Yukon

Water Resources Audit Report

Crestview Sewage Lagoon (MN20-008-1)

Water Resources Branch
May 21, 2024

Preface

The Water Resources Branch (WRB) works together with various partners to foster a healthy relationship with Yukon's waters. As technical experts in water science, we provide advice for compliance and inspection purposes, and conduct reviews of projects undergoing water licensing and environmental assessment processes.

One of WRB's responsibilities is to conduct investigations at various undertakings that use or deposit waste to water. These investigations, called audits, are undertaken to improve our knowledge and understanding of a project's effects on the receiving water environment. Through the audit process we aim to identify emerging issues and build enhanced understanding of water quality and quantity conditions to support input into assessment, licensing and post-licensing processes. The opinions and recommendations expressed in this report are based on relevant data, reports, field observations, interpretation/analyses of scientific information available to WRB and is subject to evolve as further information becomes available. While most of the findings are based on western science, we strive to recognize diverse ways of knowing and being and intend to create space to learn from both Indigenous and western perspectives side-by-side.

While WRB provides support to inspectors on enforcement and compliance matters related to water licences, it is not WRB's role to determine or enforce compliance. As such, the findings of this report should not be considered as a determination of compliance with any existing permit or licence.

Executive summary

The Water Resources Branch conducted a field audit of the City of Whitehorse's Crestview sewage lagoon throughout the summer of 2023 to examine observed slumping down-slope of the facility, and to compare lagoon water quality with future licence standards. The audit included field observations, such as probing for frozen ground, as well as water quality sampling for artificial sweeteners and basic chemistry in wastewater, groundwater and seepage. The key findings of this report are;

A) residual wastewater was detected in groundwater and seeps east and north of the facility;

B) the discharge of surface water from the Crestview lagoon caused gullies and slumping on the slope between the facility and the Yukon River; and,

C) additional clarity is required regarding the future effluent quality standards (EQS) for the Crestview Lagoon.

Based on these findings, WRB makes the following recommendations:

1) The City of Whitehorse should propose additional Adaptive Management Plan (AMP) thresholds for all regularly-sampled wells east and north of the facility and for seeps sampled during the annual seep survey.

2) The City should avoid discharging effluent to the surface of the steep slope. Alternative options, such as piping water directly to the river, should be considered if future discharges of lagoon water are required due to storage limitations within the lagoon.

3) The Yukon Water Board should correct what appears to be an administrative error in MN20-008 (and MN20-008-1) to provide clarity on the sampling location where the future Effluent Quality Standard (EQS) will apply.

4) The City of Whitehorse should compare data, sampled at the appropriate future EQS location, to future standards for all parameters with EQS in the annual report.

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1 Introduction

1.1 Background and objectives

The Crestview Lagoon receives wastewater from the City of Whitehorse's Crestview neighbourhood, which has a population of approximately 900 residents, accounting for approximately 2.5% of the total wastewater collected from the City. The Crestview Lagoon consists of two 1,968 m^3 primary cells and two secondary cells with a combined treatment capacity of 186,100 m^3 (City of Whitehorse Wastewater Facilities Adaptive Management Plan, November 2020). Treated wastewater infiltrates downwards to groundwater in the second secondary cell.

The 2020-21 and 2021-22 winters experienced higher precipitation than normal, which translated into generalized high groundwater levels in the Upper Yukon River Basin, where Whitehorse is located (Government of Yukon, 2022). These high groundwater levels reduced the infiltration capacity of the Crestview Lagoon and since late 2020, the secondary cells have required periodic discharge of effluent in order to control water levels in the lagoon. The discharge pipe of the lagoon directs the treated wastewater towards the top of a steep slope (at a rate of approximately 0.5 L/min) (City of Whitehorse, 2022).

A gully downgradient of the Crestview Lagoon was identified as part of a 2021 seep survey (Morrison Hershfield, 2021). As a result, the primary objective of this audit was to evaluate whether the observed gully near the Yukon River downslope of the Crestview lagoons is impacted by infiltration or discharge water from the Crestview lagoons.

The issuance of water licence MN20-008 resulted in the addition of Effluent Quality Standards (EQS) for the Crestview Lagoon, to come into effect in 2026. As such, a secondary objective of this audit was to compare current lagoon water quality with the EQS that will apply in the future.

To achieve these objectives, WRB conducted field reconnaissance and collected water quality samples throughout summer 2023. This included a site visit on May 23, 2023,

followed by a field sampling event on June 27, 2023. A site visit to evaluate permafrost presence at the gully area was completed on July 26, 2023. A drone survey of the gully area and the west Yukon River bank was completed on September 29, 2023.

WRB collected water quality samples at the following locations in June:

- Groundwater monitoring wells CV-MW21-01 and CV-MW21-03
- The discharge point of the secondary cell #2 (WH-5c)
- Secondary cell #2 (CL-4)

Additionally, samples for analysis of artificial sweeteners were collected at seven locations (Figure 1):

- CV-MW21-01: monitoring well east of the secondary lagoon (June 2023)
- CV-MW21-03: monitoring well north of the secondary lagoon (June 2023)
- WH-5c: discharge pipe from the secondary cell #2 (May, June 2023[1])
- CL-4: southeast area of the secondary cell #2 (June 2023)
- CV-Gully#1: seep in the gully between WH-5c and the Yukon River (May 2023),
- CV-Gully#2: seep in the gully by the Yukon River (May 2023)
- CV-Gully#3: seep sample near the base of the gully, adjacent to the Yukon River (May 2023)

Samples were collected by WRB staff following the Water Quality Sampling Protocol for Government of Yukon Monitoring Programs (Government of Yukon, 2021) and followed the requirements from the commercial lab conducting the analyses. In-situ water quality field parameters were measured using a calibrated YSI ProDSS handheld multimeter.

[1] The lagoon was not actively discharging from WH5c during any field visits. The May WH-5c sample was taken from a small trickle (roughly 1 L/hour) of water leaving the pipe. The June sample was taken with the discharge valve opened briefly only for the purposes of sampling.

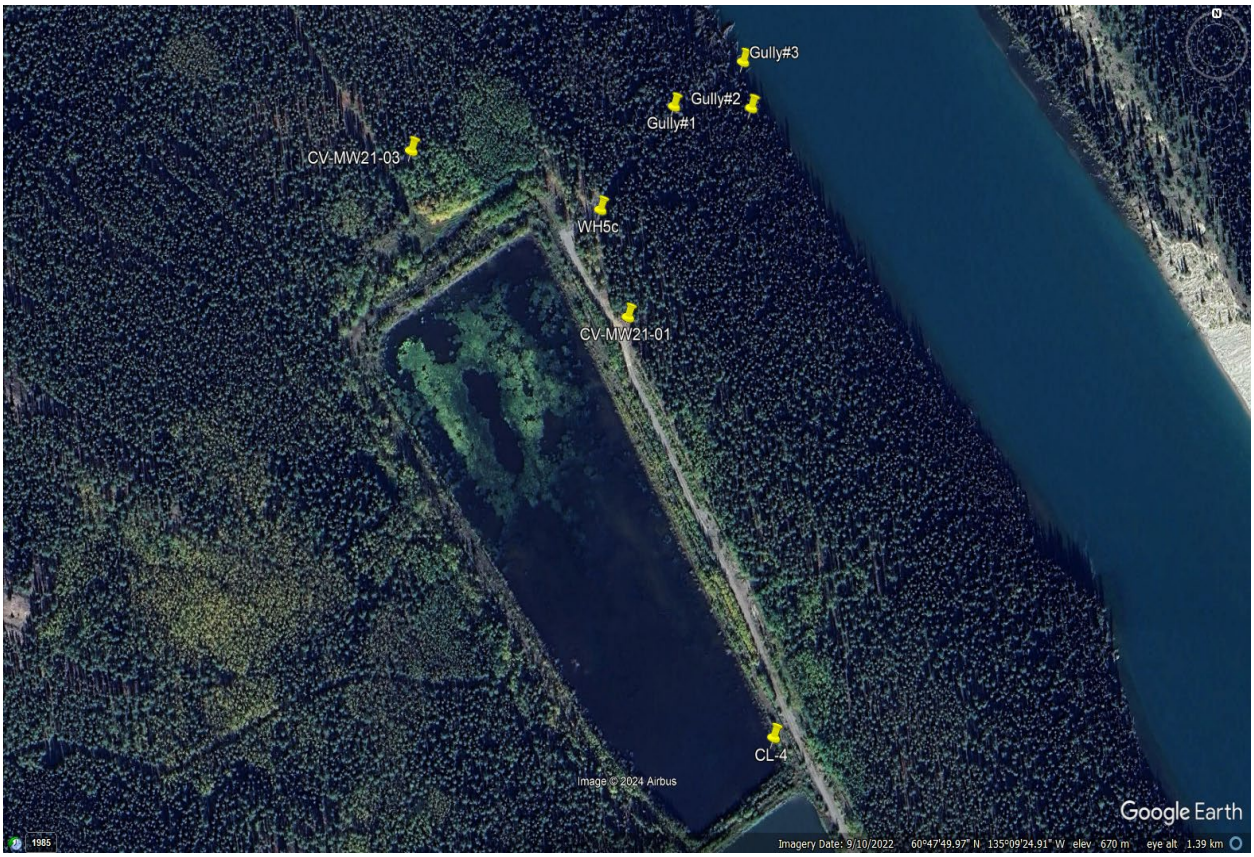

Figure 1: Sampling locations at the Crestview lagoon

1.2 Report terminology

This report will use the terms ‘gully’ and ‘slump’ to refer to the two landform features near the Crestview lagoon. A slump is a type of mass movement (i.e. movement of rock or soil down slopes under the force of gravity); whereas a gully is formed by erosion (moving water). When referring to them together, the report will use the term ‘landforms’. In communication with the City of Whitehorse, they have noted that a channel in the location of the gully has existed for many years, but only in recent wet years has erosion occurred. As such, we will refer to ‘gully formation’ as having occurred in recent years, recognizing that some form of a drainage path pre-dated gully formation. A high-resolution elevation image of the area prior to gully formation is shown in Figure 2.

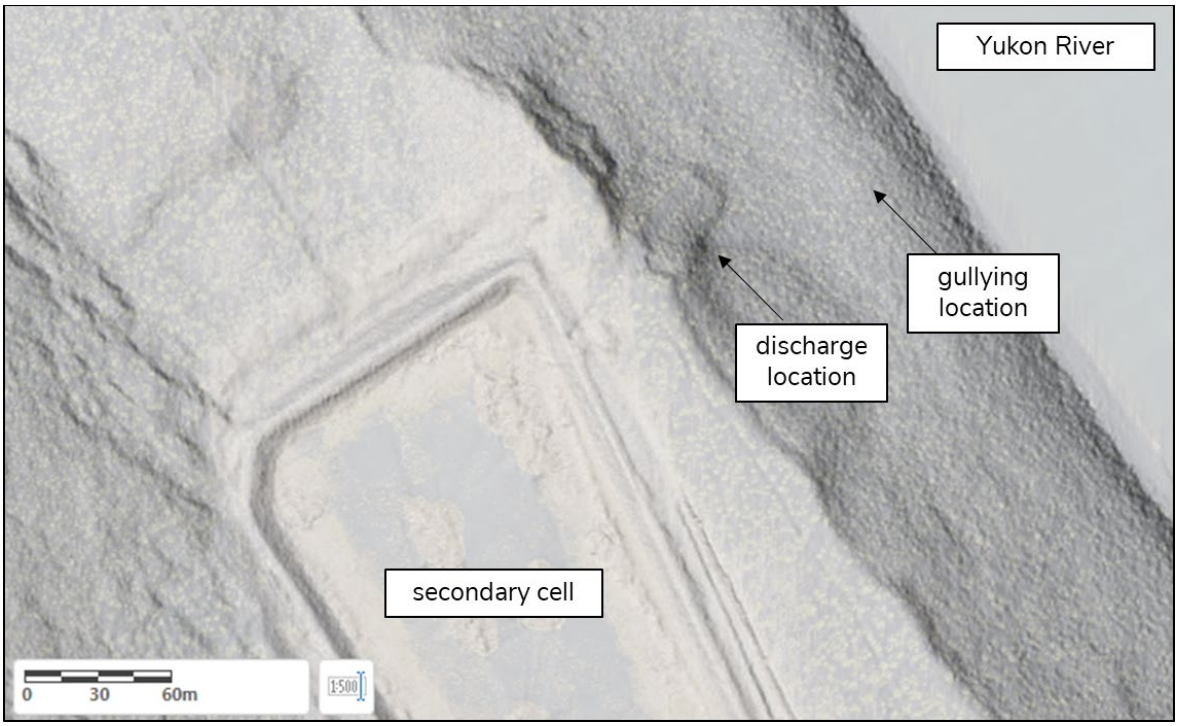

Figure 2: LiDAR derived digital elevation model (DEM) hillshade of Crestview Lagoon from 2019, prior to recent wet years and gullying.

2 Observations and results

2.1 Gully observations

WRB documented the following primary observations:

- Visible flow path of sediment-stained ground originating from the discharge pipe leading to the head of two gullies (Figure 3).
- Each gully was more than a meter deep and appears to have resulted from the erosion of highly saturated glaciolacustrine silt.
- A slump, roughly 150 m long and 25 m wide has formed along the bank of the Yukon River with one end at the location where the gully meets the river and the other end downstream of the discharge location (Figure 4).

- The slump and gullies are visible on recent satellite imagery (Google Earth), but were not visible prior to 2021 when the City began to discharge lagoon water to surface.
- The gullies were initially believed to be generated by permafrost thaw (Morrison Hershfield, 2021); however, during the July 26, 2023 site visit, no permafrost was identified within the top 1 m of the subsurface in the vicinity of the gullies.

Figure 3: Sediment-stained ground, down-slope of WH-5c

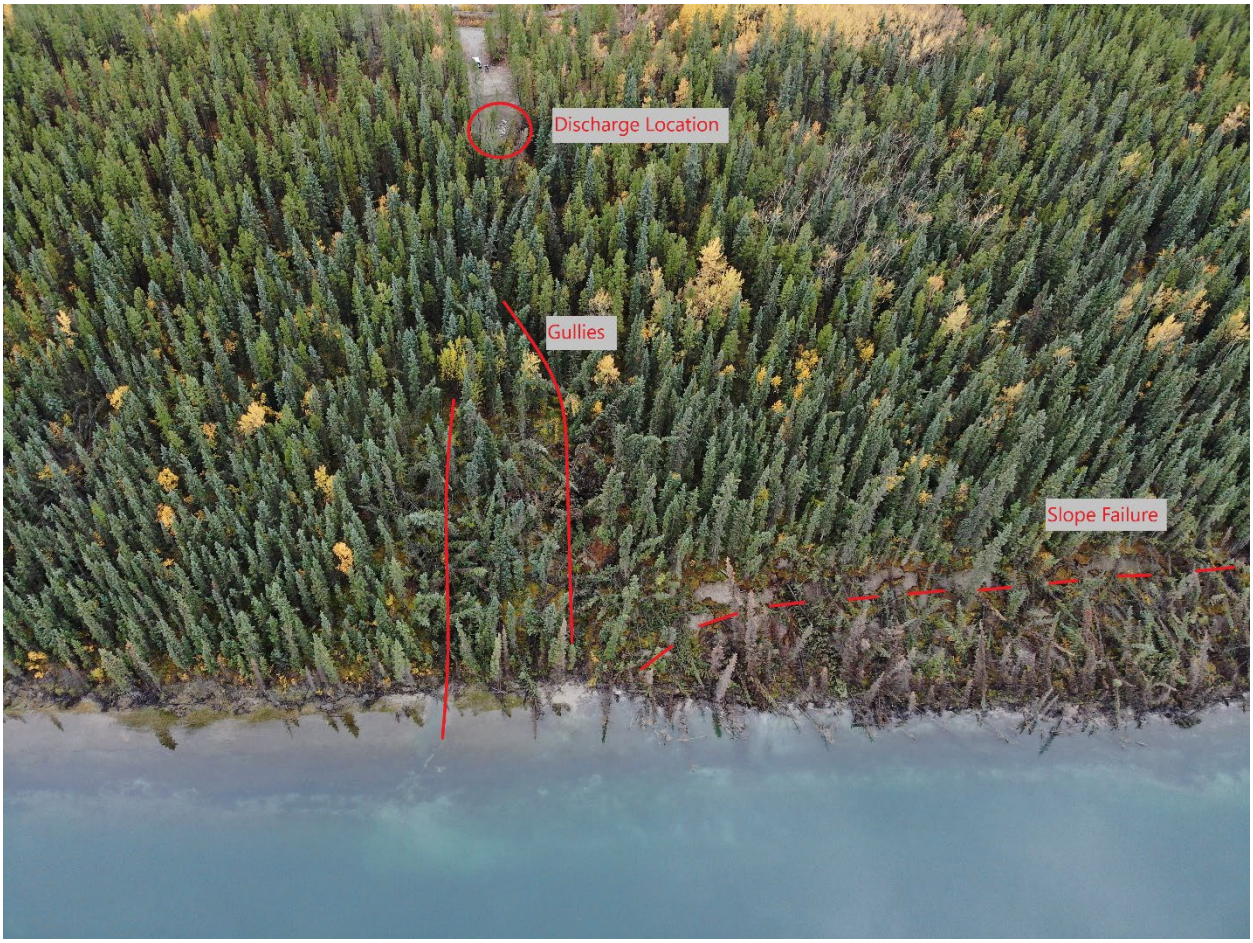

Figure 4: Drone photo of the gullies and slump, between the secondary cell lagoon and the Yukon River

2.2 Comparison with effluent quality standards

Condition 37 of MN20-008-1 stipulates that after January 1, 2026, wastewater contained in the secondary cell at the Crestview Lagoons must meet effluent quality standards (EQS) measured from a sample collected at monitoring station “WH-5b”. However, schedule A of the licence defines a “WH-5a” monitoring location and no “WH-5b”, so the exact location where EQS will eventually apply is unclear. Similarly, the reasons for decision associated with MN20-008 refer to location “WH-5a”, which contradicts condition 37.

Regardless, the locations where WRB sampled lagoon water as part of this audit (CL-4 and WH-5c) likely do not correspond to the future EQS location; however, results are

compared with these EQS for informational purposes. Any results greater than the EQS do not represent actual exceedances of licence standards (Table 1).

Sampling conducted by WRB in June 2023 indicated results that would be exceedances of the future EQS for pH and TSS at CL-4. It is noteworthy that there were considerable differences between the WH-5c and CL-4 samples. Lagoon samples were also compared to the standards for the protection of aquatic life in the Yukon *Contaminated Sites Regulation* (CSR-AW). The ammonia concentration in the sample collected at CL-4 (2.09 mg/L) exceeded the CSR-AW (1.31 mg/L).

Table 1: June 2023 water quality samples from the secondary cell and the secondary cell discharge pipe compared to upcoming EQS of MN20-008-1

Parameter	EQS	WH-5c	CL-4
pH	6.0 to 9.0	8.24*	9.35*
TSS (mg/L)	60	31.6	76
$CBOD_5$ (mg/L)	25	2.3	8.3
Un-ionized Ammonia (mg/L at 15oC ± 1oC)	1.25	0.0883	0.792
Fecal Coliforms (cfu / 100mL)	20,000	<1	4

*Reported pH values as measured in the accredited commercial laboratory

2.3 Artificial sweetener results

Artificial sweeteners are man-made compounds commonly used as food additives. They are widespread in products consumed by humans but have no natural source, are persistent in the natural environment (particularly acesulfame and sucralose), and can be detected at relatively low concentrations, making them useful tracers of wastewater (Spoelstra et al. 2017).

Artificial sweeteners were detected at concentrations above the practical quantitation limit in all samples as shown below (Table 2).

Table2. Complete sweetener analysis results.

Sample Name	Acesulfame (ng/L)	Saccharin (ng/L)	Cyclamate (ng/L)	Sucralose (ng/L)
Wastewater Samples				
CL-4	10682	3970	2743	29277
WH5c (May 2023)	5378	333	133	12596
WH5c (June 2023)	1755	684	304	9401
Groundwater Samples				
CV-21-01	7112	1727	3046	11490
CV-21-03	14821	6732	2956	32482
Gully Samples				
CV-Gully#1	1131	73	<mdl	6520
CV-Gully#2	2246	173	<mdl	3344
CV-Gully#3	1910	68	58	3306
MDL	2	2	3	20
PQL	6	6	8	60

Method: IC/ESI/MS/MS ACS500 suppressor
MDL: minimum detection limit
PQL: practical quantitation limit
N.D.: not detected

3 Discussion and recommendations

Key Finding #1: Wastewater was detected in groundwater and seep receptors east and north of the facility.

The presence of artificial sweeteners at relatively high concentrations in the sampled seeps and wells indicates the presence of residual wastewater sourced from the lagoon. The May 2023 seep samples contained ~20-50% of the sweetener concentrations found in the May effluent (WH5c) sample, whereas the June seep sample contained ~10-100% of the sweetener concentrations found in the June effluent (WH5c) sample. This provides a rough indication of the amount of dilution resulting from mixing with snowmelt and rainwater.

The presence of artificial sweeteners in the seep samples do not provide an indication of where that wastewater originated from (i.e. whether it was wastewater discharged to

surface or wastewater that infiltrated downwards from the secondary lagoon). Additionally, comparisons to concentrations from the lagoon, or effluent pipe, are also very approximate as these source concentrations are expected to vary over time.

The June sample collected from CV-MW-21-03 contained higher concentrations of sweeteners than the sample collected from the secondary lagoon in June, evidence of preferential groundwater flow north of the lagoons. Ponded water north of the lagoons was mentioned in previous environmental reports (Core Geoscience Services, 2022). Monitoring well MW3-08 was located in this ponded area and was decommissioned in December 2021 due to frost-jacking.

The sample collected at CV-MW-21-01 also contained elevated concentrations of sweeteners (~40-90% of lagoon concentrations). This suggests groundwater flow east of the lagoons, towards the Yukon River, which aligns with the interpreted groundwater flow direction from the hydrogeological assessment (Golder, 2020).

The presence of artificial sweeteners is not, in and of itself, an environmental concern. Water quality results in the two wells sampled by WRB were compared with CSR aquatic life standards with one exceedance of the CSR-AW for arsenic (0.05 mg/L) reported at CV-MW21-03 (0.066 mg/L). Further assessment of water quality in this well is beyond the scope of this report.

The current City of Whitehorse Adaptive Management Plan (2023, v2.0) includes water quality thresholds for one Crestview groundwater well (MW4-08). Given the results of this report, and the fact that additional well and seep monitoring is occurring as part of the licence, we recommend this AMP be expanded for additional wells:

1. **Recommendation:** The City of Whitehorse should propose additional Adaptive Management Plan (AMP) thresholds for all regularly-sampled wells east and north of the facility and for seeps sampled during the annual seep survey.

Key Finding #2: The discharge of effluent from the Crestview Lagoon has caused gullies and slumping on the slope between the facility and the Yukon River.

This audit represents a snapshot in time. The exact mechanisms of formation of the landforms down-gradient of the secondary lagoon are not clear, and beyond the expertise of WRB. However, the close proximity of the gullying to the discharge location, the associated surface staining between the discharge location and the gully, and the fact that the gully formed when discharges were occurring, are lines of evidence that suggest the lagoon discharge caused the gullying and the associated slump.

The City of Whitehorse has postulated that the gully erosion was a result of high runoff from successive wet years, as opposed to being caused by the surface discharge from the facility (City of Whitehorse, 2024). Groundwater levels would have been elevated because of the successive wet years and could have played a role in the gully formation. However, the observed gully was the only such location noted as part of the annual seep surveys along the river, and there is very minimal catchment to generate surface runoff in the gully due to the lagoon, and surrounding berm, on top of the slope.

Based on these findings, we believe it is highly likely that wastewater discharged to surface played a significant role in gully formation. However, now that gullying has occurred, erosion is likely to continue regardless of whether there are additional surface discharges. The presence of artificial sweeteners in the gully seeps one-year after the most recent surface discharge, suggests a seep origin that is either sourced from water infiltrating (as designed) from the lagoon, or wastewater that was previously discharged and gone to ground.

Based on the findings in this report, WRB recommends the following:

2. **Recommendation:** The City should avoid discharging effluent to the surface of the steep slope. Alternative options, such as piping water directly to the river, should be considered if future discharges of lagoon water are required due to storage limitations within the lagoon.

Key Finding #3: Additional clarity is required in regards to the future EQS for the Crestview Lagoon.

During the MN20-008 licence proceedings, the City of Whitehorse requested a delay of five years until Crestview EQS came into effect. The City sought this time to collect additional water quality data and to apply mitigations in the event that future exceedances appear likely. Water Licence MN20-008-1 includes the following effluent quality standards:

Table 3: Effluent Quality Standards provided in MN20-008-1

Parameter	EQS Value
pH	6.0 to 9.0
Total Suspended Solids	60 mg/L
CBOD5	25 mg/L
Un-ionized Ammonia - N	1.25 mg/L at 15oC +/- 1oC
Fecal Coliforms	20,000 cfu / 100 mL

As discussed in section 2.2, WRB contends that the licence contains an administrative error in relation to the future EQS location at the facility. The licence indicates that the lagoons must meet effluent quality standards measured from a sample collected at monitoring station “WH-5b”. However, Schedule A of the licence defines a “WH-5a” monitoring location and no “WH-5b”. Similarly, the reasons for decision associated with MN20-008 refer to location “WH-5a”, which contradicts condition 37. Lastly, the City of Whitehorse 2022 Annual Report (Section 2.6.4) compared only one parameter (CBOD5) with future EQS. This was sampled at a location the city defined as “WH-5a”; however, this location appears to have a different meaning than the one defined in Schedule A of the licence.

WRB results suggest some potential for future exceedances; however, a further examination of historic data was beyond the scope of this report. Based on these findings, WRB makes the following recommendations:

3. **Recommendation:** The Yukon Water Board should correct what appears to be an administrative error in MN20-008 (and MN20-008-1) to provide clarity on the future EQS location.
4. **Recommendation:** The City of Whitehorse should compare data sampled at the appropriate future EQS location to future standards for all parameters with EQS in the annual report.

Authors and contact information

- Norbert Botca, Groundwater Technologist, Water Resources Branch, Department of Environment
- Brendan Mulligan, Senior Scientist Groundwater, Water Resources Branch, Department of Environment
- Tyler Williams, Water Resources Scientist, Water Resources Branch, Department of Environment

For more information about this report please contact:
Norbert Botca, Groundwater Technologist, Water Resources Branch, Department of Environment; Norbert.Botca@Yukon.ca or waterresources@yukon.ca

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Appendix A – Field notes and site conditions

Table A1: Site visit dates and conditions.

Date	Weather	Site Conditions
May 23, 2023	Mainly clear, 12°C at the time of the site visit	Site was accessible by truck and on foot. Accessed the slump and gully and down-gradient area located in between the secondary lagoon and Yukon River. Checked the ponded water north of the secondary cells – however, the area was observed to be dry at the time of the site visit.
June 27, 2023	Partly cloudy, 19°C at the time of the site visit	Accessed the two monitoring wells by truck and collected groundwater samples for full suite analysis. Collected one seep sample downgradient of the slump, by Yukon River, and analyzed it for sweeteners. Collected one sample at the secondary lagoon discharge point for full suite analysis. Collected one sample from the secondary lagoon, for full suite analysis.
July 26, 2023	Mostly cloudy, 21°C at the time of the site visit	Accessed the slump and gully area down-gradient of the secondary lagoon, in between the secondary lagoon and Yukon River. Assessed for evidence of permafrost.
Sept. 29, 2023	Mostly cloudy, 5°C at the time of the site visit	Drone survey of the slump and gully area down-gradient of the secondary lagoon and Yukon River west bank.

Table A2. Field notes.

Station Code	Station Description	Field Notes
CL-4	Secondary lagoon #2 (southeast area)	High visible TSS (green algae)
CV-MW21-01	Northeast monitoring well	Well in good standing; water turbid during well purging
CV-MW21-03	North monitoring well	Well in good standing; water turbid during well purging
WH-5c	Secondary lagoon #2 - Outflow discharge on the northeast	Water slightly turbid; no odours noted

In-situ field data was compared against lab data as a check of quality assurance. pH of samples is known to vary any time after 15 minutes and therefore likely the reason for

an RPD over 10%. The specific chemistry of a single water sample will cause changes to the pH, but this change is not always linear or predictable.

Table A3. Results of in-situ and lab data comparison from June 2023 water samples.

Sample Location	**Field pH**	**Lab pH**	**RPD** Should be below 10%	**Field Conductivity** (µS/cm)	**Lab Conductivity** (µS/cm)	**RDP** Should be below 20%
CL-4	9.90	9.35	5.71	421.6	405	4.01
CV-MW21-01	7.09	7.78	9.28	809	747	7.96
CV-MW21-03	7.13	7.93	10.62	944	876	7.47
WH-5c	8.21	8.24	0.36	447.5	348	25.01

Appendix B – ALS water quality sample results

CERTIFICATE OF ANALYSIS

Work Order	: **WR2300617**	Page	: 1 of 6
Client	: **Government of Yukon**	Laboratory	: ALS Environmental - Whitehorse
Contact	: Water Resources Branch	Account Manager	: Tasnia Tarannum
Address	: Department of Environment, Environmental Protection and Assessment Branch 419 Range Road Whitehorse YT Canada Y1A 3V1	Address	: #12 151 Industrial Road Whitehorse YT Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: Crestview Sewage Lagoon Sampling	Date Samples Received	: 28-Jun-2023 21:14
PO	: ----	Date Analysis Commenced	: 30-Jun-2023
C-O-C number	: ----	Issue Date	: 10-Jul-2023 13:10
Sampler	: ----		
Site	: YOWN - Yukon Observation Well Network		
Quote number	: WR22-GYPT100-002		
No. of samples received	: 4		
No. of samples analysed	: 4		

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
Angelo Salandanan	Lab Assistant	Metals, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Metals, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Inorganics, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Organics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	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
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*
DLDS	*Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.*
DLM	*Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).*
RRV	*Reported result verified by repeat analysis.*
SFP	*Sample was filtered and preserved at the laboratory.*

Analytical Results

Sub-Matrix: Water
(Matrix: Water)

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Crestview Discharge	CV21-03	CV21-01	CVS.Cell1	----
					Client sampling date / time	27-Jun-2023 11:30	27-Jun-2023 12:50	27-Jun-2023 14:00	27-Jun-2023 14:35	----
						WR2300617-001	WR2300617-002	WR2300617-003	WR2300617-004	--------
						Result	Result	Result	Result	----
Physical Tests										
Alkalinity, bicarbonate (as CaCO3)	----	E290/VA	1.0	mg/L		151	469	395	83.4	----
Alkalinity, carbonate (as CaCO3)	----	E290/VA	1.0	mg/L		15.8	<1.0	<1.0	69.8	----
Alkalinity, hydroxide (as CaCO3)	----	E290/VA	1.0	mg/L		<1.0	<1.0	<1.0	<1.0	----
Alkalinity, total (as CaCO3)	----	E290/VA	1.0	mg/L		167	469	395	153	----
Conductivity	----	E100/VA	2.0	µS/cm		348	876	747	405	----
Hardness (as CaCO3), dissolved	----	EC100/VA	0.60	mg/L		176	346	371	146	----
pH	----	E108/VA	0.10	pH units		8.56	8.12	7.93	9.47	----
pH @ 15°C (WSER)	----	E108A/VA	0.10	pH units		8.24	7.93	7.78	9.35	----
Solids, total suspended [TSS]	----	E160/VA	3.0	mg/L		31.6	7.8	508	76.0	----
Anions and Nutrients										
Ammonia, total (as N)	7664-41-7	E298/VA	0.0050	mg/L		1.95	10.2	0.0110	2.09	----
Ammonia, un-ionized (as N), 15°C (WSER)	7664-41-7	EC298/VA	0.0010	mg/L		0.0883	0.231	<0.0010	0.792	----
Bromide	24959-67-9	E235.Br-L/VA	0.050	mg/L		<0.050	<0.250 DLDS	<0.250 DLDS	<0.050	----
Chloride	16887-00-6	E235.Cl/VA	0.50	mg/L		9.36	36.8	24.1	27.4	----
Fluoride	16984-48-8	E235.F/VA	0.020	mg/L		0.379	0.438	0.227	0.205	----
Nitrate (as N)	14797-55-8	E235.NO3-L/VA	0.0050	mg/L		0.506	<0.0250 DLDS	<0.0250 DLDS	0.213	----
Nitrate + Nitrite (as N)	----	EC235.N+N/VA	0.0050	mg/L		0.597	<0.0255	<0.0255	0.787	----
Nitrite (as N)	14797-65-0	E235.NO2-L/VA	0.0010	mg/L		0.0911	<0.0050 DLDS	<0.0050 DLDS	0.574	----
Nitrogen, total	7727-37-9	E366/VA	0.030	mg/L		3.46	11.1	0.393	4.63	----
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U/VA	0.0010	mg/L		1.09	0.0211	0.0016	2.33	----
Phosphorus, total	7723-14-0	E372-U/VA	0.0020	mg/L		0.904	0.106	0.0457	1.31 RRV	----
Phosphorus, total dissolved	7723-14-0	E375-T/VA	0.0020	mg/L		0.946 SFP	0.0514 SFP	0.0054 SFP	1.46	----
Sulfate (as SO4)	14808-79-8	E235.SO4/VA	0.30	mg/L		17.5	<1.50 DLDS	9.64	38.8	----
Organic / Inorganic Carbon										
Carbon, dissolved inorganic [DIC]	----	E353-L/VA	0.50	mg/L		44.2	115	103	23.9	----
Carbon, dissolved organic [DOC]	----	E358-L/VA	0.50	mg/L		9.85	16.2	5.62	19.0	----
Carbon, total inorganic [TIC]	----	E354-L/VA	0.50	mg/L		44.1	111	107	26.2	----

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID	Crestview Discharge	CV21-03	CV21-01	CVS.Cell1	----
					Client sampling date / time	27-Jun-2023 11:30	27-Jun-2023 12:50	27-Jun-2023 14:00	27-Jun-2023 14:35	----
						WR2300617-001	WR2300617-002	WR2300617-003	WR2300617-004	--------
						Result	Result	Result	Result	----
Organic / Inorganic Carbon										
Carbon, total organic [TOC]	----	E355-L/VA	0.50	mg/L		11.0	16.3	5.52	20.1	----
Dissolved Metals										
Aluminum, dissolved	7429-90-5	E421/VA	0.0010	mg/L		0.0139	0.0078	0.249	0.0786	----
Antimony, dissolved	7440-36-0	E421/VA	0.00010	mg/L		0.00028	0.00074	0.00021	0.00046	----
Arsenic, dissolved	7440-38-2	E421/VA	0.00010	mg/L		0.0323	0.0661	0.00404	0.00488	----
Barium, dissolved	7440-39-3	E421/VA	0.00010	mg/L		0.0598	1.15	0.182	0.0240	----
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	0.000064	----
Boron, dissolved	7440-42-8	E421/VA	0.010	mg/L		0.111	0.086	0.083	0.176	----
Cadmium, dissolved	7440-43-9	E421/VA	0.0000050	mg/L		0.0000068	0.00416	0.0000399	0.0000100	----
Calcium, dissolved	7440-70-2	E421/VA	0.050	mg/L		40.1	85.2	89.9	28.3	----
Cesium, dissolved	7440-46-2	E421/VA	0.000010	mg/L		<0.000010	<0.000010	0.000031	0.000019	----
Chromium, dissolved	7440-47-3	E421/VA	0.00050	mg/L		0.00248	<0.00050	0.00063	0.00313	----
Cobalt, dissolved	7440-48-4	E421/VA	0.00010	mg/L		0.00045	0.00353	0.00078	0.00036	----
Copper, dissolved	7440-50-8	E421/VA	0.00020	mg/L		0.00148	0.00841	0.00509	0.00551	----
Iron, dissolved	7439-89-6	E421/VA	0.010	mg/L		0.257	0.922	0.325	0.151	----
Lead, dissolved	7439-92-1	E421/VA	0.000050	mg/L		<0.000050	0.000094	0.000285	0.000210	----
Lithium, dissolved	7439-93-2	E421/VA	0.0010	mg/L		0.0028	0.0015	0.0095	0.0022	----
Magnesium, dissolved	7439-95-4	E421/VA	0.0050	mg/L		18.4	32.3	35.6	18.2	----
Manganese, dissolved	7439-96-5	E421/VA	0.00010	mg/L		0.189	4.33	0.165	0.00333	----
Mercury, dissolved	7439-97-6	E509/VA	0.0000050	mg/L		<0.0000050	0.0000461	0.0000232	<0.0000050	----
Molybdenum, dissolved	7439-98-7	E421/VA	0.000050	mg/L		0.00372	0.00619	0.00749	0.00369	----
Nickel, dissolved	7440-02-0	E421/VA	0.00050	mg/L		0.00234	0.00800	0.00473	0.00149	----
Phosphorus, dissolved	7723-14-0	E421/VA	0.050	mg/L		1.02	0.096	0.054	1.54 RRV	----
Potassium, dissolved	7440-09-7	E421/VA	0.050	mg/L		5.04	18.4	3.29	10.5	----
Rubidium, dissolved	7440-17-7	E421/VA	0.00020	mg/L		0.00165	<0.00020	0.00062	0.00775	----
Selenium, dissolved	7782-49-2	E421/VA	0.000050	mg/L		0.000156	0.000209	0.000104	0.000203	----
Silicon, dissolved	7440-21-3	E421/VA	0.050	mg/L		4.83	12.2	8.07	5.06	----
Silver, dissolved	7440-22-4	E421/VA	0.000010	mg/L		<0.000010	0.000019	<0.000010	<0.000010	----
Sodium, dissolved	7440-23-5	E421/VA	0.050	mg/L		18.3	41.2	27.5	26.5	----

Analytical Results

Sub-Matrix: Water (Matrix: Water)					Client sample ID	Crestview Discharge	CV21-03	CV21-01	CVS.Cell1	----
					Client sampling date / time	27-Jun-2023 11:30	27-Jun-2023 12:50	27-Jun-2023 14:00	27-Jun-2023 14:35	----
Analyte	CAS Number	Method/Lab	LOR	Unit		WR2300617-001	WR2300617-002	WR2300617-003	WR2300617-004	--------
						Result	Result	Result	Result	----
Dissolved Metals										
Strontium, dissolved	7440-24-6	E421/VA	0.00020	mg/L		0.324	0.456	1.18	0.211	----
Sulfur, dissolved	7704-34-9	E421/VA	0.50	mg/L		6.35	0.61	5.36	13.9	----
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	0.000156	<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	0.00012	----
Titanium, dissolved	7440-32-6	E421/VA	0.00030	mg/L		0.00036	0.00043	0.00913	0.00359	----
Tungsten, dissolved	7440-33-7	E421/VA	0.00010	mg/L		0.00047	0.00010	<0.00010	0.00019	----
Uranium, dissolved	7440-61-1	E421/VA	0.000010	mg/L		0.00506	0.000987	0.0117	0.00189	----
Vanadium, dissolved	7440-62-2	E421/VA	0.00050	mg/L		0.00214	0.00486	0.00132	0.00438	----
Zinc, dissolved	7440-66-6	E421/VA	0.0010	mg/L		<0.0010	0.0013	0.0094	0.0026	----
Zirconium, dissolved	7440-67-7	E421/VA	0.00020	mg/L		<0.00020	0.00124	<0.00040 DLM	0.00057	----
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]	----	E555/VA	2.0	mg/L		2.3	2.4	<2.0	8.3	----
Oil & grease (gravimetric)	----	E567/VA	5.0	mg/L		<5.0	<5.0	<5.0	<5.0	----
Hydrocarbons										
EPH (C10-C19)	----	E601A/VA	250	µg/L		<250	<250	<250	<250	----
EPH (C19-C32)	----	E601A/VA	250	µg/L		<250	<250	<250	<250	----
HEPHw	----	EC600A/VA	250	µg/L		<250	<250	<250	<250	----
LEPHw	----	EC600A/VA	250	µg/L		<250	<250	<250	<250	----
Hydrocarbons Surrogates										
Bromobenzotrifluoride, 2- (EPH surrogate)	392-83-6	E601A/VA	1.0	%		95.8	91.9	86.3	96.5	----
Polycyclic Aromatic Hydrocarbons										
Acenaphthene	83-32-9	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	----
Acenaphthylene	208-96-8	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	----
Acridine	260-94-6	E641A/VA	0.010	µg/L		0.013	0.020	<0.010	0.041	----
Anthracene	120-12-7	E641A/VA	0.010	µg/L		<0.010	<0.010	<0.010	<0.010	----

Analytical Results

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

Analyte	CAS Number	Method/Lab	LOR	Unit	Client sample ID: Crestview Discharge	CV21-03	CV21-01	CVS.Cell1	----
Client sampling date / time					27-Jun-2023 11:30	27-Jun-2023 12:50	27-Jun-2023 14:00	27-Jun-2023 14:35	----
					WR2300617-001	WR2300617-002	WR2300617-003	WR2300617-004	--------
					Result	Result	Result	Result	----
Polycyclic Aromatic Hydrocarbons									
Benz(a)anthracene	56-55-3	E641A/VA	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----
Benzo(a)pyrene	50-32-8	E641A/VA	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A/VA	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----
Benzo(b+j+k)fluoranthene	n/a	E641A/VA	0.015	µg/L	<0.015	<0.015	<0.015	<0.015	----
Benzo(g,h,i)perylene	191-24-2	E641A/VA	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----
Benzo(k)fluoranthene	207-08-9	E641A/VA	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----
Chrysene	218-01-9	E641A/VA	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A/VA	0.0050	µg/L	<0.0050	<0.0050	<0.0050	<0.0050	----
Fluoranthene	206-44-0	E641A/VA	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----
Fluorene	86-73-7	E641A/VA	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A/VA	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----
Methylnaphthalene, 1-	90-12-0	E641A/VA	0.010	µg/L	<0.010	<0.010	0.017	<0.010	----
Methylnaphthalene, 2-	91-57-6	E641A/VA	0.010	µg/L	<0.010	<0.010	0.047	<0.010	----
Naphthalene	91-20-3	E641A/VA	0.050	µg/L	<0.050	<0.050	0.091	<0.050	----
Phenanthrene	85-01-8	E641A/VA	0.020	µg/L	<0.020	<0.020	<0.020	<0.020	----
Pyrene	129-00-0	E641A/VA	0.010	µg/L	<0.010	<0.010	<0.010	<0.010	----
Quinoline	91-22-5	E641A/VA	0.050	µg/L	<0.050	<0.050	<0.050	<0.050	----
Polycyclic Aromatic Hydrocarbons Surrogates									
Chrysene-d12	1719-03-5	E641A/VA	0.1	%	72.4	76.0	72.4	80.3	----
Naphthalene-d8	1146-65-2	E641A/VA	0.1	%	120	113	100	109	----
Phenanthrene-d10	1517-22-2	E641A/VA	0.1	%	116	110	104	111	----

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

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

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QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: **WR2300617**	Page	: 1 of 22
Client	: **Government of Yukon**	Laboratory	: ALS Environmental - Whitehorse
Contact	: Water Resources Branch	Account Manager	: Tasnia Tarannum
Address	: Department of Environment, Environmental Protection and Assessment Branch 419 Range Road Whitehorse YT Canada Y1A 3V1	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	: ----	Telephone	: +1 867 668 6689
Project	: Crestview Sewage Lagoon Sampling	Date Samples Received	: 28-Jun-2023 21:14
PO	: ----	Issue Date	: 10-Jul-2023 13:11
C-O-C number	: ----		
Sampler	: ----		
Site	: YOWN - Yukon Observation Well Network		
Quote number	: WR22-GYPT100-002		
No. of samples received	: 4		
No. of samples analysed	: 4		

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 / 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 3d] Crestview Discharge	E555	27-Jun-2023	----	----	----		30-Jun-2023	3 days	3 days	✓
Aggregate Organics : Biochemical Oxygen Demand (Carbonaceous) - 5 day										
HDPE [BOD HT 3d] CV21-01	E555	27-Jun-2023	----	----	----		30-Jun-2023	3 days	3 days	✓
Aggregate Organics : Biochemical Oxygen Demand (Carbonaceous) - 5 day										
HDPE [BOD HT 3d] CV21-03	E555	27-Jun-2023	----	----	----		30-Jun-2023	3 days	3 days	✓
Aggregate Organics : Biochemical Oxygen Demand (Carbonaceous) - 5 day										
HDPE [BOD HT 3d] CVS.Cell1	E555	27-Jun-2023	----	----	----		30-Jun-2023	3 days	3 days	✓
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) Crestview Discharge	E567	27-Jun-2023	05-Jul-2023	28 days	8 days	✓	05-Jul-2023	40 days	0 days	✓
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CV21-01	E567	27-Jun-2023	05-Jul-2023	28 days	8 days	✓	05-Jul-2023	40 days	0 days	✓
Aggregate Organics : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid) CV21-03	E567	27-Jun-2023	05-Jul-2023	28 days	8 days	✓	05-Jul-2023	40 days	0 days	✓

Matrix: **Water**

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

Analyte Group / 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 : Oil & Grease by Gravimetry										
Amber glass (hydrochloric acid)										
CVS.Cell1	E567	27-Jun-2023	05-Jul-2023	28 days	8 days	✓	05-Jul-2023	40 days	0 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
Crestview Discharge	E298	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
CV21-03	E298	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	4 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
CV21-01	E298	27-Jun-2023	30-Jun-2023	----	----		03-Jul-2023	28 days	6 days	✓
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
CVS.Cell1	E298	27-Jun-2023	30-Jun-2023	----	----		03-Jul-2023	28 days	6 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
Crestview Discharge	E235.Br-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
CV21-01	E235.Br-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
CV21-03	E235.Br-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Bromide in Water by IC (Low Level)										
HDPE										
CVS.Cell1	E235.Br-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Chloride in Water by IC										
HDPE Crestview Discharge	E235.Cl	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CV21-01	E235.Cl	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CV21-03	E235.Cl	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Chloride in Water by IC										
HDPE CVS.Cell1	E235.Cl	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE Crestview Discharge	E378-U	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CV21-01	E378-U	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CV21-03	E378-U	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001										
HDPE CVS.Cell1	E378-U	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	3 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
Crestview Discharge	E235.F	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
CV21-01	E235.F	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
CV21-03	E235.F	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Fluoride in Water by IC										
HDPE										
CVS.Cell1	E235.F	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
Crestview Discharge	E235.NO3-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
CV21-01	E235.NO3-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
CV21-03	E235.NO3-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE										
CVS.Cell1	E235.NO3-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
Crestview Discharge	E235.NO2-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	3 days	3 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CV21-01	E235.NO2-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CV21-03	E235.NO2-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE CVS.Cell1	E235.NO2-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	3 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE Crestview Discharge	E235.SO4	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CV21-01	E235.SO4	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CV21-03	E235.SO4	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Sulfate in Water by IC										
HDPE CVS.Cell1	E235.SO4	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (lab preserved) Crestview Discharge	E375-T	27-Jun-2023	30-Jun-2023	3 days	3 days	✓	05-Jul-2023	28 days	5 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (lab preserved) CV21-01	E375-T	27-Jun-2023	30-Jun-2023	3 days	3 days	✓	05-Jul-2023	28 days	5 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (lab preserved)										
CV21-03	E375-T	27-Jun-2023	30-Jun-2023	3 days	3 days	✓	05-Jul-2023	28 days	5 days	✓
Anions and Nutrients : Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass dissolved (lab preserved)										
CVS.Cell1	E375-T	27-Jun-2023	30-Jun-2023	3 days	3 days	✓	05-Jul-2023	28 days	5 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
Crestview Discharge	E366	27-Jun-2023	30-Jun-2023	----	----		01-Jul-2023	28 days	4 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
CV21-01	E366	27-Jun-2023	30-Jun-2023	----	----		01-Jul-2023	28 days	4 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
CV21-03	E366	27-Jun-2023	30-Jun-2023	----	----		01-Jul-2023	28 days	4 days	✓
Anions and Nutrients : Total Nitrogen by Colourimetry										
Amber glass total (sulfuric acid)										
CVS.Cell1	E366	27-Jun-2023	30-Jun-2023	----	----		01-Jul-2023	28 days	4 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
Crestview Discharge	E372-U	27-Jun-2023	30-Jun-2023	----	----		05-Jul-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CV21-01	E372-U	27-Jun-2023	30-Jun-2023	----	----		05-Jul-2023	28 days	8 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid)										
CV21-03	E372-U	27-Jun-2023	30-Jun-2023	----	----		05-Jul-2023	28 days	8 days	✓

Matrix: **Water**

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

Analyte Group / Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times Rec	Holding Times Actual	Eval	Analysis Date	Holding Times Rec	Holding Times Actual	Eval
Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)										
Amber glass total (sulfuric acid) CVS.Cell1	E372-U	27-Jun-2023	30-Jun-2023	----	----		05-Jul-2023	28 days	8 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) Crestview Discharge	E509	27-Jun-2023	06-Jul-2023	----	----		06-Jul-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) CV21-01	E509	27-Jun-2023	06-Jul-2023	----	----		06-Jul-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) CV21-03	E509	27-Jun-2023	06-Jul-2023	----	----		06-Jul-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Mercury in Water by CVAAS										
Glass vial dissolved (hydrochloric acid) CVS.Cell1	E509	27-Jun-2023	06-Jul-2023	----	----		06-Jul-2023	28 days	9 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) Crestview Discharge	E421	27-Jun-2023	30-Jun-2023	----	----		01-Jul-2023	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) CV21-01	E421	27-Jun-2023	30-Jun-2023	----	----		01-Jul-2023	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) CV21-03	E421	27-Jun-2023	30-Jun-2023	----	----		01-Jul-2023	180 days	4 days	✓
Dissolved Metals : Dissolved Metals in Water by CRC ICPMS										
HDPE dissolved (nitric acid) CVS.Cell1	E421	27-Jun-2023	30-Jun-2023	----	----		01-Jul-2023	180 days	4 days	✓

Matrix: **Water**

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

Analyte Group / 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 : BC PHCs - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
Crestview Discharge	E601A	27-Jun-2023	07-Jul-2023	14 days	10 days	✓	08-Jul-2023	40 days	1 days	✓
Hydrocarbons : BC PHCs - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
CV21-01	E601A	27-Jun-2023	07-Jul-2023	14 days	10 days	✓	08-Jul-2023	40 days	1 days	✓
Hydrocarbons : BC PHCs - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
CV21-03	E601A	27-Jun-2023	07-Jul-2023	14 days	10 days	✓	08-Jul-2023	40 days	1 days	✓
Hydrocarbons : BC PHCs - EPH by GC-FID										
Amber glass/Teflon lined cap (sodium bisulfate)										
CVS.Cell1	E601A	27-Jun-2023	07-Jul-2023	14 days	10 days	✓	08-Jul-2023	40 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Inorganic Carbon by Combustion										
HDPE										
Crestview Discharge	E353-L	27-Jun-2023	----	----	----		02-Jul-2023	14 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Inorganic Carbon by Combustion										
HDPE										
CV21-01	E353-L	27-Jun-2023	----	----	----		02-Jul-2023	14 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Inorganic Carbon by Combustion										
HDPE										
CV21-03	E353-L	27-Jun-2023	----	----	----		02-Jul-2023	14 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Inorganic Carbon by Combustion										
HDPE										
CVS.Cell1	E353-L	27-Jun-2023	----	----	----		02-Jul-2023	14 days	5 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved)										
Crestview Discharge	E358-L	27-Jun-2023	30-Jun-2023	3 days	3 days	✓	30-Jun-2023	28 days	0 days	✓

Matrix: **Water**

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

Analyte Group / 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) CV21-03	E358-L	27-Jun-2023	30-Jun-2023	3 days	3 days	✓	30-Jun-2023	28 days	0 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) CV21-01	E358-L	27-Jun-2023	30-Jun-2023	3 days	3 days	✓	30-Jun-2023	28 days	1 days	✓
Organic / Inorganic Carbon : Dissolved Organic Carbon by Combustion (Low Level)										
Amber glass dissolved (lab preserved) CVS.Cell1	E358-L	27-Jun-2023	30-Jun-2023	3 days	3 days	✓	30-Jun-2023	28 days	1 days	✓
Organic / Inorganic Carbon : Total Inorganic Carbon by Combustion (Low Level)										
HDPE Crestview Discharge	E354-L	27-Jun-2023	----	----	----		02-Jul-2023	14 days	5 days	✓
Organic / Inorganic Carbon : Total Inorganic Carbon by Combustion (Low Level)										
HDPE CV21-01	E354-L	27-Jun-2023	----	----	----		02-Jul-2023	14 days	5 days	✓
Organic / Inorganic Carbon : Total Inorganic Carbon by Combustion (Low Level)										
HDPE CV21-03	E354-L	27-Jun-2023	----	----	----		02-Jul-2023	14 days	5 days	✓
Organic / Inorganic Carbon : Total Inorganic Carbon by Combustion (Low Level)										
HDPE CVS.Cell1	E354-L	27-Jun-2023	----	----	----		02-Jul-2023	14 days	5 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) Crestview Discharge	E355-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid) CV21-03	E355-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓

Matrix: **Water**

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

Analyte Group / 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 : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
CV21-01	E355-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	4 days	✓
Organic / Inorganic Carbon : Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)										
Amber glass total (sulfuric acid)										
CVS.Cell1	E355-L	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	4 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
Crestview Discharge	E290	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
CV21-01	E290	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
CV21-03	E290	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	14 days	3 days	✓
Physical Tests : Alkalinity Species by Titration										
HDPE										
CVS.Cell1	E290	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	14 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
Crestview Discharge	E100	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
CV21-01	E100	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Physical Tests : Conductivity in Water										
HDPE										
CV21-03	E100	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓

Matrix: **Water**

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

Analyte Group / 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 CVS.Cell1	E100	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	28 days	3 days	✓
Physical Tests : pH by Meter at 15C (WSER)										
HDPE Crestview Discharge	E108A	27-Jun-2023	----	----	----		04-Jul-2023	5 days	7 days	× EHT
Physical Tests : pH by Meter at 15C (WSER)										
HDPE CV21-01	E108A	27-Jun-2023	----	----	----		04-Jul-2023	5 days	7 days	× EHT
Physical Tests : pH by Meter at 15C (WSER)										
HDPE CV21-03	E108A	27-Jun-2023	----	----	----		04-Jul-2023	5 days	7 days	× EHT
Physical Tests : pH by Meter at 15C (WSER)										
HDPE CVS.Cell1	E108A	27-Jun-2023	----	----	----		04-Jul-2023	5 days	7 days	× EHT
Physical Tests : pH by Meter										
HDPE Crestview Discharge	E108	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	0.25 hrs	5.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CV21-01	E108	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	0.25 hrs	5.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CV21-03	E108	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	0.25 hrs	5.25 hrs	× EHTR-FM
Physical Tests : pH by Meter										
HDPE CVS.Cell1	E108	27-Jun-2023	30-Jun-2023	----	----		30-Jun-2023	0.25 hrs	5.25 hrs	× EHTR-FM

Matrix: **Water**

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

Analyte Group / 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 CV21-01	E160	27-Jun-2023	----	----	----		01-Jul-2023	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CV21-03	E160	27-Jun-2023	----	----	----		01-Jul-2023	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE CVS.Cell1	E160	27-Jun-2023	----	----	----		01-Jul-2023	7 days	3 days	✓
Physical Tests : TSS by Gravimetry										
HDPE Crestview Discharge	E160	27-Jun-2023	----	----	----		01-Jul-2023	7 days	4 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) Crestview Discharge	E641A	27-Jun-2023	07-Jul-2023	14 days	10 days	✓	07-Jul-2023	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) CV21-01	E641A	27-Jun-2023	07-Jul-2023	14 days	10 days	✓	07-Jul-2023	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) CV21-03	E641A	27-Jun-2023	07-Jul-2023	14 days	10 days	✓	07-Jul-2023	40 days	0 days	✓
Polycyclic Aromatic Hydrocarbons : PAHs by Hexane LVI GC-MS										
Amber glass/Teflon lined cap (sodium bisulfate) CVS.Cell1	E641A	27-Jun-2023	07-Jul-2023	14 days	10 days	✓	07-Jul-2023	40 days	0 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).

Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

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

Quality Control Sample Type			Count		Frequency (%)		
Analytical Methods	*Method*	*QC Lot #*	*QC*	*Regular*	*Actual*	*Expected*	*Evaluation*
Laboratory Duplicates (DUP)							
Alkalinity Species by Titration	E290	1017129	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	1017099	2	19	10.5	5.0	✓
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1017924	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1017133	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	1017132	1	14	7.1	5.0	✓
Conductivity in Water	E100	1017130	1	8	12.5	5.0	✓
Dissolved Inorganic Carbon by Combustion	E353-L	1020245	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1025340	2	23	8.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1017709	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1017097	2	21	9.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1017138	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	1017136	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1017137	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1017134	1	14	7.1	5.0	✓
pH by Meter	E108	1017128	1	15	6.6	5.0	✓
pH by Meter at 15C (WSER)	E108A	1021931	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1017131	1	14	7.1	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	1017098	2	26	7.6	5.0	✓
Total Inorganic Carbon by Combustion (Low Level)	E354-L	1020246	1	4	25.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1017100	1	13	7.6	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1017103	2	9	22.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1017101	2	17	11.7	5.0	✓
TSS by Gravimetry	E160	1019204	1	16	6.2	5.0	✓
Laboratory Control Samples (LCS)							
Alkalinity Species by Titration	E290	1017129	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	1017099	2	19	10.5	5.0	✓
BC PHCs - EPH by GC-FID	E601A	1026947	1	15	6.6	5.0	✓
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1017924	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1017133	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	1017132	1	14	7.1	5.0	✓
Conductivity in Water	E100	1017130	1	8	12.5	5.0	✓
Dissolved Inorganic Carbon by Combustion	E353-L	1020245	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1025340	2	23	8.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1017709	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1017097	2	21	9.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1017138	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 Control Samples (LCS) - Continued							
Fluoride in Water by IC	E235.F	1017136	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1017137	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1017134	1	14	7.1	5.0	✓
Oil & Grease by Gravimetry	E567	1023045	1	10	10.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	1026948	1	15	6.6	5.0	✓
pH by Meter	E108	1017128	1	15	6.6	5.0	✓
pH by Meter at 15C (WSER)	E108A	1021931	1	13	7.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1017131	1	14	7.1	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	1017098	2	26	7.6	5.0	✓
Total Inorganic Carbon by Combustion (Low Level)	E354-L	1020246	1	4	25.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1017100	2	13	15.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1017103	2	9	22.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1017101	2	17	11.7	5.0	✓
TSS by Gravimetry	E160	1019204	1	16	6.2	5.0	✓
Method Blanks (MB)							
Alkalinity Species by Titration	E290	1017129	1	12	8.3	5.0	✓
Ammonia by Fluorescence	E298	1017099	2	19	10.5	5.0	✓
BC PHCs - EPH by GC-FID	E601A	1026947	1	15	6.6	5.0	✓
Biochemical Oxygen Demand (Carbonaceous) - 5 day	E555	1017924	1	13	7.6	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1017133	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	1017132	1	14	7.1	5.0	✓
Conductivity in Water	E100	1017130	1	8	12.5	5.0	✓
Dissolved Inorganic Carbon by Combustion	E353-L	1020245	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1025340	2	23	8.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1017709	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1017097	2	21	9.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1017138	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	1017136	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1017137	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1017134	1	14	7.1	5.0	✓
Oil & Grease by Gravimetry	E567	1023045	1	10	10.0	5.0	✓
PAHs by Hexane LVI GC-MS	E641A	1026948	1	15	6.6	5.0	✓
Sulfate in Water by IC	E235.SO4	1017131	1	14	7.1	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	1017098	2	26	7.6	5.0	✓
Total Inorganic Carbon by Combustion (Low Level)	E354-L	1020246	1	4	25.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1017100	2	13	15.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1017103	2	9	22.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1017101	2	17	11.7	5.0	✓
TSS by Gravimetry	E160	1019204	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*
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	1017099	2	19	10.5	5.0	✓
Bromide in Water by IC (Low Level)	E235.Br-L	1017133	1	14	7.1	5.0	✓
Chloride in Water by IC	E235.Cl	1017132	1	14	7.1	5.0	✓
Dissolved Inorganic Carbon by Combustion	E353-L	1020245	1	12	8.3	5.0	✓
Dissolved Mercury in Water by CVAAS	E509	1025340	2	23	8.7	5.0	✓
Dissolved Metals in Water by CRC ICPMS	E421	1017709	1	20	5.0	5.0	✓
Dissolved Organic Carbon by Combustion (Low Level)	E358-L	1017097	2	21	9.5	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1017138	1	5	20.0	5.0	✓
Fluoride in Water by IC	E235.F	1017136	1	14	7.1	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1017137	1	11	9.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1017134	1	14	7.1	5.0	✓
Sulfate in Water by IC	E235.SO4	1017131	1	14	7.1	5.0	✓
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T	1017098	2	26	7.6	5.0	✓
Total Inorganic Carbon by Combustion (Low Level)	E354-L	1020246	1	4	25.0	5.0	✓
Total Nitrogen by Colourimetry	E366	1017100	2	13	15.3	5.0	✓
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L	1017103	2	9	22.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1017101	2	17	11.7	5.0	✓

Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Conductivity in Water	E100 ALS Environmental - Vancouver	Water	APHA 2510 (mod)	Conductivity, also known as Electrical Conductivity (EC) or Specific Conductance, is measured by immersion of a conductivity cell with platinum electrodes into a water sample. Conductivity measurements are temperature-compensated to 25°C.
pH by Meter	E108 ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at ambient laboratory temperature (normally 20 ± 5°C). For high accuracy test results, pH should be measured in the field within the recommended 15 minute hold time.
pH by Meter at 15C (WSER)	E108A ALS Environmental - Vancouver	Water	APHA 4500-H (mod)	pH is determined by potentiometric measurement with a pH electrode, and is conducted at 15 ± 1°C, and is used to calculate Un-Ionized Ammonia for the federal Wastewater Systems Effluent Regulation.
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.
Bromide in Water by IC (Low Level)	E235.Br-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Chloride in Water by IC	E235.Cl ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Fluoride in Water by IC	E235.F ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Nitrate in Water by IC (Low Level)	E235.NO3-L ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Sulfate in Water by IC	E235.SO4 ALS Environmental - Vancouver	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Alkalinity Species by Titration	E290 ALS Environmental - Vancouver	Water	APHA 2320 B (mod)	Total alkalinity is determined by potentiometric titration to a pH 4.5 endpoint. Bicarbonate, carbonate and hydroxide alkalinity are calculated from phenolphthalein alkalinity and total alkalinity values.
Ammonia by Fluorescence	E298 ALS Environmental - Vancouver	Water	Method Fialab 100, 2018	Ammonia in water is determined by automated continuous flow analysis with membrane diffusion and fluorescence detection, after reaction with OPA (ortho-phthalaldehyde). This method is approved under US EPA 40 CFR Part 136 (May 2021)
Dissolved Inorganic Carbon by Combustion	E353-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Dissolved Inorganic Carbon is determined on a sample which is filtered through a 0.45 micron filter prior to analysis by the high temperature combustion method with measurement by an infrared detector, where the sample is acidified in a reaction chamber to convert all inorganic carbons (carbonates) to carbon dioxide for analysis.
Total Inorganic Carbon by Combustion (Low Level)	E354-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Inorganic Carbon is determined by the high temperature combustion method with measurement by an infrared detector, where the sample is acidified in a reaction chamber to convert all inorganic carbons (carbonates) to carbon dioxide for analysis.
Total Organic Carbon (Non-Purgeable) by Combustion (Low Level)	E355-L ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Total Organic Carbon (Non-Purgeable), also known as NPOC (total), is a direct measurement of TOC after an acidified sample has been purged to remove inorganic carbon (IC). Analysis is by high temperature combustion with infrared detection of CO_2. NPOC does not include volatile organic species that are purged off with IC. For samples where the majority of total carbon (TC) is comprised of IC (which is common), this method is more accurate and more reliable than the TOC by subtraction method (i.e. TC minus TIC).
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 CO_2. 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 Nitrogen by Colourimetry	E366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Total Nitrogen is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Dissolved Phosphorus by Colourimetry (0.002 mg/L)	E375-T ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Total Dissolved Phosphorus is determined colourimetrically using a discrete analyzer after filtration through a 0.45 micron filter followed by heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Vancouver	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter. Field filtration is recommended to ensure test results represent conditions at time of sampling.
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.
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.
Oil & Grease by Gravimetry	E567 ALS Environmental - Vancouver	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane and the extract is evaporated to dryness. The residue is then weighed to determine Oil and Grease.
BC PHCs - EPH by GC-FID	E601A ALS Environmental - Vancouver	Water	BC MOE Lab Manual	Sample extracts are analyzed by GC-FID for BC hydrocarbon fractions.
PAHs by Hexane LVI GC-MS	E641A ALS Environmental - Vancouver	Water	EPA 8270E (mod)	Polycyclic Aromatic Hydrocarbons (PAHs) are analyzed by large volume injection (LVI) GC-MS.
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.

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Vancouver	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).
Un-ionized Ammonia at 15°C, WSER	EC298 ALS Environmental - Vancouver	Water	WSER 29June2012	Un-ionized Ammonia at 15C is calculated from test results for Total Ammonia and for pH at 15C, as per the federal Wastewater Systems Effluent Regulation, and is expressed in units of mg/L "as N".
LEPH and HEPH: EPH-PAH	EC600A ALS Environmental - Vancouver	Water	BC MOE Lab Manual (LEPH and HEPH)	Light Extractable Petroleum Hydrocarbons (LEPH) and Heavy Extractable Petroleum Hydrocarbons (HEPH) are calculated as follows: LEPH = Extractable Petroleum Hydrocarbons (EPH10-19) minus Acenaphthene, Acridine, Anthracene, Fluorene, Naphthalene and Phenanthrene; HEPH = Extractable Petroleum Hydrocarbons (EPH19-32) minus Benz(a)anthracene, Benzo(a)pyrene, Fluoranthene, and Pyrene.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Vancouver	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Preparation for Total Organic Carbon by Combustion	EP355 ALS Environmental - Vancouver	Water		Preparation for Total Organic Carbon by Combustion
Preparation for Dissolved Organic Carbon for Combustion	EP358 ALS Environmental - Vancouver	Water	APHA 5310 B (mod)	Preparation for Dissolved Organic Carbon
Digestion for Total Nitrogen in water	EP366 ALS Environmental - Vancouver	Water	APHA 4500-P J (mod)	Samples are heated with a persulfate digestion reagent.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
Digestion for Dissolved Phosphorus in water	EP375 ALS Environmental - Vancouver	Water	APHA 4500-P E (mod).	Samples are filtered through a 0.45 micron membrane filter and then heated with a persulfate digestion reagent.
Dissolved Metals Water Filtration	EP421 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HNO3.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Dissolved Mercury Water Filtration	EP509 ALS Environmental - Vancouver	Water	APHA 3030B	Water samples are filtered (0.45 um), and preserved with HCl.
Oil & Grease Extraction for Gravimetry	EP567 ALS Environmental - Vancouver	Water	BC MOE Lab Manual (Oil & Grease) (mod)	The entire water sample is extracted with hexane by liquid-liquid extraction.
PHCs and PAHs Hexane Extraction	EP601 ALS Environmental - Vancouver	Water	EPA 3511 (mod)	Petroleum Hydrocarbons (PHCs) and Polycyclic Aromatic Hydrocarbons (PAHs) are extracted using a hexane liquid-liquid extraction.

QUALITY CONTROL REPORT

Work Order	: **WR2300617**	Page	: 1 of 16
Client	: Government of Yukon	Laboratory	: ALS Environmental - Whitehorse
Contact	: Water Resources Branch	Account Manager	: Tasnia Tarannum
Address	: Department of Environment, Environmental Protection and Assessment Branch 419 Range Road Whitehorse YT Canada Y1A 3V1	Address	: #12 151 Industrial Road Whitehorse, Yukon Canada Y1A 2V3
Telephone	:	Telephone	: +1 867 668 6689
Project	: Crestview Sewage Lagoon Sampling	Date Samples Received	: 28-Jun-2023 21:14
PO	: ----	Date Analysis Commenced	: 30-Jun-2023
C-O-C number	: ----	Issue Date	: 10-Jul-2023 13:13
Sampler	: ---- ----		
Site	: YOWN - Yukon Observation Well Network		
Quote number	: WR22-GYPT100-002		
No. of samples received	: 4		
No. of samples analysed	: 4		

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
Angelo Salandanan	Lab Assistant	Vancouver Metals, Burnaby, British Columbia
Dan Gebert	Laboratory Analyst	Vancouver Metals, Burnaby, British Columbia
Janice Leung	Supervisor - Organics Instrumentation	Vancouver Organics, Burnaby, British Columbia
Kim Jensen	Department Manager - Metals	Vancouver Metals, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Vancouver Inorganics, Burnaby, British Columbia
Paul Cushing	Team Leader - Organics	Vancouver Organics, Burnaby, British Columbia
Tracy Harley	Supervisor - Water Quality Instrumentation	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: 1017128)											
VA23B4929-001	Anonymous	pH	----	E108	0.10	pH units	8.50	8.50	0.00%	4%	----
Physical Tests (QC Lot: 1017129)											
VA23B4929-001	Anonymous	Alkalinity, bicarbonate (as CaCO3)	----	E290	1.0	mg/L	174	175	0.516%	200%	----
		Alkalinity, carbonate (as CaCO3)	----	E290	1.0	mg/L	10.2	10.2	0.00%	200%	----
		Alkalinity, hydroxide (as CaCO3)	----	E290	1.0	mg/L	<1.0	<1.0	0.00%	200%	----
		Alkalinity, total (as CaCO3)	----	E290	1.0	mg/L	184	185	0.487%	20%	----
Physical Tests (QC Lot: 1017130)											
VA23B4929-001	Anonymous	Conductivity	----	E100	2.0	µS/cm	485	487	0.412%	10%	----
Physical Tests (QC Lot: 1019204)											
VA23B4978-006	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	6.4	5.2	1.2	Diff <2x LOR	----
Physical Tests (QC Lot: 1021931)											
VA23B4717-001	Anonymous	pH @ 15°C (WSER)	----	E108A	0.10	pH units	7.39	7.38	0.135%	4%	----
Anions and Nutrients (QC Lot: 1017098)											
FJ2301513-001	Anonymous	Phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0053	0.0053	0.00002	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1017099)											
FJ2301513-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1017100)											
FJ2301513-001	Anonymous	Nitrogen, total	7727-37-9	E366	0.030	mg/L	0.312	0.306	1.84%	20%	----
Anions and Nutrients (QC Lot: 1017101)											
FJ2301556-007	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1017131)											
VA23B4838-001	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	0.30	mg/L	1.52	1.54	0.02	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1017132)											
VA23B4838-001	Anonymous	Chloride	16887-00-6	E235.Cl	0.50	mg/L	<0.50	<0.50	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1017133)											
VA23B4838-001	Anonymous	Bromide	24959-67-9	E235.Br-L	0.050	mg/L	<0.050	<0.050	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1017134)											
VA23B4838-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1017136)											
VA23B4838-001	Anonymous	Fluoride	16984-48-8	E235.F	0.020	mg/L	0.046	0.046	0.0007	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*
Anions and Nutrients (QC Lot: 1017137)											
VA23B4929-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	0.0125	0.0130	0.0005	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1017138)											
VA23B4929-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0500	mg/L	1.14	1.06	7.35%	20%	----
Anions and Nutrients (QC Lot: 1017163)											
VA23B4679-001	Anonymous	Phosphorus, total dissolved	7723-14-0	E375-T	0.0020	mg/L	0.0120	0.0116	0.0003	Diff <2x LOR	----
Anions and Nutrients (QC Lot: 1017166)											
VA23B4679-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	0.617	0.625	1.22%	20%	----
Anions and Nutrients (QC Lot: 1017167)											
VA23B4679-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0544	0.0542	0.360%	20%	----
Organic / Inorganic Carbon (QC Lot: 1017097)											
FJ2301513-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	3.70	3.83	0.13	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1017103)											
VA23B4736-001	Anonymous	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	2.05	2.06	0.02	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1017161)											
VA23B4711-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	0.50	mg/L	2.17	2.23	0.05	Diff <2x LOR	----
Organic / Inorganic Carbon (QC Lot: 1017169)											
WR2300617-003	CV21-01	Carbon, total organic [TOC]	----	E355-L	0.50	mg/L	5.52	5.94	7.39%	20%	----
Organic / Inorganic Carbon (QC Lot: 1020245)											
FC2301738-003	Anonymous	Carbon, dissolved inorganic [DIC]	----	E353-L	1.50	mg/L	114	112	1.41%	20%	----
Organic / Inorganic Carbon (QC Lot: 1020246)											
WR2300617-001	Crestview Discharge	Carbon, total inorganic [TIC]	----	E354-L	0.50	mg/L	44.1	45.3	2.86%	20%	----
Dissolved Metals (QC Lot: 1017709)											
FJ2301548-001	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.0010	mg/L	0.0072	0.0073	0.0001	Diff <2x LOR	----
		Antimony, dissolved	7440-36-0	E421	0.00010	mg/L	<0.00010	<0.00010	0	Diff <2x LOR	----
		Arsenic, dissolved	7440-38-2	E421	0.00010	mg/L	0.00050	0.00051	0.00001	Diff <2x LOR	----
		Barium, dissolved	7440-39-3	E421	0.00010	mg/L	0.0503	0.0485	3.70%	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	0.031	0.031	0.0004	Diff <2x LOR	----
		Cadmium, dissolved	7440-43-9	E421	0.0000050	mg/L	0.0000062	0.0000052	0.0000009	Diff <2x LOR	----
		Calcium, dissolved	7440-70-2	E421	0.050	mg/L	47.8	45.5	4.96%	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	0.00012	0.00011	0.000007	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: 1017709) - continued											
FJ2301548-001	Anonymous	Copper, dissolved	7440-50-8	E421	0.00020	mg/L	0.00101	0.00102	0.000009	Diff <2x LOR	----
		Iron, dissolved	7439-89-6	E421	0.010	mg/L	0.141	0.140	1.17%	20%	----
		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	0.0074	0.0073	0.0001	Diff <2x LOR	----
		Magnesium, dissolved	7439-95-4	E421	0.100	mg/L	8.52	8.78	3.09%	20%	----
		Manganese, dissolved	7439-96-5	E421	0.00010	mg/L	0.0335	0.0333	0.381%	20%	----
		Molybdenum, dissolved	7439-98-7	E421	0.000050	mg/L	0.000618	0.000625	1.19%	20%	----
		Nickel, dissolved	7440-02-0	E421	0.00050	mg/L	0.00124	0.00120	0.00004	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	1.80	1.79	0.710%	20%	----
		Rubidium, dissolved	7440-17-7	E421	0.00020	mg/L	0.00118	0.00114	0.00004	Diff <2x LOR	----
		Selenium, dissolved	7782-49-2	E421	0.000050	mg/L	0.000168	0.000126	0.000042	Diff <2x LOR	----
		Silicon, dissolved	7440-21-3	E421	0.050	mg/L	0.573	0.602	4.89%	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	10.6	10.6	0.517%	20%	----
		Strontium, dissolved	7440-24-6	E421	0.00020	mg/L	0.113	0.115	1.99%	20%	----
		Sulfur, dissolved	7704-34-9	E421	0.50	mg/L	11.8	11.7	1.04%	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	0.00051	0.00047	0.00004	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	0.000336	0.000355	5.54%	20%	----
		Vanadium, dissolved	7440-62-2	E421	0.00050	mg/L	<0.00050	<0.00050	0	Diff <2x LOR	----
		Zinc, dissolved	7440-66-6	E421	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
		Zirconium, dissolved	7440-67-7	E421	0.00020	mg/L	0.00022	<0.00020	0.00002	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1025340)											
WR2300609-001	Anonymous	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	<0.0000050	<0.0000050	0	Diff <2x LOR	----
Dissolved Metals (QC Lot: 1025341)											
WR2300617-002	CV21-03	Mercury, dissolved	7439-97-6	E509	0.0000050	mg/L	0.0000461	0.0000444	0.0000017	Diff <2x LOR	----
Aggregate Organics (QC Lot: 1017924)											
KS2302261-001	Anonymous	Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2.0	mg/L	3.2	2.9	9.8%	30%	----

Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 1017129)						
Alkalinity, bicarbonate (as CaCO3)	----	E290	1	mg/L	1.1	----
Alkalinity, carbonate (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, hydroxide (as CaCO3)	----	E290	1	mg/L	<1.0	----
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	1.1	----
Physical Tests (QCLot: 1017130)						
Conductivity	----	E100	1	µS/cm	1.4	----
Physical Tests (QCLot: 1019204)						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
Anions and Nutrients (QCLot: 1017098)						
Phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1017099)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1017100)						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1017101)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1017131)						
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	<0.30	----
Anions and Nutrients (QCLot: 1017132)						
Chloride	16887-00-6	E235.Cl	0.5	mg/L	<0.50	----
Anions and Nutrients (QCLot: 1017133)						
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	<0.050	----
Anions and Nutrients (QCLot: 1017134)						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1017136)						
Fluoride	16984-48-8	E235.F	0.02	mg/L	<0.020	----
Anions and Nutrients (QCLot: 1017137)						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
Anions and Nutrients (QCLot: 1017138)						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
Anions and Nutrients (QCLot: 1017162)						

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Anions and Nutrients (QCLot: 1017162) - continued						
Nitrogen, total	7727-37-9	E366	0.03	mg/L	<0.030	----
Anions and Nutrients (QCLot: 1017163)						
Phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1017166)						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
Anions and Nutrients (QCLot: 1017167)						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
Organic / Inorganic Carbon (QCLot: 1017097)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1017103)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1017161)						
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1017169)						
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1020245)						
Carbon, dissolved inorganic [DIC]	----	E353-L	0.5	mg/L	<0.50	----
Organic / Inorganic Carbon (QCLot: 1020246)						
Carbon, total inorganic [TIC]	----	E354-L	0.5	mg/L	<0.50	----
Dissolved Metals (QCLot: 1017709)						
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: 1017709) - 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: 1025340)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Dissolved Metals (QCLot: 1025341)						
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	<0.0000050	----
Aggregate Organics (QCLot: 1017924)						
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	<2.0	----
Aggregate Organics (QCLot: 1023045)						
Oil & grease (gravimetric)	----	E567	5	mg/L	<5.0	----
Hydrocarbons (QCLot: 1026947)						
EPH (C10-C19)	----	E601A	250	µg/L	<250	----
EPH (C19-C32)	----	E601A	250	µg/L	<250	----

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1026948)						
Acenaphthene	83-32-9	E641A	0.01	µg/L	<0.010	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	<0.010	----
Acridine	260-94-6	E641A	0.01	µg/L	<0.010	----
Anthracene	120-12-7	E641A	0.01	µg/L	<0.010	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	<0.010	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	<0.0050	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	<0.010	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	<0.010	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	<0.010	----
Chrysene	218-01-9	E641A	0.01	µg/L	<0.010	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	<0.0050	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	<0.010	----
Fluorene	86-73-7	E641A	0.01	µg/L	<0.010	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	<0.010	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	<0.010	----
Naphthalene	91-20-3	E641A	0.05	µg/L	<0.050	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	<0.020	----
Pyrene	129-00-0	E641A	0.01	µg/L	<0.010	----
Quinoline	91-22-5	E641A	0.05	µg/L	<0.050	----

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	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 1017128)									
pH	----	E108	----	pH units	7 pH units	99.7	98.0	102	----
Physical Tests (QCLot: 1017129)									
Alkalinity, total (as CaCO3)	----	E290	1	mg/L	500 mg/L	108	85.0	115	----
Physical Tests (QCLot: 1017130)									
Conductivity	----	E100	1	µS/cm	146.9 µS/cm	96.9	90.0	110	----
Physical Tests (QCLot: 1019204)									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	108	85.0	115	----
Physical Tests (QCLot: 1021931)									
pH @ 15°C (WSER)	----	E108A	----	pH units	7 pH units	100	98.0	102	----
Anions and Nutrients (QCLot: 1017098)									
Phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	0.05 mg/L	98.3	80.0	120	----
Anions and Nutrients (QCLot: 1017099)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
Anions and Nutrients (QCLot: 1017100)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1017101)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	97.3	80.0	120	----
Anions and Nutrients (QCLot: 1017131)									
Sulfate (as SO4)	14808-79-8	E235.SO4	0.3	mg/L	100 mg/L	102	90.0	110	----
Anions and Nutrients (QCLot: 1017132)									
Chloride	16887-00-6	E235.Cl	0.5	mg/L	100 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1017133)									
Bromide	24959-67-9	E235.Br-L	0.05	mg/L	0.5 mg/L	94.7	85.0	115	----
Anions and Nutrients (QCLot: 1017134)									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.8	90.0	110	----
Anions and Nutrients (QCLot: 1017136)									
Fluoride	16984-48-8	E235.F	0.02	mg/L	1 mg/L	98.7	90.0	110	----
Anions and Nutrients (QCLot: 1017137)									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
Anions and Nutrients (QCLot: 1017138)									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	105	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1017162)									
Nitrogen, total	7727-37-9	E366	0.03	mg/L	0.5 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1017163)									
Phosphorus, total dissolved	7723-14-0	E375-T	0.002	mg/L	0.05 mg/L	91.7	80.0	120	----
Anions and Nutrients (QCLot: 1017166)									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	97.9	80.0	120	----
Anions and Nutrients (QCLot: 1017167)									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	96.9	85.0	115	----
Organic / Inorganic Carbon (QCLot: 1017097)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	94.2	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1017103)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	96.2	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1017161)									
Carbon, dissolved organic [DOC]	----	E358-L	0.5	mg/L	8.57 mg/L	102	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1017169)									
Carbon, total organic [TOC]	----	E355-L	0.5	mg/L	8.57 mg/L	112	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1020245)									
Carbon, dissolved inorganic [DIC]	----	E353-L	0.5	mg/L	8 mg/L	105	80.0	120	----
Organic / Inorganic Carbon (QCLot: 1020246)									
Carbon, total inorganic [TIC]	----	E354-L	0.5	mg/L	8 mg/L	106	80.0	120	----
Dissolved Metals (QCLot: 1017709)									
Aluminum, dissolved	7429-90-5	E421	0.001	mg/L	2 mg/L	105	80.0	120	----
Antimony, dissolved	7440-36-0	E421	0.0001	mg/L	1 mg/L	102	80.0	120	----
Arsenic, dissolved	7440-38-2	E421	0.0001	mg/L	1 mg/L	103	80.0	120	----
Barium, dissolved	7440-39-3	E421	0.0001	mg/L	0.25 mg/L	112	80.0	120	----
Beryllium, dissolved	7440-41-7	E421	0.00002	mg/L	0.1 mg/L	102	80.0	120	----
Bismuth, dissolved	7440-69-9	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
Boron, dissolved	7440-42-8	E421	0.01	mg/L	1 mg/L	96.1	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	104	80.0	120	----
Cesium, dissolved	7440-46-2	E421	0.00001	mg/L	0.05 mg/L	107	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	101	80.0	120	----
Copper, dissolved	7440-50-8	E421	0.0002	mg/L	0.25 mg/L	100	80.0	120	----
Iron, dissolved	7439-89-6	E421	0.01	mg/L	1 mg/L	109	80.0	120	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Dissolved Metals (QCLot: 1017709) - continued									
Lead, dissolved	7439-92-1	E421	0.00005	mg/L	0.5 mg/L	102	80.0	120	----
Lithium, dissolved	7439-93-2	E421	0.001	mg/L	0.25 mg/L	98.7	80.0	120	----
Magnesium, dissolved	7439-95-4	E421	0.005	mg/L	50 mg/L	102	80.0	120	----
Manganese, dissolved	7439-96-5	E421	0.0001	mg/L	0.25 mg/L	102	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	103	80.0	120	----
Phosphorus, dissolved	7723-14-0	E421	0.05	mg/L	10 mg/L	102	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	101	80.0	120	----
Selenium, dissolved	7782-49-2	E421	0.00005	mg/L	1 mg/L	102	80.0	120	----
Silicon, dissolved	7440-21-3	E421	0.05	mg/L	10 mg/L	103	80.0	120	----
Silver, dissolved	7440-22-4	E421	0.00001	mg/L	0.1 mg/L	102	80.0	120	----
Sodium, dissolved	7440-23-5	E421	0.05	mg/L	50 mg/L	96.3	80.0	120	----
Strontium, dissolved	7440-24-6	E421	0.0002	mg/L	0.25 mg/L	107	80.0	120	----
Sulfur, dissolved	7704-34-9	E421	0.5	mg/L	50 mg/L	93.9	80.0	120	----
Tellurium, dissolved	13494-80-9	E421	0.0002	mg/L	0.1 mg/L	94.5	80.0	120	----
Thallium, dissolved	7440-28-0	E421	0.00001	mg/L	1 mg/L	96.5	80.0	120	----
Thorium, dissolved	7440-29-1	E421	0.0001	mg/L	0.1 mg/L	97.6	80.0	120	----
Tin, dissolved	7440-31-5	E421	0.0001	mg/L	0.5 mg/L	98.4	80.0	120	----
Titanium, dissolved	7440-32-6	E421	0.0003	mg/L	0.25 mg/L	94.5	80.0	120	----
Tungsten, dissolved	7440-33-7	E421	0.0001	mg/L	0.1 mg/L	97.4	80.0	120	----
Uranium, dissolved	7440-61-1	E421	0.00001	mg/L	0.005 mg/L	96.1	80.0	120	----
Vanadium, dissolved	7440-62-2	E421	0.0005	mg/L	0.5 mg/L	103	80.0	120	----
Zinc, dissolved	7440-66-6	E421	0.001	mg/L	0.5 mg/L	96.2	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	0.0001 mg/L	97.6	80.0	120	----
Mercury, dissolved	7439-97-6	E509	0.000005	mg/L	0.0001 mg/L	98.6	80.0	120	----
Aggregate Organics (QCLot: 1017924)									
Carbonaceous biochemical oxygen demand [CBOD]	----	E555	2	mg/L	198 mg/L	92.3	85.0	115	----
Aggregate Organics (QCLot: 1023045)									
Oil & grease (gravimetric)	----	E567	5	mg/L	100 mg/L	94.1	70.0	130	----
Hydrocarbons (QCLot: 1026947)									
EPH (C10-C19)	----	E601A	250	µg/L	6491 µg/L	112	70.0	130	----
EPH (C19-C32)	----	E601A	250	µg/L	3363 µg/L	110	70.0	130	----

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Polycyclic Aromatic Hydrocarbons (QCLot: 1026948)									
Acenaphthene	83-32-9	E641A	0.01	µg/L	0.5 µg/L	107	60.0	130	----
Acenaphthylene	208-96-8	E641A	0.01	µg/L	0.5 µg/L	109	60.0	130	----
Acridine	260-94-6	E641A	0.01	µg/L	0.5 µg/L	118	60.0	130	----
Anthracene	120-12-7	E641A	0.01	µg/L	0.5 µg/L	121	60.0	130	----
Benz(a)anthracene	56-55-3	E641A	0.01	µg/L	0.5 µg/L	124	60.0	130	----
Benzo(a)pyrene	50-32-8	E641A	0.005	µg/L	0.5 µg/L	124	60.0	130	----
Benzo(b+j)fluoranthene	n/a	E641A	0.01	µg/L	0.5 µg/L	121	60.0	130	----
Benzo(g,h,i)perylene	191-24-2	E641A	0.01	µg/L	0.5 µg/L	120	60.0	130	----
Benzo(k)fluoranthene	207-08-9	E641A	0.01	µg/L	0.5 µg/L	120	60.0	130	----
Chrysene	218-01-9	E641A	0.01	µg/L	0.5 µg/L	124	60.0	130	----
Dibenz(a,h)anthracene	53-70-3	E641A	0.005	µg/L	0.5 µg/L	123	60.0	130	----
Fluoranthene	206-44-0	E641A	0.01	µg/L	0.5 µg/L	124	60.0	130	----
Fluorene	86-73-7	E641A	0.01	µg/L	0.5 µg/L	111	60.0	130	----
Indeno(1,2,3-c,d)pyrene	193-39-5	E641A	0.01	µg/L	0.5 µg/L	122	60.0	130	----
Methylnaphthalene, 1-	90-12-0	E641A	0.01	µg/L	0.5 µg/L	96.9	60.0	130	----
Methylnaphthalene, 2-	91-57-6	E641A	0.01	µg/L	0.5 µg/L	98.7	60.0	130	----
Naphthalene	91-20-3	E641A	0.05	µg/L	0.5 µg/L	103	50.0	130	----
Phenanthrene	85-01-8	E641A	0.02	µg/L	0.5 µg/L	121	60.0	130	----
Pyrene	129-00-0	E641A	0.01	µg/L	0.5 µg/L	123	60.0	130	----
Quinoline	91-22-5	E641A	0.05	µg/L	0.5 µg/L	122	60.0	130	----

Matrix Spike (MS) Report

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

Sub-Matrix: **Water**

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutrients (QCLot: 1017098)										
VA23B4884-001	Anonymous	Phosphorus, total dissolved	7723-14-0	E375-T	0.0512 mg/L	0.05 mg/L	102	70.0	130	----
Anions and Nutrients (QCLot: 1017099)										
FJ2301556-007	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
Anions and Nutrients (QCLot: 1017100)										
KS2302275-001	Anonymous	Nitrogen, total	7727-37-9	E366	0.404 mg/L	0.4 mg/L	101	70.0	130	----
Anions and Nutrients (QCLot: 1017101)										
FJ2301557-007	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0498 mg/L	0.05 mg/L	99.5	70.0	130	----
Anions and Nutrients (QCLot: 1017131)										
VA23B4838-002	Anonymous	Sulfate (as SO4)	14808-79-8	E235.SO4	2030 mg/L	2000 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1017132)										
VA23B4838-002	Anonymous	Chloride	16887-00-6	E235.Cl	2030 mg/L	2000 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1017133)										
VA23B4838-002	Anonymous	Bromide	24959-67-9	E235.Br-L	9.14 mg/L	10 mg/L	91.4	75.0	125	----
Anions and Nutrients (QCLot: 1017134)										
VA23B4838-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	10.1 mg/L	10 mg/L	101	75.0	125	----
Anions and Nutrients (QCLot: 1017136)										
VA23B4838-002	Anonymous	Fluoride	16984-48-8	E235.F	20.3 mg/L	20 mg/L	102	75.0	125	----
Anions and Nutrients (QCLot: 1017137)										
VA23B4930-003	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.50 mg/L	2.5 mg/L	100	75.0	125	----
Anions and Nutrients (QCLot: 1017138)										
WR2300617-001	Crestview Discharge	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	ND mg/L	0.03 mg/L	ND	70.0	130	----
Anions and Nutrients (QCLot: 1017162)										
VA23B4711-001	Anonymous	Nitrogen, total	7727-37-9	E366	0.410 mg/L	0.4 mg/L	102	70.0	130	----
Anions and Nutrients (QCLot: 1017163)										
VA23B4711-001	Anonymous	Phosphorus, total dissolved	7723-14-0	E375-T	0.0465 mg/L	0.05 mg/L	92.9	70.0	130	----
Anions and Nutrients (QCLot: 1017166)										
VA23B4880-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0456 mg/L	0.05 mg/L	91.3	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
Anions and Nutrients (QCLot: 1017167)										
VA23B4847-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0964 mg/L	0.1 mg/L	96.4	75.0	125	----
Organic / Inorganic Carbon (QCLot: 1017097)										
VA23B4736-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	4.85 mg/L	5 mg/L	96.9	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1017103)										
VA23B4736-002	Anonymous	Carbon, total organic [TOC]	----	E355-L	4.71 mg/L	5 mg/L	94.2	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1017161)										
VA23B4846-001	Anonymous	Carbon, dissolved organic [DOC]	----	E358-L	5.32 mg/L	5 mg/L	106	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1017169)										
WR2300617-004	CVS.Cell1	Carbon, total organic [TOC]	----	E355-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1020245)										
FC2301738-006	Anonymous	Carbon, dissolved inorganic [DIC]	----	E353-L	ND mg/L	5 mg/L	ND	70.0	130	----
Organic / Inorganic Carbon (QCLot: 1020246)										
WR2300617-002	CV21-03	Carbon, total inorganic [TIC]	----	E354-L	ND mg/L	5 mg/L	ND	70.0	130	----
Dissolved Metals (QCLot: 1017709)										
FJ2301548-002	Anonymous	Aluminum, dissolved	7429-90-5	E421	0.213 mg/L	0.2 mg/L	106	70.0	130	----
		Antimony, dissolved	7440-36-0	E421	0.0192 mg/L	0.02 mg/L	96.2	70.0	130	----
		Arsenic, dissolved	7440-38-2	E421	0.0212 mg/L	0.02 mg/L	106	70.0	130	----
		Barium, dissolved	7440-39-3	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Beryllium, dissolved	7440-41-7	E421	0.0405 mg/L	0.04 mg/L	101	70.0	130	----
		Bismuth, dissolved	7440-69-9	E421	0.00940 mg/L	0.01 mg/L	94.0	70.0	130	----
		Boron, dissolved	7440-42-8	E421	0.095 mg/L	0.1 mg/L	94.8	70.0	130	----
		Cadmium, dissolved	7440-43-9	E421	0.00407 mg/L	0.004 mg/L	102	70.0	130	----
		Calcium, dissolved	7440-70-2	E421	ND mg/L	4 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	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		Cobalt, dissolved	7440-48-4	E421	0.0199 mg/L	0.02 mg/L	99.7	70.0	130	----
		Copper, dissolved	7440-50-8	E421	0.0195 mg/L	0.02 mg/L	97.6	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	0.0190 mg/L	0.02 mg/L	95.2	70.0	130	----
		Lithium, dissolved	7439-93-2	E421	0.0960 mg/L	0.1 mg/L	96.0	70.0	130	----
		Magnesium, dissolved	7439-95-4	E421	ND mg/L	1 mg/L	ND	70.0	130	----
		Manganese, dissolved	7439-96-5	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Molybdenum, dissolved	7439-98-7	E421	0.0203 mg/L	0.02 mg/L	102	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: 1017709) - continued										
FJ2301548-002	Anonymous	Nickel, dissolved	7440-02-0	E421	0.0403 mg/L	0.04 mg/L	101	70.0	130	----
		Phosphorus, dissolved	7723-14-0	E421	9.91 mg/L	10 mg/L	99.1	70.0	130	----
		Potassium, dissolved	7440-09-7	E421	3.99 mg/L	4 mg/L	99.8	70.0	130	----
		Rubidium, dissolved	7440-17-7	E421	0.0201 mg/L	0.02 mg/L	100	70.0	130	----
		Selenium, dissolved	7782-49-2	E421	0.0430 mg/L	0.04 mg/L	107	70.0	130	----
		Silicon, dissolved	7440-21-3	E421	9.77 mg/L	10 mg/L	97.7	70.0	130	----
		Silver, dissolved	7440-22-4	E421	0.00409 mg/L	0.004 mg/L	102	70.0	130	----
		Sodium, dissolved	7440-23-5	E421	ND mg/L	2 mg/L	ND	70.0	130	----
		Strontium, dissolved	7440-24-6	E421	ND mg/L	0.02 mg/L	ND	70.0	130	----
		Sulfur, dissolved	7704-34-9	E421	ND mg/L	20 mg/L	ND	70.0	130	----
		Tellurium, dissolved	13494-80-9	E421	0.0418 mg/L	0.04 mg/L	104	70.0	130	----
		Thallium, dissolved	7440-28-0	E421	0.00367 mg/L	0.004 mg/L	91.7	70.0	130	----
		Thorium, dissolved	7440-29-1	E421	0.0207 mg/L	0.02 mg/L	104	70.0	130	----
		Tin, dissolved	7440-31-5	E421	0.0196 mg/L	0.02 mg/L	98.3	70.0	130	----
		Titanium, dissolved	7440-32-6	E421	0.0399 mg/L	0.04 mg/L	99.8	70.0	130	----
		Tungsten, dissolved	7440-33-7	E421	0.0194 mg/L	0.02 mg/L	96.9	70.0	130	----
		Uranium, dissolved	7440-61-1	E421	0.00391 mg/L	0.004 mg/L	97.7	70.0	130	----
		Vanadium, dissolved	7440-62-2	E421	0.105 mg/L	0.1 mg/L	105	70.0	130	----
		Zinc, dissolved	7440-66-6	E421	0.406 mg/L	0.4 mg/L	102	70.0	130	----
		Zirconium, dissolved	7440-67-7	E421	0.0416 mg/L	0.04 mg/L	104	70.0	130	----
Dissolved Metals (QCLot: 1025340)										
WR2300609-002	Anonymous	Mercury, dissolved	7439-97-6	E509	0.000101 mg/L	0.0001 mg/L	101	70.0	130	----
Dissolved Metals (QCLot: 1025341)										
WR2300617-003	CV21-01	Mercury, dissolved	7439-97-6	E509	0.0000932 mg/L	0.0001 mg/L	93.2	70.0	130	----

Chain of Custody (COC) / Analytical Request Form

COC Number: 22 -

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Canada Toll Free: 1 800 668 9878

www.alsglobal.com

Environmental Division Whitehorse

Work Order Reference

WR2300617

Telephone : +1 867 668 6689

Report To	Contact and company name below will appear on the final report
Company:	Government of Yukon - Dept of ENV / WRB
Contact:	Water Resources Branch (V-310)
Phone:	867 332 3120
	Company address below will appear on the final report
Street:	419 Range Road
City/Province:	Whitehorse, Y.T.
Postal Code:	Y1A 3V1
Invoice To	Same as Report To ☑ YES ☐ NO
	Copy of Invoice with Report ☑ YES ☐ NO
Company:	
Contact:	

Reports / Recipients

Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: norbert.botca@yukon.ca

Email 2: nicole.novodvorsky@yukon.ca

Email 3: cole.fischer@yukon.ca

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: norbert.botca@yukon.ca

Email 2: nicole.novodvorsky@yukon.ca

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, st

Date and Time Required for all E&P TATs:

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

Project Information

ALS Account # / Quote #:	GYPT100 / WR22-GYPT100-002
Job #:	Crestview Sewage Lagoon Sampling
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

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

ALS Lab Work Order # (ALS use only):

ALS Contact:

Sampler:

Analysis Request

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

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	F/P	Routine	dissolved metals	major ions	nutrients	CBOD5	oil & grease	HC: LEPH; HEPH; PAH	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Crestview Discharge	27-Jun-23	11:30	Water	9											
	CV21-03	27-Jun-23	12:50	Water	9											
	CV21-01	27-Jun-23	14:00	Water	9											
	CVS.Cell1	27-Jun-23	14:35	Water	9											

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

Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)

SAMPLE RECEIPT DETAIL

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS

Submission Comments identified on Sample Receipt Not

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

INITIAL COOLER TEMPERATURES °C

1 6°C

SHIPMENT RELEASE (client use)

Released by:	NB	Date:	28-Jun-23	Time:	945

INITIAL SHIPMENT RECEPTION (ALS use only)

Received by:	Date:	Time:
Quinn	28 Jun 2023	9:14

FINAL SHIPMENT REC

Received by:	Date:

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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

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

Chain of Custody (COC) / Analytical Request Form

www.alsglobal.com

Canada Toll Free: 1 800 668 9878

COC Number: 22 -

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Environmental Division Whitehorse

Work Order Reference

WR2300617

Telephone : +1 867 668 6669

Report To	Contact and company name below will appear on the final report
Company:	Government of Yukon - Dept of ENV / WRB
Contact:	Water Resources Branch (V-310)
Phone:	867 332 3120
	Company address below will appear on the final report
Street:	419 Range Road
City/Province:	Whithorse, Y.T.
Postal Code:	Y1A 3V1

Reports / Recipients

Select Report Format: ☑ PDF ☐ EXCEL ☐ EDD (DIGITAL)

Merge QC/QCI Reports with COA ☐ YES ☐ NO ☐ N/A

☐ Compare Results to Criteria on Report - provide details below if box checked

Select Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: norbert.botca@yukon.ca

Email 2: nicole.novodvorsky@yukon.ca

Email 3: cole.fischer@yukon.ca

Turnaround Time (TAT) Requested

☑ Routine [R] if received by 3pm M-F - no surcharges apply

☐ 4 day [P4] if received by 3pm M-F - 20% rush surcharge minimum

☐ 3 day [P3] if received by 3pm M-F - 25% rush surcharge minimum

☐ 2 day [P2] if received by 3pm M-F - 50% rush surcharge minimum

☐ 1 day [E] if received by 3pm M-F - 100% rush surcharge minimum

☐ Same day [E2] if received by 10am M-S - 200% rush surcharge.

Additional fees may apply to rush requests on weekends, st

Date and Time Required for all E&P TATs:

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

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

Invoice Recipients

Select Invoice Distribution: ☑ EMAIL ☐ MAIL ☐ FAX

Email 1 or Fax: norbert.botca@yukon.ca

Email 2: nicole.novodvorsky@yukon.ca

Project Information	
ALS Account # / Quote #:	GYPT100 / WR22-GYPT100-002
Job #:	Crestview Sewage Lagoon Sampling
PO / AFE:	
LSD:	

Oil and Gas Required Fields (client use)

AFE/Cost Center: PO#

Major/Minor Code: Routing Code:

Requisitioner:

Location:

ALS Lab Work Order # (ALS use only):

ALS Contact: Sampler:

Analysis Request

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

ALS Sample # (ALS use only)	Sample Identification and/or Coordinates (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	NUMBER OF CONTAINERS	F/P	Routine	dissolved metals	major ions	nutrients	CBOD5	oil & grease	HC: LEPH; HEPH; PAH	SAMPLES ON HOLD	EXTENDED STORAGE REQUIRED	SUSPECTED HAZARD (see notes)
	Crestview Discharge	27-Jun-23	11:30	Water	9											
	CV21-03	27-Jun-23	12:50	Water	9											
	CV21-01	27-Jun-23	14:00	Water	9											
	CVS.Cell1	27-Jun-23	14:35	Water	9											

Drinking Water (DW) Samples[1] (client use)	Notes / Specify Limits for result evaluation by selecting from drop-down below (Excel COC only)
Are samples taken from a Regulated DW System? ☐ YES ☑ NO	
Are samples for human consumption/ use? ☐ YES ☑ NO	

SAMPLE RECEIPT DETAIL

Cooling Method: ☐ NONE ☐ ICE ☐ ICE PACKS

Submission Comments identified on Sample Receipt Not

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

INITIAL COOLER TEMPERATURES °C

6.6

SHIPMENT RELEASE (client use)				INITIAL SHIPMENT RECEPTION (ALS use only)			FINAL SHIPMENT REC	
Released by: NB	Date: 28-Jun-23	Time: 945	Received by:	Date: 28 Jun 2023	Time: 914	Received by:	Date:	

REFER TO BACK PAGE FOR ALS LOCATIONS AND SAMPLING INFORMATION

WHITE - LABORATORY COPY YELLOW - CLIENT COPY

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

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