.000010	----	<0.000010
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	<0.00050
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		<0.00010	0.00078	0.00010	----	<0.00010
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00118	0.00161	0.00066	----	<0.00020
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.062	0.442	0.452	----	<0.010
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	0.000172	<0.000050	----	<0.000050
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0051	0.0051	<0.0010	----	<0.0010
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		9.01	4.26	1.01	----	<0.0050
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.00363	0.103	0.0265	----	<0.00010
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	0.0000078	0.0000093	----	<0.0000050
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.000606	0.000120	<0.000050	----	<0.000050
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.00099	0.00208	0.00059	----	<0.00050
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	<0.050	<0.050	----	<0.050
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		1.13	2.88	1.17	----	<0.050
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00061	0.00077	0.00075	----	<0.00020
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		0.000148	0.000126	<0.000050	----	<0.000050
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		1.24	0.754	0.448	----	<0.050
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	0.000130	<0.000010	----	<0.000010
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		10.3	7.90	0.635	----	<0.050
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.129	0.0703	0.0109	----	<0.00020
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		13.0	20.2	<0.50	----	<0.50
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	<0.00020
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	<0.000010
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	<0.00010
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	<0.00010
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	0.00448	0.00034	----	<0.00030
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	<0.00010
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000340	0.000074	<0.000010	----	<0.000010
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	<0.00050
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		0.0012	0.0048	0.0047	----	<0.0010

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP2-RW	SNP4-RW	SNP6-RW	SNP7-D "a"	Field Blank
					Client sampling date / time	25-May-2024 20:50	25-May-2024 16:20	25-May-2024 17:30	25-May-2024 20:00	25-May-2024 21:30
						YL2400512-001	YL2400512-002	YL2400512-003	YL2400512-004	YL2400512-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	<0.00040 DLM	<0.00020	----	<0.00020
Dissolved mercury filtration location	----	EP509/VA	-	-		Laboratory	Field	Laboratory	----	Laboratory
Dissolved metals filtration location	----	EP421/VA	-	-		Laboratory	Field	Laboratory	----	Laboratory
Aggregate Organics										
Carbonaceous biochemical oxygen demand [CBOD]	----	CBOD5/1Y	2	mg/L		0	0	0	0	0
Volatile Organic Compounds [Fuels]										
Benzene	71-43-2	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	----	<0.50
Ethylbenzene	100-41-4	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	----	<0.50
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	----	<0.50
Styrene	100-42-5	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	----	<0.50
Toluene	108-88-3	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	----	<0.50
Xylene, m+p-	179601-23-1	E611A/VA	0.40	µg/L		<0.40	<0.40	<0.40	----	<0.40
Xylene, o-	95-47-6	E611A/VA	0.30	µg/L		<0.30	<0.30	<0.30	----	<0.30
Xylenes, total	1330-20-7	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	----	<0.50
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	<100	<100	----	<100
F2 (C10-C16)	----	E601/VA	300	µg/L		<300	<300	<300	----	<300
F3 (C16-C34)	----	E601/VA	300	µg/L		<300	<300	<300	----	<300
F4 (C34-C50)	----	E601/VA	300	µg/L		<300	<300	<300	----	<300
VHw (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	<100	<100	----	<100
F1-BTEX	----	EC580/VA	100	µg/L		<100	<100	<100	----	<100
VPHw	----	EC580A/VA	100	µg/L		<100	<100	<100	----	<100
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/VA	1.0	%		92.6	78.3	79.9	----	73.1
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		100	99.6	95.7	----	97.9
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%		87.4	88.8	87.0	----	87.9

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	SNP2-RW	SNP4-RW	SNP6-RW	SNP7-D "a"	Field Blank
					Client sampling date / time	25-May-2024 20:50	25-May-2024 16:20	25-May-2024 17:30	25-May-2024 20:00	25-May-2024 21:30
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400512-001	YL2400512-002	YL2400512-003	YL2400512-004	YL2400512-005
						Result	Result	Result	Result	Result
Volatile Organic Compounds Surrogates										
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%		99.4	99.3	99.3	----	99.5
Glycols										
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
Glycols Surrogates										
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%		94.5	89.0	91.4	99.1	107

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: Water (Matrix: Water)					Client sample ID	SNP-7-D "b'	----	----	----	----
					Client sampling date / time	25-May-2024 20:30	----	----	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2400512-006	--------	--------	--------	--------
						Result	----	----	----	----
Glycols										
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L		<5.0	----	----	----	----
Glycols Surrogates										
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%		100.0	----	----	----	----

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.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **YL2400512**	Page	: 1 of 15
Amendment	: 1		
Client	: **Associated Engineering Ltd.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: Unit 201, 5103 48 St. Yellowknife NT Canada X1A 1N5	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: Inuvik Airport Water Licence Monitoring	Date Samples Received	: 28-May-2024 09:35
PO	: 2020-2886.055.505	Issue Date	: 10-Jun-2024 08:26
C-O-C number	: ----		
Sampler	: C.McKenzie		
Site	: Inuvik Airport		
Quote number	: YL24-ASEG100-001		
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 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 : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-4d] Field Blank	CBOD5	25-May-2024	----	----	----		28-May-2024	4 days	3 days	✓
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-4d] SNP2-RW	CBOD5	25-May-2024	----	----	----		28-May-2024	4 days	3 days	✓
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-4d] SNP4-RW	CBOD5	25-May-2024	----	----	----		28-May-2024	4 days	3 days	✓
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-4d] SNP6-RW	CBOD5	25-May-2024	----	----	----		28-May-2024	4 days	3 days	✓
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-4d] SNP7-D "a"	CBOD5	25-May-2024	----	----	----		28-May-2024	4 days	3 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) Field Blank	E509	25-May-2024	04-Jun-2024	0 hrs	221 hrs	× UCP	04-Jun-2024	0 hrs	221 hrs	× UCP
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved) SNP2-RW	E509	25-May-2024	04-Jun-2024	0 hrs	222 hrs	× UCP	04-Jun-2024	0 hrs	222 hrs	× UCP

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	
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved)										
SNP6-RW	E509	25-May-2024	04-Jun-2024	0 hrs	225 hrs	× UCP	04-Jun-2024	0 hrs	225 hrs	× UCP
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
HDPE - dissolved (lab preserved)										
SNP4-RW	E509	25-May-2024	04-Jun-2024	0 hrs	226 hrs	× UCP	04-Jun-2024	0 hrs	226 hrs	× UCP
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
SNP4-RW	E421	25-May-2024	01-Jun-2024	180 days	7 days	✓	04-Jun-2024	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
Field Blank	E421	25-May-2024	03-Jun-2024	180 days	9 days	✓	04-Jun-2024	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
SNP2-RW	E421	25-May-2024	03-Jun-2024	180 days	9 days	✓	04-Jun-2024	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved)										
SNP6-RW	E421	25-May-2024	03-Jun-2024	180 days	9 days	✓	04-Jun-2024	180 days	10 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial										
Field Blank	E680E	25-May-2024	31-May-2024	7 days	6 days	✓	01-Jun-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial										
SNP2-RW	E680E	25-May-2024	31-May-2024	7 days	6 days	✓	01-Jun-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial										
SNP4-RW	E680E	25-May-2024	31-May-2024	7 days	6 days	✓	01-Jun-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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP6-RW	E680E	25-May-2024	31-May-2024	7 days	6 days	✓	01-Jun-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP7-D "a"	E680E	25-May-2024	31-May-2024	7 days	6 days	✓	01-Jun-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP-7-D "b'	E680E	25-May-2024	31-May-2024	7 days	6 days	✓	01-Jun-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) Field Blank	E601	25-May-2024	04-Jun-2024	14 days	9 days	✓	04-Jun-2024	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP2-RW	E601	25-May-2024	04-Jun-2024	14 days	9 days	✓	04-Jun-2024	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP4-RW	E601	25-May-2024	04-Jun-2024	14 days	9 days	✓	04-Jun-2024	40 days	0 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP6-RW	E601	25-May-2024	04-Jun-2024	14 days	9 days	✓	04-Jun-2024	40 days	0 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) Field Blank	E581.VH+F1	25-May-2024	02-Jun-2024	14 days	8 days	✓	02-Jun-2024	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP2-RW	E581.VH+F1	25-May-2024	02-Jun-2024	14 days	8 days	✓	02-Jun-2024	14 days	8 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) SNP4-RW	E581.VH+F1	25-May-2024	02-Jun-2024	14 days	8 days	✓	02-Jun-2024	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP6-RW	E581.VH+F1	25-May-2024	02-Jun-2024	14 days	8 days	✓	02-Jun-2024	14 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) Field Blank	E358-L	25-May-2024	31-May-2024	3 days	5 days	× EHT	31-May-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) SNP6-RW	E358-L	25-May-2024	31-May-2024	3 days	5 days	× EHTL	31-May-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) SNP2-RW	E358-L	25-May-2024	31-May-2024	3 days	5 days	× EHT	31-May-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) SNP7-D "a"	E358-L	25-May-2024	31-May-2024	3 days	5 days	× EHT	31-May-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) SNP4-RW	E358-L	25-May-2024	31-May-2024	3 days	6 days	× EHTL	31-May-2024	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE Field Blank	E100	25-May-2024	04-Jun-2024	28 days	9 days	✓	04-Jun-2024	28 days	10 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP2-RW	E100	25-May-2024	04-Jun-2024	28 days	9 days	✓	04-Jun-2024	28 days	10 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 : Conductivity in Water										
HDPE SNP4-RW	E100	25-May-2024	04-Jun-2024	28 days	9 days	✓	04-Jun-2024	28 days	10 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP6-RW	E100	25-May-2024	04-Jun-2024	28 days	9 days	✓	04-Jun-2024	28 days	10 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP7-D "a"	E100	25-May-2024	04-Jun-2024	28 days	9 days	✓	04-Jun-2024	28 days	10 days	✓
Physical Tests : pH by Meter										
HDPE Field Blank	E108	25-May-2024	04-Jun-2024	0.25 hrs	220 hrs	× EHTR-FM	04-Jun-2024	0.25 hrs	229 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP2-RW	E108	25-May-2024	04-Jun-2024	0.25 hrs	221 hrs	× EHTR-FM	04-Jun-2024	0.25 hrs	230 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP7-D "a"	E108	25-May-2024	04-Jun-2024	0.25 hrs	222 hrs	× EHTR-FM	04-Jun-2024	0.25 hrs	230 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP6-RW	E108	25-May-2024	04-Jun-2024	0.25 hrs	224 hrs	× EHTR-FM	04-Jun-2024	0.25 hrs	233 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP4-RW	E108	25-May-2024	04-Jun-2024	0.25 hrs	225 hrs	× EHTR-FM	04-Jun-2024	0.25 hrs	234 hrs	× EHTR-FM
Physical Tests : TSS by Gravimetry										
HDPE Field Blank	E160	25-May-2024	----	----	----		01-Jun-2024	7 days	6 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 : TSS by Gravimetry										
HDPE SNP2-RW	E160	25-May-2024	----	----	----		01-Jun-2024	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP4-RW	E160	25-May-2024	----	----	----		01-Jun-2024	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP6-RW	E160	25-May-2024	----	----	----		01-Jun-2024	7 days	6 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP7-D "a"	E160	25-May-2024	----	----	----		01-Jun-2024	7 days	6 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE Field Blank	E121	25-May-2024	----	----	----		01-Jun-2024	3 days	6 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP4-RW	E121	25-May-2024	----	----	----		01-Jun-2024	3 days	6 days	× EHTL
Physical Tests : Turbidity by Nephelometry										
HDPE SNP6-RW	E121	25-May-2024	----	----	----		01-Jun-2024	3 days	6 days	× EHTL
Physical Tests : Turbidity by Nephelometry										
HDPE SNP2-RW	E121	25-May-2024	----	----	----		01-Jun-2024	3 days	6 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP7-D "a"	E121	25-May-2024	----	----	----		01-Jun-2024	3 days	6 days	× EHT

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 (hydrochloric acid) Field Blank	E508	25-May-2024	02-Jun-2024	28 days	8 days	✓	03-Jun-2024	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP2-RW	E508	25-May-2024	02-Jun-2024	28 days	8 days	✓	03-Jun-2024	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP4-RW	E508	25-May-2024	02-Jun-2024	28 days	8 days	✓	03-Jun-2024	28 days	9 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP6-RW	E508	25-May-2024	02-Jun-2024	28 days	8 days	✓	03-Jun-2024	28 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Field Blank	E420	25-May-2024	01-Jun-2024	180 days	7 days	✓	03-Jun-2024	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP2-RW	E420	25-May-2024	01-Jun-2024	180 days	7 days	✓	03-Jun-2024	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP4-RW	E420	25-May-2024	01-Jun-2024	180 days	7 days	✓	03-Jun-2024	180 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP6-RW	E420	25-May-2024	01-Jun-2024	180 days	7 days	✓	03-Jun-2024	180 days	9 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) Field Blank	E611A	25-May-2024	02-Jun-2024	14 days	8 days	✓	02-Jun-2024	14 days	8 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*	
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP2-RW	E611A	25-May-2024	02-Jun-2024	14 days	8 days	✓	02-Jun-2024	14 days	8 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP4-RW	E611A	25-May-2024	02-Jun-2024	14 days	8 days	✓	02-Jun-2024	14 days	8 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP6-RW	E611A	25-May-2024	02-Jun-2024	14 days	8 days	✓	02-Jun-2024	14 days	8 days	✓

Legend & Qualifier Definitions

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

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

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	1471694	1	20	5.0	5.0	✓
Conductivity in Water	E100	1473926	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1473963	2	20	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1469505	2	21	9.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1470175	1	17	5.8	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1469644	1	17	5.8	5.0	✓
pH by Meter	E108	1473925	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1472115	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1469687	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1470653	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	1471567	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1471693	1	17	5.8	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	1471694	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1473594	1	10	10.0	5.0	✓
Conductivity in Water	E100	1473926	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1473963	2	20	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1469505	2	21	9.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1470175	1	17	5.8	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1469644	1	17	5.8	5.0	✓
pH by Meter	E108	1473925	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1472115	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1469687	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1470653	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	1471567	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1471693	1	17	5.8	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	1471694	1	20	5.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1473594	1	10	10.0	5.0	✓
Conductivity in Water	E100	1473926	1	16	6.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1473963	2	20	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1469505	2	21	9.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1470175	1	17	5.8	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1469644	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	1472115	1	17	5.8	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*
Method Blanks (MB) - Continued							
Total Metals in Water by CRC ICPMS	E420	1469687	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1470653	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	1471567	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1471693	1	17	5.8	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1471694	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1473963	2	20	10.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1469505	2	21	9.5	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1470175	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	1472115	1	17	5.8	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1469687	1	19	5.2	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1471693	1	17	5.8	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
Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day	CBOD5 Taiga Environmental Laboratory - 4601 - 52nd Avenue P.O. BOX 1500 Yellowknife Northwest Territories Canada X1A 2R3	Water	SM5210B	Sample was diluted, seeded, and incubated at specified temperature for 5 days. Dissolved oxygen is measured initially and after incubation, and the CBOD is computed from the difference between initial and final DO.
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.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
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.
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
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.
Glycols (4 analytes) by GC-FID	E680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Derivatized glycols are analyzed by GC-FID.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CaCO3 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.
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 for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Glycols Extraction and Derivatization (BC Only)	EP680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Aqueous sample is derivatized and extracted with orgaic solvent.

QUALITY CONTROL REPORT

Work Order	: **YL2400512**	Page	: 1 of 21
Amendment	: **1**		
Client	: Associated Engineering Ltd.	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: Unit 201, 5103 48 St. Yellowknife NT Canada X1A 1N5	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: Inuvik Airport Water Licence Monitoring	Date Samples Received	: 28-May-2024 09:35
PO	: 2020-2886.055.505	Date Analysis Commenced	: 28-May-2024
C-O-C number	: ----	Issue Date	: 10-Jun-2024 08:26
Sampler	: C.McKenzie		
Site	: Inuvik Airport		
Quote number	: YL24-ASEG100-001		
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*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
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
Monica Ko	Lab Assistant	Vancouver Inorganics, Burnaby, British Columbia
Oliver Gregg	Client Services Supervisor	Taiga Environmental Laboratory External Subcontracting, Yellowknife, Northwest Territories
Owen Cheng		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: 1470653)											
VA24B2472-014	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1471567)											
VA24B2537-001	Anonymous	Turbidity	----	E121	0.10	NTU	4.72	4.60	2.57%	15%	----
Physical Tests (QC Lot: 1473925)											
VA24B2588-001	Anonymous	pH	----	E108	0.10	pH units	8.30	8.28	0.241%	4%	----
Physical Tests (QC Lot: 1473926)											
VA24B2588-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	722	739	2.33%	10%	----
Organic / Inorganic Carbon (QC Lot: 1470175)											
VA24B2385-004	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	0.60	0.79	0.19	Diff <2x LOR	----
Total Metals (QC Lot: 1469687)											
VA24B2306-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	41.2 µg/L	0.0389	5.74%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.23 µg/L	0.00024	0.000006	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.55 µg/L	0.00054	0.00001	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	10.6 µg/L	0.0104	1.48%	20%	----
		Beryllium, total	7440-41-7	E420	0.000100	mg/L	<0.100 µg/L	<0.000100	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000050	mg/L	<0.050 µg/L	<0.000050	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.010	mg/L	846 µg/L	0.863	1.96%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.0439 µg/L	0.0000411	0.0000028	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	85600 µg/L	89.4	4.32%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.098 µg/L	0.000101	0.000003	Diff <2x LOR	----
		Chromium, total	7440-47-3	E420	0.00050	mg/L	<0.50 µg/L	<0.00050	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00010	mg/L	0.76 µg/L	0.00076	0.000005	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.62 µg/L	0.00061	0.000009	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	740 µg/L	0.744	0.600%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.104 µg/L	0.000121	0.000017	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	3.6 µg/L	0.0038	0.0002	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	79200 µg/L	81.1	2.27%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	264 µg/L	0.263	0.568%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	3.08 µg/L	0.00318	3.41%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	2.95 µg/L	0.00293	0.00002	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: 1469687) - continued											
VA24B2306-001	Anonymous	Phosphorus, total	7723-14-0	E420	0.050	mg/L	2160 µg/L	2.21	2.34%	20%	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	37600 µg/L	37.6	0.229%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	32.0 µg/L	0.0311	3.06%	20%	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	<0.050 µg/L	0.000074	0.000024	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	6330 µg/L	6.09	3.86%	20%	----
		Silver, total	7440-22-4	E420	0.000010	mg/L	<0.010 µg/L	<0.000010	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.050	mg/L	154000 µg/L	158	2.48%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	405 µg/L	0.418	3.12%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	117000 µg/L	115	1.07%	20%	----
		Tellurium, total	13494-80-9	E420	0.00020	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000010	mg/L	<0.010 µg/L	<0.000010	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00010	mg/L	<0.10 µg/L	<0.00010	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00010	mg/L	0.18 µg/L	0.00019	0.0000008	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00120	mg/L	<1.20 µg/L	<0.00120	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00010	mg/L	0.14 µg/L	0.00015	0.00001	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000010	mg/L	0.319 µg/L	0.000335	4.90%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	6.56 µg/L	0.00659	0.392%	20%	----
		Zinc, total	7440-66-6	E420	0.0030	mg/L	9.0 µg/L	0.0086	0.0004	Diff <2x LOR	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.20 µg/L	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 1472115)											
VA24B2522-008	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000067	0.0000081	0.0000014	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1469505)											
YL2400512-001	SNP2-RW	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0088	0.0085	0.0003	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	0.00032	0.00031	0.000008	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0428	0.0426	0.358%	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	0.000050	mg/L	<0.000050	<0.000050	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.015	0.015	0.00009	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	30.0	29.3	2.25%	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	----

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: 1469505) - continued											
YL2400512-001	SNP2-RW	Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00118	0.00117	0.00001	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.062	0.062	0.0008	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	0.0051	0.0049	0.0001	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	9.01	9.23	2.42%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00363	0.00361	0.425%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000606	0.000573	5.54%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00099	0.00096	0.00002	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	0.050	mg/L	1.13	1.14	0.815%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00061	0.00057	0.00004	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000148	0.000182	0.000034	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	1.24	1.17	6.09%	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	0.050	mg/L	10.3	10.2	1.12%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.129	0.131	1.42%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	13.0	13.2	1.69%	20%	----
		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	0.000340	0.000342	0.609%	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	0.0012	0.0012	0.00003	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1470044)											
VA24B2435-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0037	0.0040	0.0002	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.00061	0.00061	0.000003	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00036	0.00036	0.000003	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0390	0.0387	0.680%	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	----

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: 1470044) - continued											
VA24B2435-001	Anonymous	Boron, dissolved	7440-42-8	E421	0.010	mg/L	0.013	0.013	0.0004	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000458	0.0000560	20.0%	20%	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	196	196	0.147%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000010	mg/L	0.000063	0.000065	0.000002	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	0.00099	0.00100	0.00001	Diff <2x LOR	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00386	0.00394	1.95%	20%	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.020	0.020	0.0002	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	<0.0010	<0.0010	0	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.100	mg/L	42.6	43.3	1.57%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	1.74	1.69	2.73%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00542	0.00538	0.727%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00121	0.00120	0.000006	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	0.100	mg/L	6.98	7.22	3.31%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00570	0.00579	1.53%	20%	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000305	0.000304	0.0000008	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.93	5.79	2.40%	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	0.050	mg/L	22.9	23.0	0.371%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.837	0.841	0.423%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	182	178	2.06%	20%	----
		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	0.00123	0.00122	0.847%	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	0.0012	0.0011	0.00006	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1473963)											

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: 1473963) - continued											
VA24B2519-005	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1474005)											
VA24B2583-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1471694)											
VA24B1595-001	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: 1471693)											
VA24B1595-001	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%	----
Glycols (QC Lot: 1469644)											
VA24B1914-004	Anonymous	Ethylene glycol	107-21-1	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----

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: 1470653)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1471567)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1473926)						
Conductivity	----	E100	1	µS/cm	1.1	----
Organic / Inorganic Carbon (QCLot: 1470175)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 1469687)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1469687) - continued						
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: 1472115)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1469505)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1469505) - continued						
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	----
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: 1470044)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1470044) - continued						
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	----
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: 1473963)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1474005)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds (QCLot: 1471694)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1471694) - continued						
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: 1471693)						
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Hydrocarbons (QCLot: 1473594)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
F3 (C16-C34)	----	E601	250	µg/L	<250	----
F4 (C34-C50)	----	E601	250	µg/L	<250	----
Glycols (QCLot: 1469644)						
Ethylene glycol	107-21-1	E680E	5	mg/L	<5.0	----

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: 1470653)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	95.5	85.0	115	----
Physical Tests (QCLot: 1471567)									
Turbidity	----	E121	0.1	NTU	200 NTU	100	85.0	115	----
Physical Tests (QCLot: 1473925)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1473926)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	98.7	90.0	110	----
Organic / Inorganic Carbon (QCLot: 1470175)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	104	80.0	120	----
Total Metals (QCLot: 1469687)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	100	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	102	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	101	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	98.8	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	91.3	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	100.0	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	104	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	99.2	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	104	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	97.0	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	97.5	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	99.5	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	109	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.7	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 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: 1469687) - continued									
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	98.7	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	106	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	95.9	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	105	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	87.0	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	97.8	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	94.7	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	99.4	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	94.8	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	95.2	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	95.7	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.1	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	95.5	80.0	120	----
Total Metals (QCLot: 1472115)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	95.7	80.0	120	----
Dissolved Metals (QCLot: 1469505)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.9	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	101	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	97.8	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	89.1	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	100	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	91.5	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	97.7	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	94.0	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	102	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	99.0	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.5	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	98.3	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: 1469505) - continued									
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.9	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	91.5	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	95.6	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	103	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.9	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	101	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	96.9	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	105	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	108	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	96.4	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	101	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	103	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	96.5	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	97.1	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	98.6	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	97.8	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.6	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	97.2	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	99.5	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	102	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.4	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	99.6	80.0	120	----
Dissolved Metals (QCLot: 1470044)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	97.7	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	105	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	95.2	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	96.2	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	103	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	97.5	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	99.5	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	97.7	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: 1470044) - continued									
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	101	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	101	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	101	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	104	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.1	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	101	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	101	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	101	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	101	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	100	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	106	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	104	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	109	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	95.0	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	113	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	105	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	96.6	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	104	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	95.6	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	97.5	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.6	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	99.1	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	101	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	101	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	93.6	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	97.8	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	97.9	80.0	120	----
Volatile Organic Compounds (QCLot: 1471694)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	96.4	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	95.9	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	100 µg/L	101	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
Volatile Organic Compounds (QCLot: 1471694) - continued									
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	99.0	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	93.9	70.0	130	----
Hydrocarbons (QCLot: 1471693)									
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	81.8	70.0	130	----
Hydrocarbons (QCLot: 1473594)									
F2 (C10-C16)	----	E601	100	µg/L	3540 µg/L	111	70.0	130	----
F3 (C16-C34)	----	E601	250	µg/L	7050 µg/L	107	70.0	130	----
F4 (C34-C50)	----	E601	250	µg/L	5050 µg/L	109	70.0	130	----
Glycols (QCLot: 1469644)									
Ethylene glycol	107-21-1	E680E	5	mg/L	25 mg/L	89.8	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
Organic / Inorganic Carbon (QCLot: 1470175)										
VA24B2385-005	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	5.07 mg/L	5 mg/L	101	70.0	130	----
Total Metals (QCLot: 1469687)										
VA24B2306-002	Anonymous	Aluminum, total	7429-90-5	E420	0.185 mg/L	0.2 mg/L	92.6	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0192 mg/L	0.02 mg/L	96.3	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	0.0179 mg/L	0.02 mg/L	89.3	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0379 mg/L	0.04 mg/L	94.8	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00897 mg/L	0.01 mg/L	89.7	70.0	130	----
		Boron, total	7440-42-8	E420	ND mg/L	----	ND	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00371 mg/L	0.004 mg/L	92.8	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.00958 mg/L	0.01 mg/L	95.8	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0388 mg/L	0.04 mg/L	96.9	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0182 mg/L	0.02 mg/L	91.0	70.0	130	----
		Copper, total	7440-50-8	E420	0.0169 mg/L	0.02 mg/L	84.6	70.0	130	----
		Iron, total	7439-89-6	E420	1.79 mg/L	2 mg/L	89.6	70.0	130	----
		Lead, total	7439-92-1	E420	0.0179 mg/L	0.02 mg/L	89.7	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0995 mg/L	0.1 mg/L	99.5	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	0.0205 mg/L	0.02 mg/L	103	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0352 mg/L	0.04 mg/L	87.9	70.0	130	----
		Phosphorus, total	7723-14-0	E420	9.93 mg/L	10 mg/L	99.3	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	----	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	ND mg/L	----	ND	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0428 mg/L	0.04 mg/L	107	70.0	130	----
		Silicon, total	7440-21-3	E420	10.5 mg/L	10 mg/L	105	70.0	130	----
		Silver, total	7440-22-4	E420	0.00380 mg/L	0.004 mg/L	95.1	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	0.0377 mg/L	0.04 mg/L	94.4	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00346 mg/L	0.004 mg/L	86.4	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		Tin, total	7440-31-5	E420	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0388 mg/L	0.04 mg/L	97.1	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00367 mg/L	0.004 mg/L	91.8	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 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: 1469687) - continued										
VA24B2306-002	Anonymous	Zinc, total	7440-66-6	E420	0.370 mg/L	0.4 mg/L	92.4	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
Total Metals (QCLot: 1472115)										
YL2400512-001	SNP2-RW	Mercury, total	7439-97-6	E508	0.0000940 mg/L	0 mg/L	94.0	70.0	130	----
Dissolved Metals (QCLot: 1469505)										
YL2400512-003	SNP6-RW	Aluminum, dissolved	7429-90-5	E421	0.190 mg/L	0.2 mg/L	95.1	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0195 mg/L	0.02 mg/L	97.6	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0191 mg/L	0.02 mg/L	95.7	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0362 mg/L	0.04 mg/L	90.6	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00941 mg/L	0.01 mg/L	94.1	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.086 mg/L	0.1 mg/L	85.7	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00393 mg/L	0.004 mg/L	98.2	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.00977 mg/L	0.01 mg/L	97.7	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0395 mg/L	0.04 mg/L	98.7	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.89 mg/L	2 mg/L	94.4	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0193 mg/L	0.02 mg/L	96.7	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0908 mg/L	0.1 mg/L	90.8	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	----	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0392 mg/L	0.04 mg/L	98.1	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.00 mg/L	10 mg/L	100.0	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.71 mg/L	4 mg/L	92.9	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	10.1 mg/L	10 mg/L	101	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00406 mg/L	0.004 mg/L	102	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	2.00 mg/L	2 mg/L	100.0	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	19.6 mg/L	20 mg/L	97.8	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0394 mg/L	0.04 mg/L	98.4	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00382 mg/L	0.004 mg/L	95.6	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0390 mg/L	0.04 mg/L	97.5	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0192 mg/L	0.02 mg/L	96.3	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00404 mg/L	0.004 mg/L	101	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.0980 mg/L	0.1 mg/L	98.0	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.386 mg/L	0.4 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
Dissolved Metals (QCLot: 1469505) - continued										
YL2400512-003	SNP6-RW	Zirconium, dissolved	7440-67-7	E421	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
Dissolved Metals (QCLot: 1470044)										
YL2400512-002	SNP4-RW	Aluminum, dissolved	7429-90-5	E421	0.184 mg/L	0.2 mg/L	92.0	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0193 mg/L	0.02 mg/L	96.4	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Barium, dissolved	7440-39-3	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0393 mg/L	0.04 mg/L	98.4	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00941 mg/L	0.01 mg/L	94.1	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.099 mg/L	0.1 mg/L	98.8	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00402 mg/L	0.004 mg/L	100	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0404 mg/L	0.04 mg/L	101	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0200 mg/L	0.02 mg/L	100	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0198 mg/L	0.02 mg/L	98.8	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.91 mg/L	2 mg/L	95.4	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0202 mg/L	0.02 mg/L	101	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0970 mg/L	0.1 mg/L	97.0	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	----	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0203 mg/L	0.02 mg/L	101	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0398 mg/L	0.04 mg/L	99.6	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.7 mg/L	10 mg/L	107	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	4.18 mg/L	4 mg/L	104	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0194 mg/L	0.02 mg/L	97.0	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	10.3 mg/L	10 mg/L	103	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00407 mg/L	0.004 mg/L	102	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	0.0408 mg/L	0.04 mg/L	102	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00383 mg/L	0.004 mg/L	95.7	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0187 mg/L	0.02 mg/L	93.6	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0194 mg/L	0.02 mg/L	97.1	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0373 mg/L	0.04 mg/L	93.3	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0195 mg/L	0.02 mg/L	97.4	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00386 mg/L	0.004 mg/L	96.4	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.102 mg/L	0.1 mg/L	102	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.399 mg/L	0.4 mg/L	99.6	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0419 mg/L	0.04 mg/L	105	70.0	130	----
Dissolved Metals (QCLot: 1473963)										
VA24B2519-006	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000975 mg/L	0 mg/L	97.5	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
Dissolved Metals (QCLot: 1474005)										
YL2400512-001	SNP2-RW	Mercury, dissolved	7439-97-6	E509	0.0000922 mg/L	0 mg/L	92.2	70.0	130	----
Volatile Organic Compounds (QCLot: 1471694)										
VA24B1866-001	Anonymous	Benzene	71-43-2	E611A	98.7 µg/L	100 µg/L	98.7	60.0	140	----
		Ethylbenzene	100-41-4	E611A	96.4 µg/L	100 µg/L	96.4	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	102 µg/L	100 µg/L	102	60.0	140	----
		Styrene	100-42-5	E611A	104 µg/L	100 µg/L	104	60.0	140	----
		Toluene	108-88-3	E611A	99.4 µg/L	100 µg/L	99.4	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	198 µg/L	200 µg/L	99.2	60.0	140	----
		Xylene, o-	95-47-6	E611A	95.8 µg/L	100 µg/L	95.8	60.0	140	----
Hydrocarbons (QCLot: 1471693)										
VA24B1866-002	Anonymous	F1 (C6-C10)	----	E581.VH+F1	5200 µg/L	6310 µg/L	82.5	60.0	140	----
		VHw (C6-C10)	----	E581.VH+F1	5260 µg/L	6310 µg/L	83.3	60.0	140	----

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	3.03°C DATE/TIME: 28/05/2024	DATE/TIME:	DATE/TIME:

CLIENT:	Associated Engineering (BC) Ltd.	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)	☒ Standard TAT (List due date):
PROJECT:	Inuvik Airport Water Licence Monitoring		☐ Non Standard or urgent TAT (List due date):
SITE:	Inuvik Airport		
PURCHASE ORDER NO.:	2020-2886.055.505	ALS QUOTE NO:	YL24-ASEG100-001
PROJECT MANAGER:	Louis Ibalo, Caitlin McKenzie	CONTACT PH:	867-687-2854
SAMPLER:	C. McKenzie	SAMPLER MOBILE:	867-687-2854
EMAIL REPORTS TO:	[redacted]	EMAIL INVOICE TO:	[redacted]

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	N/A
Free ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:		°C	
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL: Invoice to be addressed as: Associated Engineering (BC) Ltd. Attn: Accounts Payable 500, 9888 Jasper Avenue Edmonton, AB T5J 5C6

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))		MATRIX:	CONTAINER INFORMATION	ANALYSIS REQUIRED				Additional Information
SAMPLE	Sample Identification (This description will appear on the report)	DATE / TIME (dd-mm-yyyy)	MATRIX	TOTAL CONTAINERS	Receiving Water	Runoff Water	Sediment	Soil Inert/Dry	Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	[redacted]		W						
1	SNP2 – RW	05/25 3:50 pm	W	14	X				no field filter
	[redacted]		W						
2	SNP4 – RW	05/25/24 4:20pm	W	14	X				only dissolved metals filtered
	[redacted]		W						
3	SNP6 – RW	05/25/24 5:30pm	W	14	X				
4	SNP7 – D "a"	05/25/24 9:00pm	W	5		X			no field filter
	[redacted]		W						no field filter
	[redacted]		W						
	[redacted]		W						
	[redacted]		W						
	[redacted]		W						
5	Field blank	05/25/24 9:30pm	W	12	X				no field filter - only Hg req
	[redacted]		W						
6	SNP-7-D "b"	05/25/24 8:30pm	W	2		X - glycol only			glycol only
			TOTAL	61					

Environmental Division
Yellowknife
Work Order Reference
YL2400512

Telephone : +1 867 873 5593

CERTIFICATE OF ANALYSIS

Work Order	: **YL2401025**	Page	: 1 of 17
Client	: **Associated Engineering Ltd.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: 301 - 4109 4th Avenue Whitehorse YT Canada Y1A 5M2	Address	: 314 Old Airport Road, Unit 116 Yellowknife NT Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: 2020-2886.055.505	Date Samples Received	: 30-Jul-2024 08:25
PO	: ----	Date Analysis Commenced	: 01-Aug-2024
C-O-C number	: 17-824702	Issue Date	: 08-Aug-2024 16:32
Sampler	: D.O		
Site	: ----		
Quote number	: YL24-ASEG100-001		
No. of samples received	: 12		
No. of samples analysed	: 12		

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*
Alex Thornton	Analyst	Metals, Burnaby, British Columbia
Courtney Cox	Analyst- General	Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Daniela Ruiz	Account Manager Assistant	External Subcontracting, Yellowknife, Northwest Territories
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Maya Urquhart	Lab Analyst	Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Inorganics, 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
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
mg/L	milligrams per litre
NTU	nephelometric turbidity units
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.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Trip Blank	SNP1-RW 12806	SNP3-RW 12811	SNP4-RW 12813	SNP5-RW 12815
					Client sampling date / time	27-Jul-2024 00:00	28-Jul-2024 07:05	28-Jul-2024 07:41	28-Jul-2024 10:16	28-Jul-2024 08:30
						YL2401025-001	YL2401025-002	YL2401025-003	YL2401025-004	YL2401025-005
						Result	Result	Result	Result	Result
Physical Tests										
Conductivity	----	E100/VA	2.0	µS/cm		<2.0	274	272	176	274
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		<0.60	123	120	75.3	118
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		<0.60	120	116	71.4	120
pH	----	E108/VA	0.10	pH units		5.24	8.10	8.14	7.62	8.11
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		<3.0	<3.0	<3.0	4.9	4.1
Turbidity	----	E121/VA	0.10	NTU		<0.10	1.12	1.16	1.30	1.66
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		<0.50	8.95	9.08	14.0	10.3
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		<0.0030	0.0333	0.0250	0.0270	0.0397
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		<0.00010	0.00050	0.00049	0.00044	0.00052
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		<0.00010	0.0560	0.0570	0.0338	0.0540
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420/VA	0.010	mg/L		<0.010	0.018	0.018	0.020	0.018
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		<0.0000050	0.0000063	0.0000066	<0.0000050	0.0000074
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		<0.050	30.5	30.1	19.0	31.7
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	0.000013	<0.000010
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		<0.00050	0.00134	0.00132	0.00082	0.00129
Iron, total	7439-89-6	E420/VA	0.010	mg/L		<0.010	0.084	0.066	0.253	0.093
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		<0.0010	0.0065	0.0064	0.0048	0.0066
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		<0.0050	10.6	10.0	5.82	10.0
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		<0.00010	0.00620	0.00558	0.00755	0.00587
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		<0.000050	0.000660	0.000680	0.000104	0.000671
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		<0.00050	0.00113	0.00111	0.00098	0.00114

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Trip Blank	SNP1-RW 12806	SNP3-RW 12811	SNP4-RW 12813	SNP5-RW 12815
					Client sampling date / time	27-Jul-2024 00:00	28-Jul-2024 07:05	28-Jul-2024 07:41	28-Jul-2024 10:16	28-Jul-2024 08:30
						YL2401025-001	YL2401025-002	YL2401025-003	YL2401025-004	YL2401025-005
						Result	Result	Result	Result	Result
Total Metals										
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		<0.050	1.06	1.05	0.984	1.04
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		<0.00020	0.00059	0.00070	0.00059	0.00066
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		<0.000050	0.000154	0.000167	0.000092	0.000169
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		<0.10	1.18	1.12	0.44	1.12
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		<0.050	11.8	11.6	7.19	11.8
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		<0.00020	0.150	0.154	0.0555	0.156
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		<0.50	14.1	13.8	14.1	13.5
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		<0.00030	0.00049	<0.00030	0.00066	0.00060
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		<0.000010	0.000368	0.000362	0.000034	0.000368
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		<0.0010	0.0056	0.0062	0.0124	0.0063
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		<0.00010	0.00041	0.00039	0.00036	0.00040
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		<0.00010	0.0524	0.0523	0.0313	0.0526
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		<0.010	0.019	0.018	0.022	0.017
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		<0.050	33.0	32.1	20.6	31.0
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Trip Blank	SNP1-RW 12806	SNP3-RW 12811	SNP4-RW 12813	SNP5-RW 12815
					Client sampling date / time	27-Jul-2024 00:00	28-Jul-2024 07:05	28-Jul-2024 07:41	28-Jul-2024 10:16	28-Jul-2024 08:30
						YL2401025-001	YL2401025-002	YL2401025-003	YL2401025-004	YL2401025-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		<0.00020	0.00123	0.00120	0.00074	0.00121
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		<0.010	0.019	0.018	0.184	0.021
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		<0.0010	0.0071	0.0068	0.0057	0.0065
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		<0.0050	9.91	9.64	5.79	9.89
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		<0.00010	0.00042	0.00036	0.00925	0.00042
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		<0.000050	0.000662	0.000651	0.000106	0.000727
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		<0.00050	0.00102	0.00099	0.00098	0.00103
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	<0.050	<0.050	<0.050	<0.050
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		<0.050	1.06	1.02	0.980	1.02
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		<0.00020	0.00061	0.00060	0.00058	0.00055
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		<0.000050	0.000224	0.000200	0.000103	0.000176
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		<0.050	0.929	0.941	0.358	0.950
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		<0.050	11.2	11.1	8.03	11.0
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		<0.00020	0.158	0.153	0.0591	0.156
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		<0.50	13.0	13.0	15.1	12.8
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	<0.00030	<0.00030	0.00032	<0.00030
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		<0.000010	0.000334	0.000335	0.000044	0.000327
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	<0.0010
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved mercury filtration location	----	EP509/VA	-	-		N/A	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421/VA	-	-		Field	Field	Field	Field	Field

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Trip Blank	SNP1-RW 12806	SNP3-RW 12811	SNP4-RW 12813	SNP5-RW 12815
					Client sampling date / time	27-Jul-2024 00:00	28-Jul-2024 07:05	28-Jul-2024 07:41	28-Jul-2024 10:16	28-Jul-2024 08:30
						YL2401025-001	YL2401025-002	YL2401025-003	YL2401025-004	YL2401025-005
						Result	Result	Result	Result	Result
Aggregate Organics										
Carbonaceous biochemical oxygen demand [CBOD]	----	CBOD5/1Y	2	mg/L		----	0	0	0	0
Volatile Organic Compounds [Fuels]										
Benzene	71-43-2	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	100-41-4	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Styrene	100-42-5	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Toluene	108-88-3	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Xylene, m+p-	179601-23-1	E611A/VA	0.40	µg/L		<0.40	<0.40	<0.40	<0.40	<0.40
Xylene, o-	95-47-6	E611A/VA	0.30	µg/L		<0.30	<0.30	<0.30	<0.30	<0.30
Xylenes, total	1330-20-7	E611A/VA	0.50	µg/L		<0.50	<0.50	<0.50	<0.50	<0.50
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	<100	<100	<100	<100
F2 (C10-C16)	----	E601/VA	300	µg/L		<300	<300	<300	<300	<300
F3 (C16-C34)	----	E601/VA	300	µg/L		<300	<300	<300	<300	<300
F4 (C34-C50)	----	E601/VA	300	µg/L		<300	<300	<300	<300	<300
VHw (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	<100	<100	<100	<100
F1-BTEX	----	EC580/VA	100	µg/L		<100	<100	<100	<100	<100
VPHw	----	EC580A/VA	100	µg/L		<100	<100	<100	<100	<100
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/VA	1.0	%		81.0	88.8	83.2	85.4	86.3
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		102	125	130	102	89.8
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%		98.0	97.0	96.9	96.8	94.1
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%		100	100	101	101	101
Glycols										
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
Glycols Surrogates										
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%		102	103	96.1	97.4	99.5

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: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP6-RW 12817	SNP8-Da 12805	SNP9-RW 12813	OF1-RW 12804	OF1-D 12803
					Client sampling date / time	28-Jul-2024 10:33	28-Jul-2024 07:19	28-Jul-2024 10:16	28-Jul-2024 06:35	28-Jul-2024 06:44
						YL2401025-006	YL2401025-007	YL2401025-008	YL2401025-009	YL2401025-010
						Result	Result	Result	Result	Result
Physical Tests										
Conductivity	----	E100/VA	2.0	µS/cm		167	2370	183	277	291
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		69.9	----	74.9	122	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		70.0	----	70.7	118	----
pH	----	E108/VA	0.10	pH units		7.65	8.22	7.70	8.11	8.14
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		<3.0	3.1	<3.0	<3.0	3.5
Turbidity	----	E121/VA	0.10	NTU		1.08	1.98	1.40	1.28	2.50
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		14.0	18.8	14.5	10.1	10.2
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		0.0245	----	0.0502	0.0237	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	----	<0.00010	<0.00010	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00041	----	0.00043	0.00047	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0318	----	0.0318	0.0544	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	----	<0.000100	<0.000100	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	----	<0.000050	<0.000050	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		0.019	----	0.021	0.018	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		<0.0000050	----	<0.0000050	<0.0000050	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		18.9	----	18.6	29.7	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000012	----	0.000024	<0.000010	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	----	<0.00050	<0.00050	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		<0.00010	----	<0.00010	<0.00010	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00077	----	0.00081	0.00132	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		0.260	----	0.304	0.062	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		<0.000050	----	0.000061	<0.000050	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0046	----	0.0052	0.0068	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		5.53	----	5.90	10.6	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.00759	----	0.00966	0.00523	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	----	<0.0000050	<0.0000050	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000101	----	0.000113	0.000686	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.00095	----	0.00104	0.00108	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	----	<0.050	<0.050	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP6-RW 12817	SNP8-Da 12805	SNP9-RW 12813	OF1-RW 12804	OF1-D 12803
					Client sampling date / time	28-Jul-2024 10:33	28-Jul-2024 07:19	28-Jul-2024 10:16	28-Jul-2024 06:35	28-Jul-2024 06:44
						YL2401025-006	YL2401025-007	YL2401025-008	YL2401025-009	YL2401025-010
						Result	Result	Result	Result	Result
Total Metals										
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		0.981	----	0.990	1.05	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00069	----	0.00066	0.00068	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000109	----	0.000116	0.000162	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		0.50	----	0.53	1.13	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	----	<0.000010	<0.000010	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		6.60	----	7.38	12.9	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.0542	----	0.0562	0.161	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		13.6	----	15.1	14.3	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	----	<0.00020	<0.00020	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	----	<0.000010	<0.000010	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	----	<0.00010	<0.00010	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	----	<0.00010	<0.00010	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.00050	----	0.00101	0.00040	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	----	<0.00010	<0.00010	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000031	----	0.000041	0.000364	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	----	<0.00050	<0.00050	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		<0.0030	----	<0.0030	<0.0030	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	----	<0.00020	<0.00020	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.0118	----	0.0125	0.0054	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	----	<0.00010	<0.00010	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00038	----	0.00035	0.00039	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.0300	----	0.0308	0.0524	----
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		<0.000100	----	<0.000100	<0.000100	----
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	----	<0.000050	<0.000050	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		0.018	----	0.022	0.019	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		<0.0000050	----	<0.0000050	<0.0000050	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		19.2	----	20.8	32.5	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		<0.000010	----	<0.000010	<0.000010	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	----	<0.00050	<0.00050	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		<0.00010	----	<0.00010	<0.00010	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP6-RW 12817	SNP8-Da 12805	SNP9-RW 12813	OF1-RW 12804	OF1-D 12803
					Client sampling date / time	28-Jul-2024 10:33	28-Jul-2024 07:19	28-Jul-2024 10:16	28-Jul-2024 06:35	28-Jul-2024 06:44
						YL2401025-006	YL2401025-007	YL2401025-008	YL2401025-009	YL2401025-010
						Result	Result	Result	Result	Result
Dissolved Metals										
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00074	----	0.00071	0.00122	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.182	----	0.172	0.021	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	----	<0.000050	<0.000050	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0047	----	0.0057	0.0073	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		5.33	----	5.58	9.98	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.00373	----	0.00651	0.00055	----
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	----	<0.0000050	<0.0000050	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.000096	----	0.000112	0.000675	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.00100	----	0.00093	0.00099	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	----	<0.050	<0.050	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		0.970	----	0.965	1.06	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00058	----	0.00058	0.00056	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		0.000121	----	0.000110	0.000159	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		0.374	----	0.356	0.989	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	----	<0.000010	<0.000010	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		6.44	----	7.34	12.0	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.0546	----	0.0614	0.161	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		13.2	----	14.0	13.7	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	----	<0.00020	<0.00020	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	----	<0.000010	<0.000010	----
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	----	<0.00010	<0.00010	----
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	----	<0.00010	<0.00010	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	----	<0.00030	<0.00030	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	----	<0.00010	<0.00010	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000027	----	0.000040	0.000335	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	----	<0.00050	<0.00050	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		0.0011	----	<0.0010	<0.0010	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	----	<0.00020	<0.00020	----
Dissolved mercury filtration location	----	EP509/VA	-	-		Field	----	Field	Field	----
Dissolved metals filtration location	----	EP421/VA	-	-		Field	----	Field	Field	----
Aggregate Organics										

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP6-RW 12817	SNP8-Da 12805	SNP9-RW 12813	OF1-RW 12804	OF1-D 12803
					Client sampling date / time	28-Jul-2024 10:33	28-Jul-2024 07:19	28-Jul-2024 10:16	28-Jul-2024 06:35	28-Jul-2024 06:44
						YL2401025-006	YL2401025-007	YL2401025-008	YL2401025-009	YL2401025-010
						Result	Result	Result	Result	Result
Aggregate Organics										
Carbonaceous biochemical oxygen demand [CBOD]	----	CBOD5/1Y	2	mg/L		0	0	0	0	0
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	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	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	300	µg/L		<300	----	<300	<300	----
F3 (C16-C34)	----	E601/VA	300	µg/L		<300	----	<300	<300	----
F4 (C34-C50)	----	E601/VA	300	µg/L		<300	----	<300	<300	----
VHw (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	----	<100	<100	----
F1-BTEX	----	EC580/VA	100	µg/L		<100	----	<100	<100	----
VPHw	----	EC580A/VA	100	µg/L		<100	----	<100	<100	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/VA	1.0	%		85.3	----	84.9	82.4	----
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		107	----	116	100	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%		96.6	----	96.8	96.0	----
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%		101	----	101	101	----
Glycols										
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
Glycols Surrogates										
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%		102	97.7	102	95.4	113

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: **Water**
(Matrix: **Water**)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	EC-RW 12801	SNP8-Db 12805	----	----	----
					Client sampling date / time	28-Jul-2024 08:04	28-Jul-2024 08:42	----	----	----
						YL2401025-011	YL2401025-012	--------	--------	--------
						Result	Result	----	----	----
Physical Tests										
Conductivity	----	E100/VA	2.0	µS/cm		278	2370	----	----	----
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		123	----	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		156	----	----	----	----
pH	----	E108/VA	0.10	pH units		8.00	8.22	----	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		308	3.5	----	----	----
Turbidity	----	E121/VA	0.10	NTU		78.2	1.70	----	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		10.0	20.0	----	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		4.65	----	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		0.00023	----	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00557	----	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.218	----	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		0.000337	----	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		0.000084	----	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		0.031	----	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.000286	----	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		40.8	----	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		0.000798	----	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		0.00784	----	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		0.00602	----	----	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.0157	----	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		14.0	----	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		0.00719	----	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0141	----	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		13.2	----	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.659	----	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		0.0000293	----	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000884	----	----	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.0186	----	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		0.327	----	----	----	----

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	EC-RW 12801	SNP8-Db 12805	----	----	----
					Client sampling date / time	28-Jul-2024 08:04	28-Jul-2024 08:42	----	----	----
						YL2401025-011	YL2401025-012	--------	--------	--------
						Result	Result	----	----	----
Total Metals										
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		1.68	----	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00771	----	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000636	----	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		7.28	----	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		0.000071	----	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		11.8	----	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.201	----	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		14.6	----	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	----	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		0.000092	----	----	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		0.00056	----	----	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		0.0268	----	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	----	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000943	----	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		0.0141	----	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		0.0497	----	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		0.00055	----	----	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.0104	----	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	----	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00045	----	----	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.0502	----	----	----	----
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		0.019	----	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		33.3	----	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		<0.000010	----	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	----	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		<0.00010	----	----	----	----

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	EC-RW 12801	SNP8-Db 12805	----	----	----
					Client sampling date / time	28-Jul-2024 08:04	28-Jul-2024 08:42	----	----	----
						YL2401025-011	YL2401025-012	--------	--------	--------
						Result	Result	----	----	----
Dissolved Metals										
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00115	----	----	----	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.054	----	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	----	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0070	----	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		9.79	----	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.0407	----	----	----	----
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	----	----	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.000695	----	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.00103	----	----	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	----	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		1.02	----	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00044	----	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		0.000157	----	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		0.987	----	----	----	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	----	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		11.0	----	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.155	----	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		13.6	----	----	----	----
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		<0.00010	----	----	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		0.00041	----	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	----	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000349	----	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	----	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		<0.0010	----	----	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	----	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-		Field	----	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Field	----	----	----	----
Aggregate Organics										

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	EC-RW 12801	SNP8-Db 12805	----	----	----
					Client sampling date / time	28-Jul-2024 08:04	28-Jul-2024 08:42	----	----	----
						YL2401025-011	YL2401025-012	--------	--------	--------
						Result	Result	----	----	----
Aggregate Organics										
Carbonaceous biochemical oxygen demand [CBOD]	----	CBOD5/1Y	2	mg/L		5	3	----	----	----
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	----	----	----	----
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	----	----	----	----
F2 (C10-C16)	----	E601/VA	300	µg/L		<300	----	----	----	----
F3 (C16-C34)	----	E601/VA	300	µg/L		<300	----	----	----	----
F4 (C34-C50)	----	E601/VA	300	µg/L		<300	----	----	----	----
VHw (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	----	----	----	----
F1-BTEX	----	EC580/VA	100	µg/L		<100	----	----	----	----
VPHw	----	EC580A/VA	100	µg/L		<100	----	----	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/VA	1.0	%		82.5	----	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		103	----	----	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%		95.6	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%		100	----	----	----	----
Glycols										
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L		<5.0	<5.0	----	----	----
Glycols Surrogates										
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%		97.2	100	----	----	----

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.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **YL2401025**	Page	: 1 of 24
Client	: **Associated Engineering Ltd.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: 301 - 4109 4th Avenue Whitehorse YT Canada Y1A 5M2	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: 2020-2886.055.505	Date Samples Received	: 30-Jul-2024 08:25
PO	: ----	Issue Date	: 08-Aug-2024 16:33
C-O-C number	: 17-824702		
Sampler	: D.O		
Site	: ----		
Quote number	: YL24-ASEG100-001		
No. of samples received	: 12		
No. of samples analysed	: 12		

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 : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] SNP4-RW 12813	CBOD5	28-Jul-2024	----	----	----		08-Aug-2024	48 hrs	267 hrs	× EHTL
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] SNP6-RW 12817	CBOD5	28-Jul-2024	----	----	----		08-Aug-2024	48 hrs	267 hrs	× EHTL
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] SNP9-RW 12813	CBOD5	28-Jul-2024	----	----	----		08-Aug-2024	48 hrs	267 hrs	× EHTL
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] SNP8-Db 12805	CBOD5	28-Jul-2024	----	----	----		08-Aug-2024	48 hrs	268 hrs	× EHTL
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] EC-RW 12801	CBOD5	28-Jul-2024	----	----	----		08-Aug-2024	48 hrs	269 hrs	× EHTL
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] SNP5-RW 12815	CBOD5	28-Jul-2024	----	----	----		08-Aug-2024	48 hrs	269 hrs	× EHTL
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] OF1-D 12803	CBOD5	28-Jul-2024	----	----	----		08-Aug-2024	48 hrs	270 hrs	× EHTR

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*	
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] SNP1-RW 12806	CBOD5	28-Jul-2024	----	----	----		08-Aug-2024	48 hrs	270 hrs	× EHTR
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] SNP3-RW 12811	CBOD5	28-Jul-2024	----	----	----		08-Aug-2024	48 hrs	270 hrs	× EHTR
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] SNP8-Da 12805	CBOD5	28-Jul-2024	----	----	----		08-Aug-2024	48 hrs	270 hrs	× EHTR
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] OF1-RW 12804	CBOD5	28-Jul-2024	----	----	----		08-Aug-2024	48 hrs	271 hrs	× EHTR
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) EC-RW 12801	E509	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) OF1-RW 12804	E509	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) SNP1-RW 12806	E509	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) SNP3-RW 12811	E509	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) SNP4-RW 12813	E509	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓

Matrix: **Water**

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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 Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) SNP5-RW 12815	E509	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) SNP6-RW 12817	E509	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) SNP9-RW 12813	E509	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial - dissolved (lab preserved) Trip Blank	E509	27-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) EC-RW 12801	E421	28-Jul-2024	01-Aug-2024	180 days	4 days	✓	02-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) OF1-RW 12804	E421	28-Jul-2024	01-Aug-2024	180 days	4 days	✓	02-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP1-RW 12806	E421	28-Jul-2024	01-Aug-2024	180 days	4 days	✓	02-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP3-RW 12811	E421	28-Jul-2024	01-Aug-2024	180 days	4 days	✓	02-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP4-RW 12813	E421	28-Jul-2024	01-Aug-2024	180 days	4 days	✓	02-Aug-2024	180 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) SNP5-RW 12815	E421	28-Jul-2024	01-Aug-2024	180 days	4 days	✓	02-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP6-RW 12817	E421	28-Jul-2024	01-Aug-2024	180 days	4 days	✓	02-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP9-RW 12813	E421	28-Jul-2024	01-Aug-2024	180 days	4 days	✓	02-Aug-2024	180 days	5 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) Trip Blank	E421	27-Jul-2024	01-Aug-2024	180 days	5 days	✓	02-Aug-2024	180 days	6 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial EC-RW 12801	E680E	28-Jul-2024	02-Aug-2024	7 days	5 days	✓	04-Aug-2024	40 days	2 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial OF1-D 12803	E680E	28-Jul-2024	02-Aug-2024	7 days	5 days	✓	04-Aug-2024	40 days	2 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial OF1-RW 12804	E680E	28-Jul-2024	02-Aug-2024	7 days	5 days	✓	04-Aug-2024	40 days	2 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP1-RW 12806	E680E	28-Jul-2024	02-Aug-2024	7 days	5 days	✓	04-Aug-2024	40 days	2 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP3-RW 12811	E680E	28-Jul-2024	02-Aug-2024	7 days	5 days	✓	04-Aug-2024	40 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
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP4-RW 12813	E680E	28-Jul-2024	02-Aug-2024	7 days	5 days	✓	04-Aug-2024	40 days	2 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP5-RW 12815	E680E	28-Jul-2024	02-Aug-2024	7 days	5 days	✓	04-Aug-2024	40 days	2 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP6-RW 12817	E680E	28-Jul-2024	02-Aug-2024	7 days	5 days	✓	04-Aug-2024	40 days	2 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP8-Da 12805	E680E	28-Jul-2024	02-Aug-2024	7 days	5 days	✓	04-Aug-2024	40 days	2 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP8-Db 12805	E680E	28-Jul-2024	02-Aug-2024	7 days	5 days	✓	04-Aug-2024	40 days	2 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP9-RW 12813	E680E	28-Jul-2024	02-Aug-2024	7 days	5 days	✓	04-Aug-2024	40 days	2 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial Trip Blank	E680E	27-Jul-2024	02-Aug-2024	7 days	6 days	✓	04-Aug-2024	40 days	2 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) EC-RW 12801	E601	28-Jul-2024	02-Aug-2024	14 days	5 days	✓	02-Aug-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) OF1-RW 12804	E601	28-Jul-2024	02-Aug-2024	14 days	5 days	✓	02-Aug-2024	40 days	1 days	✓

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			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										
Amber glass/Teflon lined cap (sodium bisulfate)										
SNP1-RW 12806	E601	28-Jul-2024	02-Aug-2024	14 days	5 days	✓	02-Aug-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
SNP3-RW 12811	E601	28-Jul-2024	02-Aug-2024	14 days	5 days	✓	02-Aug-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
SNP4-RW 12813	E601	28-Jul-2024	02-Aug-2024	14 days	5 days	✓	02-Aug-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
SNP5-RW 12815	E601	28-Jul-2024	02-Aug-2024	14 days	5 days	✓	02-Aug-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
SNP6-RW 12817	E601	28-Jul-2024	02-Aug-2024	14 days	5 days	✓	02-Aug-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
SNP9-RW 12813	E601	28-Jul-2024	02-Aug-2024	14 days	5 days	✓	02-Aug-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
Trip Blank	E601	27-Jul-2024	02-Aug-2024	14 days	5 days	✓	02-Aug-2024	40 days	1 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
EC-RW 12801	E581.VH+F1	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
OF1-RW 12804	E581.VH+F1	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓

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			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) SNP1-RW 12806	E581.VH+F1	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP3-RW 12811	E581.VH+F1	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP4-RW 12813	E581.VH+F1	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP5-RW 12815	E581.VH+F1	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP6-RW 12817	E581.VH+F1	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP9-RW 12813	E581.VH+F1	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) Trip Blank	E581.VH+F1	27-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) OF1-D 12803	E358-L	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP1-RW 12806	E358-L	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓

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			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP3-RW 12811	E358-L	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP4-RW 12813	E358-L	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP5-RW 12815	E358-L	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP8-Da 12805	E358-L	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP8-Db 12805	E358-L	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) EC-RW 12801	E358-L	28-Jul-2024	01-Aug-2024	3 days	3 days	✓	01-Aug-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) OF1-RW 12804	E358-L	28-Jul-2024	01-Aug-2024	3 days	3 days	✓	01-Aug-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) SNP6-RW 12817	E358-L	28-Jul-2024	01-Aug-2024	3 days	3 days	✓	01-Aug-2024	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) SNP9-RW 12813	E358-L	28-Jul-2024	01-Aug-2024	3 days	3 days	✓	01-Aug-2024	28 days	0 days	✓

Matrix: **Water**

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			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
HDPE Trip Blank	E358-L	27-Jul-2024	01-Aug-2024	3 days	4 days	× EHT	01-Aug-2024	28 days	0 days	✓
Physical Tests : Conductivity in Water										
HDPE EC-RW 12801	E100	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE OF1-D 12803	E100	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE OF1-RW 12804	E100	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP1-RW 12806	E100	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP3-RW 12811	E100	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP4-RW 12813	E100	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP5-RW 12815	E100	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP6-RW 12817	E100	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓

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			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Physical Tests : Conductivity in Water										
HDPE SNP8-Da 12805	E100	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP8-Db 12805	E100	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP9-RW 12813	E100	28-Jul-2024	01-Aug-2024	28 days	4 days	✓	01-Aug-2024	28 days	4 days	✓
Physical Tests : Conductivity in Water										
HDPE Trip Blank	E100	27-Jul-2024	01-Aug-2024	28 days	5 days	✓	01-Aug-2024	28 days	5 days	✓
Physical Tests : pH by Meter										
HDPE SNP5-RW 12815	E108	28-Jul-2024	01-Aug-2024	0.25 hrs	101 hrs	× EHTR-FM	01-Aug-2024	0.25 hrs	102 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP8-Db 12805	E108	28-Jul-2024	01-Aug-2024	0.25 hrs	101 hrs	× EHTR-FM	01-Aug-2024	0.25 hrs	102 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE EC-RW 12801	E108	28-Jul-2024	01-Aug-2024	0.25 hrs	101 hrs	× EHTR-FM	01-Aug-2024	0.25 hrs	103 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP3-RW 12811	E108	28-Jul-2024	01-Aug-2024	0.25 hrs	102 hrs	× EHTR-FM	01-Aug-2024	0.25 hrs	103 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE OF1-D 12803	E108	28-Jul-2024	01-Aug-2024	0.25 hrs	102 hrs	× EHTR-FM	01-Aug-2024	0.25 hrs	104 hrs	× EHTR-FM

Matrix: **Water**

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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 : pH by Meter										
HDPE SNP1-RW 12806	E108	28-Jul-2024	01-Aug-2024	0.25 hrs	102 hrs	× EHTR-FM	01-Aug-2024	0.25 hrs	104 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP8-Da 12805	E108	28-Jul-2024	01-Aug-2024	0.25 hrs	102 hrs	× EHTR-FM	01-Aug-2024	0.25 hrs	104 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE OF1-RW 12804	E108	28-Jul-2024	01-Aug-2024	0.25 hrs	103 hrs	× EHTR-FM	01-Aug-2024	0.25 hrs	104 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE Trip Blank	E108	27-Jul-2024	01-Aug-2024	0.25 hrs	110 hrs	× EHTR-FM	01-Aug-2024	0.25 hrs	112 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP6-RW 12817	E108	28-Jul-2024	01-Aug-2024	0.25 hrs	99 hrs	× EHTR-FM	01-Aug-2024	0.25 hrs	100 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP4-RW 12813	E108	28-Jul-2024	01-Aug-2024	0.25 hrs	99 hrs	× EHTR-FM	01-Aug-2024	0.25 hrs	101 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP9-RW 12813	E108	28-Jul-2024	01-Aug-2024	0.25 hrs	99 hrs	× EHTR-FM	01-Aug-2024	0.25 hrs	101 hrs	× EHTR-FM
Physical Tests : TSS by Gravimetry										
HDPE EC-RW 12801	E160	28-Jul-2024	----	----	----		02-Aug-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE OF1-D 12803	E160	28-Jul-2024	----	----	----		02-Aug-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
Physical Tests : TSS by Gravimetry										
HDPE OF1-RW 12804	E160	28-Jul-2024	----	----	----		02-Aug-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP1-RW 12806	E160	28-Jul-2024	----	----	----		02-Aug-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP3-RW 12811	E160	28-Jul-2024	----	----	----		02-Aug-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP4-RW 12813	E160	28-Jul-2024	----	----	----		02-Aug-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP5-RW 12815	E160	28-Jul-2024	----	----	----		02-Aug-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP6-RW 12817	E160	28-Jul-2024	----	----	----		02-Aug-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP8-Da 12805	E160	28-Jul-2024	----	----	----		02-Aug-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP8-Db 12805	E160	28-Jul-2024	----	----	----		02-Aug-2024	7 days	5 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP9-RW 12813	E160	28-Jul-2024	----	----	----		02-Aug-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
Physical Tests : TSS by Gravimetry										
HDPE Trip Blank	E160	27-Jul-2024	----	----	----		02-Aug-2024	7 days	5 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE SNP4-RW 12813	E121	28-Jul-2024	----	----	----		01-Aug-2024	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE SNP6-RW 12817	E121	28-Jul-2024	----	----	----		01-Aug-2024	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE SNP8-Db 12805	E121	28-Jul-2024	----	----	----		01-Aug-2024	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE SNP9-RW 12813	E121	28-Jul-2024	----	----	----		01-Aug-2024	3 days	3 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE EC-RW 12801	E121	28-Jul-2024	----	----	----		01-Aug-2024	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE OF1-D 12803	E121	28-Jul-2024	----	----	----		01-Aug-2024	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE OF1-RW 12804	E121	28-Jul-2024	----	----	----		01-Aug-2024	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP1-RW 12806	E121	28-Jul-2024	----	----	----		01-Aug-2024	3 days	4 days	× EHT

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 : Turbidity by Nephelometry										
HDPE SNP3-RW 12811	E121	28-Jul-2024	----	----	----		01-Aug-2024	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP5-RW 12815	E121	28-Jul-2024	----	----	----		01-Aug-2024	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP8-Da 12805	E121	28-Jul-2024	----	----	----		01-Aug-2024	3 days	4 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE Trip Blank	E121	27-Jul-2024	----	----	----		01-Aug-2024	3 days	4 days	× EHT
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) EC-RW 12801	E508	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) OF1-RW 12804	E508	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP1-RW 12806	E508	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP3-RW 12811	E508	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP4-RW 12813	E508	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 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 (hydrochloric acid) SNP5-RW 12815	E508	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP6-RW 12817	E508	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP9-RW 12813	E508	28-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial - total (lab preserved) Trip Blank	E508	27-Jul-2024	04-Aug-2024	28 days	7 days	✓	04-Aug-2024	28 days	7 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) EC-RW 12801	E420	28-Jul-2024	02-Aug-2024	180 days	5 days	✓	02-Aug-2024	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) OF1-RW 12804	E420	28-Jul-2024	02-Aug-2024	180 days	5 days	✓	02-Aug-2024	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP1-RW 12806	E420	28-Jul-2024	02-Aug-2024	180 days	5 days	✓	02-Aug-2024	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP3-RW 12811	E420	28-Jul-2024	02-Aug-2024	180 days	5 days	✓	02-Aug-2024	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP4-RW 12813	E420	28-Jul-2024	02-Aug-2024	180 days	5 days	✓	02-Aug-2024	180 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 Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP5-RW 12815	E420	28-Jul-2024	02-Aug-2024	180 days	5 days	✓	02-Aug-2024	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP6-RW 12817	E420	28-Jul-2024	02-Aug-2024	180 days	5 days	✓	02-Aug-2024	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP9-RW 12813	E420	28-Jul-2024	02-Aug-2024	180 days	5 days	✓	02-Aug-2024	180 days	5 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) Trip Blank	E420	27-Jul-2024	02-Aug-2024	180 days	5 days	✓	02-Aug-2024	180 days	6 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) EC-RW 12801	E611A	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) OF1-RW 12804	E611A	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP1-RW 12806	E611A	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP3-RW 12811	E611A	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP4-RW 12813	E611A	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 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
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP5-RW 12815	E611A	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP6-RW 12817	E611A	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP9-RW 12813	E611A	28-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) Trip Blank	E611A	27-Jul-2024	06-Aug-2024	14 days	9 days	✓	07-Aug-2024	14 days	10 days	✓

Legend & Qualifier Definitions

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

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

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	1580731	1	11	9.0	5.0	✓
Conductivity in Water	E100	1576000	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1579811	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1575357	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1574625	1	17	5.8	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1578257	1	14	7.1	5.0	✓
pH by Meter	E108	1575999	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1579863	2	24	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1575401	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1576824	2	27	7.4	5.0	✓
Turbidity by Nephelometry	E121	1575220	1	14	7.1	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1580729	1	18	5.5	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	1580731	1	11	9.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1576798	1	9	11.1	5.0	✓
Conductivity in Water	E100	1576000	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1579811	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1575357	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1574625	1	17	5.8	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1578257	1	14	7.1	5.0	✓
pH by Meter	E108	1575999	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1579863	2	24	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1575401	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1576824	2	27	7.4	5.0	✓
Turbidity by Nephelometry	E121	1575220	1	14	7.1	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1580729	1	18	5.5	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	1580731	1	11	9.0	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1576798	1	9	11.1	5.0	✓
Conductivity in Water	E100	1576000	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1579811	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1575357	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1574625	1	17	5.8	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1578257	1	14	7.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1579863	2	24	8.3	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*
Method Blanks (MB) - Continued							
Total Metals in Water by CRC ICPMS	E420	1575401	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1576824	2	27	7.4	5.0	✓
Turbidity by Nephelometry	E121	1575220	1	14	7.1	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1580729	1	18	5.5	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1580731	1	11	9.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1579811	1	18	5.5	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1575357	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1574625	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	1579863	2	24	8.3	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1575401	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1580729	1	18	5.5	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
Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day	CBOD5 Taiga Environmental Laboratory - 4601 - 52nd Avenue P.O. BOX 1500 Yellowknife Northwest Territories Canada X1A 2R3	Water	SM5210B	Sample was diluted, seeded, and incubated at specified temperature for 5 days. Dissolved oxygen is measured initially and after incubation, and the CBOD is computed from the difference between initial and final DO.
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.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
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.
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
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.
Glycols (4 analytes) by GC-FID	E680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Derivatized glycols are analyzed by GC-FID.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CaCO3 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.
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 for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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.
Glycols Extraction and Derivatization (BC Only)	EP680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Aqueous sample is derivatized and extracted with orgaic solvent.

ALS Canada Ltd.

QUALITY CONTROL REPORT

Work Order	: **YL2401025**	Page	: 1 of 17
Client	: Associated Engineering Ltd.	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: 301 - 4109 4th Avenue Whitehorse YT Canada Y1A 5M2	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: 2020-2886.055.505	Date Samples Received	: 30-Jul-2024 08:25
PO	: ----	Date Analysis Commenced	: 01-Aug-2024
C-O-C number	: 17-824702	Issue Date	: 08-Aug-2024 16:37
Sampler	: D.O		
Site	: ----		
Quote number	: YL24-ASEG100-001		
No. of samples received	: 12		
No. of samples analysed	: 12		

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*
Alex Thornton	Analyst	Vancouver Metals, Burnaby, British Columbia
Courtney Cox	Analyst- General	Vancouver Inorganics, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Daniela Ruiz	Account Manager Assistant	Taiga Environmental Laboratory External Subcontracting, Yellowknife, Northwest Territories
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Maya Urquhart	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Miles Gropen	Department Manager - Inorganics	Vancouver Inorganics, 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: 1575220)											
YL2401025-001	Trip Blank	Turbidity	----	E121	0.10	NTU	<0.10	<0.10	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1575999)											
VA24B8788-001	Anonymous	pH	----	E108	0.10	pH units	7.12	7.12	0.00%	4%	----
Physical Tests (QC Lot: 1576000)											
VA24B8788-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	245	245	0.00%	10%	----
Physical Tests (QC Lot: 1576824)											
VA24B8810-002	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	163	144	12.5%	20%	----
Physical Tests (QC Lot: 1576825)											
YL2401025-005	SNP5-RW 12815	Solids, total suspended [TSS]	----	E160	3.0	mg/L	4.1	3.9	0.2	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1574625)											
VA24B8950-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	6.94	7.14	2.75%	20%	----
Total Metals (QC Lot: 1575401)											
FJ2402193-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0038	0.0043	0.0005	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.0332	0.0325	2.32%	20%	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00057	0.00051	0.00006	Diff <2x LOR	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0264	0.0264	0.300%	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	0.014	0.015	0.0006	Diff <2x LOR	----
		Cadmium, total	7440-43-9	E420	0.0000050	mg/L	0.000888	0.000881	0.790%	20%	----
		Calcium, total	7440-70-2	E420	0.050	mg/L	141	141	0.360%	20%	----
		Cesium, total	7440-46-2	E420	0.000010	mg/L	0.000079	0.000073	0.000006	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	0.00057	0.00059	0.00002	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00100	0.00106	0.00006	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.297	0.308	3.65%	20%	----
		Lead, total	7439-92-1	E420	0.000050	mg/L	0.000604	0.000602	0.241%	20%	----
		Lithium, total	7439-93-2	E420	0.0010	mg/L	0.0069	0.0071	0.0002	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	80.5	82.5	2.47%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0311	0.0309	0.555%	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: 1575401) - continued											
FJ2402193-001	Anonymous	Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.00344	0.00335	2.60%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00833	0.00848	1.78%	20%	----
		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	1.84	1.86	0.814%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00272	0.00268	1.70%	20%	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.00186	0.00203	9.00%	20%	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	2.57	2.61	1.49%	20%	----
		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	37.9	38.2	0.862%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.774	0.760	1.93%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	165	172	3.70%	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	0.000030	0.000012	0.000018	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	0.00120	mg/L	<0.00120	<0.00120	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	0.0367	0.0360	1.96%	20%	----
		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	0.416	0.413	0.752%	20%	----
		Zirconium, total	7440-67-7	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Total Metals (QC Lot: 1579863)											
VA24B9013-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	0.0000070	0.0000061	0.0000010	Diff <2x LOR	----
Total Metals (QC Lot: 1579864)											
YL2401025-006	SNP6-RW 12817	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1575357)											
YL2401014-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0100	mg/L	0.0136	0.0121	0.0015	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00100	mg/L	0.0370	0.0374	1.06%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00100	mg/L	19.8	19.8	0.368%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00100	mg/L	0.0439	0.0433	1.55%	20%	----
		Beryllium, dissolved	7440-41-7	E421	0.000200	mg/L	<0.000200	<0.000200	0	Diff <2x LOR	----
		Bismuth, dissolved	7440-69-9	E421	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		Boron, dissolved	7440-42-8	E421	0.100	mg/L	0.351	0.359	0.008	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000500	mg/L	0.000126	0.000129	0.0000032	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*
Dissolved Metals (QC Lot: 1575357) - continued											
YL2401014-001	Anonymous	Calcium, dissolved	7440-70-2	E421	0.500	mg/L	792	784	1.09%	20%	----
		Cesium, dissolved	7440-46-2	E421	0.000100	mg/L	0.00134	0.00133	0.614%	20%	----
		Chromium, dissolved	7440-47-3	E421	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		Cobalt, dissolved	7440-48-4	E421	0.00100	mg/L	0.144	0.144	0.593%	20%	----
		Copper, dissolved	7440-50-8	E421	0.00200	mg/L	0.00501	0.00498	0.00003	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.100	mg/L	19.9	20.2	1.45%	20%	----
		Lead, dissolved	7439-92-1	E421	0.000500	mg/L	0.00179	0.00185	0.000054	Diff <2x LOR	----
		Lithium, dissolved	7439-93-2	E421	0.0100	mg/L	0.0650	0.0679	0.0029	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.0500	mg/L	138	140	1.88%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00100	mg/L	3.22	3.22	0.0430%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000500	mg/L	0.00849	0.00844	0.532%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00500	mg/L	0.0971	0.0977	0.589%	20%	----
		Phosphorus, dissolved	7723-14-0	E421	0.500	mg/L	<0.500	<0.500	0	Diff <2x LOR	----
		Potassium, dissolved	7440-09-7	E421	0.500	mg/L	11.6	11.8	1.71%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00200	mg/L	0.0119	0.0112	0.00078	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000500	mg/L	<0.000500	<0.000500	0	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.500	mg/L	6.92	6.88	0.533%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.500	mg/L	414	411	0.781%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00200	mg/L	9.84	10.0	2.15%	20%	----
		Sulfur, dissolved	7704-34-9	E421	5.00	mg/L	297	308	3.67%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Thorium, dissolved	7440-29-1	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Tin, dissolved	7440-31-5	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Titanium, dissolved	7440-32-6	E421	0.00300	mg/L	<0.00300	<0.00300	0	Diff <2x LOR	----
		Tungsten, dissolved	7440-33-7	E421	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Uranium, dissolved	7440-61-1	E421	0.000100	mg/L	0.0149	0.0151	1.42%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00500	mg/L	<0.00500	<0.00500	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0100	mg/L	0.206	0.205	0.554%	20%	----
		Zirconium, dissolved	7440-67-7	E421	0.00200	mg/L	<0.00200	<0.00200	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1579811)											
VA24B8803-002	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1580731)											

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*
Volatile Organic Compounds (QC Lot: 1580731) - continued											
VA24B8919-001	Anonymous	Benzene	71-43-2	E611A	0.50	µg/L	263	256	2.69%	30%	----
		Ethylbenzene	100-41-4	E611A	0.50	µg/L	152	150	1.22%	30%	----
		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	2.00	µg/L	1250	1190	4.96%	30%	----
		Xylene, m+p-	179601-23-1	E611A	0.40	µg/L	670	653	2.54%	30%	----
		Xylene, o-	95-47-6	E611A	0.30	µg/L	358	348	2.82%	30%	----
Hydrocarbons (QC Lot: 1580729)											
VA24B8524-001	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%	----
Glycols (QC Lot: 1578257)											
VA24B8856-001	Anonymous	Ethylene glycol	107-21-1	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----

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: 1575220)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1576000)						
Conductivity	----	E100	1	µS/cm	1.9	----
Physical Tests (QCLot: 1576824)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1576825)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Organic / Inorganic Carbon (QCLot: 1574625)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 1575401)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1575401) - continued						
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: 1579863)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Total Metals (QCLot: 1579864)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1575357)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1575357) - continued						
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	----
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: 1579811)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds (QCLot: 1580731)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1580731) - continued						
Xylene, o-	95-47-6	E611A	0.3	µg/L	<0.30	----
Hydrocarbons (QCLot: 1576798)						
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: 1580729)						
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Glycols (QCLot: 1578257)						
Ethylene glycol	107-21-1	E680E	5	mg/L	<5.0	----

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: 1575220)									
Turbidity	----	E121	0.1	NTU	200 NTU	98.5	85.0	115	----
Physical Tests (QCLot: 1575999)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1576000)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	97.8	90.0	110	----
Physical Tests (QCLot: 1576824)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	99.9	85.0	115	----
Physical Tests (QCLot: 1576825)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	102	85.0	115	----
Organic / Inorganic Carbon (QCLot: 1574625)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	100	80.0	120	----
Total Metals (QCLot: 1575401)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	101	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	106	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.8	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	90.7	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	93.4	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.2	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	92.5	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	98.0	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	100	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.3	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	94.8	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	93.8	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	95.5	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	108	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	104	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	104	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
Total Metals (QCLot: 1575401) - continued									
Nickel, total	7440-02-0	E420	0.0005	mg/L	0.5 mg/L	98.0	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	115	80.0	120	----
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	101	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	97.2	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	102	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	112	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	94.8	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	102	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	97.1	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	98.4	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	90.2	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	93.8	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	96.4	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	89.6	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	96.1	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	99.6	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	97.1	80.0	120	----
Total Metals (QCLot: 1579863)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	98.6	80.0	120	----
Total Metals (QCLot: 1579864)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	99.6	80.0	120	----
Dissolved Metals (QCLot: 1575357)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	101	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.9	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	93.5	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	100	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	97.7	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.2	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	100	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.9	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	99.6	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike: Target Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Dissolved Metals (QCLot: 1575357) - continued									
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	98.1	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	98.7	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	99.9	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	90.9	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.1	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	103	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	95.6	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	97.6	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	96.6	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	118	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	100	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	101	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	110	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	91.1	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	103	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	91.8	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	96.0	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	97.8	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	87.7	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.8	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	95.8	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	93.3	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	91.8	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	99.2	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	93.9	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	98.6	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	101	80.0	120	----
Volatile Organic Compounds (QCLot: 1580731)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	97.6	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	91.0	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	100 µg/L	100	70.0	130	----
Styrene	100-42-5	E611A	0.5	µg/L	100 µg/L	100	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
Volatile Organic Compounds (QCLot: 1580731) - continued									
Toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	93.8	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	94.3	70.0	130	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	92.3	70.0	130	----
Hydrocarbons (QCLot: 1576798)									
F2 (C10-C16)	----	E601	100	µg/L	3540 µg/L	97.8	70.0	130	----
F3 (C16-C34)	----	E601	250	µg/L	7050 µg/L	92.1	70.0	130	----
F4 (C34-C50)	----	E601	250	µg/L	5050 µg/L	102	70.0	130	----
Hydrocarbons (QCLot: 1580729)									
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	79.5	70.0	130	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	77.4	70.0	130	----
Glycols (QCLot: 1578257)									
Ethylene glycol	107-21-1	E680E	5	mg/L	25 mg/L	97.4	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
Organic / Inorganic Carbon (QCLot: 1574625)										
VA24B8950-002	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	4.44 mg/L	5 mg/L	88.7	70.0	130	----
Total Metals (QCLot: 1575401)										
FJ2402198-001	Anonymous	Aluminum, total	7429-90-5	E420	0.198 mg/L	0.2 mg/L	98.8	70.0	130	----
		Antimony, total	7440-36-0	E420	0.0196 mg/L	0.02 mg/L	98.1	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0209 mg/L	0.02 mg/L	104	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	----	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0402 mg/L	0.04 mg/L	100	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00858 mg/L	0.01 mg/L	85.8	70.0	130	----
		Boron, total	7440-42-8	E420	0.099 mg/L	0.1 mg/L	99.2	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00391 mg/L	0.004 mg/L	97.8	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0100 mg/L	0.01 mg/L	100	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0395 mg/L	0.04 mg/L	98.8	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0191 mg/L	0.02 mg/L	95.5	70.0	130	----
		Copper, total	7440-50-8	E420	0.0185 mg/L	0.02 mg/L	92.6	70.0	130	----
		Iron, total	7439-89-6	E420	1.98 mg/L	2 mg/L	99.2	70.0	130	----
		Lead, total	7439-92-1	E420	0.0178 mg/L	0.02 mg/L	89.1	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0970 mg/L	0.1 mg/L	97.0	70.0	130	----
		Magnesium, total	7439-95-4	E420	ND mg/L	----	ND	70.0	130	----
		Manganese, total	7439-96-5	E420	0.0192 mg/L	0.02 mg/L	96.1	70.0	130	----
		Molybdenum, total	7439-98-7	E420	0.0205 mg/L	0.02 mg/L	102	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0361 mg/L	0.04 mg/L	90.2	70.0	130	----
		Phosphorus, total	7723-14-0	E420	10.5 mg/L	10 mg/L	105	70.0	130	----
		Potassium, total	7440-09-7	E420	3.92 mg/L	4 mg/L	98.0	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0413 mg/L	0.04 mg/L	103	70.0	130	----
		Silicon, total	7440-21-3	E420	9.50 mg/L	10 mg/L	95.0	70.0	130	----
		Silver, total	7440-22-4	E420	0.00399 mg/L	0.004 mg/L	99.7	70.0	130	----
		Sodium, total	7440-23-5	E420	2.02 mg/L	2 mg/L	101	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	0.0397 mg/L	0.04 mg/L	99.3	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00354 mg/L	0.004 mg/L	88.6	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		Tin, total	7440-31-5	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0399 mg/L	0.04 mg/L	99.7	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0181 mg/L	0.02 mg/L	90.6	70.0	130	----
		Uranium, total	7440-61-1	E420	0.00385 mg/L	0.004 mg/L	96.3	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.100 mg/L	0.1 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: 1575401) - continued										
FJ2402198-001	Anonymous	Zinc, total	7440-66-6	E420	0.377 mg/L	0.4 mg/L	94.2	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0394 mg/L	0.04 mg/L	98.5	70.0	130	----
Total Metals (QCLot: 1579863)										
VA24B9013-002	Anonymous	Mercury, total	7439-97-6	E508	0.0000944 mg/L	0 mg/L	94.4	70.0	130	----
Total Metals (QCLot: 1579864)										
YL2401025-008	SNP9-RW 12813	Mercury, total	7439-97-6	E508	0.0000948 mg/L	0 mg/L	94.8	70.0	130	----
Dissolved Metals (QCLot: 1575357)										
FJ2402179-006	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.196 mg/L	0.2 mg/L	98.0	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0198 mg/L	0.02 mg/L	99.0	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0208 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	0.0396 mg/L	0.04 mg/L	98.9	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00891 mg/L	0.01 mg/L	89.1	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00391 mg/L	0.004 mg/L	97.6	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0104 mg/L	0.01 mg/L	104	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.0389 mg/L	0.04 mg/L	97.3	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0186 mg/L	0.02 mg/L	93.2	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0184 mg/L	0.02 mg/L	91.9	70.0	130	----
		Iron, dissolved	7439-89-6	E421	1.95 mg/L	2 mg/L	97.6	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0181 mg/L	0.02 mg/L	90.5	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0998 mg/L	0.1 mg/L	99.8	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	0.0183 mg/L	0.02 mg/L	91.6	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	10.6 mg/L	10 mg/L	106	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.90 mg/L	4 mg/L	97.4	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0193 mg/L	0.02 mg/L	96.5	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0411 mg/L	0.04 mg/L	103	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	9.44 mg/L	10 mg/L	94.4	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00395 mg/L	0.004 mg/L	98.8	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	0.0407 mg/L	0.04 mg/L	102	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00362 mg/L	0.004 mg/L	90.5	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0184 mg/L	0.02 mg/L	92.2	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	98.2	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0381 mg/L	0.04 mg/L	95.4	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0183 mg/L	0.02 mg/L	91.4	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00360 mg/L	0.004 mg/L	90.1	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: 1575357) - continued										
FJ2402179-006	Anonymous	Vanadium, dissolved	7440-62-2	E421	0.100 mg/L	0.1 mg/L	100	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.369 mg/L	0.4 mg/L	92.2	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0412 mg/L	0.04 mg/L	103	70.0	130	----
Dissolved Metals (QCLot: 1579811)										
VA24B8912-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000934 mg/L	0 mg/L	93.4	70.0	130	----
Volatile Organic Compounds (QCLot: 1580731)										
VA24B8919-001	Anonymous	Benzene	71-43-2	E611A	ND µg/L	----	ND	60.0	140	----
		Ethylbenzene	100-41-4	E611A	ND µg/L	----	ND	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	104 µg/L	100 µg/L	104	60.0	140	----
		Styrene	100-42-5	E611A	106 µg/L	100 µg/L	106	60.0	140	----
		Toluene	108-88-3	E611A	ND µg/L	----	ND	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	ND µg/L	----	ND	60.0	140	----
		Xylene, o-	95-47-6	E611A	ND µg/L	----	ND	60.0	140	----
Hydrocarbons (QCLot: 1580729)										
VA24B8524-002	Anonymous	F1 (C6-C10)	----	E581.VH+F1	4490 µg/L	6310 µg/L	71.1	60.0	140	----
		VHw (C6-C10)	----	E581.VH+F1	4370 µg/L	6310 µg/L	69.3	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 - 824702

Page 1 of 1

Report To	Contact and company name below will appear on the final report
Company:	Associated Engineering (BC) Ltd
Contact:	Caitlin McKenzie
Phone:	867-687-2854
	Company address below will appear on the final report
Street:	301 - 4109 4th Ave
City/Province:	Whitehorse, YT
Postal Code:	Y1A 1H6
Invoice To	Same as Report To ☐ YES ☒ NO
	Copy of Invoice with Report ☒ YES ☐ NO
Company:	Associated Engineering
Contact:	Accounts Payable (Edmonton)

Project Information

ALS Account # / Quote #:	YL24-ASE-100-001
Job #:	2020-2886.055.505
PO / AFE:	
LSD:	Inuvik Airport
ALS Lab Work Order # (lab use only):	

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: mckenziec@ae.ca
Email 2:
Email 3:

Invoice Distribution

Select Invoice Distribution: ☒ EMAIL ☐ MAIL ☐ FAX
Email 1 or Fax: mckenziec@ae.ca
Email 2:

Oil and Gas Required Fields (client use)

AFE/Cost Center:	PO#
Major/Minor Code:	Routing Code:
Requisitioner:	
Location:	

ALS Contact: Oliver Gregg Sampler: D.O.

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)] ☐

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.

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) W.O. #	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	Receiving Water	Runoff Water	Dissolved metals + Hg	Dissolved nutrients	SAMPLES ON HOLD	SUSPECTED HAZARD (see Special Instructions)
	Trip Blank	28-Jul-24	-	Water	15						
	SNP1-RW 12806		08:05		13	X		F	F		
	SNP3-RW 12811		08:41		13	X		F	F		
	SNP4-RW 12813		11:16		13	X		F	F		
	SNP5-RW 12815		09:30		13	X		F	F		
	SNP6-RW 12817		11:33		13	X		F	F		
	SNP8-Da 12805		08:19		7		X		F		
	SNP9-RW 12813		11:16		13	X		F	F		
	OF1-RW 12804		07:35		13	X		F	F		
	OF1-D 12803		07:44		7		X		F		
	EC-RW 12801		09:04		13	X		F	F		
	SNP8-Db 12805		09:42		7		X		F		

Environmental Division
Yellowknife
Work Order Reference
YL2401025

Telephone : +1 867 873 5593

Drinking Water (DW) Samples[1] (client use)

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

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

Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only)

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
5.3	

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:
BRENT LARISON	2024-07-29		MH	July 30/24	9:25			

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

JUNE 2015 FRONT

RELEASE TO CANADIAN NORTH - RUSH

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	: **YL2401534**		
Amendment	: **2**		
Client	: **Associated Engineering Ltd.**	Laboratory	: ALS Environmental - Vancouver
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: Unit 201, 5103 48 St. Yellowknife Northwest Territories Canada X1A 1N5	Address	: 8081 Lougheed Highway Burnaby BC Canada V5A 1W9
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: 2024 Water License Monitoring	Date Samples Received	: 18-Sep-2024 16:15
PO	: 2020-2886.055.599	Date Analysis Commenced	: 19-Sep-2024
C-O-C number	: ----	Issue Date	: 28-Oct-2024 16:24
Sampler	: ----		
Site	: ----		
Quote number	: YL24-ASEG100-001		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
Chamoi Beckford	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
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Inorganics, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Organics, Burnaby, British Columbia
Marianne Jensen	Analyst- General	Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Oliver Gregg	Client Services Supervisor	External Subcontracting, Yellowknife, Northwest Territories
Owen Cheng		Metals, Burnaby, British Columbia
Raymond Lin	Analyst	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
NTU	nephelometric turbidity units
pH units	pH units
µS/cm	microsiemens per centimetre
-	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.

Qualifiers

Qualifier	Description
DLIS	Detection Limit Adjusted due to insufficient sample.

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP 8-D WW#12805	SNP1-RW WW#12806	SNP9-RW WW#12806	SNP5-RW WW#12815	EC-RW WW#12801
					Client sampling date / time	16-Sep-2024 10:25	16-Sep-2024 11:15	16-Sep-2024 11:15	16-Sep-2024 14:40	16-Sep-2024 15:30
						YL2401534-001	YL2401534-002	YL2401534-003	YL2401534-004	YL2401534-005
						Result	Result	Result	Result	Result
Physical Tests										
Conductivity	----	E100/VA	2.0	µS/cm		2370	298	293	290	299
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		----	122	123	123	123
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		----	139	142	139	147
pH	----	E108/VA	0.10	pH units		8.05	8.05	7.98	8.03	8.01
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		21.4	<3.0	3.2	<3.0	7.0
Turbidity	----	E121/VA	0.10	NTU		7.97	0.78	0.71	0.97	3.76
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		17.3	9.82	9.58	9.22	10.8
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		----	0.0425	0.0377	0.0162	0.0694
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		----	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		----	0.00047	0.00046	0.00044	0.00052
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		----	0.0618	0.0626	0.0629	0.0629
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		----	<0.000100	<0.000100	<0.000100	<0.000100
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		----	<0.000050	<0.000050	<0.000050	<0.000050
Boron, total	7440-42-8	E420/VA	0.010	mg/L		----	0.020	0.019	0.019	0.019
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		----	0.0000074	0.0000069	0.0000055	0.0000072
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		----	36.6	37.7	36.2	38.7
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		----	0.000017	0.000013	<0.000010	0.000014
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		----	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		----	<0.00010	<0.00010	<0.00010	0.00011

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP 8-D WW#12805	SNP1-RW WW#12806	SNP9-RW WW#12806	SNP5-RW WW#12815	EC-RW WW#12801
					Client sampling date / time	16-Sep-2024 10:25	16-Sep-2024 11:15	16-Sep-2024 11:15	16-Sep-2024 14:40	16-Sep-2024 15:30
						YL2401534-001	YL2401534-002	YL2401534-003	YL2401534-004	YL2401534-005
						Result	Result	Result	Result	Result
Total Metals										
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		----	0.00172	0.00175	0.00133	0.00151
Iron, total	7439-89-6	E420/VA	0.010	mg/L		----	0.090	0.071	0.036	0.371
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		----	0.000064	0.000050	<0.000050	0.000138
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		----	0.0075	0.0076	0.0073	0.0072
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		----	11.6	11.7	11.8	12.3
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		----	0.00718	0.00645	0.00495	0.0301
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		----	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		----	0.000793	0.000787	0.000779	0.000776
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		----	0.00116	0.00119	0.00112	0.00125
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		----	<0.050	<0.050	<0.050	<0.050
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		----	1.27	1.18	1.14	1.17
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		----	0.00072	0.00076	0.00074	0.00077
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		----	0.000150	0.000163	0.000152	0.000142
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		----	1.07	1.11	1.12	1.14
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		----	<0.000010	<0.000010	<0.000010	<0.000010
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		----	14.2	15.0	15.0	14.1
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		----	0.161	0.167	0.164	0.158
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		----	14.9	14.6	15.3	15.3
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		----	<0.00020	<0.00020	<0.00020	<0.00020
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		----	<0.000010	<0.000010	<0.000010	<0.000010
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		----	<0.00010	<0.00010	<0.00010	<0.00010

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP 8-D WW#12805	SNP1-RW WW#12806	SNP9-RW WW#12806	SNP5-RW WW#12815	EC-RW WW#12801
					Client sampling date / time	16-Sep-2024 10:25	16-Sep-2024 11:15	16-Sep-2024 11:15	16-Sep-2024 14:40	16-Sep-2024 15:30
						YL2401534-001	YL2401534-002	YL2401534-003	YL2401534-004	YL2401534-005
						Result	Result	Result	Result	Result
Total Metals										
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		----	<0.00010	<0.00010	<0.00010	<0.00010
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		----	0.00062	0.00054	<0.00030	0.00096
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		----	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		----	0.000370	0.000360	0.000361	0.000357
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		----	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		----	0.0059	0.0055	<0.0030	<0.0030
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		----	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		----	0.0041	0.0054	0.0033	0.0109
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		----	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		----	0.00039	0.00042	0.00042	0.00045
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		----	0.0559	0.0564	0.0567	0.0572
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		----	<0.000100	<0.000100	<0.000100	<0.000100
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		----	<0.000050	<0.000050	<0.000050	<0.000050
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		----	0.018	0.018	0.018	0.017
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		----	<0.0000050	<0.0000050	0.0000053	<0.0000050
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		----	33.0	33.2	33.4	33.3
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		----	<0.000010	<0.000010	<0.000010	<0.000010
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		----	<0.00050	<0.00050	<0.00050	<0.00050
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		----	<0.00010	<0.00010	<0.00010	<0.00010
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		----	0.00147	0.00151	0.00132	0.00130

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP 8-D WW#12805	SNP1-RW WW#12806	SNP9-RW WW#12806	SNP5-RW WW#12815	EC-RW WW#12801
					Client sampling date / time	16-Sep-2024 10:25	16-Sep-2024 11:15	16-Sep-2024 11:15	16-Sep-2024 14:40	16-Sep-2024 15:30
						YL2401534-001	YL2401534-002	YL2401534-003	YL2401534-004	YL2401534-005
						Result	Result	Result	Result	Result
Dissolved Metals										
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L	----	0.019	0.019	0.016	0.178	
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L	----	<0.000050	<0.000050	<0.000050	<0.000050	
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L	----	0.0072	0.0073	0.0070	0.0068	
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L	----	9.68	9.80	9.70	9.69	
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L	----	0.00200	0.00206	0.00161	0.0221	
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L	----	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L	----	0.000748	0.000728	0.000723	0.000742	
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L	----	0.00103	0.00105	0.00099	0.00106	
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L	----	<0.050	<0.050	<0.050	<0.050	
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L	----	1.11	1.13	1.13	1.13	
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L	----	0.00062	0.00067	0.00058	0.00064	
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L	----	0.000212	0.000151	0.000187	0.000143	
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L	----	1.02	1.03	1.07	1.02	
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L	----	<0.000010	<0.000010	<0.000010	<0.000010	
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L	----	12.6	12.8	12.6	12.0	
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L	----	0.168	0.168	0.166	0.166	
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L	----	14.1	14.0	14.3	14.1	
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L	----	<0.00020	<0.00020	<0.00020	<0.00020	
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L	----	<0.000010	<0.000010	<0.000010	<0.000010	
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L	----	<0.00010	<0.00010	<0.00010	<0.00010	
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L	----	<0.00010	<0.00010	<0.00010	<0.00010	

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID: SNP 8-D WW#12805	SNP1-RW WW#12806	SNP9-RW WW#12806	SNP5-RW WW#12815	EC-RW WW#12801
				Client sampling date / time	16-Sep-2024 10:25	16-Sep-2024 11:15	16-Sep-2024 11:15	16-Sep-2024 14:40	16-Sep-2024 15:30
					YL2401534-001	YL2401534-002	YL2401534-003	YL2401534-004	YL2401534-005
					Result	Result	Result	Result	Result
Dissolved Metals									
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L	----	<0.00030	<0.00030	<0.00030	<0.00030
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L	----	<0.00010	<0.00010	<0.00010	<0.00010
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L	----	0.000391	0.000393	0.000396	0.000378
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L	----	<0.00050	<0.00050	<0.00050	<0.00050
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L	----	0.0024	0.0024	<0.0010	<0.0010
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L	----	<0.00020	<0.00020	<0.00020	<0.00020
Dissolved mercury filtration location	----	EP509/VA	-	-	----	Field	Field	Field	Field
Dissolved metals filtration location	----	EP421/VA	-	-	----	Field	Field	Field	Field
Aggregate Organics									
Carbonaceous biochemical oxygen demand [CBOD]	----	CBOD5/1Y	2	mg/L	----	3	2	0	2
Carbonaceous biochemical oxygen demand [CBOD]	----	E555/VA	2.0	mg/L	<2.0	----	----	----	----
Volatile Organic Compounds [Fuels]									
Benzene	71-43-2	E611A/VA	0.50	µg/L	----	<0.50	<0.50	<0.50	<0.50
Ethylbenzene	100-41-4	E611A/VA	0.50	µg/L	----	<0.50	<0.50	<0.50	<0.50
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A/VA	0.50	µg/L	----	<0.50	<0.50	<0.50	<0.50
Styrene	100-42-5	E611A/VA	0.50	µg/L	----	<0.50	<0.50	<0.50	<0.50
Toluene	108-88-3	E611A/VA	0.50	µg/L	----	<0.50	<0.50	<0.50	<0.50
Xylene, m+p-	179601-23-1	E611A/VA	0.40	µg/L	----	<0.40	<0.40	<0.40	<0.40
Xylene, o-	95-47-6	E611A/VA	0.30	µg/L	----	<0.30	<0.30	<0.30	<0.30
Xylenes, total	1330-20-7	E611A/VA	0.50	µg/L	----	<0.50	<0.50	<0.50	<0.50

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP 8-D WW#12805	SNP1-RW WW#12806	SNP9-RW WW#12806	SNP5-RW WW#12815	EC-RW WW#12801
					Client sampling date / time	16-Sep-2024 10:25	16-Sep-2024 11:15	16-Sep-2024 11:15	16-Sep-2024 14:40	16-Sep-2024 15:30
						YL2401534-001	YL2401534-002	YL2401534-003	YL2401534-004	YL2401534-005
						Result	Result	Result	Result	Result
Hydrocarbons										
F1 (C6-C10)	----	E581.VH+F1/VA	100	µg/L		----	<100	<100	<100	<100
F2 (C10-C16)	----	E601/VA	300	µg/L		----	<300	<300	<300	<300
F3 (C16-C34)	----	E601/VA	300	µg/L		----	<300	<300	<300	<300
F4 (C34-C50)	----	E601/VA	300	µg/L		----	<300	<300	<300	<300
VHw (C6-C10)	----	E581.VH+F1/VA	100	µg/L		----	<100	<100	<100	<100
F1-BTEX	----	EC580/VA	100	µg/L		----	<100	<100	<100	<100
VPHw	----	EC580A/VA	100	µg/L		----	<100	<100	<100	<100
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/VA	1.0	%		----	87.2	84.1	87.0	89.6
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		----	78.6	89.8	78.5	84.5
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%		----	92.7	95.3	94.0	95.1
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%		----	101	100	99.9	101
Glycols										
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	<5.0
Glycols Surrogates										
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%		94.8	94.5	93.2	90.8	96.4

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: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP3-RW WW#12811	OF1-RW WW#12804	OF1-D WW#12803	SNP8-Db	OF1-Db
					Client sampling date / time	16-Sep-2024 16:10	16-Sep-2024 16:45	16-Sep-2024 17:20	16-Sep-2024 10:55	16-Sep-2024 17:50
						YL2401534-006	YL2401534-007	YL2401534-008	YL2401534-009	YL2401534-010
						Result	Result	Result	Result	Result
Physical Tests										
Conductivity	----	E100/VA	2.0	µS/cm		291	297	1660	----	----
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		122	122	----	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		142	143	----	----	----
pH	----	E108/VA	0.10	pH units		8.08	8.07	8.10	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		<3.0	<3.0	<3.0	----	----
Turbidity	----	E121/VA	0.10	NTU		0.66	1.24	0.31	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		9.92	10.1	11.8	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		0.0149	0.0240	----	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		0.00043	0.00048	----	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		0.0615	0.0650	----	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	<0.000100	----	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		0.019	0.020	----	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		0.0000059	0.0000056	----	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		36.9	37.6	----	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP3-RW WW#12811	OF1-RW WW#12804	OF1-D WW#12803	SNP8-Db	OF1-Db
					Client sampling date / time	16-Sep-2024 16:10	16-Sep-2024 16:45	16-Sep-2024 17:20	16-Sep-2024 10:55	16-Sep-2024 17:50
						YL2401534-006	YL2401534-007	YL2401534-008	YL2401534-009	YL2401534-010
						Result	Result	Result	Result	Result
Total Metals										
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00128	0.00133	----	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		0.030	0.053	----	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		0.0074	0.0078	----	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		12.1	11.9	----	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		0.00508	0.00593	----	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		0.000734	0.000771	----	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		0.00108	0.00114	----	----	----
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	<0.050	----	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		1.14	1.18	----	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		0.00076	0.00073	----	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		0.000148	0.000163	----	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		1.10	1.13	----	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		14.1	15.4	----	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		0.162	0.170	----	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		14.7	14.6	----	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP3-RW WW#12811	OF1-RW WW#12804	OF1-D WW#12803	SNP8-Db	OF1-Db
					Client sampling date / time	16-Sep-2024 16:10	16-Sep-2024 16:45	16-Sep-2024 17:20	16-Sep-2024 10:55	16-Sep-2024 17:50
						YL2401534-006	YL2401534-007	YL2401534-008	YL2401534-009	YL2401534-010
						Result	Result	Result	Result	Result
Total Metals										
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		<0.00030	0.00031	----	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		0.000360	0.000356	----	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		<0.0030	<0.0030	----	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.0031	0.0036	----	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.00036	0.00042	----	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.0557	0.0554	----	----	----
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		<0.000050	<0.000050	----	----	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		0.018	0.018	----	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		<0.0000050	<0.0000050	----	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		32.9	33.4	----	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00122	0.00126	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP3-RW WW#12811	OF1-RW WW#12804	OF1-D WW#12803	SNP8-Db	OF1-Db
					Client sampling date / time	16-Sep-2024 16:10	16-Sep-2024 16:45	16-Sep-2024 17:20	16-Sep-2024 10:55	16-Sep-2024 17:50
						YL2401534-006	YL2401534-007	YL2401534-008	YL2401534-009	YL2401534-010
						Result	Result	Result	Result	Result
Dissolved Metals										
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.018	0.017	----	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	<0.000050	----	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0070	0.0074	----	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		9.58	9.35	----	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.00188	0.00193	----	----	----
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		0.000721	0.000728	----	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.00099	0.00102	----	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	<0.050	----	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		1.09	1.13	----	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00059	0.00066	----	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		0.000172	0.000171	----	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		1.05	1.06	----	----	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		12.4	13.0	----	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.166	0.167	----	----	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		13.6	13.8	----	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	<0.000010	----	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	Client sample ID	SNP3-RW WW#12811	OF1-RW WW#12804	OF1-D WW#12803	SNP8-Db	OF1-Db
					Client sampling date / time	16-Sep-2024 16:10	16-Sep-2024 16:45	16-Sep-2024 17:20	16-Sep-2024 10:55	16-Sep-2024 17:50
						YL2401534-006	YL2401534-007	YL2401534-008	YL2401534-009	YL2401534-010
						Result	Result	Result	Result	Result
Dissolved Metals										
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	<0.00030	----	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	<0.00010	----	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.000393	0.000382	----	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	<0.00050	----	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		<0.0010	<0.0010	----	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	<0.00020	----	----	----
Dissolved mercury filtration location	----	EP509/VA	-	-		Field	Field	----	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Field	Field	----	----	----
Aggregate Organics										
Carbonaceous biochemical oxygen demand [CBOD]	----	E555/VA	2.0	mg/L		----	----	<4.0 DLIS	----	----
Carbonaceous biochemical oxygen demand [CBOD]	----	CBOD5/1Y	2	mg/L		0	0	----	----	----
Volatile Organic Compounds [Fuels]										
Benzene	71-43-2	E611A/VA	0.50	µg/L		<0.50	<0.50	----	----	----
Ethylbenzene	100-41-4	E611A/VA	0.50	µg/L		<0.50	<0.50	----	----	----
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	<0.50	----	----	----
Xylene, m+p-	179601-23-1	E611A/VA	0.40	µg/L		<0.40	<0.40	----	----	----
Xylene, o-	95-47-6	E611A/VA	0.30	µg/L		<0.30	<0.30	----	----	----
Xylenes, total	1330-20-7	E611A/VA	0.50	µg/L		<0.50	<0.50	----	----	----

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab/Accreditation	LOR	Unit	SNP3-RW WW#12811	OF1-RW WW#12804	OF1-D WW#12803	SNP8-Db	OF1-Db
Client sample ID					SNP3-RW WW#12811	OF1-RW WW#12804	OF1-D WW#12803	SNP8-Db	OF1-Db
Client sampling date / time					16-Sep-2024 16:10	16-Sep-2024 16:45	16-Sep-2024 17:20	16-Sep-2024 10:55	16-Sep-2024 17:50
					YL2401534-006	YL2401534-007	YL2401534-008	YL2401534-009	YL2401534-010
					Result	Result	Result	Result	Result
Hydrocarbons									
F1 (C6-C10)	----	E581.VH+F1/VA	100	µg/L	<100	<100	----	----	----
F2 (C10-C16)	----	E601/VA	300	µg/L	<300	<300	----	----	----
F3 (C16-C34)	----	E601/VA	300	µg/L	<300	<300	----	----	----
F4 (C34-C50)	----	E601/VA	300	µg/L	<300	<300	----	----	----
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	----	----	----
Hydrocarbons Surrogates									
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/VA	1.0	%	88.2	77.9	----	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%	85.2	91.2	----	----	----
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%	97.0	95.9	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%	101	100	----	----	----
Glycols									
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L	<5.0	<5.0	<5.0	<5.0	<5.0
Glycols Surrogates									
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%	96.1	95.0	92.4	98.8	96.0

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.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **YL2401534**	Page	: 1 of 20
Amendment	: **2**		
Client	: **Associated Engineering Ltd.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: Unit 201, 5103 48 St. Yellowknife NT Canada X1A 1N5	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: 2024 Water License Monitoring	Date Samples Received	: 18-Sep-2024 16:15
PO	: 2020-2886.055.599	Issue Date	: 28-Oct-2024 16:27
C-O-C number	: ----		
Sampler	: ----		
Site	: ----		
Quote number	: YL24-ASEG100-001		
No. of samples received	: 10		
No. of samples analysed	: 10		

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 : Biochemical Oxygen Demand (Carbonaceous) - 5 day										
HDPE [BOD HT-48h] OF1-D WW#12803	E555	16-Sep-2024	----	----	----		24-Sep-2024	48 hrs	188 hrs	× EHTL
Aggregate Organics : Biochemical Oxygen Demand (Carbonaceous) - 5 day										
HDPE [BOD HT-48h] SNP 8-D WW#12805	E555	16-Sep-2024	----	----	----		24-Sep-2024	48 hrs	195 hrs	× EHTR
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] OF1-RW WW#12804	CBOD5	16-Sep-2024	----	----	----		19-Sep-2024	48 hrs	67 hrs	× EHTL
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] SNP3-RW WW#12811	CBOD5	16-Sep-2024	----	----	----		19-Sep-2024	48 hrs	67 hrs	× EHTL
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] EC-RW WW#12801	CBOD5	16-Sep-2024	----	----	----		19-Sep-2024	48 hrs	68 hrs	× EHTR
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] SNP5-RW WW#12815	CBOD5	16-Sep-2024	----	----	----		19-Sep-2024	48 hrs	69 hrs	× EHTR
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] SNP1-RW WW#12806	CBOD5	16-Sep-2024	----	----	----		19-Sep-2024	48 hrs	72 hrs	× EHTR

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 : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h] SNP9-RW WW#12806	CBOD5	16-Sep-2024	----	----	----		19-Sep-2024	48 hrs	72 hrs	× EHTR
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) EC-RW WW#12801	E509	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) OF1-RW WW#12804	E509	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) SNP1-RW WW#12806	E509	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) SNP3-RW WW#12811	E509	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) SNP5-RW WW#12815	E509	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) SNP9-RW WW#12806	E509	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) EC-RW WW#12801	E421	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) OF1-RW WW#12804	E421	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 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) SNP1-RW WW#12806	E421	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP3-RW WW#12811	E421	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP5-RW WW#12815	E421	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP9-RW WW#12806	E421	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial OF1-Db	E680E	16-Sep-2024	26-Sep-2024	7 days	10 days	× EHT	27-Sep-2024	40 days	0 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP8-Db	E680E	16-Sep-2024	26-Sep-2024	7 days	10 days	× EHT	27-Sep-2024	40 days	0 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial EC-RW WW#12801	E680E	16-Sep-2024	24-Sep-2024	7 days	8 days	× EHT	25-Sep-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial OF1-D WW#12803	E680E	16-Sep-2024	24-Sep-2024	7 days	8 days	× EHT	25-Sep-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial OF1-RW WW#12804	E680E	16-Sep-2024	24-Sep-2024	7 days	8 days	× EHT	25-Sep-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 Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP 8-D WW#12805	E680E	16-Sep-2024	24-Sep-2024	7 days	8 days	× EHT	25-Sep-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP1-RW WW#12806	E680E	16-Sep-2024	24-Sep-2024	7 days	8 days	× EHT	25-Sep-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP3-RW WW#12811	E680E	16-Sep-2024	24-Sep-2024	7 days	8 days	× EHT	25-Sep-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP5-RW WW#12815	E680E	16-Sep-2024	24-Sep-2024	7 days	8 days	× EHT	25-Sep-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP9-RW WW#12806	E680E	16-Sep-2024	24-Sep-2024	7 days	8 days	× EHT	25-Sep-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) EC-RW WW#12801	E601	16-Sep-2024	27-Sep-2024	14 days	11 days	✓	01-Oct-2024	40 days	4 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) OF1-RW WW#12804	E601	16-Sep-2024	27-Sep-2024	14 days	11 days	✓	01-Oct-2024	40 days	4 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP1-RW WW#12806	E601	16-Sep-2024	27-Sep-2024	14 days	11 days	✓	01-Oct-2024	40 days	4 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP3-RW WW#12811	E601	16-Sep-2024	27-Sep-2024	14 days	11 days	✓	01-Oct-2024	40 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
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
SNP5-RW WW#12815	E601	16-Sep-2024	27-Sep-2024	14 days	11 days	✓	01-Oct-2024	40 days	4 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
SNP9-RW WW#12806	E601	16-Sep-2024	27-Sep-2024	14 days	11 days	✓	01-Oct-2024	40 days	4 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
OF1-RW WW#12804	E581.VH+F1	16-Sep-2024	24-Sep-2024	14 days	7 days	✓	24-Sep-2024	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
SNP3-RW WW#12811	E581.VH+F1	16-Sep-2024	24-Sep-2024	14 days	7 days	✓	24-Sep-2024	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
EC-RW WW#12801	E581.VH+F1	16-Sep-2024	24-Sep-2024	14 days	8 days	✓	24-Sep-2024	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
SNP1-RW WW#12806	E581.VH+F1	16-Sep-2024	24-Sep-2024	14 days	8 days	✓	24-Sep-2024	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
SNP5-RW WW#12815	E581.VH+F1	16-Sep-2024	24-Sep-2024	14 days	8 days	✓	24-Sep-2024	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate)										
SNP9-RW WW#12806	E581.VH+F1	16-Sep-2024	24-Sep-2024	14 days	8 days	✓	24-Sep-2024	14 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid)										
EC-RW WW#12801	E358-L	16-Sep-2024	23-Sep-2024	28 days	7 days	✓	23-Sep-2024	28 days	7 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
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) OF1-D WW#12803	E358-L	16-Sep-2024	23-Sep-2024	28 days	7 days	✓	23-Sep-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) OF1-RW WW#12804	E358-L	16-Sep-2024	23-Sep-2024	28 days	7 days	✓	23-Sep-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP 8-D WW#12805	E358-L	16-Sep-2024	23-Sep-2024	28 days	7 days	✓	23-Sep-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP1-RW WW#12806	E358-L	16-Sep-2024	23-Sep-2024	28 days	7 days	✓	23-Sep-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP3-RW WW#12811	E358-L	16-Sep-2024	23-Sep-2024	28 days	7 days	✓	23-Sep-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP5-RW WW#12815	E358-L	16-Sep-2024	23-Sep-2024	28 days	7 days	✓	23-Sep-2024	28 days	7 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP9-RW WW#12806	E358-L	16-Sep-2024	23-Sep-2024	28 days	7 days	✓	23-Sep-2024	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE EC-RW WW#12801	E100	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE OF1-D WW#12803	E100	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 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 : Conductivity in Water										
HDPE OF1-RW WW#12804	E100	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP 8-D WW#12805	E100	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP1-RW WW#12806	E100	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP3-RW WW#12811	E100	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP5-RW WW#12815	E100	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP9-RW WW#12806	E100	16-Sep-2024	24-Sep-2024	28 days	8 days	✓	24-Sep-2024	28 days	8 days	✓
Physical Tests : pH by Meter										
HDPE OF1-D WW#12803	E108	16-Sep-2024	24-Sep-2024	0.25 hrs	185 hrs	× EHTR-FM	24-Sep-2024	0.25 hrs	186 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE OF1-RW WW#12804	E108	16-Sep-2024	24-Sep-2024	0.25 hrs	186 hrs	× EHTR-FM	24-Sep-2024	0.25 hrs	187 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP3-RW WW#12811	E108	16-Sep-2024	24-Sep-2024	0.25 hrs	186 hrs	× EHTR-FM	24-Sep-2024	0.25 hrs	187 hrs	× EHTR-FM

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 : pH by Meter										
HDPE EC-RW WW#12801	E108	16-Sep-2024	24-Sep-2024	0.25 hrs	187 hrs	× EHTR-FM	24-Sep-2024	0.25 hrs	188 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP5-RW WW#12815	E108	16-Sep-2024	24-Sep-2024	0.25 hrs	188 hrs	× EHTR-FM	24-Sep-2024	0.25 hrs	189 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP1-RW WW#12806	E108	16-Sep-2024	24-Sep-2024	0.25 hrs	191 hrs	× EHTR-FM	24-Sep-2024	0.25 hrs	192 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP9-RW WW#12806	E108	16-Sep-2024	24-Sep-2024	0.25 hrs	191 hrs	× EHTR-FM	24-Sep-2024	0.25 hrs	192 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP 8-D WW#12805	E108	16-Sep-2024	24-Sep-2024	0.25 hrs	192 hrs	× EHTR-FM	24-Sep-2024	0.25 hrs	193 hrs	× EHTR-FM
Physical Tests : TSS by Gravimetry										
HDPE EC-RW WW#12801	E160	16-Sep-2024	----	----	----		24-Sep-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE OF1-D WW#12803	E160	16-Sep-2024	----	----	----		24-Sep-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE OF1-RW WW#12804	E160	16-Sep-2024	----	----	----		24-Sep-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP3-RW WW#12811	E160	16-Sep-2024	----	----	----		24-Sep-2024	7 days	7 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 : TSS by Gravimetry										
HDPE SNP5-RW WW#12815	E160	16-Sep-2024	----	----	----		24-Sep-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP 8-D WW#12805	E160	16-Sep-2024	----	----	----		24-Sep-2024	7 days	8 days	× EHT
Physical Tests : TSS by Gravimetry										
HDPE SNP1-RW WW#12806	E160	16-Sep-2024	----	----	----		24-Sep-2024	7 days	8 days	× EHT
Physical Tests : TSS by Gravimetry										
HDPE SNP9-RW WW#12806	E160	16-Sep-2024	----	----	----		24-Sep-2024	7 days	8 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP9-RW WW#12806	E121	16-Sep-2024	----	----	----		07-Oct-2024	3 days	21 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE EC-RW WW#12801	E121	16-Sep-2024	----	----	----		24-Sep-2024	3 days	8 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE OF1-D WW#12803	E121	16-Sep-2024	----	----	----		24-Sep-2024	3 days	8 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE OF1-RW WW#12804	E121	16-Sep-2024	----	----	----		24-Sep-2024	3 days	8 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP 8-D WW#12805	E121	16-Sep-2024	----	----	----		24-Sep-2024	3 days	8 days	× EHT

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 : Turbidity by Nephelometry										
HDPE SNP1-RW WW#12806	E121	16-Sep-2024	----	----	----		24-Sep-2024	3 days	8 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP3-RW WW#12811	E121	16-Sep-2024	----	----	----		24-Sep-2024	3 days	8 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP5-RW WW#12815	E121	16-Sep-2024	----	----	----		24-Sep-2024	3 days	8 days	× EHT
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) EC-RW WW#12801	E508	16-Sep-2024	26-Sep-2024	28 days	10 days	✓	26-Sep-2024	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) OF1-RW WW#12804	E508	16-Sep-2024	26-Sep-2024	28 days	10 days	✓	26-Sep-2024	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP1-RW WW#12806	E508	16-Sep-2024	26-Sep-2024	28 days	10 days	✓	26-Sep-2024	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP3-RW WW#12811	E508	16-Sep-2024	26-Sep-2024	28 days	10 days	✓	26-Sep-2024	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP5-RW WW#12815	E508	16-Sep-2024	26-Sep-2024	28 days	10 days	✓	26-Sep-2024	28 days	10 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP9-RW WW#12806	E508	16-Sep-2024	26-Sep-2024	28 days	10 days	✓	26-Sep-2024	28 days	10 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) EC-RW WW#12801	E420	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) OF1-RW WW#12804	E420	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP1-RW WW#12806	E420	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP3-RW WW#12811	E420	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP5-RW WW#12815	E420	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP9-RW WW#12806	E420	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) OF1-RW WW#12804	E611A	16-Sep-2024	24-Sep-2024	14 days	7 days	✓	24-Sep-2024	14 days	8 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP3-RW WW#12811	E611A	16-Sep-2024	24-Sep-2024	14 days	7 days	✓	24-Sep-2024	14 days	8 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) EC-RW WW#12801	E611A	16-Sep-2024	24-Sep-2024	14 days	8 days	✓	24-Sep-2024	14 days	8 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*	
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP1-RW WW#12806	E611A	16-Sep-2024	24-Sep-2024	14 days	8 days	✓	24-Sep-2024	14 days	8 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP5-RW WW#12815	E611A	16-Sep-2024	24-Sep-2024	14 days	8 days	✓	24-Sep-2024	14 days	8 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP9-RW WW#12806	E611A	16-Sep-2024	24-Sep-2024	14 days	8 days	✓	24-Sep-2024	14 days	8 days	✓

Legend & Qualifier Definitions

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

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

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)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1670024	1	2	50.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1668644	1	13	7.6	5.0	✓
Conductivity in Water	E100	1668972	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1670203	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1669307	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1668245	1	11	9.0	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1669144	3	27	11.1	5.0	✓
pH by Meter	E108	1668970	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1675640	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1669280	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1668560	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	1669580	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1668642	1	19	5.2	5.0	✓
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1670024	1	2	50.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1668644	1	13	7.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1676528	1	6	16.6	5.0	✓
Conductivity in Water	E100	1668972	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1670203	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1669307	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1668245	1	11	9.0	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1669144	3	27	11.1	5.0	✓
pH by Meter	E108	1668970	1	20	5.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1675640	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1669280	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1668560	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	1669580	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1668642	1	19	5.2	5.0	✓
Method Blanks (MB)							
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1670024	1	2	50.0	5.0	✓
BTEX by Headspace GC-MS	E611A	1668644	1	13	7.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1676528	1	6	16.6	5.0	✓
Conductivity in Water	E100	1668972	1	20	5.0	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1670203	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1669307	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*
Method Blanks (MB) - Continued							
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1668245	1	11	9.0	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1669144	3	27	11.1	5.0	✓
Total Mercury in Water by CVAAS	E508	1675640	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1669280	1	19	5.2	5.0	✓
TSS by Gravimetry	E160	1668560	1	16	6.2	5.0	✓
Turbidity by Nephelometry	E121	1669580	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1668642	1	19	5.2	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1668644	1	13	7.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1670203	1	6	16.6	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1669307	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1668245	1	11	9.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1675640	1	20	5.0	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1669280	1	19	5.2	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1668642	1	19	5.2	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
Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day	CBOD5 Taiga Environmental Laboratory - 4601 - 52nd Avenue P.O. BOX 1500 Yellowknife Northwest Territories Canada X1A 2R3	Water	SM5210B	Sample was diluted, seeded, and incubated at specified temperature for 5 days. Dissolved oxygen is measured initially and after incubation, and the CBOD is computed from the difference between initial and final DO.
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.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.
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.
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555 ALS Environmental - Vancouver	Water	APHA 5210 B (mod)	Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter. Nitrification inhibitor is added to samples to prevent nitrogenous compounds from consuming oxygen resulting in only carbonaceous oxygen demand being reported by this method. Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
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.
Glycols (4 analytes) by GC-FID	E680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Derivatized glycols are analyzed by GC-FID.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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 CaCO3 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 CaCO3 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.
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 for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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 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.
Glycols Extraction and Derivatization (BC Only)	EP680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Aqueous sample is derivatized and extracted with orgaic solvent.

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QUALITY CONTROL REPORT

Work Order	: **YL2401534**	Page	: 1 of 17
Amendment	: **2**		
Client	: Associated Engineering Ltd.	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: Unit 201, 5103 48 St. Yellowknife NT Canada X1A 1N5	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: 2024 Water License Monitoring	Date Samples Received	: 18-Sep-2024 16:15
PO	: 2020-2886.055.599	Date Analysis Commenced	: 19-Sep-2024
C-O-C number	: ----	Issue Date	: 28-Oct-2024 16:21
Sampler	: ----		
Site	: ----		
Quote number	: YL24-ASEG100-001		
No. of samples received	: 10		
No. of samples analysed	: 10		

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*
Chamoi Beckford	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Inorganics, Burnaby, British Columbia
Kevin Duarte	Supervisor - Metals ICP Instrumentation	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Inorganics, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Organics, Burnaby, British Columbia
Marianne Jensen	Analyst- General	Vancouver Inorganics, Burnaby, British Columbia
Monica Ko	Lab Assistant	Vancouver Inorganics, Burnaby, British Columbia
Oliver Gregg	Client Services Supervisor	Taiga Environmental Laboratory External Subcontracting, Yellowknife, Northwest Territories
Owen Cheng		Vancouver Metals, Burnaby, British Columbia
Raymond Lin	Analyst	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: 1668560)											
VA24C4431-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1668970)											
YL2401553-001	Anonymous	pH	----	E108	0.10	pH units	7.55	7.58	0.396%	4%	----
Physical Tests (QC Lot: 1668972)											
YL2401553-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	791	797	0.756%	10%	----
Physical Tests (QC Lot: 1669580)											
VA24C4732-002	Anonymous	Turbidity	----	E121	0.10	NTU	0.76	0.76	0.008	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1668245)											
YL2401534-001	SNP 8-D WW#12805	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	17.3	18.4	6.61%	20%	----
Total Metals (QC Lot: 1669280)											
YL2401532-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0060	mg/L	<0.0060	<0.0060	0	Diff <2x LOR	----
		Antimony, total	7440-36-0	E420	0.00020	mg/L	0.00943	0.00938	0.584%	20%	----
		Arsenic, total	7440-38-2	E420	0.00020	mg/L	3.67	3.58	2.45%	20%	----
		Barium, total	7440-39-3	E420	0.00020	mg/L	0.0236	0.0233	1.20%	20%	----
		Beryllium, total	7440-41-7	E420	0.000040	mg/L	<0.000040	<0.000040	0	Diff <2x LOR	----
		Bismuth, total	7440-69-9	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Boron, total	7440-42-8	E420	0.020	mg/L	0.410	0.413	0.621%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000100	mg/L	<0.0000150	<0.0000100	0.0000050	Diff <2x LOR	----
		Calcium, total	7440-70-2	E420	0.100	mg/L	329	336	1.92%	20%	----
		Cesium, total	7440-46-2	E420	0.000020	mg/L	0.00129	0.00129	0.0834%	20%	----
		Chromium, total	7440-47-3	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Cobalt, total	7440-48-4	E420	0.00020	mg/L	0.0128	0.0128	0.284%	20%	----
		Copper, total	7440-50-8	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.020	mg/L	4.21	4.41	4.62%	20%	----
		Lead, total	7439-92-1	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Lithium, total	7439-93-2	E420	0.0020	mg/L	0.0457	0.0449	1.74%	20%	----
		Magnesium, total	7439-95-4	E420	0.0100	mg/L	80.1	80.2	0.143%	20%	----
		Manganese, total	7439-96-5	E420	0.00020	mg/L	0.803	0.826	2.76%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000100	mg/L	0.0122	0.0122	0.0864%	20%	----
		Nickel, total	7440-02-0	E420	0.00100	mg/L	0.00771	0.00761	0.00010	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: 1669280) - continued											
YL2401532-001	Anonymous	Phosphorus, total	7723-14-0	E420	0.100	mg/L	<0.100	<0.100	0	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.100	mg/L	13.7	14.0	1.81%	20%	----
		Rubidium, total	7440-17-7	E420	0.00040	mg/L	0.00899	0.00911	1.34%	20%	----
		Selenium, total	7782-49-2	E420	0.000100	mg/L	<0.000100	<0.000100	0	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.20	mg/L	4.57	4.92	7.46%	20%	----
		Silver, total	7440-22-4	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Sodium, total	7440-23-5	E420	0.100	mg/L	226	230	1.48%	20%	----
		Strontium, total	7440-24-6	E420	0.00040	mg/L	2.41	2.40	0.327%	20%	----
		Sulfur, total	7704-34-9	E420	1.00	mg/L	182	194	6.58%	20%	----
		Tellurium, total	13494-80-9	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
		Thallium, total	7440-28-0	E420	0.000020	mg/L	<0.000020	<0.000020	0	Diff <2x LOR	----
		Thorium, total	7440-29-1	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Tin, total	7440-31-5	E420	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
		Titanium, total	7440-32-6	E420	0.00060	mg/L	<0.00060	<0.00060	0	Diff <2x LOR	----
		Tungsten, total	7440-33-7	E420	0.00020	mg/L	0.00167	0.00172	0.00005	Diff <2x LOR	----
		Uranium, total	7440-61-1	E420	0.000020	mg/L	0.00492	0.00505	2.52%	20%	----
		Vanadium, total	7440-62-2	E420	0.00100	mg/L	<0.00100	<0.00100	0	Diff <2x LOR	----
		Zinc, total	7440-66-6	E420	0.0060	mg/L	0.252	0.254	1.10%	20%	----
		Zirconium, total	7440-67-7	E420	0.00040	mg/L	<0.00040	<0.00040	0	Diff <2x LOR	----
Total Metals (QC Lot: 1675640)											
VA24C4726-004	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1669307)											
YL2401546-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0015	0.0013	0.0003	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.0152	0.0154	0.794%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.0740	0.0724	2.20%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0290	0.0289	0.523%	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	0.123	0.123	0.353%	20%	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000381	0.0000397	0.0000016	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	273	278	1.70%	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	0.0159	0.0157	1.12%	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: 1669307) - continued											
YL2401546-001	Anonymous	Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00528	0.00522	1.22%	20%	----
		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	0.0128	0.0128	0.393%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	51.5	50.0	2.87%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00058	0.00059	0.000009	Diff <2x LOR	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00126	0.00125	0.123%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00206	0.00203	0.00002	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	0.050	mg/L	4.76	4.56	4.20%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00158	0.00157	0.00001	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000515	0.000542	5.14%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.69	5.52	3.09%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000014	0.000010	0.000004	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	139	136	2.30%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	2.56	2.59	1.14%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	203	195	4.20%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	0.00023	0.00003	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	0.000014	0.0000006	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	0.0128	0.0125	2.48%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00067	0.00067	0.000003	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0034	0.0032	0.0001	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1670203)											
YL2401534-002	SNP1-RW WW#12806	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1670024)											
YL2401534-008	OF1-D WW#12803	Carbonaceous biochemical oxygen demand [CBOD]	----	E555	4.0	mg/L	<4.0	<4.0	0.0%	30%	----
Volatile Organic Compounds (QC Lot: 1668644)											
VA24C4644-002	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	----

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*
Volatile Organic Compounds (QC Lot: 1668644) - continued											
VA24C4644-002	Anonymous	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: 1668642)											
VA24C4468-001	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%	----
Glycols (QC Lot: 1669144)											
VA24C5135-001	Anonymous	Ethylene glycol	107-21-1	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
Glycols (QC Lot: 1675949)											
VA24C5374-001	Anonymous	Ethylene glycol	107-21-1	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----
Glycols (QC Lot: 1681117)											
VA24C5584-001	Anonymous	Ethylene glycol	107-21-1	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----

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: 1668560)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1668972)						
Conductivity	----	E100	1	µS/cm	1.1	----
Physical Tests (QCLot: 1669580)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Organic / Inorganic Carbon (QCLot: 1668245)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 1669280)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1669280) - continued						
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: 1675640)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1669307)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1669307) - continued						
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	----
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: 1670203)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Aggregate Organics (QCLot: 1670024)						
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	<2.0	----
Volatile Organic Compounds (QCLot: 1668644)						
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: 1668642)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Hydrocarbons (QCLot: 1668642) - continued						
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Hydrocarbons (QCLot: 1676528)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
F3 (C16-C34)	----	E601	250	µg/L	<250	----
F4 (C34-C50)	----	E601	250	µg/L	<250	----
Glycols (QCLot: 1669144)						
Ethylene glycol	107-21-1	E680E	5	mg/L	<5.0	----
Glycols (QCLot: 1675949)						
Ethylene glycol	107-21-1	E680E	5	mg/L	<5.0	----
Glycols (QCLot: 1681117)						
Ethylene glycol	107-21-1	E680E	5	mg/L	<5.0	----

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: 1668560)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	95.0	85.0	115	----
Physical Tests (QCLot: 1668970)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Physical Tests (QCLot: 1668972)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	98.9	90.0	110	----
Physical Tests (QCLot: 1669580)									
Turbidity	----	E121	0.1	NTU	200 NTU	96.5	85.0	115	----
Organic / Inorganic Carbon (QCLot: 1668245)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Total Metals (QCLot: 1669280)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	103	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	117	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	104	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	109	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	99.6	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.7	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	98.2	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 mg/L	99.0	80.0	120	----
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.3	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	95.8	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	102	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	99.8	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	98.4	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	88.3	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	114	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	101	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	100	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	99.1	80.0	120	----
Phosphorus, total	7723-14-0	E420	0.05	mg/L	10 mg/L	108	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: 1669280) - continued									
Potassium, total	7440-09-7	E420	0.05	mg/L	50 mg/L	103	80.0	120	----
Rubidium, total	7440-17-7	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	94.4	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	96.7	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	98.2	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	118	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	102	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	102	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	96.5	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	85.7	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	100	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	99.8	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	95.1	80.0	120	----
Uranium, total	7440-61-1	E420	0.00001	mg/L	0.005 mg/L	88.2	80.0	120	----
Vanadium, total	7440-62-2	E420	0.0005	mg/L	0.5 mg/L	102	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	98.1	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	96.9	80.0	120	----
Total Metals (QCLot: 1675640)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	95.3	80.0	120	----
Dissolved Metals (QCLot: 1669307)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.9	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.9	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	93.9	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.8	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.3	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.8	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	98.8	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.2	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	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: 1669307) - continued									
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.4	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.5	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.6	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	92.6	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	100	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.9	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	93.2	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.3	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.9	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	95.2	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.7	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.7	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	93.3	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	93.9	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.4	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	98.1	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	94.5	80.0	120	----
Aggregate Organics (QCLot: 1670024)									
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	198 mg/L	103	85.0	115	----
Volatile Organic Compounds (QCLot: 1668644)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	94.0	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	98.7	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	100 µg/L	103	70.0	130	----
Styrene	100-42-5	E611A	0.5	µg/L	100 µg/L	97.1	70.0	130	----
Toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	96.0	70.0	130	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike: Target Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Volatile Organic Compounds (QCLot: 1668644) - continued									
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	99.4	70.0	130	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	98.3	70.0	130	----
Hydrocarbons (QCLot: 1668642)									
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	89.4	70.0	130	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	87.8	70.0	130	----
Hydrocarbons (QCLot: 1676528)									
F2 (C10-C16)	----	E601	100	µg/L	3540 µg/L	116	70.0	130	----
F3 (C16-C34)	----	E601	250	µg/L	7050 µg/L	108	70.0	130	----
F4 (C34-C50)	----	E601	250	µg/L	5050 µg/L	116	70.0	130	----
Glycols (QCLot: 1669144)									
Ethylene glycol	107-21-1	E680E	5	mg/L	25 mg/L	97.3	70.0	130	----
Glycols (QCLot: 1675949)									
Ethylene glycol	107-21-1	E680E	5	mg/L	25 mg/L	98.8	70.0	130	----
Glycols (QCLot: 1681117)									
Ethylene glycol	107-21-1	E680E	5	mg/L	25 mg/L	92.7	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
Organic / Inorganic Carbon (QCLot: 1668245)										
YL2401534-002	SNP1-RW WW#12806	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	----	ND	70.0	130	----
Total Metals (QCLot: 1669280)										
YL2401532-002	Anonymous	Aluminum, total	7429-90-5	E420	2.12 mg/L	2 mg/L	106	70.0	130	----
		Antimony, total	7440-36-0	E420	0.237 mg/L	0.2 mg/L	118	70.0	130	----
		Arsenic, total	7440-38-2	E420	ND mg/L	----	ND	70.0	130	----
		Barium, total	7440-39-3	E420	0.214 mg/L	0.2 mg/L	107	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.391 mg/L	0.4 mg/L	97.8	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.0911 mg/L	0.1 mg/L	91.1	70.0	130	----
		Boron, total	7440-42-8	E420	1.12 mg/L	1 mg/L	112	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.0402 mg/L	0.04 mg/L	101	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.107 mg/L	0.1 mg/L	107	70.0	130	----
		Chromium, total	7440-47-3	E420	0.409 mg/L	0.4 mg/L	102	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.191 mg/L	0.2 mg/L	95.5	70.0	130	----
		Copper, total	7440-50-8	E420	0.186 mg/L	0.2 mg/L	92.9	70.0	130	----
		Iron, total	7439-89-6	E420	ND mg/L	----	ND	70.0	130	----
		Lead, total	7439-92-1	E420	0.195 mg/L	0.2 mg/L	97.6	70.0	130	----
		Lithium, total	7439-93-2	E420	1.07 mg/L	1 mg/L	107	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	0.212 mg/L	0.2 mg/L	106	70.0	130	----
		Nickel, total	7440-02-0	E420	0.381 mg/L	0.4 mg/L	95.2	70.0	130	----
		Phosphorus, total	7723-14-0	E420	108 mg/L	100 mg/L	108	70.0	130	----
		Potassium, total	7440-09-7	E420	45.6 mg/L	40 mg/L	114	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.196 mg/L	0.2 mg/L	98.0	70.0	130	----
		Selenium, total	7782-49-2	E420	0.379 mg/L	0.4 mg/L	94.8	70.0	130	----
		Silicon, total	7440-21-3	E420	94.6 mg/L	100 mg/L	94.6	70.0	130	----
		Silver, total	7440-22-4	E420	0.0412 mg/L	0.04 mg/L	103	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	0.415 mg/L	0.4 mg/L	104	70.0	130	----
		Thallium, total	7440-28-0	E420	0.0343 mg/L	0.04 mg/L	85.7	70.0	130	----
		Thorium, total	7440-29-1	E420	0.195 mg/L	0.2 mg/L	97.4	70.0	130	----
		Tin, total	7440-31-5	E420	0.202 mg/L	0.2 mg/L	101	70.0	130	----
		Titanium, total	7440-32-6	E420	0.414 mg/L	0.4 mg/L	104	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.214 mg/L	0.2 mg/L	107	70.0	130	----
		Uranium, total	7440-61-1	E420	0.0350 mg/L	0.04 mg/L	87.6	70.0	130	----
		Vanadium, total	7440-62-2	E420	1.04 mg/L	1 mg/L	104	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: 1669280) - continued										
YL2401532-002	Anonymous	Zinc, total	7440-66-6	E420	3.88 mg/L	4 mg/L	97.1	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.436 mg/L	0.4 mg/L	109	70.0	130	----
Total Metals (QCLot: 1675640)										
VA24C4726-005	Anonymous	Mercury, total	7439-97-6	E508	0.0000957 mg/L	0 mg/L	95.7	70.0	130	----
Dissolved Metals (QCLot: 1669307)										
YL2401546-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.972 mg/L	1 mg/L	97.2	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0964 mg/L	0.1 mg/L	96.4	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	ND mg/L	----	ND	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	----	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.188 mg/L	0.2 mg/L	93.8	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.0432 mg/L	0.05 mg/L	86.3	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.445 mg/L	0.5 mg/L	89.0	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0505 mg/L	0.05 mg/L	101	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.196 mg/L	0.2 mg/L	98.1	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0918 mg/L	0.1 mg/L	91.8	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0862 mg/L	0.1 mg/L	86.2	70.0	130	----
		Iron, dissolved	7439-89-6	E421	ND mg/L	----	ND	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0907 mg/L	0.1 mg/L	90.7	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.464 mg/L	0.5 mg/L	92.8	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	----	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.184 mg/L	0.2 mg/L	92.0	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	49.4 mg/L	50 mg/L	98.9	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	----	ND	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0981 mg/L	0.1 mg/L	98.1	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.199 mg/L	0.2 mg/L	99.6	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	47.5 mg/L	50 mg/L	95.0	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.0191 mg/L	0.02 mg/L	95.5	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	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.0180 mg/L	0.02 mg/L	90.2	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0972 mg/L	0.1 mg/L	97.2	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0992 mg/L	0.1 mg/L	99.2	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.198 mg/L	0.2 mg/L	99.1	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0932 mg/L	0.1 mg/L	93.2	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.508 mg/L	0.5 mg/L	102	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	1.84 mg/L	2 mg/L	92.2	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: 1669307) - continued										
YL2401546-002	Anonymous	Zirconium, dissolved	7440-67-7	E421	0.207 mg/L	0.2 mg/L	104	70.0	130	----
Dissolved Metals (QCLot: 1670203)										
YL2401534-003	SNP9-RW WW#12806	Mercury, dissolved	7439-97-6	E509	0.0000945 mg/L	0 mg/L	94.5	70.0	130	----
Volatile Organic Compounds (QCLot: 1668644)										
VA24C4671-001	Anonymous	Benzene	71-43-2	E611A	96.8 µg/L	100 µg/L	96.8	60.0	140	----
		Ethylbenzene	100-41-4	E611A	103 µg/L	100 µg/L	103	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	108 µg/L	100 µg/L	108	60.0	140	----
		Styrene	100-42-5	E611A	101 µg/L	100 µg/L	101	60.0	140	----
		Toluene	108-88-3	E611A	99.2 µg/L	100 µg/L	99.2	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	209 µg/L	200 µg/L	105	60.0	140	----
		Xylene, o-	95-47-6	E611A	103 µg/L	100 µg/L	103	60.0	140	----
Hydrocarbons (QCLot: 1668642)										
VA24C4565-016	Anonymous	F1 (C6-C10)	----	E581.VH+F1	5090 µg/L	6310 µg/L	80.6	60.0	140	----
		VHw (C6-C10)	----	E581.VH+F1	5000 µg/L	6310 µg/L	79.3	60.0	140	----

CHAIN OF CUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY:	RELINQUISHED BY:	RECEIVED BY:
Caitlin McKenzie	1615		
DATE/TIME: 09/17/24, 10:45 am	DATE/TIME: SEPT 18/24	DATE/TIME:	DATE/TIME:

CLIENT:	Associated Engineering (BC) Ltd.	TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g.. Ultra Trace Organics)	☒ Standard TAT (List due date):
PROJECT:	2024 Water Licence Monitoring		☐ Non Standard or urgent TAT (List due date):
SITE:	Inuvik Mike Zubko Airport		
PURCHASE ORDER NO.:	2020-2886.055.599	ALS QUOTE NC YL24-ASEG100-001	
PROJECT MANAGER:	Caitlin McKenzie	CONTACT PH: 867-687-2854	
SAMPLER:	C. McKenzie	SAMPLER MOBILE: 867-687-2854	
EMAIL REPORTS TO:	mckenzieca@ae.ca, indrigoc@ae.ca	EMAIL INVOICE TO:	mckenzieca@ae.ca

FOR LABORATORY USE ONLY (Circle)

Custody Seal Intact?	Yes	No	(N/A)
Free Ice / frozen ice bricks present upon receipt?	(Yes)	No	N/A
Random Sample Temperature on Receipt:	4.3 °C		
Other comments:			

SPECIAL HANDLING/STORAGE OR DISPOSAL:

ALS USE ONLY	SAMPLE DETAILS (Solid(S) Water(W))		MATRIX:	CONTAINER INFORMATION		ANALYSIS REQUIRED										Additional Information
SAMPLE	Sample Identification (This description will appear on the report)	DATE / TIME (dd-mm-yyyy)	MATRIX	TOTAL CONTAINERS		Receiving Water	Runoff Water	Sediment	Soil fertility	Field Filtered						Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	SNP8-D WW# 12805	16/09/24 10:25	W	7			X			X						
	SNP1-RW WW# 12806	" 11:15	W	13		X				X						
	SNP9-RW WW# 12806	" 11:15	W	13		X				X						
	~~SNP1-S WW# 12809~~	~~" 12:00~~	~~S~~	~~1~~				X								
	SNP5-RW WW# 12815	" 14:30	W	13		X				X						
	~~SNP5-S WW# 12816~~	~~" 15:10~~	~~S~~					X								
	EC-RW WW# 12801	" 15:30	W	13		X				X						
	SNP3-RW WW# 12811	" 16:10	W	13		X				X						
	OF1-RW WW# 12804	" 16:45	W	13		X				X						
	OF1-D WW# 12803	" 17:20	W	7			X			X						
	~~FB~~	~~" 17:55~~	~~W~~													
			TOTAL													

Environmental Division
Yellowknife
Work Order Reference
YL2401534

Telephone : +1 867 873 5593

ALS Canada Ltd.

CERTIFICATE OF ANALYSIS

Work Order	: **YL2401538**	Page	: 1 of 9
Amendment	: **1**		
Client	: **Associated Engineering Ltd.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: Unit 201, 5103 48 St. Yellowknife NT Canada X1A 1N5	Address	: 314 Old Airport Road, Unit 116 Yellowknife NT Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: 2024 Water License Monitoring	Date Samples Received	: 19-Sep-2024 09:43
PO	: 2020-2886.055.599	Date Analysis Commenced	: 19-Sep-2024
C-O-C number	: ----	Issue Date	: 01-Oct-2024 14:51
Sampler	: Caitlin McKenzie		
Site	: ----		
Quote number	: YL24-ASEG100-001		
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*
Chamoi Beckford	Lab Assistant	Metals, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Organics, Burnaby, British Columbia
Maya Urquhart	Lab Analyst	Metals, Burnaby, British Columbia
Mervat Lamose	Lab Assistant	Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Inorganics, Burnaby, British Columbia
Oliver Gregg	Client Services Supervisor	External Subcontracting, Yellowknife, Northwest Territories
Shirley Li	Team Leader - Inorganics	Metals, 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
µg/L	micrograms per litre
µS/cm	microsiemens per centimetre
mg/kg	milligrams per kilogram
mg/L	milligrams per litre
NTU	nephelometric turbidity units
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*
RRV	*Reported result verified by repeat analysis.*
SUR-ND	*Surrogate recovery marginally exceeded ALS DQO. Reported non-detect results for associated samples were deemed to be unaffected.*

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	SNP1-S WW#12809	SNP5-S WW#12816	SNP4-S WW#12814	----	----
					Client sampling date / time	16-Sep-2024 12:00	16-Sep-2024 15:10	17-Sep-2024 14:00	----	----
						YL2401538-001	YL2401538-002	YL2401538-005	--------	--------
						Result	Result	Result	----	----
Physical Tests										
pH (1:2 soil:water)	----	E108/CG	0.10	pH units		8.42	7.74	7.06	----	----
Metals										
Aluminum	7429-90-5	E440/CG	50	mg/kg		5420	11700	13300	----	----
Antimony	7440-36-0	E440/CG	0.10	mg/kg		0.24	0.54	0.34	----	----
Arsenic	7440-38-2	E440/CG	0.10	mg/kg		11.8	10.3	12.4	----	----
Barium	7440-39-3	E440/CG	0.50	mg/kg		95.6	213	312	----	----
Beryllium	7440-41-7	E440/CG	0.10	mg/kg		0.42	0.72	0.78	----	----
Bismuth	7440-69-9	E440/CG	0.20	mg/kg		<0.20	<0.20	0.20	----	----
Boron	7440-42-8	E440/CG	5.0	mg/kg		8.2	10.4	14.3	----	----
Cadmium	7440-43-9	E440/CG	0.020	mg/kg		0.060	0.528	0.290	----	----
Calcium	7440-70-2	E440/CG	50	mg/kg		6060	22500	13100	----	----
Chromium	7440-47-3	E440/CG	0.50	mg/kg		12.0	19.5	23.1	----	----
Cobalt	7440-48-4	E440/CG	0.10	mg/kg		7.70	11.5	12.6	----	----
Copper	7440-50-8	E440/CG	0.50	mg/kg		11.4	23.2	26.0	----	----
Iron	7439-89-6	E440/CG	50	mg/kg		23500	25800	28800	----	----
Lead	7439-92-1	E440/CG	0.50	mg/kg		9.16	12.6	14.6	----	----
Lithium	7439-93-2	E440/CG	2.0	mg/kg		13.7	19.9	24.1	----	----
Magnesium	7439-95-4	E440/CG	20	mg/kg		2720	12500	4650	----	----
Manganese	7439-96-5	E440/CG	1.0	mg/kg		243	380	348	----	----
Mercury	7439-97-6	E510/CG	0.0050	mg/kg		0.0363	0.0646	0.0872	----	----
Molybdenum	7439-98-7	E440/CG	0.10	mg/kg		0.76	1.18	1.05	----	----
Nickel	7440-02-0	E440/CG	0.50	mg/kg		17.6	32.1	34.6	----	----
Phosphorus	7723-14-0	E440/CG	50	mg/kg		400	588	556	----	----
Potassium	7440-09-7	E440/CG	100	mg/kg		1040	1820	1930	----	----
Selenium	7782-49-2	E440/CG	0.20	mg/kg		0.59	0.74	1.05	----	----
Silver	7440-22-4	E440/CG	0.10	mg/kg		<0.10	0.11	0.11	----	----
Sodium	7440-23-5	E440/CG	50	mg/kg		222	226	332	----	----
Strontium	7440-24-6	E440/CG	0.50	mg/kg		32.0	47.6	73.3	----	----
Sulfur	7704-34-9	E440/CG	1000	mg/kg		1200	2900	3000	----	----

Analytical Results

Sub-Matrix: Soil/Solid (Matrix: Soil/Solid)					Client sample ID	SNP1-S WW#12809	SNP5-S WW#12816	SNP4-S WW#12814	----	----
					Client sampling date / time	16-Sep-2024 12:00	16-Sep-2024 15:10	17-Sep-2024 14:00	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2401538-001	YL2401538-002	YL2401538-005	--------	--------
						Result	Result	Result	----	----
Metals										
Thallium	7440-28-0	E440/CG	0.050	mg/kg		0.063	0.211	0.158	----	----
Tin	7440-31-5	E440/CG	2.0	mg/kg		<2.0	<2.0	<2.0	----	----
Titanium	7440-32-6	E440/CG	1.0	mg/kg		39.5	17.2	11.4	----	----
Tungsten	7440-33-7	E440/CG	0.50	mg/kg		<0.50	<0.50	<0.50	----	----
Uranium	7440-61-1	E440/CG	0.050	mg/kg		0.431	1.04	1.29	----	----
Vanadium	7440-62-2	E440/CG	0.20	mg/kg		20.4	34.3	37.5	----	----
Zinc	7440-66-6	E440/CG	2.0	mg/kg		58.8	103	86.1	----	----
Zirconium	7440-67-7	E440/CG	1.0	mg/kg		3.5	2.8	7.2	----	----

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.

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	FB WW#12868	SNP4-RW WW#12813	SNP6-RW WW#12817	----	----
					Client sampling date / time	16-Sep-2024 17:35	17-Sep-2024 13:45	17-Sep-2024 14:20	----	----
						YL2401538-003	YL2401538-004	YL2401538-006	--------	--------
						Result	Result	Result	----	----
Physical Tests										
Conductivity	----	E100/VA	2.0	µS/cm		<2.0	226	223	----	----
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		<0.60	84.9	84.4	----	----
Hardness (as CaCO3), from total Ca/Mg	----	EC100A/VA	0.60	mg/L		<0.60	88.8	87.6	----	----
pH	----	E108/VA	0.10	pH units		5.76	7.71	7.78	----	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		<3.0	<3.0	<3.0	----	----
Turbidity	----	E121/VA	0.10	NTU		<0.10	1.24	1.16	----	----
Organic / Inorganic Carbon										
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		<0.50	13.9	15.5	----	----
Total Metals										
Aluminum, total	7429-90-5	E420/VA	0.0030	mg/L		<0.0030	0.0191	0.0206	----	----
Antimony, total	7440-36-0	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Arsenic, total	7440-38-2	E420/VA	0.00010	mg/L		<0.00010	0.00035	0.00036	----	----
Barium, total	7440-39-3	E420/VA	0.00010	mg/L		<0.00010	0.0405	0.0399	----	----
Beryllium, total	7440-41-7	E420/VA	0.000100	mg/L		<0.000100	<0.000100	<0.000100	----	----
Bismuth, total	7440-69-9	E420/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Boron, total	7440-42-8	E420/VA	0.010	mg/L		<0.010	0.026	0.025	----	----
Cadmium, total	7440-43-9	E420/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Calcium, total	7440-70-2	E420/VA	0.050	mg/L		<0.050	23.5	23.1	----	----
Cesium, total	7440-46-2	E420/VA	0.000010	mg/L		<0.000010	0.000012	0.000014	----	----
Chromium, total	7440-47-3	E420/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Cobalt, total	7440-48-4	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Copper, total	7440-50-8	E420/VA	0.00050	mg/L		0.00113 RRV	0.00061	0.00069	----	----
Iron, total	7439-89-6	E420/VA	0.010	mg/L		<0.010	0.158	0.178	----	----
Lead, total	7439-92-1	E420/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Lithium, total	7439-93-2	E420/VA	0.0010	mg/L		<0.0010	0.0072	0.0070	----	----
Magnesium, total	7439-95-4	E420/VA	0.0050	mg/L		<0.0050	7.31	7.28	----	----
Manganese, total	7439-96-5	E420/VA	0.00010	mg/L		<0.00010	0.00695	0.00569	----	----
Mercury, total	7439-97-6	E508/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Molybdenum, total	7439-98-7	E420/VA	0.000050	mg/L		<0.000050	0.000108	0.000107	----	----
Nickel, total	7440-02-0	E420/VA	0.00050	mg/L		<0.00050	0.00099	0.00102	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FB WW#12868	SNP4-RW WW#12813	SNP6-RW WW#12817	----	----
					Client sampling date / time	16-Sep-2024 17:35	17-Sep-2024 13:45	17-Sep-2024 14:20	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2401538-003	YL2401538-004	YL2401538-006	--------	--------
						Result	Result	Result	----	----
Total Metals										
Phosphorus, total	7723-14-0	E420/VA	0.050	mg/L		<0.050	<0.050	<0.050	----	----
Potassium, total	7440-09-7	E420/VA	0.050	mg/L		<0.050	1.16	1.14	----	----
Rubidium, total	7440-17-7	E420/VA	0.00020	mg/L		<0.00020	0.00060	0.00058	----	----
Selenium, total	7782-49-2	E420/VA	0.000050	mg/L		<0.000050	0.000058	0.000080	----	----
Silicon, total	7440-21-3	E420/VA	0.10	mg/L		<0.10	0.27	0.30	----	----
Silver, total	7440-22-4	E420/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Sodium, total	7440-23-5	E420/VA	0.050	mg/L		<0.050	11.6	11.2	----	----
Strontium, total	7440-24-6	E420/VA	0.00020	mg/L		<0.00020	0.0639	0.0651	----	----
Sulfur, total	7704-34-9	E420/VA	0.50	mg/L		<0.50	21.2	20.2	----	----
Tellurium, total	13494-80-9	E420/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Thallium, total	7440-28-0	E420/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Thorium, total	7440-29-1	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Tin, total	7440-31-5	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Titanium, total	7440-32-6	E420/VA	0.00030	mg/L		<0.00030	0.00060	0.00052	----	----
Tungsten, total	7440-33-7	E420/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Uranium, total	7440-61-1	E420/VA	0.000010	mg/L		<0.000010	0.000032	0.000032	----	----
Vanadium, total	7440-62-2	E420/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Zinc, total	7440-66-6	E420/VA	0.0030	mg/L		<0.0030	<0.0030	<0.0030	----	----
Zirconium, total	7440-67-7	E420/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		<0.0010	0.0063	0.0129	----	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		<0.00010	0.00032	0.00032	----	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		<0.00010	0.0379	0.0361	----	----
Beryllium, dissolved	7440-41-7	E421/VA	0.000100	mg/L		<0.000100	<0.000100	<0.000100	----	----
Bismuth, dissolved	7440-69-9	E421/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		<0.010	0.025	0.024	----	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		<0.050	23.3	23.0	----	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FB WW#12868	SNP4-RW WW#12813	SNP6-RW WW#12817	----	----
					Client sampling date / time	16-Sep-2024 17:35	17-Sep-2024 13:45	17-Sep-2024 14:20	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2401538-003	YL2401538-004	YL2401538-006	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00096 RRV	0.00064	0.00070	----	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		<0.010	0.130	0.149	----	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	<0.000050	<0.000050	----	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		<0.0010	0.0075	0.0072	----	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		<0.0050	6.49	6.56	----	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		<0.00010	0.00606	0.00403	----	----
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	<0.0000050	<0.0000050	----	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		<0.000050	0.000113	0.000107	----	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		<0.00050	0.00095	0.00093	----	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		<0.050	<0.050	<0.050	----	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		<0.050	1.22	1.18	----	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		<0.00020	0.00068	0.00060	----	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		<0.000050	0.000073	0.000098	----	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		<0.050	0.223	0.260	----	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		0.069 RRV	11.0	10.8	----	----
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		<0.00020	0.0715	0.0687	----	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		<0.50	20.3	19.1	----	----
Tellurium, dissolved	13494-80-9	E421/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----
Thallium, dissolved	7440-28-0	E421/VA	0.000010	mg/L		<0.000010	<0.000010	<0.000010	----	----
Thorium, dissolved	7440-29-1	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Tin, dissolved	7440-31-5	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		<0.00030	<0.00030	0.00043	----	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		<0.00010	<0.00010	<0.00010	----	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		<0.000010	0.000032	0.000036	----	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		<0.00050	<0.00050	<0.00050	----	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		<0.0010	0.0017	<0.0010	----	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	<0.00020	<0.00020	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FB WW#12868	SNP4-RW WW#12813	SNP6-RW WW#12817	----	----
					Client sampling date / time	16-Sep-2024 17:35	17-Sep-2024 13:45	17-Sep-2024 14:20	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2401538-003	YL2401538-004	YL2401538-006	--------	--------
						Result	Result	Result	----	----
Dissolved Metals										
Dissolved mercury filtration location	----	EP509/VA	-	-		Field	Field	Field	----	----
Dissolved metals filtration location	----	EP421/VA	-	-		Field	Field	Field	----	----
Aggregate Organics										
Carbonaceous biochemical oxygen demand [CBOD]	----	CBOD5/1Y	2	mg/L		0	0	0	----	----
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	----	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	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	300	µg/L		<300	<300	<300	----	----
F3 (C16-C34)	----	E601/VA	300	µg/L		<300	<300	<300	----	----
F4 (C34-C50)	----	E601/VA	300	µg/L		<300	<300	<300	----	----
VHw (C6-C10)	----	E581.VH+F1/VA	100	µg/L		<100	<100	<100	----	----
F1-BTEX	----	EC580/VA	100	µg/L		<100	<100	<100	----	----
VPHw	----	EC580A/VA	100	µg/L		<100	<100	<100	----	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (F2-F4 surrogate)	392-83-6	E601/VA	1.0	%		81.7	87.8	82.4	----	----
Dichlorotoluene, 3,4-	95-75-0	E581.VH+F1/VA	1.0	%		114	108	110	----	----
Volatile Organic Compounds Surrogates										
Bromofluorobenzene, 4-	460-00-4	E611A/VA	1.0	%		91.0	92.8	92.7	----	----
Difluorobenzene, 1,4-	540-36-3	E611A/VA	1.0	%		101	102	99.6	----	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	FB WW#12868	SNP4-RW WW#12813	SNP6-RW WW#12817	----	----
					Client sampling date / time	16-Sep-2024 17:35	17-Sep-2024 13:45	17-Sep-2024 14:20	----	----
Analyte	CAS Number	Method/Lab	LOR	Unit		YL2401538-003	YL2401538-004	YL2401538-006	--------	--------
						Result	Result	Result	----	----
Glycols										
Ethylene glycol	107-21-1	E680E/VA	5.0	mg/L		<5.0	<5.0	<5.0	----	----
Glycols Surrogates										
Propanediol, 1,3-	504-63-2	E680E/VA	1.0	%		95.7	93.6	63.3 SUR-ND	----	----

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.

QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **YL2401538**	Page	: 1 of 16
Amendment	: 1		
Client	: **Associated Engineering Ltd.**	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: Unit 201, 5103 48 St. Yellowknife NT Canada X1A 1N5	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: 2024 Water License Monitoring	Date Samples Received	: 19-Sep-2024 09:43
PO	: 2020-2886.055.599	Issue Date	: 01-Oct-2024 14:55
C-O-C number	: ----		
Sampler	: Caitlin McKenzie		
Site	: ----		
Quote number	: YL24-ASEG100-001		
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 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

- No Quality Control Sample Frequency Outliers occur.

Regular Sample Surrogates

Sub-Matrix: **Water**

Analyte Group	Laboratory sample ID	Client/Ref Sample ID	Analyte	CAS Number	Result	Limits	Comment
Samples Submitted							
Glycols Surrogates	YL2401538-006	SNP6-RW WW#12817	Propanediol, 1,3-	504-63-2	63.3 %	70.0-130 %	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: **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
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
SNP1-S WW#12809	E510	16-Sep-2024	26-Sep-2024	28 days	10 days	✓	26-Sep-2024	28 days	10 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
SNP5-S WW#12816	E510	16-Sep-2024	26-Sep-2024	28 days	10 days	✓	26-Sep-2024	28 days	10 days	✓
Metals : Mercury in Soil/Solid by CVAAS										
Glass soil jar/Teflon lined cap										
SNP4-S WW#12814	E510	17-Sep-2024	26-Sep-2024	28 days	9 days	✓	26-Sep-2024	28 days	9 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
SNP1-S WW#12809	E440	16-Sep-2024	26-Sep-2024	180 days	10 days	✓	26-Sep-2024	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
SNP5-S WW#12816	E440	16-Sep-2024	26-Sep-2024	180 days	10 days	✓	26-Sep-2024	180 days	10 days	✓
Metals : Metals in Soil/Solid by CRC ICPMS										
Glass soil jar/Teflon lined cap										
SNP4-S WW#12814	E440	17-Sep-2024	26-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	9 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
SNP1-S WW#12809	E108	16-Sep-2024	26-Sep-2024	30 days	10 days	✓	26-Sep-2024	30 days	10 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
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
SNP5-S WW#12816	E108	16-Sep-2024	26-Sep-2024	30 days	10 days	✓	26-Sep-2024	30 days	10 days	✓
Physical Tests : pH by Meter (1:2 Soil:Water Extraction)										
Glass soil jar/Teflon lined cap										
SNP4-S WW#12814	E108	17-Sep-2024	26-Sep-2024	30 days	9 days	✓	26-Sep-2024	30 days	9 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
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h]										
SNP6-RW WW#12817	CBOD5	17-Sep-2024	----	----	----		19-Sep-2024	48 hrs	45 hrs	✓
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h]										
SNP4-RW WW#12813	CBOD5	17-Sep-2024	----	----	----		19-Sep-2024	48 hrs	46 hrs	✓
Aggregate Organics : Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day										
HDPE [BOD HT-48h]										
FB WW#12868	CBOD5	16-Sep-2024	----	----	----		19-Sep-2024	48 hrs	66 hrs	× EHTR
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
SNP4-RW WW#12813	E509	17-Sep-2024	25-Sep-2024	28 days	8 days	✓	25-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
SNP6-RW WW#12817	E509	17-Sep-2024	25-Sep-2024	28 days	8 days	✓	25-Sep-2024	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid)										
FB WW#12868	E509	16-Sep-2024	25-Sep-2024	28 days	9 days	✓	25-Sep-2024	28 days	9 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) SNP4-RW WW#12813	E421	17-Sep-2024	25-Sep-2024	180 days	8 days	✓	26-Sep-2024	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) SNP6-RW WW#12817	E421	17-Sep-2024	25-Sep-2024	180 days	8 days	✓	26-Sep-2024	180 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE - dissolved (lab preserved) FB WW#12868	E421	16-Sep-2024	25-Sep-2024	180 days	9 days	✓	26-Sep-2024	180 days	10 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP4-RW WW#12813	E680E	17-Sep-2024	24-Sep-2024	7 days	7 days	✓	25-Sep-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial SNP6-RW WW#12817	E680E	17-Sep-2024	24-Sep-2024	7 days	7 days	✓	25-Sep-2024	40 days	1 days	✓
Glycols : Glycols (4 analytes) by GC-FID										
Glass vial FB WW#12868	E680E	16-Sep-2024	24-Sep-2024	7 days	8 days	× EHT	25-Sep-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) FB WW#12868	E601	16-Sep-2024	26-Sep-2024	14 days	10 days	✓	26-Sep-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP4-RW WW#12813	E601	17-Sep-2024	26-Sep-2024	14 days	9 days	✓	26-Sep-2024	40 days	1 days	✓
Hydrocarbons : CCME PHCs - F2-F4 by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate) SNP6-RW WW#12817	E601	17-Sep-2024	26-Sep-2024	14 days	9 days	✓	26-Sep-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 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) SNP4-RW WW#12813	E581.VH+F1	17-Sep-2024	24-Sep-2024	14 days	7 days	✓	25-Sep-2024	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) SNP6-RW WW#12817	E581.VH+F1	17-Sep-2024	24-Sep-2024	14 days	7 days	✓	25-Sep-2024	14 days	8 days	✓
Hydrocarbons : VH and F1 by Headspace GC-FID										
Glass vial (sodium bisulfate) FB WW#12868	E581.VH+F1	16-Sep-2024	24-Sep-2024	14 days	8 days	✓	25-Sep-2024	14 days	8 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP4-RW WW#12813	E358-L	17-Sep-2024	23-Sep-2024	28 days	6 days	✓	23-Sep-2024	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) SNP6-RW WW#12817	E358-L	17-Sep-2024	23-Sep-2024	28 days	6 days	✓	23-Sep-2024	28 days	6 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (sulfuric acid) FB WW#12868	E358-L	16-Sep-2024	23-Sep-2024	28 days	7 days	✓	23-Sep-2024	28 days	7 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP4-RW WW#12813	E100	17-Sep-2024	25-Sep-2024	28 days	8 days	✓	25-Sep-2024	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE SNP6-RW WW#12817	E100	17-Sep-2024	25-Sep-2024	28 days	8 days	✓	25-Sep-2024	28 days	8 days	✓
Physical Tests : Conductivity in Water										
HDPE FB WW#12868	E100	16-Sep-2024	25-Sep-2024	28 days	9 days	✓	25-Sep-2024	28 days	9 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 : pH by Meter										
HDPE SNP6-RW WW#12817	E108	17-Sep-2024	25-Sep-2024	0.25 hrs	188 hrs	× EHTR-FM	25-Sep-2024	0.25 hrs	190 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE SNP4-RW WW#12813	E108	17-Sep-2024	25-Sep-2024	0.25 hrs	189 hrs	× EHTR-FM	25-Sep-2024	0.25 hrs	191 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE FB WW#12868	E108	16-Sep-2024	25-Sep-2024	0.25 hrs	209 hrs	× EHTR-FM	25-Sep-2024	0.25 hrs	211 hrs	× EHTR-FM
Physical Tests : TSS by Gravimetry										
HDPE FB WW#12868	E160	16-Sep-2024	----	----	----		24-Sep-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP4-RW WW#12813	E160	17-Sep-2024	----	----	----		24-Sep-2024	7 days	7 days	✓
Physical Tests : TSS by Gravimetry										
HDPE SNP6-RW WW#12817	E160	17-Sep-2024	----	----	----		24-Sep-2024	7 days	7 days	✓
Physical Tests : Turbidity by Nephelometry										
HDPE SNP4-RW WW#12813	E121	17-Sep-2024	----	----	----		24-Sep-2024	3 days	7 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE SNP6-RW WW#12817	E121	17-Sep-2024	----	----	----		24-Sep-2024	3 days	7 days	× EHT
Physical Tests : Turbidity by Nephelometry										
HDPE FB WW#12868	E121	16-Sep-2024	----	----	----		24-Sep-2024	3 days	8 days	× EHTL

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 (hydrochloric acid) SNP4-RW WW#12813	E508	17-Sep-2024	25-Sep-2024	28 days	8 days	✓	25-Sep-2024	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) SNP6-RW WW#12817	E508	17-Sep-2024	25-Sep-2024	28 days	8 days	✓	25-Sep-2024	28 days	8 days	✓
Total Metals : Total Mercury in Water by CVAAS										
Glass vial total (hydrochloric acid) FB WW#12868	E508	16-Sep-2024	25-Sep-2024	28 days	9 days	✓	25-Sep-2024	28 days	9 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP4-RW WW#12813	E420	17-Sep-2024	24-Sep-2024	180 days	7 days	✓	25-Sep-2024	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) SNP6-RW WW#12817	E420	17-Sep-2024	24-Sep-2024	180 days	7 days	✓	25-Sep-2024	180 days	8 days	✓
Total Metals : Total Metals in Water by CRC ICPMS										
HDPE - total (lab preserved) FB WW#12868	E420	16-Sep-2024	24-Sep-2024	180 days	8 days	✓	25-Sep-2024	180 days	9 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP4-RW WW#12813	E611A	17-Sep-2024	24-Sep-2024	14 days	7 days	✓	25-Sep-2024	14 days	8 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) SNP6-RW WW#12817	E611A	17-Sep-2024	24-Sep-2024	14 days	7 days	✓	25-Sep-2024	14 days	8 days	✓
Volatile Organic Compounds : BTEX by Headspace GC-MS										
Glass vial (sodium bisulfate) FB WW#12868	E611A	16-Sep-2024	24-Sep-2024	14 days	8 days	✓	25-Sep-2024	14 days	8 days	✓

Legend & Qualifier Definitions

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

EHTR: Exceeded ALS recommended hold time prior to sample receipt.

EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.

EHT: Exceeded ALS recommended hold time prior to analysis.

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)							
Mercury in Soil/Solid by CVAAS	E510	1674751	1	4	25.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1674750	1	5	20.0	5.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1675245	2	27	7.4	5.0	✓
Laboratory Control Samples (LCS)							
Mercury in Soil/Solid by CVAAS	E510	1674751	2	4	50.0	10.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1674750	2	5	40.0	10.0	✓
pH by Meter (1:2 Soil:Water Extraction)	E108	1675245	4	27	14.8	10.0	✓
Method Blanks (MB)							
Mercury in Soil/Solid by CVAAS	E510	1674751	1	4	25.0	5.0	✓
Metals in Soil/Solid by CRC ICPMS	E440	1674750	1	5	20.0	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 Duplicates (DUP)							
BTEX by Headspace GC-MS	E611A	1671023	1	15	6.6	5.0	✓
Conductivity in Water	E100	1671576	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1672280	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1669307	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1668245	1	11	9.0	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1669144	1	17	5.8	5.0	✓
pH by Meter	E108	1671579	1	16	6.2	5.0	✓
Total Mercury in Water by CVAAS	E508	1672150	1	8	12.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1669292	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1668560	2	23	8.7	5.0	✓
Turbidity by Nephelometry	E121	1670430	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1671024	1	12	8.3	5.0	✓
Laboratory Control Samples (LCS)							
BTEX by Headspace GC-MS	E611A	1671023	1	15	6.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1673707	1	19	5.2	5.0	✓
Conductivity in Water	E100	1671576	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1672280	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1669307	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1668245	1	11	9.0	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1669144	1	17	5.8	5.0	✓
pH by Meter	E108	1671579	1	16	6.2	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*
Laboratory Control Samples (LCS) - Continued							
Total Mercury in Water by CVAAS	E508	1672150	1	8	12.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1669292	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1668560	2	23	8.7	5.0	✓
Turbidity by Nephelometry	E121	1670430	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1671024	1	12	8.3	5.0	✓
Method Blanks (MB)							
BTEX by Headspace GC-MS	E611A	1671023	1	15	6.6	5.0	✓
CCME PHCs - F2-F4 by GC-FID	E601	1673707	1	19	5.2	5.0	✓
Conductivity in Water	E100	1671576	1	7	14.2	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1672280	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1669307	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1668245	1	11	9.0	5.0	✓
Glycols (4 analytes) by GC-FID	E680E	1669144	1	17	5.8	5.0	✓
Total Mercury in Water by CVAAS	E508	1672150	1	8	12.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1669292	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1668560	2	23	8.7	5.0	✓
Turbidity by Nephelometry	E121	1670430	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1671024	1	12	8.3	5.0	✓
Matrix Spikes (MS)							
BTEX by Headspace GC-MS	E611A	1671023	1	15	6.6	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1672280	1	20	5.0	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1669307	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1668245	1	11	9.0	5.0	✓
Total Mercury in Water by CVAAS	E508	1672150	1	8	12.5	5.0	✓
Total Metals in Water by CRC ICPMS	E420	1669292	1	20	5.0	5.0	✓
VH and F1 by Headspace GC-FID	E581.VH+F1	1671024	1	12	8.3	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 (1:2 Soil:Water Extraction)	E108 ALS Environmental - Calgary	Soil/Solid	BC Lab Manual	pH is determined by potentiometric measurement with a pH electrode at ambient laboratory temperature (normally 20 ± 5°C), and is carried out in accordance with procedures described in the BC Lab Manual (prescriptive method). The procedure involves mixing the dried (at <60 ºC) and sieved (10mesh/2mm) sample with ultra pure water at a 1:2 ratio of sediment to water. The pH is then measured by a standard pH probe.
Metals in Soil/Solid by CRC ICPMS	E440 ALS Environmental - Calgary	Soil/Solid	EPA 6020B (mod)	This method is intended to liberate metals that may be environmentally available. Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl. Dependent on sample matrix, some metals may be only partially recovered, including Al, Ba, Be, Cr, Sr, Ti, Tl, V, W, and Zr. Silicate minerals are not solubilized. Volatile forms of sulfur (including sulfide) may not be captured, as they may be lost during sampling, storage, or digestion. This method does not adequately recover elemental sulfur, and is unsuitable for assessment of elemental sulfur standards or guidelines. Analysis is by Collision/Reaction Cell ICPMS.
Mercury in Soil/Solid by CVAAS	E510 ALS Environmental - Calgary	Soil/Solid	EPA 200.2/1631 Appendix (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO3 and HCl, followed by CVAAS analysis.
Carbonaceous Biochemical Oxygen Demand (CBOD) 5-day	CBOD5 Taiga Environmental Laboratory - 4601 - 52nd Avenue P.O. BOX 1500 Yellowknife Northwest Territories Canada X1A 2R3	Water	SM5210B	Sample was diluted, seeded, and incubated at specified temperature for 5 days. Dissolved oxygen is measured initially and after incubation, and the CBOD is computed from the difference between initial and final DO.
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.
Turbidity by Nephelometry	E121 ALS Environmental - Vancouver	Water	APHA 2130 B (mod)	Turbidity is measured by the nephelometric method, by measuring the intensity of light scatter under defined conditions.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
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.
Dissolved Organic Carbon by Combustion (Low Level)	E358-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Organic Carbon (Non-Purgeable), also known as NPOC (dissolved), is a direct measurement of DOC after a filtered (0.45 micron) sample has been acidified and purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of DC (dissolved carbon) is comprised of IC (which is common), this method is more accurate and more reliable than the DOC by subtraction method (i.e. DC minus DIC).
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.
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.
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.
Glycols (4 analytes) by GC-FID	E680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Derivatized glycols are analyzed by GC-FID.
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.
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
Leach 1:2 Soil:Water for pH/EC	EP108 ALS Environmental - Calgary	Soil/Solid	BC WLAP METHOD: PH, ELECTROMETRIC, SOIL	The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water.
Digestion for Metals and Mercury	EP440 ALS Environmental - Calgary	Soil/Solid	EPA 200.2 (mod)	Samples are dried, then sieved through a 2 mm sieve, and digested with HNO_3 and HCl. This method is intended to liberate metals that may be environmentally available.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
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 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.
Glycols Extraction and Derivatization (BC Only)	EP680E ALS Environmental - Vancouver	Water	EPA 8015D (mod)	Aqueous sample is derivatized and extracted with orgaic solvent.

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QUALITY CONTROL REPORT

Work Order	: **YL2401538**	Page	: 1 of 22
Amendment	: **1**		
Client	: Associated Engineering Ltd.	Laboratory	: ALS Environmental - Yellowknife
Contact	: Caitlin McKenzie	Account Manager	: Oliver Gregg
Address	: Unit 201, 5103 48 St. Yellowknife NT Canada X1A 1N5	Address	: 314 Old Airport Road, Unit 116 Yellowknife, Northwest Territories Canada X1A 3T3
Telephone	: ----	Telephone	: 1 867 445 7143
Project	: 2024 Water License Monitoring	Date Samples Received	: 19-Sep-2024 09:43
PO	: 2020-2886.055.599	Date Analysis Commenced	: 19-Sep-2024
C-O-C number	: ----	Issue Date	: 01-Oct-2024 14:53
Sampler	: Caitlin McKenzie		
Site	: ----		
Quote number	: YL24-ASEG100-001		
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
- Reference Material (RM) 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*
Chamoi Beckford	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Vancouver Organics, Burnaby, British Columbia
Maya Urquhart	Lab Analyst	Vancouver Metals, Burnaby, British Columbia
Mervat Lamose	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Monica Ko	Lab Assistant	Vancouver Inorganics, Burnaby, British Columbia
Oliver Gregg	Client Services Supervisor	Taiga Environmental Laboratory External Subcontracting, Yellowknife, Northwest Territories
Shirley Li	Team Leader - Inorganics	Calgary Metals, 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: 1675245)											
CG2413579-002	Anonymous	pH (1:2 soil:water)	----	E108	0.10	pH units	8.50	8.53	0.352%	5%	----
Physical Tests (QC Lot: 1675246)											
YL2401538-005	SNP4-S WW#12814	pH (1:2 soil:water)	----	E108	0.10	pH units	7.06	7.04	0.284%	5%	----
Metals (QC Lot: 1674750)											
YL2401538-001	SNP1-S WW#12809	Aluminum	7429-90-5	E440	50	mg/kg	5420	5380	0.700%	40%	----
		Antimony	7440-36-0	E440	0.10	mg/kg	0.24	0.23	0.002	Diff <2x LOR	----
		Arsenic	7440-38-2	E440	0.10	mg/kg	11.8	11.7	0.603%	30%	----
		Barium	7440-39-3	E440	0.50	mg/kg	95.6	95.1	0.524%	40%	----
		Beryllium	7440-41-7	E440	0.10	mg/kg	0.42	0.40	0.02	Diff <2x LOR	----
		Bismuth	7440-69-9	E440	0.20	mg/kg	<0.20	<0.20	0	Diff <2x LOR	----
		Boron	7440-42-8	E440	5.0	mg/kg	8.2	8.2	0.02	Diff <2x LOR	----
		Cadmium	7440-43-9	E440	0.020	mg/kg	0.060	0.060	0.00008	Diff <2x LOR	----
		Calcium	7440-70-2	E440	50	mg/kg	6060	5660	6.84%	30%	----
		Chromium	7440-47-3	E440	0.50	mg/kg	12.0	12.0	0.171%	30%	----
		Cobalt	7440-48-4	E440	0.10	mg/kg	7.70	7.49	2.80%	30%	----
		Copper	7440-50-8	E440	0.50	mg/kg	11.4	11.3	1.02%	30%	----
		Iron	7439-89-6	E440	50	mg/kg	23500	22800	3.36%	30%	----
		Lead	7439-92-1	E440	0.50	mg/kg	9.16	8.90	2.94%	40%	----
		Lithium	7439-93-2	E440	2.0	mg/kg	13.7	13.8	0.777%	30%	----
		Magnesium	7439-95-4	E440	20	mg/kg	2720	2670	1.78%	30%	----
		Manganese	7439-96-5	E440	1.0	mg/kg	243	234	3.53%	30%	----
		Molybdenum	7439-98-7	E440	0.10	mg/kg	0.76	0.76	0.786%	40%	----
		Nickel	7440-02-0	E440	0.50	mg/kg	17.6	17.0	3.63%	30%	----
		Phosphorus	7723-14-0	E440	50	mg/kg	400	432	7.71%	30%	----
		Potassium	7440-09-7	E440	100	mg/kg	1040	1040	0.164%	40%	----
		Selenium	7782-49-2	E440	0.20	mg/kg	0.59	0.44	0.16	Diff <2x LOR	----
		Silver	7440-22-4	E440	0.10	mg/kg	<0.10	<0.10	0	Diff <2x LOR	----
		Sodium	7440-23-5	E440	50	mg/kg	222	213	9	Diff <2x LOR	----
		Strontium	7440-24-6	E440	0.50	mg/kg	32.0	31.1	2.64%	40%	----
		Sulfur	7704-34-9	E440	1000	mg/kg	1200	1000	100	Diff <2x LOR	----

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*
Metals (QC Lot: 1674750) - continued											
YL2401538-001	SNP1-S WW#12809	Thallium	7440-28-0	E440	0.050	mg/kg	0.063	0.062	0.0010	Diff <2x LOR	----
		Tin	7440-31-5	E440	2.0	mg/kg	<2.0	<2.0	0	Diff <2x LOR	----
		Titanium	7440-32-6	E440	1.0	mg/kg	39.5	39.1	0.964%	40%	----
		Tungsten	7440-33-7	E440	0.50	mg/kg	<0.50	<0.50	0	Diff <2x LOR	----
		Uranium	7440-61-1	E440	0.050	mg/kg	0.431	0.424	1.68%	30%	----
		Vanadium	7440-62-2	E440	0.20	mg/kg	20.4	20.3	0.811%	30%	----
		Zinc	7440-66-6	E440	2.0	mg/kg	58.8	56.7	3.63%	30%	----
		Zirconium	7440-67-7	E440	1.0	mg/kg	3.5	3.6	0.06	Diff <2x LOR	----
Metals (QC Lot: 1674751)											
EO2407952-048	Anonymous	Mercury	7439-97-6	E510	0.0050	mg/kg	0.0200	0.0199	0.00004	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*
Physical Tests (QC Lot: 1668560)											
VA24C4431-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1670430)											
VA24C5048-004	Anonymous	Turbidity	----	E121	0.10	NTU	0.33	0.33	0.002	Diff <2x LOR	----
Physical Tests (QC Lot: 1670567)											
VA24C5207-003	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1671576)											
VA24C4345-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	<2.0	<2.0	0	Diff <2x LOR	----
Physical Tests (QC Lot: 1671579)											
VA24C4440-006	Anonymous	pH	----	E108	0.10	pH units	7.15	7.17	0.279%	4%	----
Organic / Inorganic Carbon (QC Lot: 1668245)											
YL2401534-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	17.3	18.4	6.61%	20%	----
Total Metals (QC Lot: 1669292)											
VA24C4790-001	Anonymous	Aluminum, total	7429-90-5	E420	0.0030	mg/L	0.0907	0.0924	1.88%	20%	----
		Antimony, total	7440-36-0	E420	0.00010	mg/L	0.00013	0.00013	0.000006	Diff <2x LOR	----
		Arsenic, total	7440-38-2	E420	0.00010	mg/L	0.00275	0.00271	1.52%	20%	----
		Barium, total	7440-39-3	E420	0.00010	mg/L	0.0988	0.0960	2.89%	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	0.106	0.104	1.81%	20%	----
		Cadmium, total	7440-43-9	E420	0.0000350	mg/L	<0.0000350	<0.0000350	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: 1669292) - continued											
VA24C4790-001	Anonymous	Calcium, total	7440-70-2	E420	0.050	mg/L	147	148	1.23%	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	0.00014	0.00014	0.000002	Diff <2x LOR	----
		Copper, total	7440-50-8	E420	0.00050	mg/L	0.00306	0.00301	0.00005	Diff <2x LOR	----
		Iron, total	7439-89-6	E420	0.010	mg/L	0.123	0.122	1.43%	20%	----
		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	0.0026	0.0026	0.00005	Diff <2x LOR	----
		Magnesium, total	7439-95-4	E420	0.0050	mg/L	58.8	57.5	2.22%	20%	----
		Manganese, total	7439-96-5	E420	0.00010	mg/L	0.0438	0.0426	2.72%	20%	----
		Molybdenum, total	7439-98-7	E420	0.000050	mg/L	0.0552	0.0546	1.09%	20%	----
		Nickel, total	7440-02-0	E420	0.00050	mg/L	0.00103	0.00106	0.00003	Diff <2x LOR	----
		Phosphorus, total	7723-14-0	E420	0.050	mg/L	0.114	0.105	0.009	Diff <2x LOR	----
		Potassium, total	7440-09-7	E420	0.050	mg/L	7.64	7.92	3.59%	20%	----
		Rubidium, total	7440-17-7	E420	0.00020	mg/L	0.00078	0.00070	0.00008	Diff <2x LOR	----
		Selenium, total	7782-49-2	E420	0.000050	mg/L	0.000098	0.000097	0.000001	Diff <2x LOR	----
		Silicon, total	7440-21-3	E420	0.10	mg/L	13.0	12.9	0.535%	20%	----
		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	62.6	62.8	0.293%	20%	----
		Strontium, total	7440-24-6	E420	0.00020	mg/L	0.788	0.765	2.96%	20%	----
		Sulfur, total	7704-34-9	E420	0.50	mg/L	170	168	1.47%	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	<0.000010	<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	0.00541	0.00512	5.53%	20%	----
		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	0.00896	0.00885	1.24%	20%	----
		Vanadium, total	7440-62-2	E420	0.00050	mg/L	0.00680	0.00669	1.69%	20%	----
		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: 1672150)											
YL2401537-001	Anonymous	Mercury, total	7439-97-6	E508	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1669307)											

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: 1669307) - continued											
YL2401546-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0015	0.0013	0.0003	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	0.0152	0.0154	0.794%	20%	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.0740	0.0724	2.20%	20%	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0290	0.0289	0.523%	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	0.123	0.123	0.353%	20%	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000381	0.0000397	0.0000016	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	273	278	1.70%	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	0.0159	0.0157	1.12%	20%	----
		Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00528	0.00522	1.22%	20%	----
		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	0.0128	0.0128	0.393%	20%	----
		Magnesium, dissolved	7439-95-4	E421	0.0050	mg/L	51.5	50.0	2.87%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.00058	0.00059	0.000009	Diff <2x LOR	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.00126	0.00125	0.123%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00206	0.00203	0.00002	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	0.050	mg/L	4.76	4.56	4.20%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00158	0.00157	0.00001	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000515	0.000542	5.14%	20%	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	5.69	5.52	3.09%	20%	----
		Silver, dissolved	7440-22-4	E421	0.000010	mg/L	0.000014	0.000010	0.000004	Diff <2x LOR	----
		Sodium, dissolved	7440-23-5	E421	0.050	mg/L	139	136	2.30%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	2.56	2.59	1.14%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	203	195	4.20%	20%	----
		Tellurium, dissolved	13494-80-9	E421	0.00020	mg/L	<0.00020	0.00023	0.00003	Diff <2x LOR	----
		Thallium, dissolved	7440-28-0	E421	0.000010	mg/L	0.000014	0.000014	0.0000006	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	----

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: 1669307) - continued											
YL2401546-001	Anonymous	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	0.0128	0.0125	2.48%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	0.00067	0.00067	0.000003	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	0.0034	0.0032	0.0001	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	<0.00020	<0.00020	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1672280)											
VA24C4886-002	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0050 µg/L	<0.0000050	0	Diff <2x LOR	----
Volatile Organic Compounds (QC Lot: 1671023)											
VA24C4472-001	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: 1671024)											
VA24C4495-001	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%	----
Glycols (QC Lot: 1669144)											
VA24C5135-001	Anonymous	Ethylene glycol	107-21-1	E680E	5.0	mg/L	<5.0	<5.0	0	Diff <2x LOR	----

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
Metals (QCLot: 1674750)						
Aluminum	7429-90-5	E440	50	mg/kg	<50	----
Antimony	7440-36-0	E440	0.1	mg/kg	<0.10	----
Arsenic	7440-38-2	E440	0.1	mg/kg	<0.10	----
Barium	7440-39-3	E440	0.5	mg/kg	<0.50	----
Beryllium	7440-41-7	E440	0.1	mg/kg	<0.10	----
Bismuth	7440-69-9	E440	0.2	mg/kg	<0.20	----
Boron	7440-42-8	E440	5	mg/kg	<5.0	----
Cadmium	7440-43-9	E440	0.02	mg/kg	<0.020	----
Calcium	7440-70-2	E440	50	mg/kg	<50	----
Chromium	7440-47-3	E440	0.5	mg/kg	<0.50	----
Cobalt	7440-48-4	E440	0.1	mg/kg	<0.10	----
Copper	7440-50-8	E440	0.5	mg/kg	<0.50	----
Iron	7439-89-6	E440	50	mg/kg	<50	----
Lead	7439-92-1	E440	0.5	mg/kg	<0.50	----
Lithium	7439-93-2	E440	2	mg/kg	<2.0	----
Magnesium	7439-95-4	E440	20	mg/kg	<20	----
Manganese	7439-96-5	E440	1	mg/kg	<1.0	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	<0.10	----
Nickel	7440-02-0	E440	0.5	mg/kg	<0.50	----
Phosphorus	7723-14-0	E440	50	mg/kg	<50	----
Potassium	7440-09-7	E440	100	mg/kg	<100	----
Selenium	7782-49-2	E440	0.2	mg/kg	<0.20	----
Silver	7440-22-4	E440	0.1	mg/kg	<0.10	----
Sodium	7440-23-5	E440	50	mg/kg	<50	----
Strontium	7440-24-6	E440	0.5	mg/kg	<0.50	----
Sulfur	7704-34-9	E440	1000	mg/kg	<1000	----
Thallium	7440-28-0	E440	0.05	mg/kg	<0.050	----
Tin	7440-31-5	E440	2	mg/kg	<2.0	----
Titanium	7440-32-6	E440	1	mg/kg	<1.0	----
Tungsten	7440-33-7	E440	0.5	mg/kg	<0.50	----
Uranium	7440-61-1	E440	0.05	mg/kg	<0.050	----
Vanadium	7440-62-2	E440	0.2	mg/kg	<0.20	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Metals (QCLot: 1674750) - continued						
Zinc	7440-66-6	E440	2	mg/kg	<2.0	----
Zirconium	7440-67-7	E440	1	mg/kg	<1.0	----
Metals (QCLot: 1674751)						
Mercury	7439-97-6	E510	0.005	mg/kg	<0.0050	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1668560)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1670430)						
Turbidity	----	E121	0.1	NTU	<0.10	----
Physical Tests (QCLot: 1670567)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Physical Tests (QCLot: 1671576)						
Conductivity	----	E100	1	µS/cm	1.4	----
Organic / Inorganic Carbon (QCLot: 1668245)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Total Metals (QCLot: 1669292)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Total Metals (QCLot: 1669292) - continued						
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: 1672150)						
Mercury, total	7439-97-6	E508	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1669307)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Dissolved Metals (QCLot: 1669307) - continued						
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	----
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: 1672280)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Volatile Organic Compounds (QCLot: 1671023)						
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	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1671023) - continued						
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: 1671024)						
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	<100	----
Hydrocarbons (QCLot: 1673707)						
F2 (C10-C16)	----	E601	100	µg/L	<100	----
F3 (C16-C34)	----	E601	250	µg/L	<250	----
F4 (C34-C50)	----	E601	250	µg/L	<250	----
Glycols (QCLot: 1669144)						
Ethylene glycol	107-21-1	E680E	5	mg/L	<5.0	----

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: 1675245)									
pH (1:2 soil:water)	----	E108	----	pH units	7 pH units	101	97.0	103	----
Physical Tests (QCLot: 1675246)									
pH (1:2 soil:water)	----	E108	----	pH units	7 pH units	101	97.0	103	----
Metals (QCLot: 1674750)									
Aluminum	7429-90-5	E440	50	mg/kg	200 mg/kg	101	80.0	120	----
Antimony	7440-36-0	E440	0.1	mg/kg	100 mg/kg	99.7	80.0	120	----
Arsenic	7440-38-2	E440	0.1	mg/kg	100 mg/kg	102	80.0	120	----
Barium	7440-39-3	E440	0.5	mg/kg	25 mg/kg	98.8	80.0	120	----
Beryllium	7440-41-7	E440	0.1	mg/kg	10 mg/kg	95.7	80.0	120	----
Bismuth	7440-69-9	E440	0.2	mg/kg	100 mg/kg	94.1	80.0	120	----
Boron	7440-42-8	E440	5	mg/kg	100 mg/kg	93.3	80.0	120	----
Cadmium	7440-43-9	E440	0.02	mg/kg	10 mg/kg	94.9	80.0	120	----
Calcium	7440-70-2	E440	50	mg/kg	5000 mg/kg	94.4	80.0	120	----
Chromium	7440-47-3	E440	0.5	mg/kg	25 mg/kg	99.7	80.0	120	----
Cobalt	7440-48-4	E440	0.1	mg/kg	25 mg/kg	97.2	80.0	120	----
Copper	7440-50-8	E440	0.5	mg/kg	25 mg/kg	95.8	80.0	120	----
Iron	7439-89-6	E440	50	mg/kg	100 mg/kg	93.2	80.0	120	----
Lead	7439-92-1	E440	0.5	mg/kg	50 mg/kg	96.0	80.0	120	----
Lithium	7439-93-2	E440	2	mg/kg	25 mg/kg	97.3	80.0	120	----
Magnesium	7439-95-4	E440	20	mg/kg	5000 mg/kg	100	80.0	120	----
Manganese	7439-96-5	E440	1	mg/kg	25 mg/kg	100	80.0	120	----
Molybdenum	7439-98-7	E440	0.1	mg/kg	25 mg/kg	95.9	80.0	120	----
Nickel	7440-02-0	E440	0.5	mg/kg	50 mg/kg	96.0	80.0	120	----
Phosphorus	7723-14-0	E440	50	mg/kg	1000 mg/kg	98.8	80.0	120	----
Potassium	7440-09-7	E440	100	mg/kg	5000 mg/kg	100	80.0	120	----
Selenium	7782-49-2	E440	0.2	mg/kg	100 mg/kg	92.5	80.0	120	----
Silver	7440-22-4	E440	0.1	mg/kg	10 mg/kg	86.2	80.0	120	----
Sodium	7440-23-5	E440	50	mg/kg	5000 mg/kg	94.8	80.0	120	----
Strontium	7440-24-6	E440	0.5	mg/kg	25 mg/kg	96.1	80.0	120	----
Sulfur	7704-34-9	E440	1000	mg/kg	5000 mg/kg	100	80.0	120	----
Thallium	7440-28-0	E440	0.05	mg/kg	100 mg/kg	91.4	80.0	120	----
Tin	7440-31-5	E440	2	mg/kg	50 mg/kg	97.4	80.0	120	----

Sub-Matrix: **Soil/Solid**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike: Target Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Metals (QCLot: 1674750) - continued									
Titanium	7440-32-6	E440	1	mg/kg	25 mg/kg	97.5	80.0	120	----
Tungsten	7440-33-7	E440	0.5	mg/kg	10 mg/kg	95.4	80.0	120	----
Uranium	7440-61-1	E440	0.05	mg/kg	0.5 mg/kg	94.6	80.0	120	----
Vanadium	7440-62-2	E440	0.2	mg/kg	50 mg/kg	100	80.0	120	----
Zinc	7440-66-6	E440	2	mg/kg	50 mg/kg	98.2	80.0	120	----
Zirconium	7440-67-7	E440	1	mg/kg	10 mg/kg	92.7	80.0	120	----
Metals (QCLot: 1674751)									
Mercury	7439-97-6	E510	0.005	mg/kg	0.1 mg/kg	94.2	80.0	120	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report: Spike: Target Concentration	Recovery (%): LCS	Recovery Limits (%): Low	Recovery Limits (%): High	Qualifier
Physical Tests (QCLot: 1668560)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	95.0	85.0	115	----
Physical Tests (QCLot: 1670430)									
Turbidity	----	E121	0.1	NTU	200 NTU	97.0	85.0	115	----
Physical Tests (QCLot: 1670567)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	89.8	85.0	115	----
Physical Tests (QCLot: 1671576)									
Conductivity	----	E100	1	µS/cm	147 µS/cm	97.7	90.0	110	----
Physical Tests (QCLot: 1671579)									
pH	----	E108	----	pH units	7 pH units	100	98.0	102	----
Organic / Inorganic Carbon (QCLot: 1668245)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	101	80.0	120	----
Total Metals (QCLot: 1669292)									
Aluminum, total	7429-90-5	E420	0.003	mg/L	2 mg/L	102	80.0	120	----
Antimony, total	7440-36-0	E420	0.0001	mg/L	1 mg/L	109	80.0	120	----
Arsenic, total	7440-38-2	E420	0.0001	mg/L	1 mg/L	107	80.0	120	----
Barium, total	7440-39-3	E420	0.0001	mg/L	0.25 mg/L	113	80.0	120	----
Beryllium, total	7440-41-7	E420	0.00002	mg/L	0.1 mg/L	97.9	80.0	120	----
Bismuth, total	7440-69-9	E420	0.00005	mg/L	1 mg/L	96.6	80.0	120	----
Boron, total	7440-42-8	E420	0.01	mg/L	1 mg/L	96.6	80.0	120	----
Cadmium, total	7440-43-9	E420	0.000005	mg/L	0.1 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: 1669292) - continued									
Calcium, total	7440-70-2	E420	0.05	mg/L	50 mg/L	97.7	80.0	120	----
Cesium, total	7440-46-2	E420	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
Chromium, total	7440-47-3	E420	0.0005	mg/L	0.25 mg/L	105	80.0	120	----
Cobalt, total	7440-48-4	E420	0.0001	mg/L	0.25 mg/L	102	80.0	120	----
Copper, total	7440-50-8	E420	0.0005	mg/L	0.25 mg/L	99.0	80.0	120	----
Iron, total	7439-89-6	E420	0.01	mg/L	1 mg/L	96.6	80.0	120	----
Lead, total	7439-92-1	E420	0.00005	mg/L	0.5 mg/L	101	80.0	120	----
Lithium, total	7439-93-2	E420	0.001	mg/L	0.25 mg/L	106	80.0	120	----
Magnesium, total	7439-95-4	E420	0.005	mg/L	50 mg/L	102	80.0	120	----
Manganese, total	7439-96-5	E420	0.0001	mg/L	0.25 mg/L	103	80.0	120	----
Molybdenum, total	7439-98-7	E420	0.00005	mg/L	0.25 mg/L	103	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	98.0	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	99.7	80.0	120	----
Selenium, total	7782-49-2	E420	0.00005	mg/L	1 mg/L	99.2	80.0	120	----
Silicon, total	7440-21-3	E420	0.1	mg/L	10 mg/L	104	80.0	120	----
Silver, total	7440-22-4	E420	0.00001	mg/L	0.1 mg/L	96.7	80.0	120	----
Sodium, total	7440-23-5	E420	0.05	mg/L	50 mg/L	112	80.0	120	----
Strontium, total	7440-24-6	E420	0.0002	mg/L	0.25 mg/L	96.7	80.0	120	----
Sulfur, total	7704-34-9	E420	0.5	mg/L	50 mg/L	99.4	80.0	120	----
Tellurium, total	13494-80-9	E420	0.0002	mg/L	0.1 mg/L	101	80.0	120	----
Thallium, total	7440-28-0	E420	0.00001	mg/L	1 mg/L	101	80.0	120	----
Thorium, total	7440-29-1	E420	0.0001	mg/L	0.1 mg/L	96.4	80.0	120	----
Tin, total	7440-31-5	E420	0.0001	mg/L	0.5 mg/L	103	80.0	120	----
Titanium, total	7440-32-6	E420	0.0003	mg/L	0.25 mg/L	106	80.0	120	----
Tungsten, total	7440-33-7	E420	0.0001	mg/L	0.1 mg/L	100	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	103	80.0	120	----
Zinc, total	7440-66-6	E420	0.003	mg/L	0.5 mg/L	101	80.0	120	----
Zirconium, total	7440-67-7	E420	0.0002	mg/L	0.1 mg/L	100	80.0	120	----
Total Metals (QCLot: 1672150)									
Mercury, total	7439-97-6	E508	0.000005	mg/L	0 mg/L	95.9	80.0	120	----
Dissolved Metals (QCLot: 1669307)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	99.9	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: 1669307) - continued									
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	98.9	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	100	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	93.9	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	95.8	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	94.3	80.0	120	----
Cadmium, dissolved	7440-43-9	E421	0.000005	mg/L	0.1 mg/L	102	80.0	120	----
Calcium, dissolved	7440-70-2	E421	0.05	mg/L	50 mg/L	96.8	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	101	80.0	120	----
Chromium, dissolved	7440-47-3	E421	0.0005	mg/L	0.25 mg/L	98.8	80.0	120	----
Cobalt, dissolved	7440-48-4	E421	0.0001	mg/L	0.25 mg/L	97.4	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	96.2	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	104	80.0	120	----
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	97.4	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.0	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	100	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	98.5	80.0	120	----
Molybdenum, dissolved	7439-98-7	E421	0.00005	mg/L	0.25 mg/L	102	80.0	120	----
Nickel, dissolved	7440-02-0	E421	0.0005	mg/L	0.5 mg/L	98.6	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	92.6	80.0	120	----
Potassium, dissolved	7440-09-7	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Rubidium, dissolved	7440-17-7	E421	0.0002	mg/L	0.1 mg/L	100	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	99.9	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	93.2	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	103	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	104	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	98.3	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	102	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.9	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	95.2	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	99.7	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	93.7	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	93.3	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	93.9	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	100	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: 1669307) - continued									
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	98.4	80.0	120	----
Zirconium, dissolved	7440-67-7	E421	0.0002	mg/L	0.1 mg/L	98.1	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0 mg/L	95.4	80.0	120	----
Volatile Organic Compounds (QCLot: 1671023)									
Benzene	71-43-2	E611A	0.5	µg/L	100 µg/L	92.1	70.0	130	----
Ethylbenzene	100-41-4	E611A	0.5	µg/L	100 µg/L	90.4	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	0.5	µg/L	100 µg/L	101	70.0	130	----
Styrene	100-42-5	E611A	0.5	µg/L	100 µg/L	91.6	70.0	130	----
Toluene	108-88-3	E611A	0.5	µg/L	100 µg/L	91.6	70.0	130	----
Xylene, m+p-	179601-23-1	E611A	0.4	µg/L	200 µg/L	94.4	70.0	130	----
Xylene, o-	95-47-6	E611A	0.3	µg/L	100 µg/L	90.3	70.0	130	----
Hydrocarbons (QCLot: 1671024)									
F1 (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	80.4	70.0	130	----
VHw (C6-C10)	----	E581.VH+F1	100	µg/L	6310 µg/L	71.9	70.0	130	----
Hydrocarbons (QCLot: 1673707)									
F2 (C10-C16)	----	E601	100	µg/L	3540 µg/L	106	70.0	130	----
F3 (C16-C34)	----	E601	250	µg/L	7050 µg/L	100	70.0	130	----
F4 (C34-C50)	----	E601	250	µg/L	5050 µg/L	107	70.0	130	----
Glycols (QCLot: 1669144)									
Ethylene glycol	107-21-1	E680E	5	mg/L	25 mg/L	97.3	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
Organic / Inorganic Carbon (QCLot: 1668245)										
YL2401534-002	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	ND mg/L	----	ND	70.0	130	----
Total Metals (QCLot: 1669292)										
VA24C4790-002	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	0.0206 mg/L	0.02 mg/L	103	70.0	130	----
		Arsenic, total	7440-38-2	E420	0.0208 mg/L	0.02 mg/L	104	70.0	130	----
		Barium, total	7440-39-3	E420	ND mg/L	----	ND	70.0	130	----
		Beryllium, total	7440-41-7	E420	0.0365 mg/L	0.04 mg/L	91.3	70.0	130	----
		Bismuth, total	7440-69-9	E420	0.00931 mg/L	0.01 mg/L	93.1	70.0	130	----
		Boron, total	7440-42-8	E420	0.093 mg/L	0.1 mg/L	93.4	70.0	130	----
		Cadmium, total	7440-43-9	E420	0.00393 mg/L	0.004 mg/L	98.3	70.0	130	----
		Calcium, total	7440-70-2	E420	ND mg/L	----	ND	70.0	130	----
		Cesium, total	7440-46-2	E420	0.0105 mg/L	0.01 mg/L	105	70.0	130	----
		Chromium, total	7440-47-3	E420	0.0393 mg/L	0.04 mg/L	98.3	70.0	130	----
		Cobalt, total	7440-48-4	E420	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		Copper, total	7440-50-8	E420	0.0180 mg/L	0.02 mg/L	89.9	70.0	130	----
		Iron, total	7439-89-6	E420	1.88 mg/L	2 mg/L	94.1	70.0	130	----
		Lead, total	7439-92-1	E420	0.0184 mg/L	0.02 mg/L	91.8	70.0	130	----
		Lithium, total	7439-93-2	E420	0.0956 mg/L	0.1 mg/L	95.6	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	ND mg/L	----	ND	70.0	130	----
		Nickel, total	7440-02-0	E420	0.0369 mg/L	0.04 mg/L	92.2	70.0	130	----
		Phosphorus, total	7723-14-0	E420	9.70 mg/L	10 mg/L	97.0	70.0	130	----
		Potassium, total	7440-09-7	E420	ND mg/L	----	ND	70.0	130	----
		Rubidium, total	7440-17-7	E420	0.0193 mg/L	0.02 mg/L	96.6	70.0	130	----
		Selenium, total	7782-49-2	E420	0.0407 mg/L	0.04 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	0.00390 mg/L	0.004 mg/L	97.6	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	0.0406 mg/L	0.04 mg/L	102	70.0	130	----
		Thallium, total	7440-28-0	E420	0.00363 mg/L	0.004 mg/L	90.7	70.0	130	----
		Thorium, total	7440-29-1	E420	0.0203 mg/L	0.02 mg/L	102	70.0	130	----
		Tin, total	7440-31-5	E420	0.0195 mg/L	0.02 mg/L	97.5	70.0	130	----
		Titanium, total	7440-32-6	E420	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		Tungsten, total	7440-33-7	E420	0.0197 mg/L	0.02 mg/L	98.5	70.0	130	----
		Uranium, total	7440-61-1	E420	ND mg/L	----	ND	70.0	130	----
		Vanadium, total	7440-62-2	E420	0.0997 mg/L	0.1 mg/L	99.7	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: 1669292) - continued										
VA24C4790-002	Anonymous	Zinc, total	7440-66-6	E420	0.374 mg/L	0.4 mg/L	93.6	70.0	130	----
		Zirconium, total	7440-67-7	E420	0.0422 mg/L	0.04 mg/L	105	70.0	130	----
Total Metals (QCLot: 1672150)										
YL2401537-004	Anonymous	Mercury, total	7439-97-6	E508	0.0000951 mg/L	0 mg/L	95.1	70.0	130	----
Dissolved Metals (QCLot: 1669307)										
YL2401546-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.972 mg/L	1 mg/L	97.2	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0964 mg/L	0.1 mg/L	96.4	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	ND mg/L	----	ND	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	----	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.188 mg/L	0.2 mg/L	93.8	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.0432 mg/L	0.05 mg/L	86.3	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.445 mg/L	0.5 mg/L	89.0	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.0200 mg/L	0.02 mg/L	99.9	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	----	ND	70.0	130	----
		Cesium, dissolved	7440-46-2	E421	0.0505 mg/L	0.05 mg/L	101	70.0	130	----
		Chromium, dissolved	7440-47-3	E421	0.196 mg/L	0.2 mg/L	98.1	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0918 mg/L	0.1 mg/L	91.8	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0862 mg/L	0.1 mg/L	86.2	70.0	130	----
		Iron, dissolved	7439-89-6	E421	ND mg/L	----	ND	70.0	130	----
		Lead, dissolved	7439-92-1	E421	0.0907 mg/L	0.1 mg/L	90.7	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.464 mg/L	0.5 mg/L	92.8	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	----	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	----	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		Nickel, dissolved	7440-02-0	E421	0.184 mg/L	0.2 mg/L	92.0	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	49.4 mg/L	50 mg/L	98.9	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	ND mg/L	----	ND	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0981 mg/L	0.1 mg/L	98.1	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.199 mg/L	0.2 mg/L	99.6	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	47.5 mg/L	50 mg/L	95.0	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.0191 mg/L	0.02 mg/L	95.5	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	0.203 mg/L	0.2 mg/L	101	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.0180 mg/L	0.02 mg/L	90.2	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0972 mg/L	0.1 mg/L	97.2	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0992 mg/L	0.1 mg/L	99.2	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.198 mg/L	0.2 mg/L	99.1	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0932 mg/L	0.1 mg/L	93.2	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.0191 mg/L	0.02 mg/L	95.4	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.508 mg/L	0.5 mg/L	102	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	1.84 mg/L	2 mg/L	92.2	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: 1669307) - continued										
YL2401546-002	Anonymous	Zirconium, dissolved	7440-67-7	E421	0.207 mg/L	0.2 mg/L	104	70.0	130	----
Dissolved Metals (QCLot: 1672280)										
VA24C4886-003	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000952 mg/L	0 mg/L	95.2	70.0	130	----
Volatile Organic Compounds (QCLot: 1671023)										
VA24C4472-001	Anonymous	Benzene	71-43-2	E611A	97.7 µg/L	100 µg/L	97.7	60.0	140	----
		Ethylbenzene	100-41-4	E611A	92.9 µg/L	100 µg/L	92.9	60.0	140	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611A	102 µg/L	100 µg/L	102	60.0	140	----
		Styrene	100-42-5	E611A	97.6 µg/L	100 µg/L	97.6	60.0	140	----
		Toluene	108-88-3	E611A	94.1 µg/L	100 µg/L	94.1	60.0	140	----
		Xylene, m+p-	179601-23-1	E611A	196 µg/L	200 µg/L	98.0	60.0	140	----
		Xylene, o-	95-47-6	E611A	94.3 µg/L	100 µg/L	94.3	60.0	140	----
Hydrocarbons (QCLot: 1671024)										
YL2401537-004	Anonymous	F1 (C6-C10)	----	E581.VH+F1	4670 µg/L	6310 µg/L	74.0	60.0	140	----
		VHw (C6-C10)	----	E581.VH+F1	4160 µg/L	6310 µg/L	66.0	60.0	140	----

Reference Material (RM) Report

A Reference Material (RM) is a homogenous material with known and well-established analyte concentrations. RMs are processed in an identical manner to test samples, and are used to monitor and control the accuracy and precision of a test method for a typical sample matrix. RM results are expressed as percent recovery of the target analyte concentration. RM targets may be certified target concentrations provided by the RM supplier, or may be ALS long-term mean values (for empirical test methods).

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Physical Tests (QCLot: 1675245)									
QC-1675245-002	RM	pH (1:2 soil:water)	----	E108	7.78 pH units	102	96.0	104	----
Physical Tests (QCLot: 1675246)									
QC-1675246-002	RM	pH (1:2 soil:water)	----	E108	7.78 pH units	103	96.0	104	----
Metals (QCLot: 1674750)									
QC-1674750-003	RM	Aluminum	7429-90-5	E440	22500 mg/kg	97.4	70.0	130	----
QC-1674750-003	RM	Antimony	7440-36-0	E440	24.8 mg/kg	93.8	70.0	130	----
QC-1674750-003	RM	Arsenic	7440-38-2	E440	21.2 mg/kg	96.0	70.0	130	----
QC-1674750-003	RM	Barium	7440-39-3	E440	788 mg/kg	95.6	70.0	130	----
QC-1674750-003	RM	Beryllium	7440-41-7	E440	1.82 mg/kg	102	70.0	130	----
QC-1674750-003	RM	Bismuth	7440-69-9	E440	1.78 mg/kg	88.0	70.0	130	----
QC-1674750-003	RM	Cadmium	7440-43-9	E440	2.15 mg/kg	94.8	70.0	130	----
QC-1674750-003	RM	Calcium	7440-70-2	E440	4900 mg/kg	96.8	70.0	130	----
QC-1674750-003	RM	Chromium	7440-47-3	E440	56.9 mg/kg	98.1	70.0	130	----
QC-1674750-003	RM	Cobalt	7440-48-4	E440	32 mg/kg	95.2	70.0	130	----
QC-1674750-003	RM	Copper	7440-50-8	E440	969 mg/kg	94.3	70.0	130	----
QC-1674750-003	RM	Iron	7439-89-6	E440	32700 mg/kg	94.1	70.0	130	----
QC-1674750-003	RM	Lead	7439-92-1	E440	919 mg/kg	93.2	70.0	130	----
QC-1674750-003	RM	Lithium	7439-93-2	E440	47.3 mg/kg	111	70.0	130	----
QC-1674750-003	RM	Magnesium	7439-95-4	E440	7780 mg/kg	96.2	70.0	130	----
QC-1674750-003	RM	Manganese	7439-96-5	E440	8640 mg/kg	99.3	70.0	130	----
QC-1674750-003	RM	Molybdenum	7439-98-7	E440	25.1 mg/kg	95.8	70.0	130	----
QC-1674750-003	RM	Nickel	7440-02-0	E440	1000 mg/kg	92.8	70.0	130	----
QC-1674750-003	RM	Phosphorus	7723-14-0	E440	660 mg/kg	97.1	70.0	130	----
QC-1674750-003	RM	Potassium	7440-09-7	E440	10800 mg/kg	100	70.0	130	----
QC-1674750-003	RM	Selenium	7782-49-2	E440	1.04 mg/kg	93.2	60.0	140	----
QC-1674750-003	RM	Silver	7440-22-4	E440	8.98 mg/kg	90.3	70.0	130	----
QC-1674750-003	RM	Sodium	7440-23-5	E440	1770 mg/kg	90.9	70.0	130	----
QC-1674750-003	RM	Strontium	7440-24-6	E440	41 mg/kg	95.0	70.0	130	----
QC-1674750-003	RM	Sulfur	7704-34-9	E440	3940 mg/kg	96.5	50.0	150	----
QC-1674750-003	RM	Thallium	7440-28-0	E440	0.907 mg/kg	102	70.0	130	----
QC-1674750-003	RM	Tin	7440-31-5	E440	3.79 mg/kg	97.3	40.0	160	----
QC-1674750-003	RM	Titanium	7440-32-6	E440	2790 mg/kg	99.3	70.0	130	----
QC-1674750-003	RM	Tungsten	7440-33-7	E440	6.99 mg/kg	102	70.0	130	----

Sub-Matrix:

					Reference Material (RM) Report				
					RM Target	Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Reference Material ID	Analyte	CAS Number	Method	Concentration	RM	Low	High	Qualifier
Metals (QCLot: 1674750) - continued									
QC-1674750-003	RM	Uranium	7440-61-1	E440	3.97 mg/kg	80.2	70.0	130	----
QC-1674750-003	RM	Vanadium	7440-62-2	E440	66.2 mg/kg	95.8	70.0	130	----
QC-1674750-003	RM	Zinc	7440-66-6	E440	828 mg/kg	95.5	70.0	130	----
QC-1674750-003	RM	Zirconium	7440-67-7	E440	6.91 mg/kg	96.4	70.0	130	----
Metals (QCLot: 1674751)									
QC-1674751-003	RM	Mercury	7439-97-6	E510	0.068 mg/kg	79.2	70.0	130	----

CHAIN OF COUSTODY

ALS Laboratory

RELINQUISHED BY:	RECEIVED BY: MJS	RELINQUISHED BY:	RECEIVED BY:
DATE/TIME:	DATE/TIME: Sept 19/24 9:43	DATE/TIME:	DATE/TIME:

CLIENT:	Associated Engineering (BC) Ltd.
PROJECT:	2024 Water Licence Monitoring
SITE:	Inuvik Mike Zubko Airport
PURCHASE ORDER NO.:	2020-2886.055.599
PROJECT MANAGER:	Caitlin McKenzie — CONTACT PH: 867-687-2854
SAMPLER:	C. McKenzie — SAMPLER MOBILE: 867-687-2854
EMAIL REPORTS TO:	; indrigoc@ae.ca
SPECIAL HANDLING/STORAGE OR DISPOSAL:	

TURNAROUND REQUIREMENTS : (Standard TAT may be longer for some tests e.g., Ultra Trace Organics)

☒ Standard TAT (List due date):

☐ Non Standard or urgent TAT (List due date):

ALS QUOTE NC YL24-ASEG100-001

EMAIL INVOICE TO:

FOR LABORATORY USE ONLY (Circle)

Custody Seal intact?	Yes	No	N/A
Free Ice / frozen ice bricks present upon receipt?	Yes	No	N/A
Random Sample Temperature on Receipt:	5.8 °C		
Other comments:			

ALS USE ONLY	SAMPLE DETAILS Solid(S) Water(W)	MATRIX:	CONTAINER INFORMATION		ANALYSIS REQUIRED											Additional Information
SAMPLE	Sample identification (This description will appear on the report)	DATE / TIME (dd-mm-yyyy)	MATRIX	TOTAL CONTAINERS	Receiving Water	Runoff Water	Sediment	[redacted]	Field filtered							Comments on likely contaminant levels, dilutions, or samples requiring specific QC analysis etc.
	SNP1 - S WW#12809	16/09/24 12:00	S	1			X									
	SNP5 - S WW# 12816	11 15:10	S	1			X									
	FB WW# 12868	11 17:35	W	13	X				X							
	SNP4-RW WW# 12813	17/09/24 13:45	W	13	X				X							
	SNP4-S WW# 12814	11 14:00	S	1			X									
	SNP6-RW WW# 12817	11 14:20	W	13	X				X							
		TOTAL														

Environmental Division
Yellowknife
Work Order Reference
YL2401538

Telephone : +1 867 873 5593