



140, 5050 – 106<sup>th</sup> Avenue SE  
Calgary, Alberta  
T2C 5E9  
Tel: 1-403-238-9510  
*E-mail: [jana@iqwater.ca](mailto:jana@iqwater.ca)*

April 26<sup>th</sup>, 2024  
File No. W2020-20.2023

**KICKING HORSE MOUNTAIN UTILITIES CORP.**  
1505 17<sup>th</sup> Avenue SW  
Calgary, Alberta  
T2T 0E2

Attention: Mr. Patrick Majer  
Tel: 403.861.8730  
e-mail: [pmajer@skircr.com](mailto:pmajer@skircr.com)

Dear Mr. Majer:

**Re: KICKING HORSE MOUNTAIN RESORT  
WASTEWATER TREATMENT PLANT  
2023 ANNUAL REPORT**

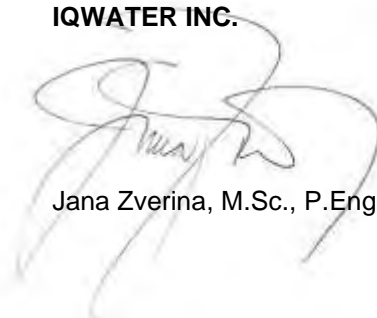
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Forwarded is a pdf copy of the 2023 Annual Wastewater Report for the above property.

Should you have any questions, please call us at 403-238-9510 or email to [jana@iqwater.ca](mailto:jana@iqwater.ca).

Sincerely,

**IQWATER INC.**



Jana Zverina, M.Sc., P.Eng.

***IQWater Inc.***



**2023 WASTEWATER TREATMENT PLANT  
ANNUAL REPORT**

**KICKING HORSE MOUNTAIN RESORT  
1339 KICKING HORSE TRAIL  
GOLDEN, B.C.**

Prepared for:

**KICKING HORSE MOUNTAIN UTILITIES CORP.**  
1505-17<sup>th</sup> Avenue SW  
Calgary, Alberta  
T2T 0E2

Prepared by:

***IQWATER INC.***  
140, 5050 – 106<sup>th</sup> Avenue SE  
Calgary, Alberta  
T2C 5E9  
Tel: 1-403-238-9510  
*E-mail: [jana@iqwater.ca](mailto:jana@iqwater.ca)*

April 26<sup>th</sup>, 2024  
Report # W2020-020.2023

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## **1.0 INTRODUCTION**

### **1.1 BACKGROUND**

The following annual report for the Wastewater Treatment Plant at Kicking Horse Mountain Resort (further KHMR) operated by Kicking Horse Mountain Utility Corporation (further KHMUC) is compiled in accordance with the requirements of the Municipal Sewage Regulation (further MSR). This report summarizes the calendar year 2023.

In January 2012 Resorts of the Canadian Rockies (RCR) took over the resort and the plant operations and formed KHMUC. KHMUC has made changes to the way the plant operates, mainly by using a spare tank as an equalization tank. There has been a noticeable difference in plant operations since RCR took over and KHMUC was formed.

The resort is an ongoing development currently consisting of a combination of a single family, multi-family, and rental pool/hotel style facilities. These contribute to the total loading of the site in addition to ski hill use and ancillary services.

### **1.2 RESORT CONSTRUCTION AND OCCUPANCY**

Kicking Horse Mountain Resort is located approximately 13 km from Golden, B.C. The sewage treatment plant, which was constructed in 2000, is located adjacent to the resort. The treatment USBF (Upflow Sludge Blanket Filtration) technology employed is a modified conventional activated sludge process applying an up-flow sludge blanket filtration clarifier. There are two independent treatment trains that are operated in parallel during the peak season (December to April) and as a single train during the rest of the calendar year.

The system incorporates two treatment zones and one clarification zone that are interconnected with the flow been driven by the hydraulic pressure from the influent storage tank pumps.

The two treatment zones consist of an Anoxic Zone and Aeration Zone discharging into an effluent clarifier.

Each zone is triangular in shape. Two 10" underflow pipes on either side of the clarification zone join in the anoxic and aeration zones together. The aeration zone is connected to the clarifier by a slotted flow through, approximately 18" above the clarifier bottom and the width of the clarifier wall. Each zone is approximately 15' deep. Effluent clarification is enhanced by an up-flow sludge blanket in the clarifier that serves to filter the solids.

Clarified effluent flows over the clarifier weir into a dual micro filtration well, equipped with dual drum screens. Leaving the drum screens, the final effluent enters an open channel Trojan U.V. disinfection system to be discharged through a 4 km long gravity main to the outfall in the Columbia River.

Waste activated sludge used to be stored in a thickener and removed by a vacuum tanker. In the fall of 2014, a 12 unit Teknofanghi (Model Number 12BCAVPK) supplied by Drycake was installed and was commissioned in mid-December. Historically, the sludge was bagged and disposed of at the CSRD Landfill located in Golden, BC; however, due to increased costs for disposal at this facility, the sludge is now disposed of at the Crowsnest/Pincher Creek Landfill site.

## 2.0 REGISTRATION REQUIREMENTS

This section describes operating requirements as specified in the Kicking Horse Mountain Resort (KHMR) Registration Letter RE 15474. The registration describes parameters that must be tested for as well as the operating conditions, sampling frequency and sampling locations.

### 2.1 PARAMETERS

The following parameters are to be monitored:

pH	Field Sample
Temperature	Field Sample, measured in Celsius
Flow	Field Samples, measured as m <sup>3</sup> /d
BOD <sub>5</sub>	Five day biochemical oxygen demand, measured in mg/l
TSS	Total suspended solids or non-filterable residue, measured in mg/l
NH <sub>3</sub>	Ammonia concentration, expressed as nitrogen in mg/l
NO <sub>3</sub>	Nitrate concentration, expressed as nitrogen in mg/l
NO <sub>2</sub>	Nitrite concentration, expressed as nitrogen in mg/l
Total-P	Total phosphorous concentration, measured in mg/l
Ortho-P	Orthophosphate concentration, measured in mg/l
Fecal coliform	Bacterial concentration, measured as colony forming units per 100ml
Enterococci	Bacterial concentration, measured as colony forming units per 100ml
E. Coli	Bacterial concentration, measured as colony forming units per 100ml
Toxicity Bioassay	96 hour toxicity test, recorded as pass or fail

### 2.2 REGISTRATION LETTER OPERATING CONDITIONS

The treatment plant is required to meet the effluent discharge conditions outlined in Table 1.

Table 1  
Effluent Limits

Parameter	Limit	Unit
Flow	300	m <sup>3</sup> /d
BOD <sub>5</sub>	45	mg/l
TSS	45	mg/l
Total-P	1.0	mg/l
Ortho-P	0.5	mg/l
Fecal Coliforms*	200	CFU/100ml
E. Coli*	77	CFU/100ml
Enterococci*	20	CFU/100ml
Toxicity Bioassay	pass	n/a

\*Limit for recreational waters only, not included in RCRI registration letter

Waste activated sludge used to be stored in a thickener and removed by a vacuum tanker. In the fall of 2014, a 12 unit Teknofanghi (Model Number 12BCAVPK) supplied by Drycake was installed and was commissioned in mid-December. The sludge is bagged and disposed of at the Crowsnest/Pincher Creek Landfill site.

Operators at the plant are required to be certified in Accordance with Section 22 of the MSR.

### **2.3 REPORTING REQUIREMENTS**

An annual report demonstrating the performance of the facility is to be publicly posted on the Internet within 120 days of the end of the calendar year.

In addition the report must also include the following:

- Tabulated results of the Effluent and Environmental Monitoring Data with standards and criteria
- Interpretation of the monitoring data
- The total volume discharged over the year
- Total sludge wasted over the year and its final destination
- The state of compliance of the treatment facility/process
- Indicated the percentage of residential development, as defined in the regulation, that contributes to the effluent discharge
- Any additional relevant information the discharger wishes to provide

### **2.4 SAMPLING FREQUENCY**

The MSR Registration requires KHMR and, as such, the contract operator KHMUC, to undertake the environmental testing program outlined in Table 2 below.

Columbia River testing requires that a minimum of 10 samples annually are taken from each of the upstream, the side channel (further also referred to as a side stream) and downstream river locations, relative to the outfall diffuser. The sampling locations were identified in Masse & Miller Consulting Ltd. letter dated February 17<sup>th</sup>, 2005. Flow data is to be collected continuously.

The intent of the environmental testing procedure outlined in Table 2 is to collect weekly samples of effluent during the summer and winter seasons. Commencement of the winter weekly seasonal sampling (weekly samples for a period of 5 weeks) is when the river sampling sites open up and the summer monitoring usually commences during low water flow in the river, usually in September or October.

In addition to the program and tests listed above, other in-plant testing is needed to permit operational control of the process.

Table 2  
Sampling Location/Frequency/Type

Parameter	Location				
	Columbia River Upstream at Bridge	Columbia River ~200 d/s of outfall from east shore	Columbia River d/s of island from west shore ~1km d/s of outfall	Columbia River side channel ~350m d/s of outfall	Effluent
EMS Number	E256694	E258898	E258899	E258897	E256696
	Winter/Summer	Winter/Summer	Winter	Summer	Winter/Summer
pH	WS/G	WS/G	WS/G	WS/G	W
Temp	WS/G	WS/G	WS/G	WS/G	W
Flow	/	/	/	/	W
BOD <sub>5</sub>	/	/	/	/	W
TSS	WS/G	WS/G	WS/G	WS/G	WS/G+Q/G
NH <sub>3</sub> -N	WS/G	WS/G	WS/G	WS/G	WS/G
NO <sub>3</sub> -N	WS/G	WS/G	WS/G	WS/G	WS/G
NO <sub>2</sub> -N	WS/G	WS/G	WS/G	WS/G	WS/G
Total-P	WS/G	WS/G	WS/G	WS/G	WS/G
Ortho-P	WS/G	WS/G	WS/G	WS/G	WS/G
Fecal Coliform	WS/G	WS/G	WS/G	WS/G	WS/G+Q/G
Enterococci	WS/G	WS/G	WS/G	WS/G	WS/G
E. Coli	WS/G	WS/G	WS/G	WS/G	WS/G
Toxicity Bioassay	/	/	/	/	1/3Y/G
Coordinates	11.500456 5684421	11.500288 5684880	N51 19.364 W 11700.218	11.500126 5684835	At sewage treatment plant

Where:

WS	Weekly seasonal (weekly samples for a period of 5 weeks)
Q	Quarterly
W	Weekly
G	Grab
1/3Y	Once every 3 years

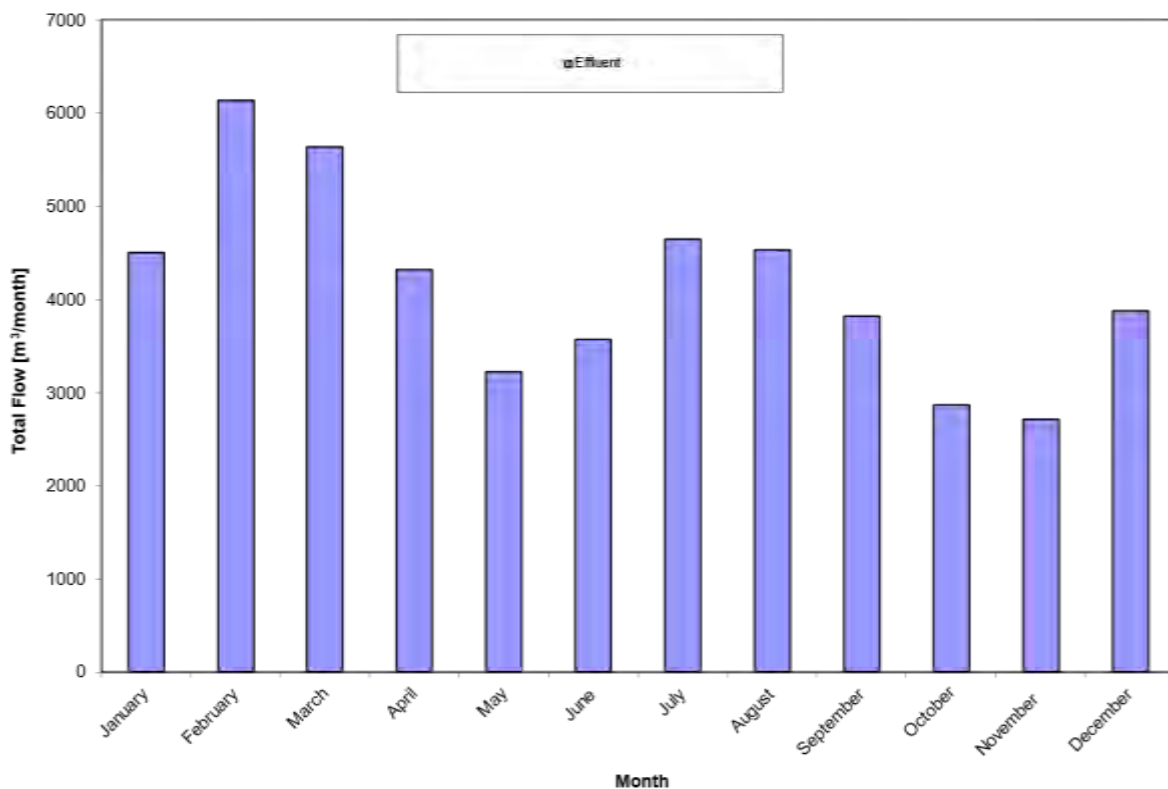
### 3.0 SEWAGE FLOW RECORDS

This section provides data and analysis regarding plant effluent flows, and compares 2023 data to the previous years.

Flow data is continuously monitored at the discharge to the outfall using a flow meter to be recorded in the SCADA system. Operators then transcribe the daily flows into a logbook.

The total effluent flow recorded for 2023 was 49,860 m<sup>3</sup> with an average of 137 m<sup>3</sup>/day. Available monthly total effluent flow meter records for 2023 are provided in Figure 1a below.

**Figure 1a**  
 2023 Effluent Flow Meter Monthly Flow Totals



The ski resort operates with higher winter and early spring sewage flows than during any other period. Larger sewage flows were typically observed during January, February, March and December. In 2023 the highest monthly flow was observed in February at 5,379 m<sup>3</sup>/month. However, summer month flows i.e. July and August are becoming similar to those in winter.

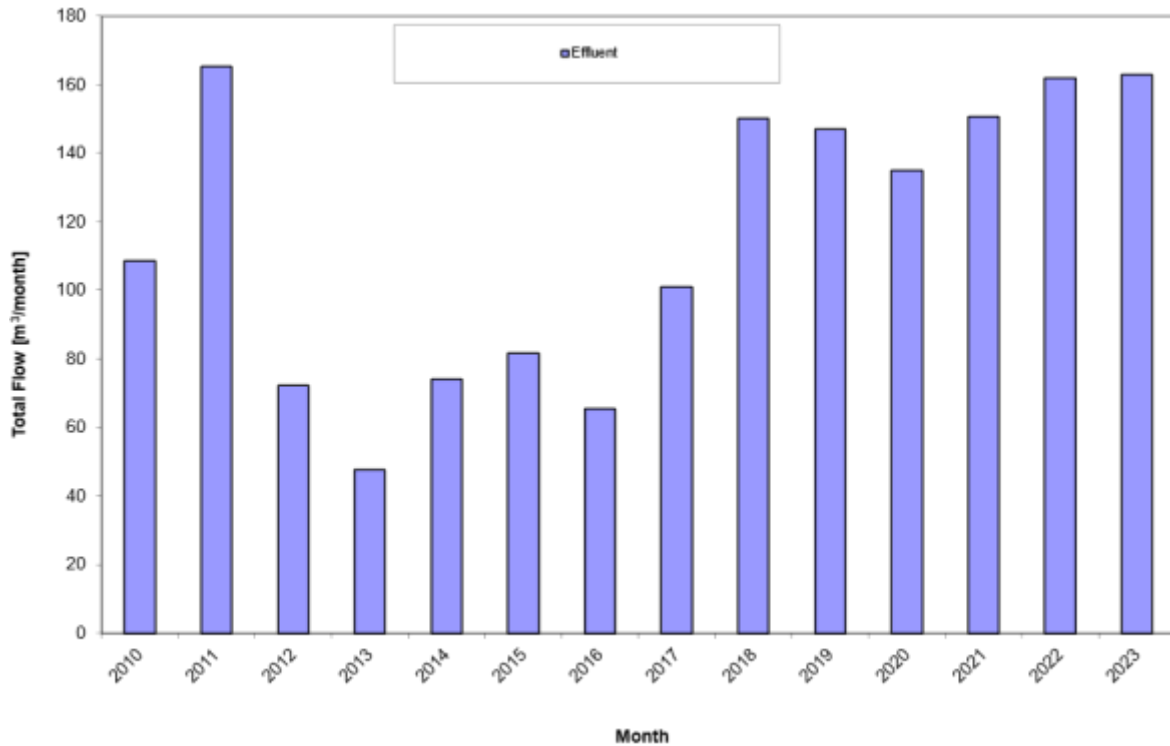
The average daily plant flow through January to March and December of 2023 at 167 m<sup>3</sup>/day was very similar to the last year average at 170 m<sup>3</sup>/day.

Please note that in the previous reports the highest plant flow was compared to five months i.e. January, February, March, April and December. In 2023 the flow for these five months was almost the same at 163 m<sup>3</sup>/day as in 2022 at 162 m<sup>3</sup>/day and higher than that of 2021 at 151 m<sup>3</sup>/day, 2020 at 135 m<sup>3</sup>/day, 2019 at 147 m<sup>3</sup>/day and 2018 at 150.2 m<sup>3</sup>/day.



These averages are higher compared to 100.96 m<sup>3</sup>/day over the same period in 2017, 65.52 m<sup>3</sup>/day in 2016, 81.79 m<sup>3</sup>/day in 2015, 74.10 m<sup>3</sup>/day in 2014, 47.73 m<sup>3</sup>/day in 2013, 72.41 m<sup>3</sup>/day in 2012 and 108.5 m<sup>3</sup>/day in 2010. The only exception was 2011 at 165.2 m<sup>3</sup>/day (note that data for Dec was missing).

Figure 1b  
 Average Effluent Flow in Peak Period – Jan to April and Dec (Historical)



Peak flow for the year reached was 265 m<sup>3</sup>/day on February 17<sup>th</sup> 2023, which is below the allowable limit of 300 m<sup>3</sup>/day.

The peak flow is higher than that in 2022 at 229 m<sup>3</sup>/day and similar to 2021 at 263 m<sup>3</sup>/day. The peak flow was 247 m<sup>3</sup>/day in 2020; similar peak flows were recorded also at 265 m<sup>3</sup>/day in 2019 and 262 m<sup>3</sup>/day in 2018. The peak flow day occurred during the ski season.

Historical peak flows were 244 m<sup>3</sup>/day in 2017, 162.25 m<sup>3</sup>/day in 2016, 137.32 m<sup>3</sup>/day in 2015, 145.71 m<sup>3</sup>/day in 2014, 165.03 m<sup>3</sup>/day in 2013, 159.05 m<sup>3</sup>/day in 2012, 311.54 m<sup>3</sup>/day in 2011 (again note that the data for one of the historically highest months, December was missing), 317.6 m<sup>3</sup>/day in 2010 and 251.3 m<sup>3</sup>/day in 2009.

There is currently no method of measuring influent to the treatment plant.

A summary of sewage flow for years 2009 through 2023 is provided in Table 3 and Figures 2 and 3:

Table 3  
2009 – 2023 Flow Comparisons

Year	Sewage Flow (m <sup>3</sup> /day)			Days Over Limit
	Total	Average	Peak	
2009	25,093.9	69.4	251.3	0
2010	27,467.5	77.6	317.6	2
2011	27,771* (42,340) <sup>1</sup>	116	311.54**	2
2012	17,323.4	47.85	159.05	0
2013	16,089	44.73	165.03	0
2014	19,279 <sup>2</sup>	52.88	145.71	0
2015	20,594	56.4	167.32	0
2016	21,125	58.9	162.25	0
2017	31,431 <sup>3</sup>	85.9	240	0
2018	45,147	123.8	262	0
2019	41,785	114.0	265	0
2020	41,218	113.0	247	0
2021	44,546	122.0	263	0
2022	46,158	127	229	0
2023	49,860	137	265	0

\*not including all of September, October, November or December

\*\*the number does not reflect a true peak as all the data was not available during the high flow months

<sup>1</sup> (data) in bracket – estimate based on daily average

<sup>2</sup> The SCADA failed to record flow for the entire day on several occasions; therefore flow was estimated on partial data

<sup>3</sup> The SCADA failed to record correct flow from July 24<sup>th</sup> until September 7<sup>th</sup>; therefore flow was based on partial estimates

### 2009 - 2020

Peak flows in **2009** coincided with the weekends, holidays, ski season and summer recreational activities. The highest daily flow was recorded on Feb 15<sup>th</sup> at 215.1 m<sup>3</sup>/day and on December 31<sup>st</sup> at 251.3 m<sup>3</sup>/day. At no time was the maximum allowed daily flow exceeded.

Peak flows in **2010** coincided with weekends, holidays, ski season and summer recreational activities. The highest daily flow was recorded on New Year's Day at 242.7 m<sup>3</sup>/day, February 14<sup>th</sup> at 206.4 m<sup>3</sup>/day, and on December 31<sup>st</sup> at 317.6 m<sup>3</sup>/day. During the third week of July 2010 a lightning strike damaged the level sensors in the wastewater treatment plant resulting in inaccurate measurement of flows. The Ministry of Environment was notified. The operators indicated that during daily monitoring of the system, there was no time when the flows came close to exceeding the permit based on visual observation and process control monitoring.

Peak flows in **2011** also coincided with weekends, holidays, ski season and summer recreational activities. The highest daily flow was recorded on a weekend (March 26<sup>th</sup>) at 311.54 m<sup>3</sup>/day and the second highest peak was observed on New Year's Day at 303.04 m<sup>3</sup>/day. The daily flow limit was exceeded on both occasions. Please note the data was incomplete for September, October, November and December 2011.

Peak flows in **2012** also coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2012. The reduction in daily flows and reduction in peak flow is due to flow equalization which has now been implemented in the facility using

the vacant tank that will one day be used for additional process trains. Flow equalization began in January 2012.

Peak flows in **2013** also coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2013. The highest daily flow was recorded on December 29<sup>th</sup> at 165.03 m<sup>3</sup>/day.

Peak flows in **2014** coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2014. The highest daily flow was recorded on January 2<sup>nd</sup> at 145.71 m<sup>3</sup>/day. The SCADA failed to record flow for the entire day on several occasions and partial data was used to estimate total flow. The failure was due to computer issues.

On January 9, 24, 25; February 4; March 3, 28, 29; May 23 to June 2, June 9, 14, 15, 23, 27; July 4, 6-10, 12, 13, 28; August 12, 13, 16, 17; September 5, 6; October 1, 3; November 21, 22, 25, 26; and December 7, 8, and 9 the flow was estimated.

Peak flows in **2015** coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2015. The highest daily flow was recorded on January 2<sup>nd</sup> at 167.32 m<sup>3</sup>/day.

Peak flows in **2016** coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2016. The highest daily flow was recorded on December 29<sup>th</sup> at 162.25 m<sup>3</sup>/day.

Peak flows in **2017** coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2017. The highest daily flow was recorded on December 29<sup>th</sup> at 244 m<sup>3</sup>/day. Please note that the SCADA failed to record correct flow from July 24<sup>th</sup> until September 7<sup>th</sup>; therefore flow was based on partial estimates.

Peak flows in **2018** coincided with the peak season in January, February, March and December. There were no daily flow limit exceedances observed in 2018. The highest daily flow was recorded on December 31<sup>st</sup> at 262 m<sup>3</sup>/day.

Peak flows in **2019** generally coincided with the peak season in January, February, March and December. The highest daily flow, however, was recorded on November 3<sup>rd</sup> at 265 m<sup>3</sup>/day.

Peak flows in **2020** generally coincided with the peak season in January, February, March and December. The highest daily flow was recorded on December 31<sup>st</sup> at 247 m<sup>3</sup>/day.

#### **2021**

Peak flows in 2021 generally coincided with the peak season in January, February, March and December. The peak flow was recorded at 263 m<sup>3</sup>/day on April 1<sup>st</sup>.

#### **2022**

Peak flows in 2022 generally coincided with the peak season in January, February, March and December. April flow was similar to February. The peak flow was recorded at 229 m<sup>3</sup>/day on December 31<sup>st</sup>. There were no daily flow limit exceedances observed in 2022.

#### **2023**

Peak flows in 2023 generally coincided with the peak season in January, February and March. April, July, August and September flows were higher than or similar to December. The peak flow was recorded at 265 m<sup>3</sup>/day on February 17<sup>th</sup>. There were no daily flow limit exceedances observed in 2023.

Daily wastewater flows are strongly correlated to weather and the number of day-users at the resort with the peak ski season having the highest flows. Summer flows result from non-skiing related recreational activities, generally hiking or mountain biking events. The lowest plant flow was experienced in the shoulder season periods (May to June and October to November).

There are approximately 100 full-time year-round residents at the resort. In total, there are currently:

- ✓ 98 single family homes (Purcell Woods, Cache Estates, Cache Residences, Dogtooth and Cedar Creek Estates)
- ✓ 116 multi-family units i.e. duplexes and triplexes (Whispering Pines, The Cedars<sup>1</sup> – 2 phases, Selkirk Resort Homes, Aspen – Phase 1 and 2)
- ✓ 155 multi-storey condos (Mountaineer Lodge, Palliser Lodge, Glacier Lodge)
- ✓ 3 commercial lodges (Cache Lodges)
- ✓ Five seasonal restaurants
- ✓ Administration office, day-care facilities, general store and rental shop

<sup>1</sup>The Cedars Phase 3 (10 units)

OCCUPANCY*	Family Residences	Hotel Units	Allocation	EQ Bed Units
<b>Seasonal</b>				
Multi-story condos (3 units)	-	155	2	310
Commercial Lodges (3)	-	-	As per tariff	122
Single Family Residences	98	-	varies	718
Multi-Family Units (Duplex & Triplex)	116	-	varies	448
<b>Non-residential</b>				
5 Restaurants	-	-	As per tariff	241
Office	-	-	As per tariff	4
Day lodge	-	-	As per tariff	144

*\*Note that the occupancy significantly varies throughout the year with near full occupancy only during the ski season and during the long weekends.*

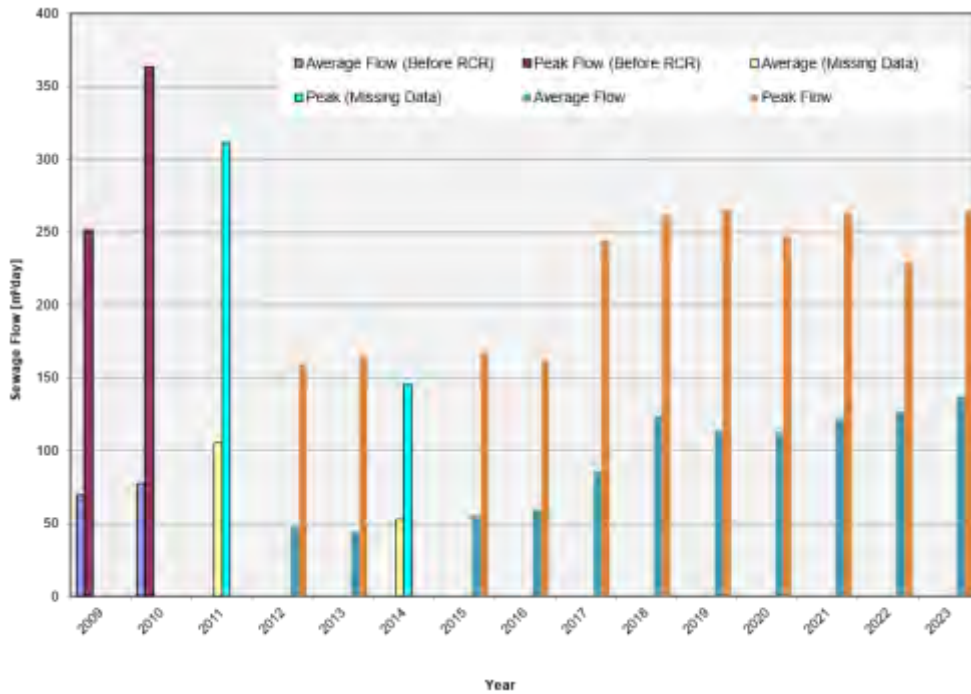
Current Total Bed Unit Count – 2448 BU

A small 26-unit subdivision was proposed and construction started in 2014. Out of the 26 units approved, Phase 1 (8 units) and Phase 2 (8 units) are now completed. Phase 3 (10 units) has now been registered and construction on the units is expected to begin this summer. Flows will be monitored closely and additional improvements may be required as growth at the resort continues.

Note the utility will be conducting an audit of all bed units on the mountain in the summer of 2024. Any correction will be added to the 2024 annual report.

Figure 2 provides historical average and peak flow and Figure 3 shows historical total flows for 2009 to 2023 for comparison.

**Figure 2**  
 Historical (2009 – 2023) Average and Peak Sewage Effluent Flow Comparison Graph



**Figure 3**  
 Historical (2009 – 2023) Total Sewage Effluent Flow Graph

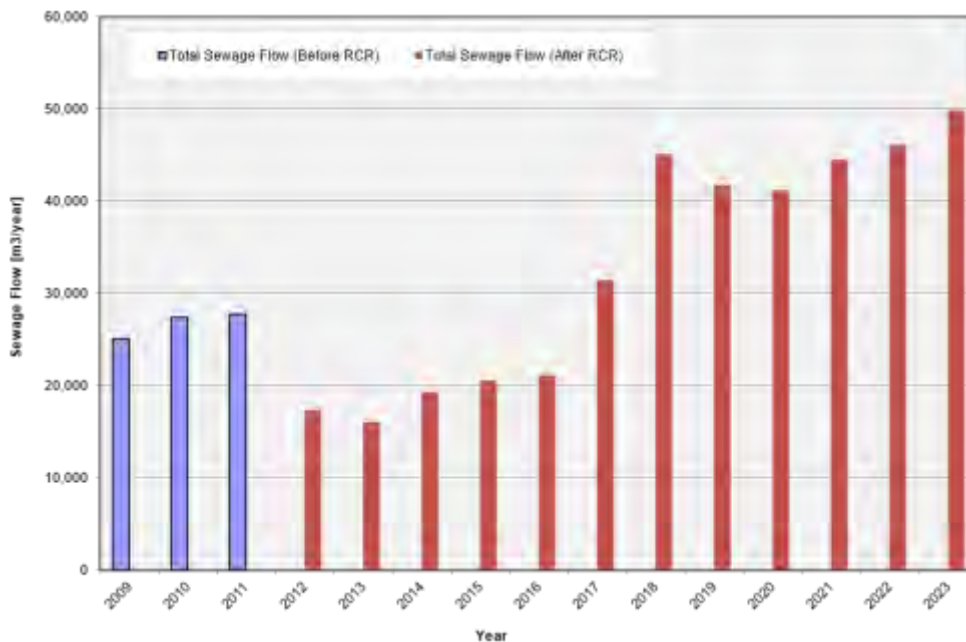
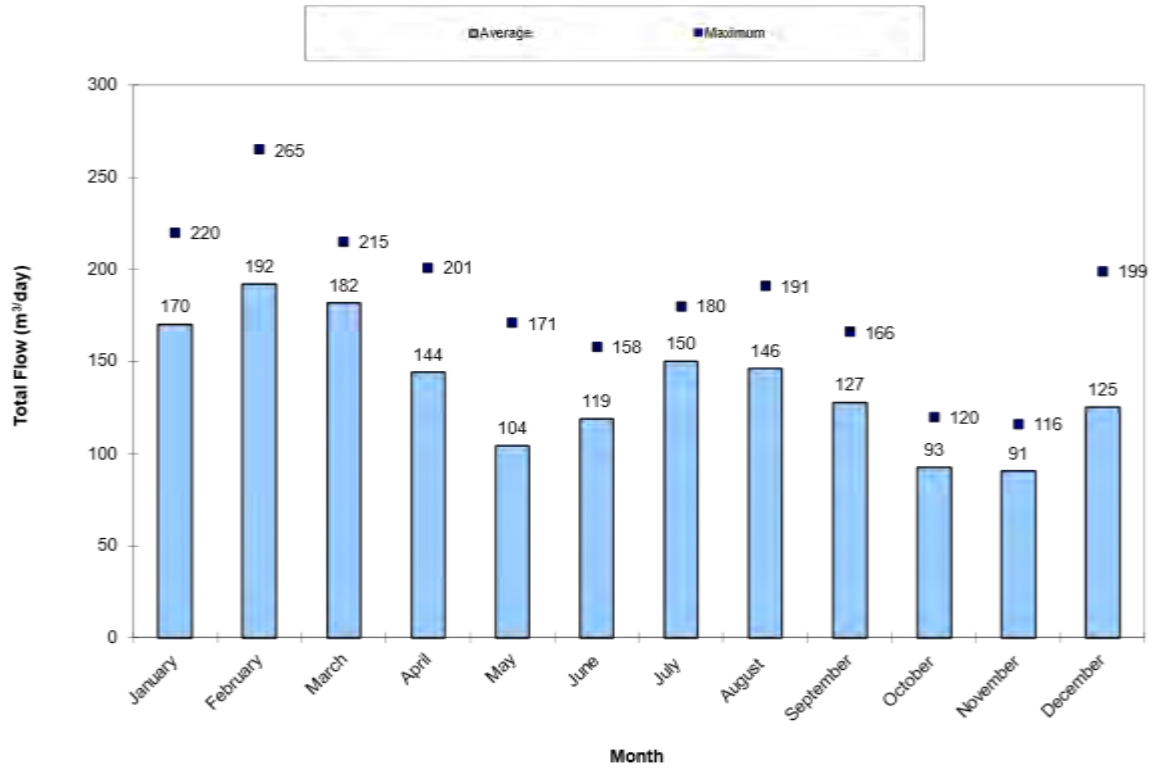


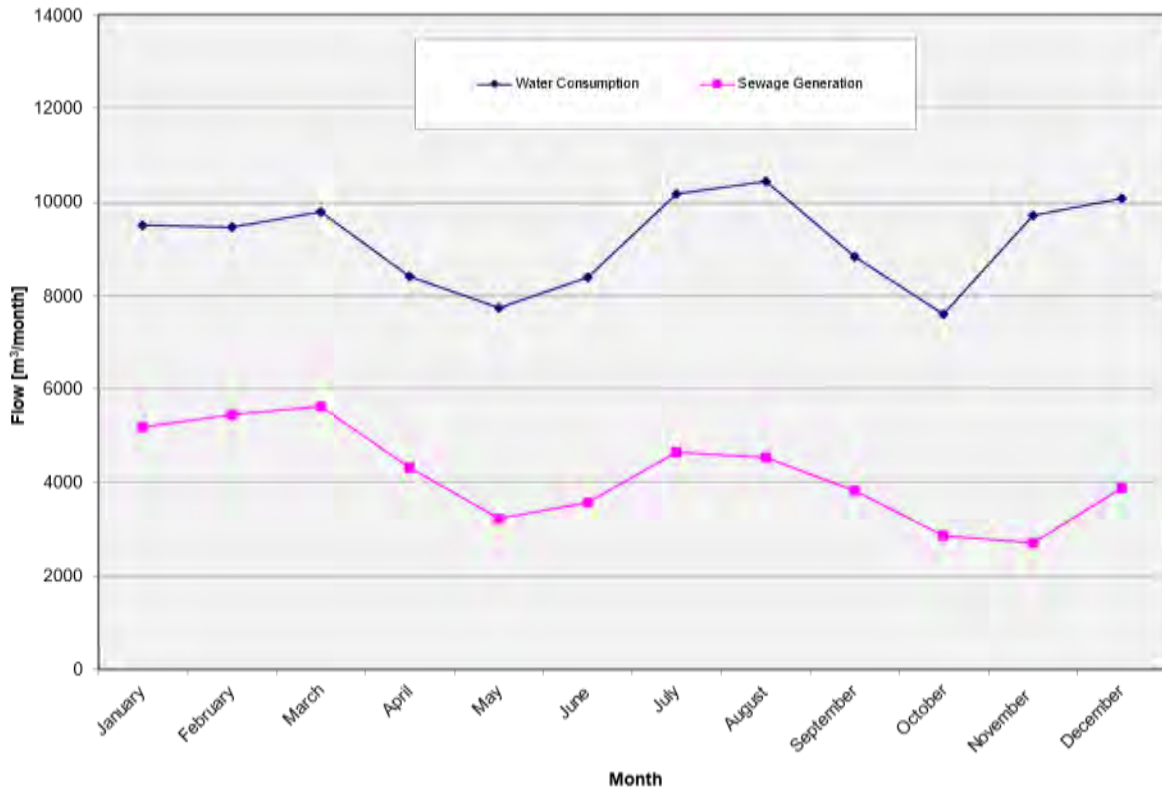
Figure 4 below shows average and peak flows for 2023.

Figure 4  
2023 Sewage Effluent Average and Peak Flows by Month



This year, the total effluent discharged was equal to 45.3 % of the total water production, which is similar or lower than during the previous years. Monthly water usage at the hill is compared to the amount of effluent discharged at the WWTP in Figure 5.

Figure 5  
2023 Water Consumption and Sewage Effluent Generation



#### 4.0 SEWAGE FLOW PROJECTION

This section shows projected wastewater flow for 2011 through 2023 based on the current development plans and provides an estimate of remaining plant capacity.

Based on unit generation rates provided in the BC Health Act for various lodging types as well as the assumption that wastewater generation would have been similar in 2011 to that calculated in 2015, the estimated highest day wastewater generation for 2011 would have been 705.5 m<sup>3</sup>/day. Using the actual peak flow of 312 m<sup>3</sup>/day, a correction factor of 0.44 was calculated for 2011. Averaged correction factor for the last eleven years (2011 to 2021) was also calculated and multiplied by the future estimated flows to more accurately reflect potential resort sewage generation rates. In 2019 the correction factor was 0.38, in 2020 it was calculated at 0.35, in 2021 at 0.37 and in 2022 at 0.32. The correction factor for 2023 was calculated at 0.37.

Projected daily peak wastewater flows from 2011 by year were provided in Table 4 for the Resort's planned expansions. The highest water generation for 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021 and 2022 was calculated based on the BC Health Act (refer to Table 10 enclosed at the end of this report). The future flows will be re-evaluated as further expansion occurs. The resort is committed to continuing the initiative on introducing a stormwater infiltration program, flow restrictive devices, and other water consumption measures.

Flow restrictive devices are intended to be utilized in all new construction and the infiltration/rehabilitation program is expected to be ongoing. The intent is to reduce the amount of per unit sewage generation and to reduce the amount of ground and surface water infiltration into the sewer system. KHMUC will monitor sewage flows to determine the efficiency of the program.

Even with additional expansion, KHMUC may not require an increase to permit discharge above the current limit of 300 m<sup>3</sup>/day if the flow restriction measures prove to be sustainable. Sewage discharge rates will be monitored and an application will be submitted to increase the maximum daily discharge when warranted.

Based on 2023 flow data, the plant has an unused capacity of 35 m<sup>3</sup>/day (based on an operating limit of 300 m<sup>3</sup>/day) due to the flow saving measures. This still needs to be closely monitored during 2024 and further considered when adding additional development.

Table 4  
Projected Peak Flows: 2011-2024

	2011	2012	2013	2014
<b>Estimated Wastewater Flow (m<sup>3</sup>/day)</b>	705.5*	705.5*	705.5*	705.5
<b>Actual and Corrected (m<sup>3</sup>/day)</b>	312** (a)	159 (a)	165 (a)	146 (a)
	2015	2016	2017	2018
<b>Estimated Wastewater Flow (m<sup>3</sup>/day)</b>	705.5	705.5	705.5	705.5
<b>Actual and Corrected (m<sup>3</sup>/day)</b>	167 (a)	162 (a)	244 (a)	262 (a)

\*the number was calculated based on 2014 occupancy, which is likely overestimated

\*\*the number does not reflect a true peak as all the data was not available during the high flow months



	2019	2020	2021	2022	2023	2024
<b>Estimated Wastewater Flow (m<sup>3</sup>/day)</b>	705.5	707.2	711.2*	711.2*	711.2*	711.2*
<b>Actual and Corrected (m<sup>3</sup>/day)</b>	265 (a)	247 (a)	263 (a)	229 (a)	265 (a)	263 (b)

\*the number was calculated based on 2014 occupancy, which is likely overestimated

(a) actual peak flow

(b) corrected daily peak flows by the averaged correction factor for 2011 - 2023 correction factor:

2011	<i>correction factor of</i>	312*/705.5	0.44
2012	"	159/705.5	0.22
2013	"	165/705.5	0.23
2014	"	146/705.5	0.21
2015	"	167/705.5	0.24
2016	"	162/705.5	0.23
2017	"	244/705.5	0.34
2018	"	262/705.5	0.37
2019	"	265/705.5	0.38
2020	"	247/707.2	0.35
2021	"	263/711.2	0.37
2022	"	229/711.2	0.32
2023	"	2265/711.2	0.37
<b>AVERAGE</b>			<b>0.32</b>

A graph showing estimated vs actual historical peak flows is shown below.

**Figure 6a**  
Historical Correction Factors

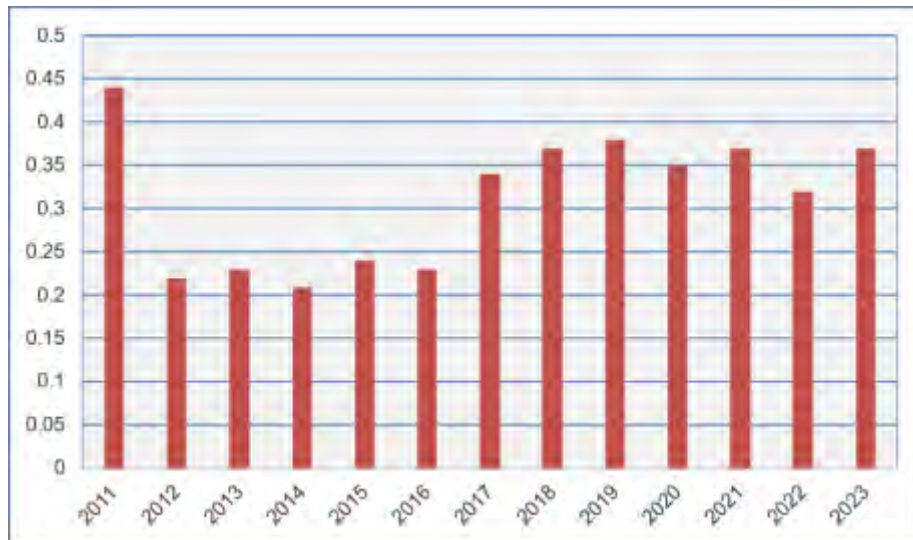
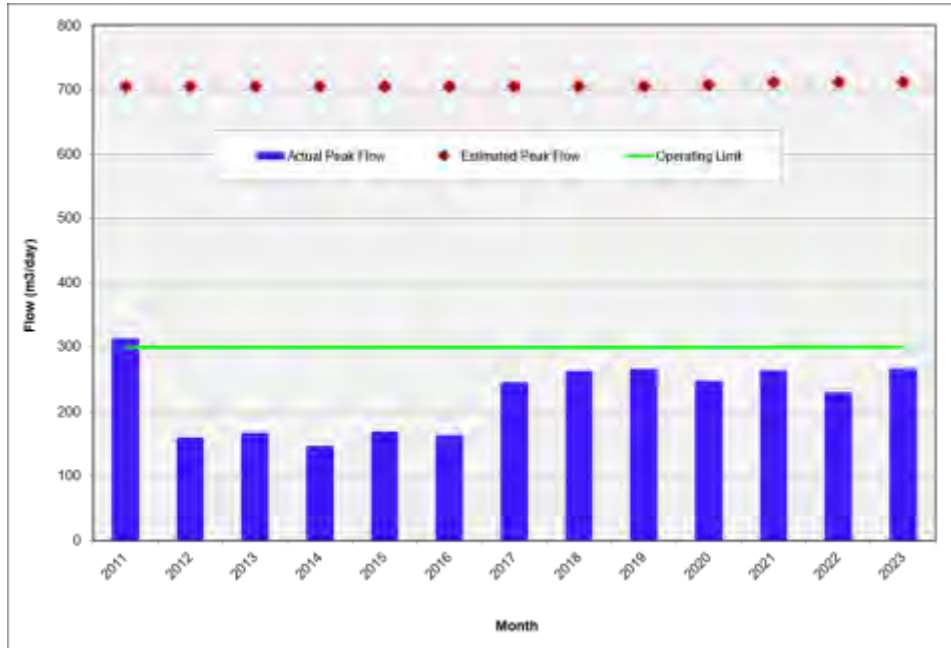


Figure 6b  
Estimated vs Actual Peak Flows (Historical)



## 5.0 OVERVIEW OF COLUMBIA RIVER SAMPLE RESULTS

This section provides data and analysis for the Columbia River samples taken during 2023.

Table 5 provides a summary record of the Columbia River test results for the period of April 18<sup>th</sup> to May 16<sup>th</sup>, 2023 and September 25<sup>th</sup> to October 23<sup>rd</sup>, 2023.

Table 5  
2023 Columbia River Sample Results

Sample Date yyyy/mm/dd	NH <sub>4</sub> -N			Ortho-P			Fecal Coliform			E.Coli			Total P mg/L		
	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN
2023-04-18	0.022	0.018	0.019	0.001	0.001	0.001	5	4	2	1	2	3	0.126	0.016	0.031
2023-04-25	0.009	0.007	0.007	0.001	0.001	0.001	3	4	1	3	1	1	0.026	0.011	0.030
2023-05-02	0.024	0.005	0.015	0.001	0.001	0.001	14	10	4	12	4	1	0.102	0.057	0.099
2023-05-11	0.005	0.005	0.005	0.004	0.001	0.001	3	3	1	2	2	10	0.036	0.024	0.023
2023-05-16	0.009	0.005	0.010	0.001	0.001	0.001	10	14	1	8	11	8	0.119	0.032	0.181
2023-09-25	0.005	0.020	0.005	0.001	0.001	0.001	4	6	2	4	4	2	0.011	0.010	0.010
2023-10-04	0.005	0.005	0.005	0.001	0.001	0.001	3	5	3	1	2	1	0.007	0.006	0.007
2023-10-10	0.005	0.005	0.005	0.001	0.001	0.001	1	4	1	1	1	1	0.006	0.008	0.007
2023-10-17	0.005	0.005	0.007	0.001	0.001	0.001	15	7	16	12	1	7	0.014	0.007	0.037
2023-10-23	0.005	0.014	0.005	0.001	0.001	0.001	27	21	10	26	14	10	0.032	0.043	0.020
# Samples	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Average	0.009	0.009	0.008	0.001	0.001	0.001	9	8	4	7	4	4	0.048	0.021	0.044
Maximum	0.024	0.020	0.019	0.004	0.001	0.001	27	21	16	26	14	10	0.126	0.057	0.181
Minimum	0.005	0.005	0.005	0.001	0.001	0.001	1	3	1	1	1	1	0.006	0.006	0.007

Sample Date yyyy/mm/dd	Field pH			TSS			NO <sub>3</sub> -N			NO <sub>2</sub> -N			Enterococcus		
	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN
2023-04-18	7.8	7.8	7.8	310.0	4.1	18.5	0.107	0.112	0.113	0.001	0.001	0.001	4.0	2.0	1.0
2023-04-25	8.2	7.8	8.0	12.2	4.0	26.6	0.108	0.112	0.104	0.001	0.001	0.001	1.0	1.0	2.0
2023-05-02	7.8	7.8	7.8	212.0	90.7	174.0	0.195	0.148	0.187	0.001	0.001	0.001	1.0	1.0	1.0
2023-05-11	7.8	7.0	7.7	30.3	35.1	38.5	0.201	0.178	0.231	0.001	0.001	0.001	1.0	1.0	1.0
2023-05-16	7.8	7.6	7.7	275.0	63.2	442.0	0.158	0.130	0.172	0.001	0.001	0.001	1.0	1.0	10.9
2023-09-25	7.0	7.0	7.0	44.1	16.3	11.7	0.073	0.072	0.075	0.001	0.001	0.001	9.0	13.0	4.0
2023-10-04	7.0	6.5	7.5	8.5	7.5	8.5	0.078	0.071	0.078	0.001	0.001	0.001	15.0	2.0	15.0
2023-10-10	7.5	7.5	7.5	5.6	5.4	6.4	0.087	0.084	0.087	0.001	0.001	0.001	2.0	2.0	2.0
2023-10-17	7.0	6.8	7.0	6.3	3.0	53.1	0.084	7.640	0.083	0.001	0.001	0.001	20.0	17.0	19.0
2023-10-23	7.0	6.5	7.0	22.9	36.9	23.1	0.100	0.115	0.118	0.001	0.001	0.001	82.0	111.0	56.0
# Samples	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Average	7.5	7.2	7.5	92.7	26.6	80.2	0.119	0.866	0.125	0.001	0.001	0.001	13.6	15.1	11.2
Maximum	8.2	7.8	8.0	310.0	90.7	442.0	0.201	7.640	0.231	0.001	0.001	0.001	82.0	111.0	56.0
Minimum	7.0	6.5	7.0	5.6	3.0	6.4	0.073	0.071	0.075	0.001	0.001	0.001	1.0	1.0	1.0

Green shaded squares show tests reported at less than the stated value, for calculations these are listed as equal to the value stated, ie; <0.05 is assumed to be 0.05

UP – Upstream

SIDE – 1 km downstream of outfall from west shore (winter) and river side channel 350 m downstream of outfall (summer)

DN – Downstream (East Shore between September 25<sup>th</sup> and October 23<sup>rd</sup>, 2023)

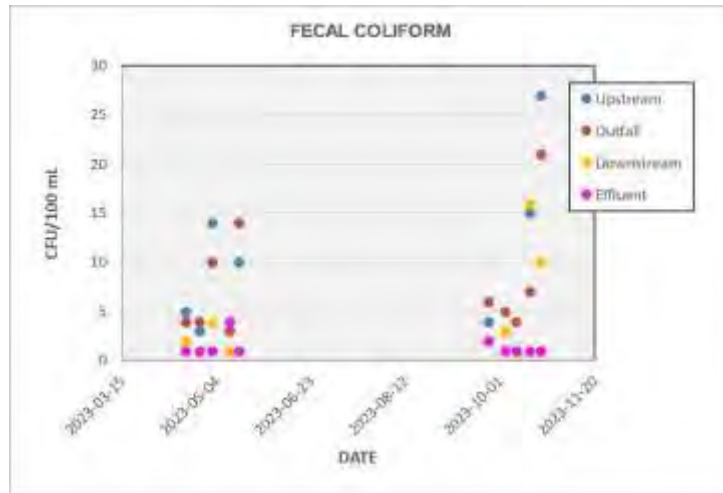
### Fecal coliforms, E-coli and Enterococci

Elevated Fecal coliforms and E-coli were recorded at the outfall (side) on several days but the results downstream were lower than or very similar to those upstream. On May 11<sup>th</sup>, 2023 the results downstream were notably higher for E-coli compared to the upstream, however, the outfall results were low; therefore, the elevated results are not likely due to the effluent.

Only on May 16<sup>th</sup>, 2023 Enterococci were notably elevated downstream compared to the upstream values, however, the results at the outfall were below the detection limits.

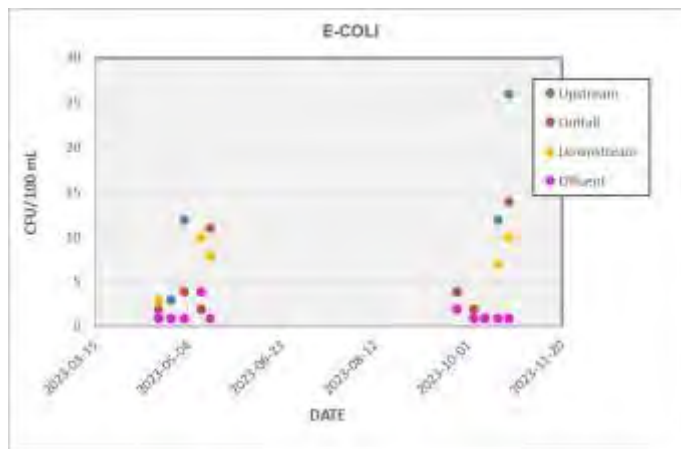
As shown on the graph below for Fecal coliforms the highest results at the outfall did not impact the results in the downstream, which are very close to the upstream.

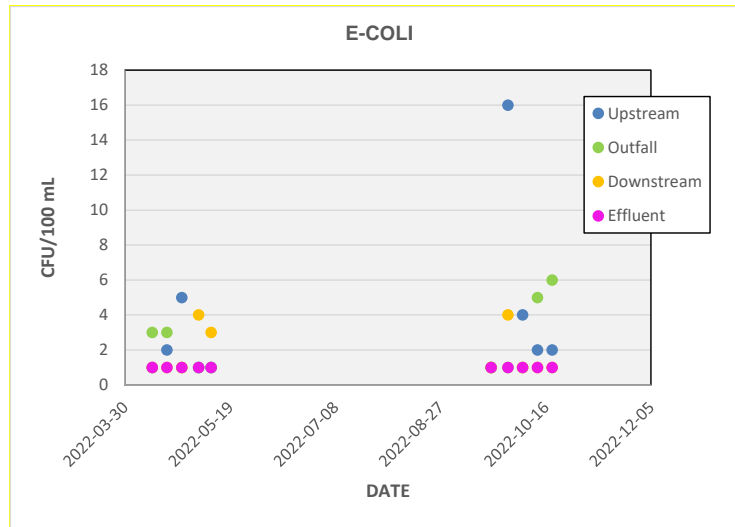
**Figure 7a**  
Fecal Coliform Levels in the Columbia River and the Effluent



A graph below shows the highest E-coli results downstream likely due to the elevated results upstream.

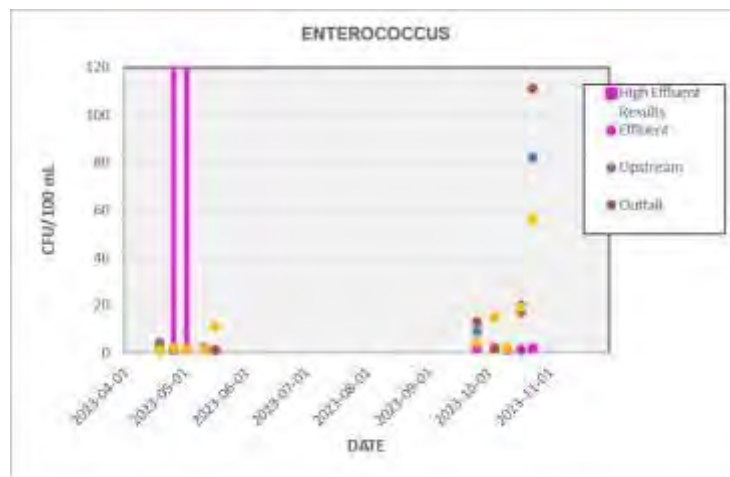
**Figure 7b**  
E.Coli Levels in the Columbia River and the Effluent





High Enterococci levels were recorded in the effluent on April 25<sup>th</sup> and May 2<sup>nd</sup>, 2023 at >2420 CFU/100 mL, however, the results downstream were very low or below the detection limit level. It should be noted that elevated Enterococci levels in the effluent impacted neither the outfall nor the river downstream as shown on the graph below.

**Figure 7c**  
 Enterococci Levels in the Columbia River and the Effluent

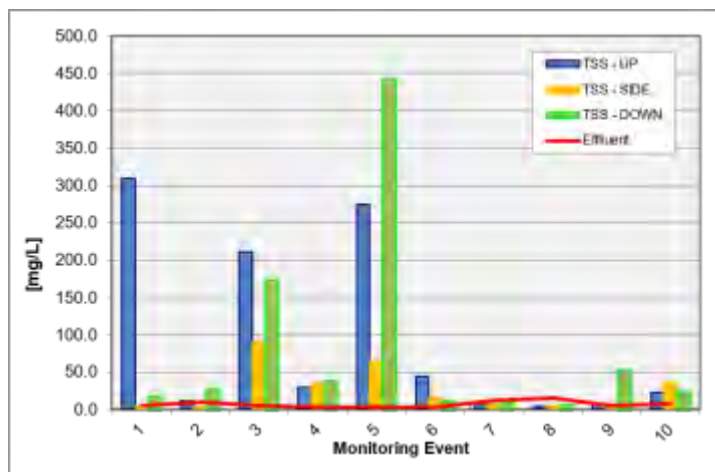


**TSS**

The highest TSS levels were recorded on May 16<sup>th</sup> in the river downstream at 442 mg/L. TSS concentration at the side-stream was 63.2 mg/L, which was significantly lower than the upstream value at 275 mg/L. It should be noted that effluent level on the same day was low at 17.0 mg/L indicating that the effluent was not likely the source of elevated TSS results in the river.

There were additional three instances where the down-stream results were at or more than 5 mg/L (B.C. Approved Water Quality Guidelines; Aquatic Life, Wildlife and Agriculture, August 2019; further BC AWQG) of the upstream. For all three instances either the effluent or outfall were near or below the detection limit.

**Figure 8**  
TSS Levels in the Columbia River and the Effluent



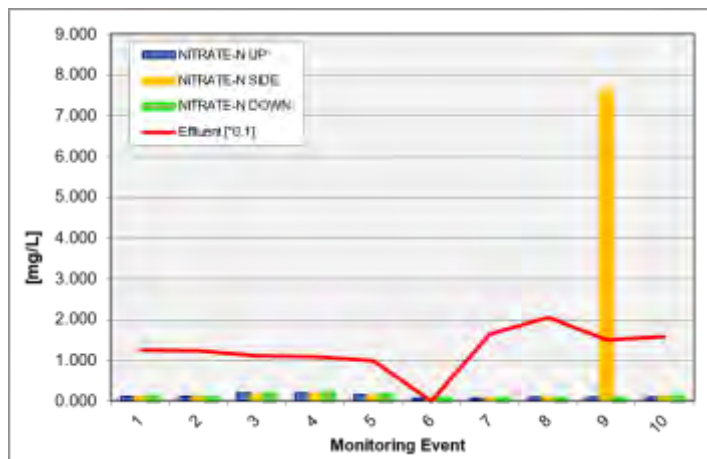
**Ammonia-N, Nitrate-N and Nitrite-N**

The ammonia-n levels were generally very low downstream and below 0.05 mg/L (BC AWQC guideline for pH>6.5) or within the background (upstream) values.

All of the nitrite-n levels downstream were at or below the detection limits.

The nitrate-n outfall levels were low with the exception of one result on October 17<sup>th</sup>, 2023 at 7.64 mg/L. The effluent levels on the same day were within the normal levels at 15 mg/L and the downstream levels were the same as upstream concentrations at 0.083 mg/L. Although the high result is shown on the graph below it may or may not be due to a sampling or testing error. The second highest result was well within the previously tested levels at 0.178 mg/L. The corresponding levels in the river upstream and downstream were similar at 0.201 and 0.231 mg/L. Note that all the downstream results were within the BC AWQC Long Term Chronic threshold at 3.0 mg/L.

Figure 9  
Nitrate-N Levels in the Columbia River



No significant changes were observed in **pH** values during any of the river sample periods between upstream and downstream samples. pH results in the downstream samples followed closely those in the upstream with no guideline (6.5 – 9.0) exceedance.

No significant changes were observed in **phosphorus** concentrations during any of the river sampling periods, several values were detected only slightly higher downstream compared to upstream; in general the majority of the results were much lower at the outfall compared to the upstream or downstream values. All the results at the outfall were recorded below 0.05 mg/L with the exception of one sample tested on May 2<sup>nd</sup>, 2023 at 0.057 mg/L.

Majority of the results downstream were similar to or below the upstream concentrations with the exception of May 16<sup>th</sup>, 2023. Total phosphorus was the highest downstream on that day at 0.181 mg/L compared to the upstream value at 0.119 mg/L and the result at the outfall at 0.032 mg/L.

All the ortho-phosphorus values downstream were at or below the respective detection limit of 0.001 mg/L.

Overall, the analysed concentrations remained constant between the upstream (UP) sampling zone and the downstream (DN) sampling zone. The data indicates that the plant's effluent does not appear to have any adverse effect on background nutrient concentrations in the Columbia River.

## 6.0 OVERVIEW OF EFFLUENT RESULTS

This section provides data and analysis for the effluent (treated) samples and plant flows for 2023.

A total of 18 effluent samples were collected and analysed. Table 6 summarizes effluent test results for 2023.

**Table 6**  
Effluent Results

Date Sampled	2023 Effluent Results Summary													
	Flow	Temp	Field pH	NH4-N	BOD	P-OP04	Coliforms Fecal	E.Coli	Total P	TSS	NO <sub>3</sub> -N	NO <sub>2</sub> -N	Enterococci	
yyyy/mm/dd	m <sup>3</sup> /d	deg C		mg/L	mg/L	mg/L	cfu/100ml	cfu/100ml	mg/L	mg/L	mg/L	mg/L	cfu/100ml	
2023-01-10	136	-	-	0.016	4.6	0.131	17	10	0.470	9.4	-	-	-	
2023-02-14	192	-	-	0.751	3.4	0.243	4	2	0.566	7.0	-	-	-	
2023-03-16	178	-	-	0.363	4.2	0.141	16	13	0.552	17.0	-	-	-	
2023-04-18	133	10.0	6.6	0.092	2.0	0.079	1	1	0.241	5.7	12.5	0.034	1	
2023-04-25	112	7.3	7.0	0.050	2.0	0.056	1	1	0.326	10.6	12.3	0.015	2420	
2023-05-02	121	8.4	7.2	0.072	2.0	0.059	1	1	0.188	5.1	11.1	0.025	2420	
2023-05-11	82	9.3	7.2	0.124	2.7	0.061	4	4	0.284	3.0	10.9	0.029	2	
2023-05-16	92	10.3	7.0	0.122	6.0	0.077	1	1	0.153	3.0	9.8	0.031	1	
2023-06-27	106	-	-	0.106	2.3	0.228	4	3	0.330	3.5	-	-	-	
2023-07-18	140	-	-	0.112	2.0	0.244	1	1	0.337	3.1	-	-	-	
2023-08-24	147	-	-	0.074	2.0	0.135	2	1	0.277	3.0	-	-	-	
2023-09-25	126	15.0	6.9	0.100	2.0	0.083	2	2	0.187	3.5	0.07	0.001	2	
2023-10-04	94	13.8	7.0	0.069	2.0	0.099	1	1	0.276	12.3	16.5	0.026	2	
2023-10-10	110	14.4	7.0	0.124	2.2	0.134	1	1	0.267	15.4	20.6	0.060	1	
2023-10-17	105	13.0	7.0	0.103	2.8	0.076	1	1	0.267	5.1	15.0	0.032	1	
2023-10-23	88	12.0	6.8	0.091	2.0	0.064	1	1	0.253	8.1	15.8	0.027	2	
2023-11-09	94	-	-	0.036	2.0	0.094	1	2	0.318	6.8	-	-	-	
2023-12-18	90	-	-	0.302	2.0	0.134	2	1	0.286	5.4	-	-	-	
# Samples	18	10	10	18	18	18	18	18	18	18	10	10	10	
Average	119	11.35	7.0	0.150	2.7	0.119	3	3	0.310	7.06	12.46	0.028	485	
High	192	15.00	7.2	0.751	6.0	0.244	17	13	0.566	17.00	20.60	0.060	2420	
Low	82	7.30	6.6	0.016	2.0	0.056	1	1	0.153	3.00	0.07	0.001	1	
Limit	300	N/A	N/A	N/A	45	0.5	200	77	1	45	N/A	N/A	20	
# Over Limit	0	N/A	N/A	N/A	0	0	0	0	0	0	N/A	N/A	2	
Notes:	1. Shaded squares show tests reported at less or more than the stated value, for calculations these are listed as equal to the value stated, ie; <0.05 is assumed to be 0.05													
	2. Geometric mean is used for coliform results													

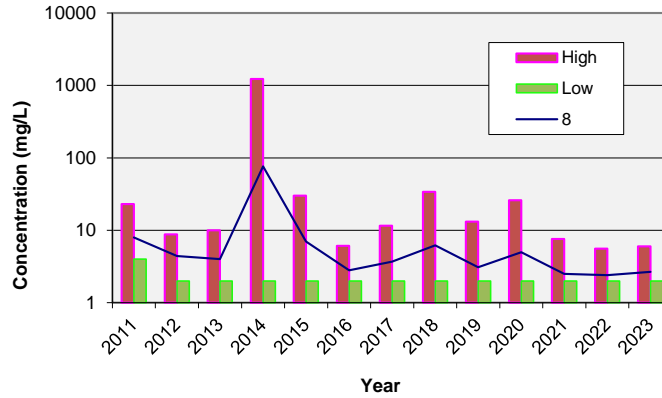
## 6.1 RESULTS ANALYSIS

Effluent **ammonia-n** concentrations were generally very low throughout the year with the highest level at 0.751 mg/L on February 14<sup>th</sup>, 2023. The results for ammonia-nitrogen were similar to those in the previous years.

The average **BOD** in the effluent was low at an average of 2.7 mg/L, which is similar to the previous years. The highest BOD results were recorded in the effluent on May 16<sup>th</sup>, 2023 at 6.0 mg/L; all BOD results were well below the MSR limits for all the samples.

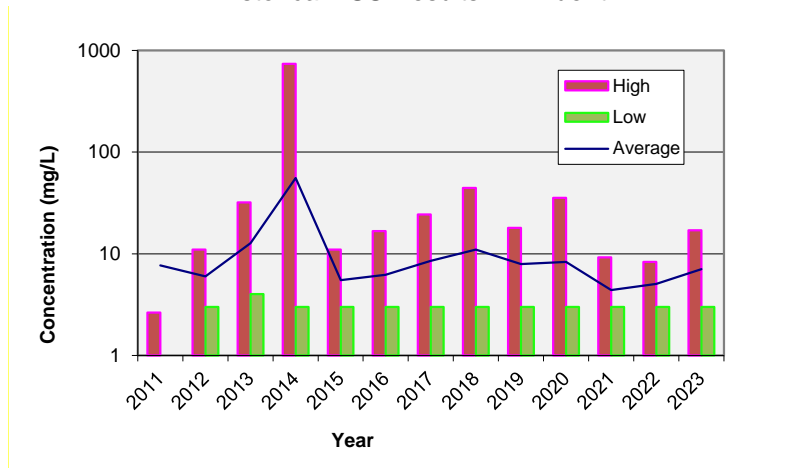


**Figure 10**  
 Historical BOD Results in Effluent



**TSS** results averaged at 7.0 mg/L with a maximum concentration of 17.0 mg/L, both results were similar to the previous years. TSS results were well below the MSR limits for all the samples.

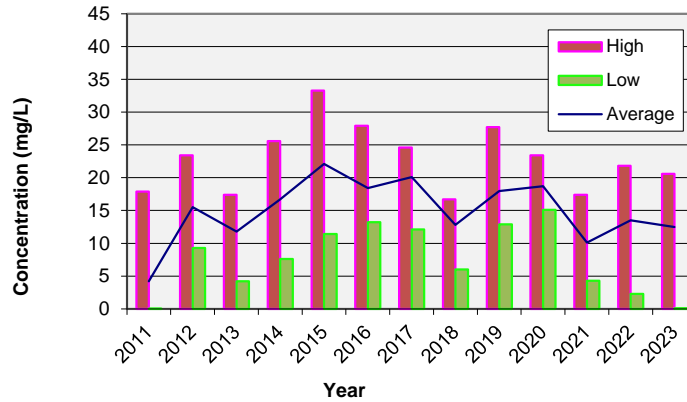
**Figure 11**  
 Historical TSS Results in Effluent



**Nitrate-N** averaged in the effluent at 12.5 mg/L with a maximum concentration at 20.6 mg/L on October 10<sup>th</sup>, 2023. As shown on the graph below the average and maximum values are very similar to the previous years.

**Nitrite-N** averaged in the effluent at 0.028 mg/L with a maximum concentration at 0.06 mg/L on October 10<sup>th</sup>, 2023. The 2023 results were low and similar to the previous years.

**Figure 12**  
 Historical NO<sub>3</sub>-N Results in Effluent



**Fecal Coliforms and E-coli**

Nine out of eighteen results for Fecal Coliforms and eleven out of eighteen results for E-coli were tested above the detection limits. None of the results exceeded the MSR limits.

**Enterococci**

Two out of ten results exceeded the MSR limit at 2420 CFU/100mL vs 20 CFU/100mL.

**Phosphorus and Ortho-phosphorus**

All ortho-phosphorus and total phosphorus samples conformed to the MSR limit.

The 2023 average for total phosphorus was 0.310 mg/L, which was lower than the previous year (2022) result at 366 mg/L. The 2021 average for total phosphorus was 0.405 mg/L, 2020 average was 0.483 mg/L, 0.506 mg/L in 2019, 7.55 mg/L in 2018, 1.20 mg/L in 2017, 1.07 mg/L in 2016, 2.77 mg/L in 2015, 2.43 mg/L in 2014, 1.65 mg/L in 2013 and 0.97 mg/L in 2012. (However, note that 2018 average phosphorus value would be 0.61 mg/L if the December 27<sup>th</sup> result was not considered; this high result could have been due to a sampling error).

The 2023 average for ortho-phosphorus was 0.119 mg/L compared to 2022 at 0.183 mg/L, which is lower than 2021 average at 0.263 mg/L and 2020 at 0.26 mg/L and 2019 at 0.277 mg/L and significantly lower than in 2018 at 0.485 mg/L or 0.91 mg/L in 2017, 0.88 mg/L in 2016, 2.37 mg/L in 2015, 2.18 mg/L in 2014, 1.26 mg/L in 2013 and 0.67 mg/L in 2012.

Phosphorus is further discussed in Section 11. Phosphorus levels are under review and KHMUC has committed to continuously modify and adjust dosing of ClearPac until all the test results show levels within the allowable limits.

The **bioassay toxicity** testing was completed in November 2023 as it is to be done every 3 years. The most recent testing showed that plant effluent was non-toxic. The results of the 2023 tests are shown below in Table 7.

Table 7  
Toxicity Test Results

Sample Date	Result
2023-11-09	Pass

## 6.2 COMPLIANCE SUMMARY

Table 8 summarizes the number of days that samples exceeded MSR effluent requirements.

Table 8  
2023 MSR Parameter Compliance

Parameter	Unit	MSR Limit	No. Of Samples	Average Value	Max. Value	Samples Over Limit
Flow	m <sup>3</sup> /day	300	365	137	265	0
BOD <sub>5</sub>	mg/l	45	18	2.7	6.0	0
TSS	mg/l	45	18	7.1	17.0	0
Total Phosphorus	mg/l	1	18	0.31	0.57	0
Ortho Phosphate	mg/l	0.5	18	0.12	0.24	0
Fecal Coliforms	CFU/100ml	200	18	3	17	0
Enterococci	CFU/100ml	20	10	485**	>2420	2**
E.Coli	CFU/100ml	77	18	3	13	0
96 hr LC <sub>50</sub> Bioassay***	/	Non-toxic	1	Pass	Pass	0

*\*This year the test results indicated that out of all the samples collected there were 2 exceedances*

*\*\*Due to the result with > value, the average is based at a maximum of 2420 CFU/100 mL*

*\*\*\*The most recent test was done in 2023*

## 7.0 SLUDGE PRODUCTION AND DISPOSAL

This section provides data regarding the disposal of bio-solids (sludge) from the treatment facility in 2023.

Waste activated sludge used to be stored in a thickener and removed by a vacuum tanker. In the fall of 2014, a 12 unit Teknofanghi (Model Number 12BCAVPK) supplied by Drycake was installed and was commissioned in mid-December. All solids were transported to the Crowsnest/Pincher Creek Landfill site.

Hauling data for pumped solids are in Table 9.

Table 9

2023 Pumped Solids Data

Month	Vol. Pumped (m <sup>3</sup> )
January	257
February	219
March	230
April	168
May	72
June	60
July	165
August	161
September	93
October	35
November	48
December	187
<b>Total</b>	<b>1695</b>

Volumes of sludge are currently being estimated by counting the quantity of bags produced. Long range plans call for the installation of a flow meter to better measure the quantity of sludge bagged.

Please note, the calculations for bagged solids are being reviewed to ensure consistency.

## **8.0 PLANT IMPROVEMENTS & BYPASS EVENTS**

The resort is committed to improvements to the phosphorus monitoring program and to implement further monitoring and increase dosage of ClearPac. The resort will continue to address the phosphorus concern and bring phosphorus levels down.

KHMUC has engaged an engineer and is currently undertaking an assessment to determine the plant's capacity to accommodate additional growth and recommend plant improvements.

KHMUC will be looking into purchasing a new flow meter for the sludge and they will calibrate their flow meter for the effluent.

There were no bypass events for 2023.

## 9.0 PHOSPHORUS REMOVAL

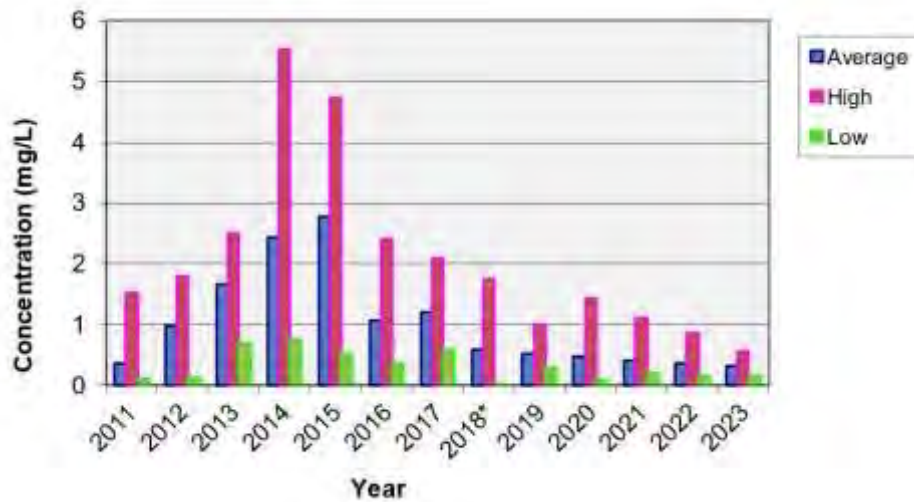
This section describes the phosphorus monitoring and removal strategy being implemented to bring the plant into compliance with effluent limits.

During 2023 **total phosphorus** varied between 0.15 and 0.57 mg/L with an average value at 0.31 mg/L.

As seen in the graphs below, the levels of phosphorus were increasing from 2011 until 2015 (average at 2.77 mg/L) but there has been a continuous decrease since 2015. The values in 2022 were low and similar to or lower than the previous year at an average value of 0.31 mg/L.

\*Note that on December 27<sup>th</sup>, 2018 high phosphorus value was tested resulting in very high yearly average at 7.55 mg/L. This value was likely a sampling error; without the high result being included the 2018 yearly average would be 0.61 mg/L, which is consistent with historical levels as shown on the following graph.

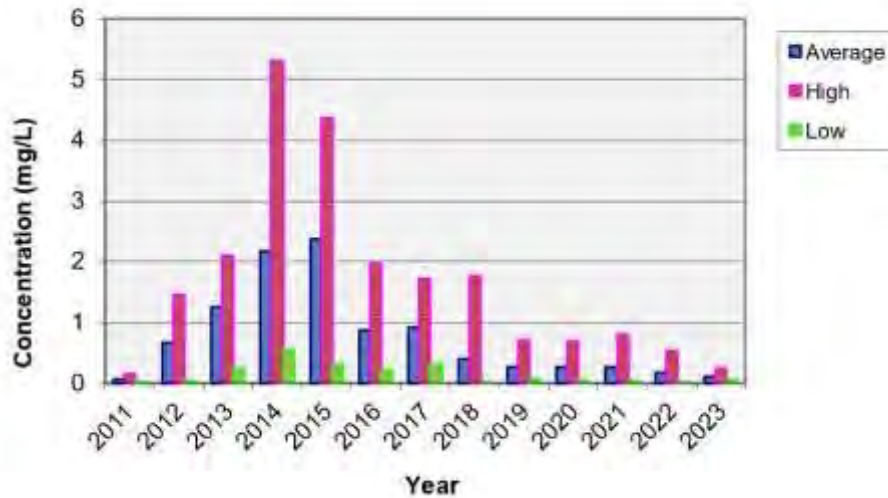
Figure 13  
 Total Phosphorus Levels 2011-2023



During 2023 **ortho-phosphorus** varied between 0.06 and 0.24 mg/L with an average value at 0.12 mg/L, which was lower than 2022 average value of 0.18 mg/L.

The historical levels of ortho-phosphorus were increasing until they peaked in 2014/2015 (average concentration at 2.18 and 2.37 mg/L), there has been a decreasing trend since.

Figure 14  
 Ortho-Phosphorus Levels 2011-2023



The days over limit for both phosphorus and ortho-phosphorus from 2011 to 2017 were either increasing or steady up to 11 days for total phosphorus and 12 days for ortho-phosphorus.

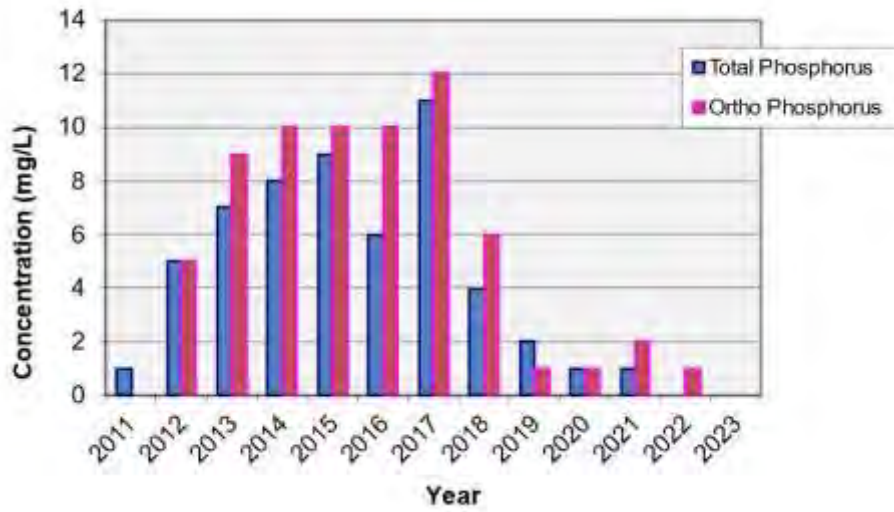
In the fall of 2015 KHMUC began injecting alum into the effluent to reduce the phosphorus levels in the plant effluent. There was a noticeable drop in the levels in the final EMS test run in 2015.

Beginning in December 2016, KHMUC switched to ClearPac addition in the winter months to control phosphorus. In 2020 ClearPac was used year round. Phosphorus levels were easier to control and with the lower summer flows, we found that ClearPac was a superior product and will likely continue with its year-round use. Note that the levels in 2019 to 2023 levels have been the lowest since 2011.

Additionally, KHMUC will continue to test total phosphorus and ortho phosphorus with the monthly effluent sampling. This will help to monitor the levels on an ongoing basis and help to determine and/or maintain the dosage levels. KHMUC has also agreed to collect a laboratory sample in first week of January going forward in order to better characterize/monitor the effluent during the peak capacity. It is also recommended that as soon as very high results are found, samples be collected immediately and submitted for testing to ensure the levels drop below the allowable limits.

Historical limits exceedances are shown on the graph below, the 2023 exceedances for both total phosphorus and ortho-phosphorus are the lowest (no exceedances) since 2011 indicating the current phosphorus reduction strategy has been successful.

Figure 15  
Days over Limit 2011-2023





## 10.0 ASSESSMENT SUMMARY

The total effluent flow recorded for 2023 was 49.860 m<sup>3</sup> with an average of 137 m<sup>3</sup>/day and a maximum peak flow at 265 m<sup>3</sup>/day. There were no days where the flow was over the allowable limit.

Effluent **ammonia-n** concentrations were generally very low throughout the year with the highest level at 0.751 mg/L on February 14<sup>th</sup>, 2023. The results for ammonia-nitrogen were similar to or lower than to those in the previous years.

The ammonia levels in the river downstream were either below 0.05 mg/L or below the background (upstream) levels.

The average **BOD** in the effluent was low with the average results at 2.7 mg/L, which was similar to the previous years. The highest BOD results were recorded in the effluent on May 16<sup>th</sup>, 2023 at 6.0 mg/L; BOD was well below the MSR limits for all the samples.

**TSS** results averaged at 7.0 mg/L with a maximum concentration of 17.0 mg/L, both of which were similar to the results during the previous years. TSS results were well below the MSR limits for all the samples.

The highest TSS levels in the river were recorded on May 15<sup>th</sup>, 2023 downstream at 442 mg/L, however, TSS concentrations at the side-stream were 63.2 mg/L, which was significantly lower than the results upstream at 275 mg/L. It should be noted that the effluent levels were low at 17 mg/L on the same day. There were additional three instances where the down-stream results were at or more than 5 mg/L (B.C. Approved Water Quality Guidelines; Aquatic Life, Wildlife and Agriculture, August 2019; further BC AWQG) of the upstream. For all three instances either the effluent or outfall were near or below the detection limit.

**Nitrate-N** varied in the effluent between 0.07 and 20.60 mg/L with the maximum result on October 17<sup>th</sup>, 2023. The average and maximum values are very similar to the previous years.

The nitrate-n outfall levels were low with one elevated result at 7.64 mg/L on October 17<sup>th</sup>, 2023. The effluent levels on the same day were within the normal levels at 15 mg/L and the downstream concentrations were the same as the background (upstream) concentrations at 0.083 mg/L. The elevated result may or may not be due to a sampling/testing error. All the downstream results in the river were within the BC AWQG Long Term Chronic threshold at 3.0 mg/L.

**Nitrite-N** averaged in the effluent at 0.028 mg/L with a maximum concentration at 0.06 mg/L. The 2023 results were low and similar to the previous years.

The results in the river downstream were very low and either at or below the detection limits.

### **Fecal Coliforms and E-coli**

Majority of the results for Fecal coliforms were below their respective detection limits or low. None of the results exceeded the MSR limits.

The results in the river downstream for both coliforms were similar to the background (upstream). Elevated results were recorded at the outfall (side) on several days but the results downstream were lower than or very similar to the upstream. It was deemed that results in the river downstream were not impacted by the effluent.

**Enterococci**

Two out of ten results exceeded the MSR limit at 2420 CFU/100mL on April 25<sup>th</sup> and May 2<sup>nd</sup>, 2023 vs the MSR limit at 20 CFU/100mL.

It should be noted that the Enterococci values at the outfall and in the river downstream were very low at 2 CFU/100 mL or below the detection limit on the same day.

**Phosphorus and Ortho-phosphorus**

None out of 18 samples for phosphorus and ortho-phosphorus exceeded the MSR discharge limit.

During 2023 **total phosphorus** varied between 0.15 and 0.57 mg/L with an average value at 0.31 mg/L. The levels of phosphorus were increasing from 2011 until 2015 (average at 2.77 mg/L), there had been a continuous decrease since 2015.

During 2023 **ortho-phosphorus** varied between 0.06 and 0.24 mg/L with an average value at 0.12 mg/L, which was lower than 2022 average value of 0.18 mg/L. The historical levels of ortho-phosphorus were increasing until 2014/2015 (average concentration at 2.18 and 2.37 mg/L), there has been a decreasing trend since.

The days over limit for total phosphorus increased from 2011 until 2015, decreased in 2016, increased to 11 days over the limit in 2017 and decreased again to four days over the limit in 2018. There was a significant decrease in exceedances in 2019, 2020, 2021, 2022 and 2023 with no days over limit for both total phosphorus and ortho-phosphorus in 2023.

In the fall of 2015 KHMUC began injecting alum into the effluent to reduce the phosphorus levels in the plant effluent. There was a noticeable drop in the levels in the final EMS test run in 2015. Beginning in December 2016, KHMUC switched to ClearPac addition in the winter months to control phosphorus. In 2020 ClearPac was used year round. Phosphorus levels are under review and KHMUC will continue to modify and adjust dosing of ClearPac until all the test results show levels within the allowable limits. Note that the levels in 2019 to 2023 have been the lowest since 2011.

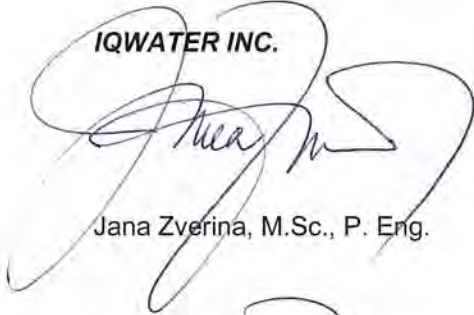
KHMUC will continue to test total phosphorus and ortho-phosphorus with the monthly effluent sampling. This will help to monitor the levels on an ongoing basis and help to determine dosage levels.

A small 26 unit subdivision was proposed and construction started in 2014. Out of the 26 units approved, Phase 1 (8 units) and Phase 2 (8 units) are now completed. Phase 3 (10 units) has now been registered and construction on the units is expected to begin this summer. Flows will be monitored closely and additional improvements may be required as growth at the resort continues.

## 11.0 AUTHORIZATION AND CLOSING

This report, titled *2023 Sewage Treatment Plant Annual Report*, was prepared for KHMUC by IQWater Inc. The material in this report reflects the best judgement of IQWater Inc. based on the information available at the time of preparation. Any use that a third party makes of this report, or reliance on or decisions based on it, is the responsibility of the third party. IQWater Inc. accepts no responsibility for damages, if any, suffered by a third party as a result of decisions made or actions taken based on this report.


**IQWATER INC.**



Jana Zverina, M.Sc., P. Eng.



IQWater Inc.  
Permit #1003055



26/04/2024

iqw/jobs/W2020-020.2023

## 12.0 REFERENCES

American Public Health Association, American Water Works Association and Water Environment Federation. Standard Methods for the Examination of Water and Wastewater. 24<sup>th</sup> Edition

BC Environmental Management Act, Municipal Wastewater Regulation B.C. Reg. 87/2012, last Amended March 30<sup>th</sup>, 2022 by B.C. Reg. 76/2022

BC Ministry of Health, Health Protection Branch, Sewerage System Standard Practice Manual, Version 3, September 2014

British Columbia Ministry of Environment and Climate Change Strategy. 2021. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture - Guideline Summary. Water Quality Guideline Series, WQG-20 (the most recent update April 2023)

Canadian Council of Ministers of the Environment. Canadian Water Quality Guidelines for the Protection of Aquatic Life

Canadian Council of Ministers of the Environment. Canadian Water Quality Guidelines for the Protection of Agricultural Water Uses

Canadian Council of Ministers of the Environment. Protocols Manual for Water Quality Sampling in Canada. 2011

Health Canada. Guidelines for Canadian Drinking Water Quality. September 2022

### 13. TERMS AND CONDITIONS

1. Our reports are prepared to specifically fulfil our Clients' requirements. The conclusions are based on the time limitations and scope of the services provided and information obtained from those services. The Inspector certifies that he/she has no present or contemplated future interest in the inspected property.
2. IQWATER INC. will provide skill, care and diligence in accordance with generally accepted engineering practices and procedures at the time and location in which the services are performed. With time, conditions may change and the interpretation of the findings may be altered.
3. IQWATER INC. cannot assume responsibility for any deficiency, misstatement or inaccuracy in the report resulting from the omissions or misrepresentations of persons providing information to use in the report. Any sketch appearing in or attached to the inspection report, or any statement of dimensions, capacities, quantities, or distances, are approximate and are included to assist the reader in visualizing the property.
4. The contents of the report are for the sole use of the Client. The report is the property of the Client and copies shall only be made by the Client or with the approval of the Client. IQWATER INC. is not responsible for any use of information contained in the report, or any reliance or decisions made based on it by an unauthorized third party.
5. This report represents the conditions investigated and sampled at the time of study. Some of the services performed were based on visual observations of the site and the areas surrounding the site, and our opinion cannot be extended to areas that were unavailable for direct observation.
6. The Client is responsible for all permits, authorization, or consents and giving any required notices that enable EDI to perform the services required.  
  
IQWATER INC. may use any contractor with appropriate recognized professional status or with special skills or knowledge to assist in performing the services, at the expense of the client.
7. Any documents provided to IQWATER INC. from the Client will remain the property of the Client, and upon written request IQWATER INC. will return such documents as soon as possible. Any information or documents obtained by IQWATER INC. while performing the services requested will remain the property of IQWATER INC.
8. IQWATER INC. and the client will take reasonable care to prevent any disclosure of the reports or documents, or any information obtained or contained in the reports prepared by IQWATER INC., unless it is to the persons who require such access to the information in order to discharge their responsibilities to IQWATER INC. or as required by law.
9. This report is not intended to have any direct effect on the value of the property, but rather to provide information on apparent site conditions. The Client acknowledges that IQWATER INC. is not making any recommendations with respect to the purchase, sale, investment, or development of the property; and that all decisions associated therewith are the sole responsibility and liability of the Client. Further, IQWATER INC. assumes no responsibility for matters of legal nature affecting the property or title thereto.
10. Limits of Liability – To the fullest extent permitted by law, and notwithstanding any other provision of the Service Agreement between the Client and IQWATER INC., total liability, in the aggregate, of IQWATER INC. and the IQWATER INC. officers, directors, partners, employees and sub-consultants, and any of them, to the Client and anyone claiming by or through the Client, for any and all claims, losses, costs or damages, including attorneys' fees and costs and expert-witness fees and costs of any nature whatsoever or claims expenses resulting from or in any way related to the Project shall not exceed the limit of IQWATER's insurance in effect at the time of this report.
11. In accepting and using this report the Client agrees to indemnify and hold harmless IQWATER INC., its officers, partners, employees and consultant (collectively IQWATER INC.) from and against any and all claims, suits, demands, liabilities, losses, damages or costs, including reasonable attorney's fees and defence costs arising out of or in any way connected to the findings and results of the proposed work, whether liability arises under breach of contract or warranty, tort, including negligence, strict liability or statutory liability or any other cause of action.
12. IQWATER INC. will exercise due diligence, however, IQWATER INC. will not assume any liability for any damage to any facilities, utilities, ground or above-ground surface infrastructure within or outside the subject property boundary since any sampling if needed is intrusive in nature and damage may have to be done to obtain samples.
13. IQWATER INC. will not assume any responsibility for any actual or perceived loss of business to owner's operations as a result of the work proposed herein.
14. The governing law for this contract will be the Alberta law.
15. All claims of costs, losses, damages, etc. have to be immediately forward to IQWATER INC. insurance

# APPENDIX

Table 10 - Kicking Horse Mountain Resort Estimated Sewage Generation (m<sup>3</sup>/day)

Current Development	Flow* (l/unit/day)	Units	2011 Generation (m3/day)	2018 Generation (m3/day)	Flow* (l/unit/day)	Units	2019 Generation (m3/day)	2020 Generation (m3/day)	Units	2021 Generation (m3/day)	2022 Generation (m3/day)	2023 Generation (m3/day)	2024 Generation (m3/day)
Single Family	318	972	309.1	309.1	1300	98	127.4	127.4	98	127.4	127.4	127.4	127.4
Duplexes & Triplexes	318	see single family	see single family	see single family	1000	112	112.0	112.0	116	116.0	116.0	116.0	116.0
Lodges (EBU)	318	296	94.1	94.1	700	296	207.2	207.2	296	207.2	207.2	207.2	207.2
Condominiums	318	952	302.7	302.7	1000	155	155.0	155.0	155	155.0	155.0	155.0	155.0
<b>Subtotal</b>		<b>2220</b>	<b>706.0</b>	<b>706.0</b>	<b>Subtotal</b>	<b>661</b>	<b>601.6</b>	<b>601.6</b>	<b>665</b>	<b>605.6</b>	<b>605.6</b>	<b>605.6</b>	<b>605.6</b>

Commercial	Flow* (l/unit/day)	Unit	2011 Generation (m3/day)	2018 Generation (m3/day)	Flow* (l/unit/day)	Units	2019 Generation (m3/day)	2020 Generation (m3/day)	Units	2021 Generation (m3/day)	2022 Generation (m3/day)	2023 Generation (m3/day)	2024 Generation (m3/day)
Administration	75	20	0	0.0	57	20	0.0	1.1	20	1.1	1.1	1.1	1.1
Other (day care, shops etc.)	20	5	0	0.0	20	5	0	0.1	5	0.1	0.1	0.1	0.1
<b>Subtotal</b>		<b>5</b>	<b>0</b>	<b>0.0</b>	<b>Subtotal</b>	<b>5</b>	<b>0.0</b>	<b>1.2</b>	<b>5</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>	<b>1.2</b>

Dining Facilities/Bars	Flow* (l/m <sup>2</sup> /day)	Area (m2)	2011 Generation (m3/day)	2018 Generation (m3/day)	Flow* (l/m <sup>2</sup> /day)	Area (m2)	2019 Generation (m3/day)	2020 Generation (m3/day)	Area (m2)	2021 Generation (m3/day)	2022 Generation (m3/day)	2023 Generation (m3/day)	2024 Generation (m3/day)
Peaks Grill	97	256	0.0	0.0	97	256	0.0	24.8	256	24.8	24.8	24.8	24.8
Double Black	97	190	0.0	0.0	97	190	0.0	18.4	190	18.4	18.4	18.4	18.4
Whitetooth Grill	97	300	0.0	0.0	97	300	0.0	29.1	300	29.1	29.1	29.1	29.1
Copperhorse Steak House	97	110	0.0	0.0	97	110	0.0	10.7	110	10.7	10.7	10.7	10.7
Winston	97	220	0.0	0.0	97	220	0.0	21.3	220	21.3	21.3	21.3	21.3
<b>Subtotal</b>		<b>1076</b>	<b>0.0</b>	<b>0.0</b>	<b>Subtotal</b>	<b>1076</b>	<b>0.0</b>	<b>104.4</b>	<b>1076</b>	<b>104.4</b>	<b>104.4</b>	<b>104.4</b>	<b>104.4</b>

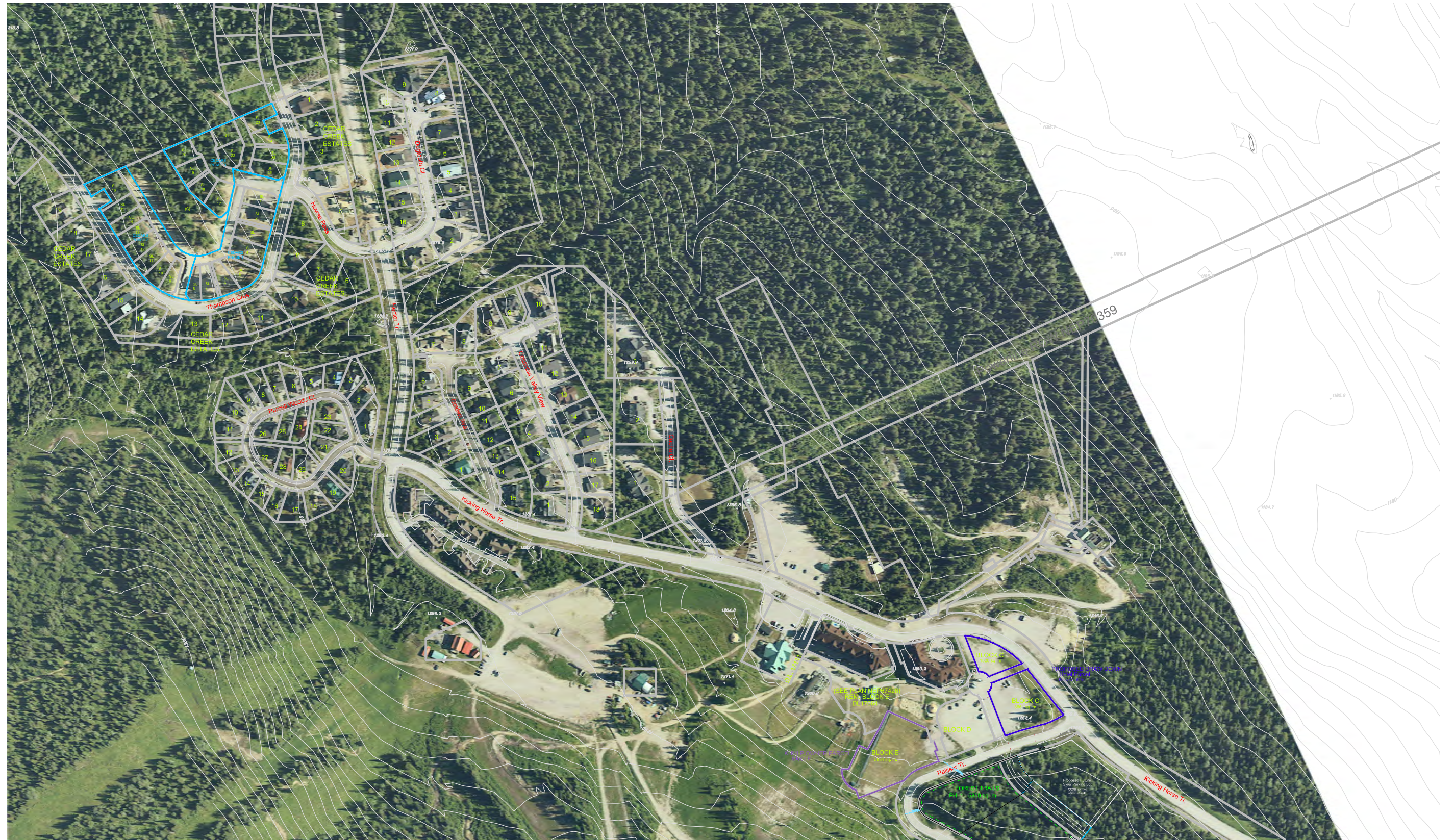
<b>Daily Wastewater Flow (m3/day)*</b>	705.5	705.5
<b>Corrected Daily Peak Flow Projections**</b>	167 (actual)	262 (actual)

705.5	707.2
265 (actual)	247 (actual)

711.2	711.2	711.2	711.2
263 (actual)	229 (actual)	265 (actual)	263 (projected)

\*Estimated Wastewater Flows - Residential and Non-residential Daily Flows

Note that the occupancy significantly varies throughout the year with near full occupancy only during the ski season and during the long weekends.



Scale: N.T.S.

Kicking Horse - Resort North

April 2022

Resorts of the Canadian Rockies Inc.





Scale: N.T.S.

Kicking Horse - Resort South

Apr 2022

Resorts of the Canadian Rockies Inc.



April 28, 2005

File: RE-15474

**REGISTERED MAIL**

Kicking Horse Mountain Sanitary Sewer Services Ltd.  
2100- 1075 W. Georgia Street  
Vancouver, BC V6E 3G2

Attn: Arijan van Vuure

Dear Mr. van Vuure:

**Re: Letter of Transmittal for Registration under the *Municipal Sewage Regulation* of the discharge to Columbia River from the Kicking Horse Mountain Resort located at Unsurveyed Crown land in the vicinity of Section 9, together with those parts of the Northwest  $\frac{1}{4}$  of Section 14 and 15, all of Township 27, R22 West of 5<sup>th</sup> Meridian, and Unsurveyed Crown Foreshore, being part of the Columbia River, Kootenay District**

Enclosed herewith is a copy of the registration letter RE-15474 in the name of the Kicking Horse Mountain Sanitary Sewer Services Ltd. Your attention is respectfully directed to the conditions outlined in the registration letter.

In addition to the registration letter and the terms and conditions of the Environmental Impact Study, dated November 20, 2000, you are directed to comply with the following requirements:

A. Outfall

The outfall shall consist of a permanent outfall with diffusers.

The permittee shall have the outfall inspected once each five years by independent qualified personnel to ensure it is in good working condition. An inspection report shall be submitted to the Regional Manager, Environmental Protection within 30 days after the inspection date. The first report shall be submitted by January 2006.

...2

B. Environmental Monitoring

In accordance with Part 7, Section 26 and 27 and applicable conditions of Schedule 6 of the *Regulation*, the discharger shall undertake the discharge and receiving environment monitoring programs established by Masse & Miller Consulting Ltd., in their letter dated February 17, 2005.

The person collecting samples shall be properly trained in sample collection and handling.

C. Reporting non-compliances

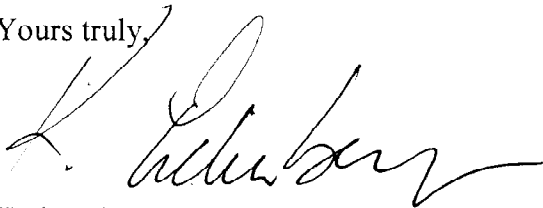
The discharger is required to report instances of non-compliance within 15 days of the date of discovery. The discharger is required to provide a report of actions taken to remediate non-compliance within 30 days from the start of non-compliance.

D. Financial Security requirements

The discharger is required to notify the Ministry and to set up either a capital replacement fund or financial security or assurance plan when the residential development content, as defined by the *regulation*, exceeds 10%.

The administration of this registration, including periodic inspections and audits shall be carried out by staff from our sub-regional office located at 205 Industrial Road G, Cranbrook, BC, V1C 7G5. Any required information may be submitted to the Regional Manager, Environmental Protection at this address in lieu of the Director.

Yours truly,



Kathy Eichenberger, P.Eng.  
for Director, *Environmental Management Act*  
Kootenay and Okanagan Regions

AMT/KE:lkM

cc: Environment Canada  
Kicking Horse Mountain Sanitary Sewer Services Ltd., 1500 Kicking Horse Trail, PO  
Box 839, Golden, BC V0A 1H0, Attn: John Urie  
Ecofluid, #101-334 E. Kent Ave. South, Vancouver, BC V5X 4N5 Attn: Rolf Loker, VP  
& Manager of Operations  
Ana C. May Tsui, MWLAP-Environment Protection, Cranbrook



April 28, 2005

File: RE-15474

**REGISTERED MAIL**

Kicking Horse Mountain Sanitary Sewer Services Ltd.  
2100-1075 W. Georgia Street  
Vancouver, BC V6E 3G2

Attn: Arijan van Vuure

Dear Mr. van Vuure:

Re: Registration under the Municipal Sewage Regulation of the discharge to Columbia River from the Kicking Horse Mountain Resort located at Unsurveyed Crown land in the vicinity of Section 9, together with those parts of the Northwest  $\frac{1}{4}$  of Section 14 and 15, all of Township 27, R22 West of 5<sup>th</sup> Meridian, and Unsurveyed Crown Foreshore, being part of the Columbia River, Kootenay District

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Receipt of the completed Municipal Sewage Regulation registration form for the subject discharge is acknowledged. Pursuant to Part 2, section 3 of the Municipal Sewage Regulation, the effective date of registration of this discharge is November 24, 2000. The ministry file number for this discharge is RE-15474. Please indicate this number on all future correspondence regarding this discharge.

An annual registration fee will be determined according to the Waste Management Permit Fees Regulation and you will be receiving an annual invoice from the ministry for payment of this fee. Payment of all fees due is necessary to comply with the Municipal Sewage Regulation. Fees will be calculated using a maximum daily effluent discharge of 300 m<sup>3</sup>/day, a maximum BOD<sub>5</sub> of 45 mg/L and a maximum TSS of 45 mg/L.

Acceptance of this registration under the Regulation is based on the following documents:

1. Kicking Horse Mountain Resort Ltd. Partnership, Registration Form dated November 24, 2000 and submitted by McElhanney Consulting Services Ltd.
2. Environmental Impact Study entitled Kicking Horse Mountain Resort – Environmental Impact Study for Sewage Treatment and Disposal, dated November 20, 2000, prepared by Western BioResources Consulting Ltd. and signed by Christopher Bullock, P.Eng.

... 2

Pursuant to Part 2, Section 3 (2) (k) of the Municipal Sewage Regulation, more stringent standards or requirements may be specified by the Director. Accordingly, in addition to the terms and conditions of the regulation, for this discharge the following standards and requirements apply. The following information related to RE-15474 must be submitted within 30 days:

1. Tables that summarize the Discharge Monitoring Program and the Environment Monitoring Sampling Programs. Tables should indicate sampling sites/locations and short description of the locations, parameters, sampling frequency, reporting frequency and standards and criteria to be met.
2. GPS coordinates for all sampling sites. Specify in decimal degrees to 4 decimal places using NAD83 Datum.

The discharger shall **report monitoring data** in accordance with Part 7, Section 28 of the *Regulation* and in accordance with the following requirements. Monitoring data shall be submitted to the Ministry (EMS) database quarterly within 30 days of the end of each quarter. Instances of non-compliances are to be notified and reported to the Manager in writing, with an explanation and action taken to remediate non-compliance.

In accordance with Part 7, Section 28 (3) of the *Regulation*, the discharger shall submit an annual report and do so in accordance with the annual report requirements of Section 28 of the *Regulation*. The annual report shall be prepared by a suitably qualified professional and shall include the following:

- Tabulated results of the Effluent and Environmental Monitoring Data with standards and criteria
- Interpretation of the monitoring data
- The total volume discharged over the year
- Total sludge wasted over the year and its final destination
- The state of compliance of the treatment facility/process
- Indicate the percentage of residential development, as defined in the *Regulation*, that contributes to the effluent discharge
- Any additional relevant information the discharger wishes to provide

The annual report shall contain recommendations of a qualified professional regarding changes (additions, deletions, modifications) to the monitoring program. Electronic and hard copies of the annual report submission is due within 120 days of the end of each calendar year.

This decision to specify more stringent standards or requirements under the Municipal Sewage Regulation may be appealed to the Environmental Appeal Board in accordance with Part 8 of the *Environmental Management Act*. An appeal must be delivered within 30 days from the date that notice of this decision is given, in accordance with the practices, procedures and forms prescribed by regulation under the *Environment Management Act*. For further information, please contact the Environmental Appeal Board at (250) 387-3464.

The ministry uses a reference number to track monitoring data associated with discharges. The following are the EMS site numbers assigned to the monitoring sites listed above. These numbers are to be used when entering data directly into the Ministry EMS database in accordance with Part 7, Section 28 (2) of the *Regulation*.

SAMPLING SITE/LOCATION	EMS NUMBER	DESCRIPTION
Columbia River UP IDZ	E256694	Upstream at the bridge
Columbia River 100m DN, main stem	E256695	~ 100 m downstream of outfall, at main stem from island
Columbia River 100m DN, side channel	E258897	~ 100 m downstream of outfall, at side channel
Columbia River 200m DN, east shore	E258898	~ 200 m downstream of outfall, from east shore
Columbia River 1km DN, west shore	E258899	~ 1 km downstream of outfall, downstream of island from west shore
Plant Effluent	E256696	Sample prior to the discharge outfall

For information on the use of EMS and the electronic data transfer utility, please refer to the following website: [http://wlapwww.gov.bc.ca/epd/ems\\_edt.html](http://wlapwww.gov.bc.ca/epd/ems_edt.html)

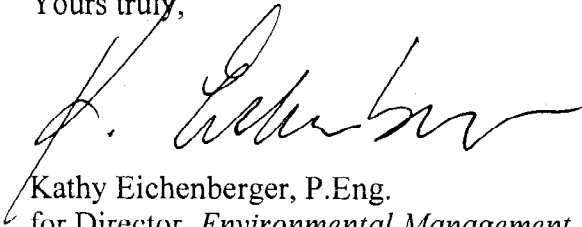
Your attention is respectfully directed to the terms and conditions outlined in the Municipal Sewage Regulation. Compliance with all the terms and conditions of the regulation is required. Contravention of any of the conditions of the regulation is a violation of the *Environmental Management Act* and may result in prosecution.

Registration under the Municipal Sewage Regulation should not be construed as a representation that the works are adequately designed or will satisfy all the requirements of the regulation. It is the responsibility of the discharger to ensure that the works are adequately designed, constructed and operated and that the discharge quality complies with the regulation. Registration under the regulation is without prejudice to any additional works that may be required or any additional requirements that may be specified by the Director. The Director may also issue Orders under the *Environmental Management Act*.

Registration under the Municipal Sewage Regulation does not authorise entry upon, crossing over, or use for any purpose of private or Crown lands or works, unless and except as authorised by the owner of such lands or works. The responsibility for obtaining such authority shall rest with the discharger. It is also the responsibility of the discharger to ensure that all activities conducted under this registration are carried out with regard to the rights of third parties and comply with other applicable legislation that may be in force. The discharger must also obtain any necessary approvals from other agencies.

Administration of the Municipal Sewage Regulation will be carried out by staff from our Sub-regional office located at 205 Industrial Road G, Cranbrook, British Columbia, V1C 7G5 (Telephone 250-489-8540). Plans, data and reports pertinent to the regulation are to be submitted to the Regional Manager, Environmental Protection, at this address. If you have any questions concerning this registration, please contact our Cranbrook Sub-Regional Office at 250-489-8540

Yours truly,



Kathy Eichenberger, P.Eng.  
for Director, *Environmental Management Act*  
Kootenay and Okanagan Regions

cc:	Environment Canada
	Kicking Horse Mountain Sanitary Sewer Services Ltd., 1500 Kicking Horse Trail, PO Box 839, Golden, BC V0A 1H0, Attn: John Urie
	Ecofluid, #101-334 E. Kent Ave. South, Vancouver, BC V5X 4N5 Attn: Rolf Loker, VP & Manager of Operations
	Ana C. May Tsui, MWLAP- Environmental Protection, Cranbrook

AMT/KE:lkm

January

DATE	WEATHER	TEMP	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 SSV	BR2 SSV	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	BR1 Anoxic zone D.O	BR1 Aeration zone D.O	BR2 Anoxic zone D.O	Br2 Aeration zone D.O	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
01-Jan	clear	-3	228711	206		590	430	5.6	5.6	2.4	1.6	5	1.4	3.4	522347	700909
02-Jan	clear	-3	228917	203		750	590	5.6	5.6	2.2	1.8	4.2	0.3	3.3	522487	701130
03-Jan	clear	-7	229120	208		720	590	5.6	5.6	1.6	1.4	4.7	2	4.1	522624	701347
04-Jan	clear	-10	229328	205		710	640	5.6	5.6	1.7	0.4	4.5	1.4	4.3	522758	701558
05-Jan	clear	-7	229533	194		700	650	5.6	5.6	1.5	0.4	5.3	1.3	3.3	522888	
06-Jan	clear	-7	229727	193		700	600	5.6	5.6	1.5	0.2	5.2	1.4	3.2	523027	701986
07-Jan	clear	-5	229920	187		750	500	5.6	5.6	1.2	0.2	4	1.2		523154	702188
08-Jan	clear	-3	230107	184		700	400	5.6	5.6	1.8	1	2.9	1.4	1	523279	702387
09-Jan	clear	-2	230291	155		800	640	5.6	5.6	1.3	2.2	6	1.2	5	523399	702578
10-Jan	clear	-2	230446	136		850	610	5.6	5.6	0.6	0.4	7.4	0.8	5.6	523483	702712
11-Jan	clear	-2	230582	144		840	610	5.6	5.6	0.6	2	7.3	1.8	4.5	523539	702797
12-Jan	clear	-3	230726	155		720	500	5.6	5.6	0.7	0.5	6.8	1.8	5.2	523680	703022
13-Jan	clear	-2	230881	173		680	440	5.6	5.6	0.7	0.5	7.5	2.2	4.1	523813	
14-Jan	cloud	2	231054	191		600	450	5.6	5.6	1.3	0.2	5.2	1.7	4.2	523938	703430
15-Jan	fog	1	231245	174		720	600	5.6	5.6	2.2	1.7	2.6	0.8	2.7	524059	403622
16-Jan	clear	1	231419	153		720	560	5.6	5.6	2.5	0.6	5.5	1.7	5.5	524133	703738
17-Jan	clear	-3	231572	143		700	550	5.6	5.6	1.3	0.4	6.6	2	6.7	524279	703969
18-Jan	clear	-1	231715	143		740	500	5.6	5.6	1.2	1.5	7.9	1.4	7.5	524405	704170
19-Jan	clear	-3	231858	116			380	5.6	5.6	0.6			2.4	6.2	524497	704318
20-Jan	clear	-3	231974	127			450	5.6	5.6	0.8			2.4	2.7	524574	
21-Jan	clear	-9	232101	180		300	420	7.4	5.6	0.8	0.5	4.2	2.2	5.9	524703	704642
22-Jan	snow	-4	232281	189		360	490	5.6	5.6	1.2	0.4	4.5	1.6	5.5	524848	704872
23-Jan	snow	-9	232470	164		470	480	5.6	5.6	1.1	0.3	6.1	1.7	7.5	524980	705083
24-Jan	clear	-6	232634	152		450	470	5.6	5.6	0.9	1.3	6	1.8	8.2	525108	705286
25-Jan	clear	-6	232786	162		550	460	5.6	5.6	0.9	1.4	6.1	2.5	7.2	525199	705431
26-Jan	clear	-5	232948	115		550		5.6	5.6	0.7					525269	705546
27-Jan	snow	-3	233063	156		560		5.6	7.4	1.7	0.2	2			525410	
28-Jan	clear	-11	233219	220		480	220	5.6	5.6	1.2	0.7	5.3	1.9	7.7	525553	
29-Jan	clear	-18	233439	185		660	240	5.6	5.6	2.1	0.7	4.7	1.7	7.5	525725	705991
30-Jan	clear	-20	233624	185		670	260	5.6	7	1.4	0.6	7	1.3	8.4	525918	706345
31-Jan	snow	-16	233809	177	257	700	290	5.6	7	1.2	1.9	6.8	0.5	9.1	526047	706557
Summary			-5	5275				6	6	1						
	Median		-3					5.6	5.6	1.2						
				Bags removed	257			175.4	178.2	40.9						



February

DATE	WEATHER	TEMP	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 SSV	BR2 SSV	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	BR1 Anoxic zone D.O	BR1 Aeration zone D.O	BR2 Anoxic zone D.O	BR2 Aeration zone D.O	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
01-Feb	clear	-12	233896	176		760	310	5.6	5.6	1.1	1.4	7.7	0.5	4	526109	706658
02-Feb	clear	-9	234162	176		600	300	5.6	5.6	0.8	1.4	4.1	2	7	526203	706812
03-Feb	sun	-8	234338	180		750	300	5.6	5.6	1.2	0.5	3.4	1	6	526351	707049
04-Feb	clear	-5	234518	184		650	300	5.6	5.6	2.1	1.6	1.6	1.5	5	526490	707275
05-Feb	clear	-1	234702	193		720	300	7	7	2.4	0.4	0.4	0.6	3.3	526633	
06-Feb	clear	0	234895	177		820	320	7	7	1.8	0.3	3.3	0.2	6.4	526756	707707
07-Feb	snow	0	235072	176		750	320	7	7	1.3	1.3	4.6	0.4	7.2	526803	
08-Feb	clear	-2	235248	176		790	350	7	7	1.1	1.1	4.4	0.5	6.9	526957	708044
09-Feb	clear	-5	235424	181		330	640	7	7	1.3	1.4	3.2	1.6	5.8	527094	708266
10-Feb	snow	-8	235605	180		680	320	7	7	1.6	1.9	4.4	1.5	6.8	527244	708512
11-Feb	clear	-4	235785	187		650	280	7	7	1.9	1.6	4.6	1.9	6.8	527338	
12-Feb	clear	-2	235972	197		760	340	7	7	1.9	0.9	4.5	0.4	6.3	527432	708835
13-Feb	snow	-1	236169	184		710	420	8.4	8.4	1.3	0.3	2	1.2	4.4	527600	709118
14-Feb	clear	-5	236353	192		760	450	8.4	8.4	1.2	0.6	4.7	0.3	6.5	527733	709342
15-Feb	clear	-8	236545	220		790	460	8.4	8.4	1	0.2	5.5	1.3	7.2	527857	709545
16-Feb	cloud	-8	236765	219		680	350	8.4	8.4	1.1	1.5	5.5	2	7.2	527914	
17-Feb	clear	-10	236984	265		700	400	8.4	8.4	1.7	1	2.8	1.8	5.7	528059	709891
18-Feb	clear	-8	237249	250		680	420	8.4	8.4	2.3	0.2	2.6	1.7	4.1	528223	710169
19-Feb	clear	-4	237499	212		820	620	8.4	8.4	2.4	0.5	3.2	0.2	6.1	528353	710396
20-Feb	clear	-6	237711	204		850	670	8.4	8.4	2.3	0.5	1.9	0.5	4.7	528442	710574
21-Feb	snow	-3	237915	175		860	640	8.4	8.4	1.4	0.8	1.5	0.4	4.7	528610	
22-Feb	clear	-14	238090	168		820	610	8.4	8.4	1.4	1.1	2.8	1.1	5.6	528758	711133
23-Feb	clear	-22	238258	173		740	430	8.4	8.4	1.6	0.7	4.1	1.5	6.7	528872	
24-Feb	clear	-25	238431	193		800	400	8.4	5.6	1.4	0.9	2.9	1.7	4.8	528948	711479
25-Feb	snow	-15	238624	191		850	480	8.4	5.6	1.6	0.9	2.1	1.6	4.6	529122	711790
26-Feb	snow	-10	238815	187		830	480	8.4	5.6	1.7	0.3	0.7	0.3	2.7	529227	
27-Feb	clear	-11	239002	176		870	570	8.4	8.4	1.9	0.8	1.7	0.6	4.6	529416	712085
28-Feb	clear	-9	239178	178	219	860	570	8.4	8.4	1.4	0.6	0.7	0.6	3.6	529525	712292
Summary		-8	Average	192				8	7	2						
	Median	-8	Max	265				8.4	7	1.5						
			Total	5370	219			212.8	204.4	44.2			Monthly total			

March

DATE	WEATHER	Temp	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 SSV	BR2 SSV	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	BR1 Anoxic zone D.O	BR1 Aeration zone D.O	BR2 Anoxic zone D.O	Br2 Aeration zone D.O	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
01-Mar	clear	-8	239356	215		850	570	8.4	8.4	1.4	0.2	3.8	0.9	6.1	529667	712560
02-Mar	snow	-5	239571	201		800	420	8.4	8.4	1.7	1	1.2	1.3	4	529752	712703
03-Mar	cloud	-7	239772	188		820	500	8.4	8.4	2	1.3	1.1	2.1	4.3	529831	712866
04-Mar	clear	-15	239960	182		800	500	11.2	5.6	2.2	1.4	2.2	2.5	5	529998	713171
05-Mar	clear	-8	240142	176		870	730	11.2	5.6	1.8	0.9	1	0.5	3.9	530127	713320
06-Mar	clear	-10	240318	176		860	710	8.1	5.6	1	0.3	2.8	0.8	3.8	530336	713502
07-Mar	clear	-10	240494	188		890	790	8.1	5.6	0.8	0.2	3	1	5	530419	713707
08-Mar	clear	-10	240682	181		890	810	8.1	5.6	1	0.2	3.6	0.9	5.8	530548	713953
09-Mar	clear	-15	240863	181		840	740	8.1	5.6	0.7	0.7	4.5	2.2	6.4	530595	714037
10-Mar	clear	-13	241044	159		850	710	8.1	5.6	1	0.5	0.6	1.6	2.5	530789	714264
11-Mar	cloud	-11	241203	157		800	700	8.1	5.6	1	0.9	4.3	2.2	6.4	530847	714404
12-Mar	clear	-8	241360	187		750	600	8.1	5.6	0.9	0.5	5.2	1.3	6.7	530920	714683
13-Mar	snow	-2	241547	168		840	700	8.1	5.6	0.9	0.3	2.3	0.2	4.7	531192	714795
14-Mar	clear	-6	241715	184		800	700	8.1	5.6	0.9	0.2	2.9	1.5	5.2	531280	715025
15-Mar	clear	-8	241899	206		850	750	9	5.6	0.8	1.1	5.8	1.6	7	531416	715025
16-Mar	clear	-10	242105	178		810	620	9	5.6	0.5	1.3	5.4	1.3	7	531570	715444
17-Mar	sun	-7	242283	192		800	630	6.3	5.6	0.4	1	3	0.3	5	531653	715555
18-Mar	sun	-7	242475	164		820	560	6.3	5.6	0.8	1.2	1.4	1.4	2.8	531821	715701
19-Mar	clear	-6	242639	179		860	730	6.3	5.6	1.2	0.2	1.1	0.5	3.3	531965	715951
20-Mar	clear	-4	242818	150		860	710	6.3	5.6	1.5	0.3	0.5	0.9	3.6	532114	716122
21-Mar	sclear	-6	242968	175		860	720	6.3	5.6	0.7	0.9	6	1.7	8.4	532255	716339
22-Mar	clear	-6	243143	178		850	650	6.3	5.6	1.1	0.5	6.5	0.8	7.7	532295	716453
23-Mar	clear	-8	243321	181				6.3	5.6	0.6	2	5.1	2.3	7.2	532425	716725
24-Mar	cloud	-5	243502	172		800	5100	6.3	5.6	0.7	2.5	5.9	2.4	7.8	532537	716942
25-Mar	cloud	-4	243674	179		820		6.3	5.6	0.9	1.4	5.3	1.5	4.5	532621	716973
26-Mar	clear	-4	243853	176		860	5500	6.3	5.6	0.9	0.9	4.5	1	4.8	532791	717266
27-Mar	clear	1	244029	160		860	5500	6.3	5.6	0.8	0.3	2.7	0.8	3.3	532945	717400
28-Mar	clear	-9	244189	197		890	5500	6.3	5.6	0.5	0.8	2.2	0.7	3.4	533089	717637
29-Mar	clear	-7	244386	191		870	800	6.3	5.6	0.8	0.3	4.6	1	4.5	533224	717818
30-Mar	clear	-7	244577	208		820	720	6.3	5.6	0.6	2.3	6.3	2.4	6.6	533361	718005
31-Mar	cloud	-7	244785	205	230	840	760	6.3	5.6	0.6	0.9	6.9	2	6.7	533492	718199
Summary			Average	182				8	6	1			1.4			
	Median	-7	Max	215				8.1	5.6	0.9						
			Total	5634	230			233	182	30.7						

April

DATE	WEATHER	Temp	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 SSV	BR2 SSV	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	BR1 Anoxic zone D.O	BR1 Aeration zone D.O	BR2 Anoxic zone D.O	Br2 Aeration zone D.O	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
01-Apr	cloud	-8	244990	171		860	760	6.3	5.6	0.7	0.4	1.9	1.4	2	533625	718383
02-Apr	clear	-4	245161	173		900	870	6.3	5.6	0.8	0.4	2.8	0.5	1.6	533755	718577
03-Apr	snow	-4	245334	145	12	900	880	6.3	5.6	0.7	0.5	5	0.8	5.2	533892	718724
04-Apr	snow	-4	245479	160	12	890	800	6.3	5.6	0.6	0.6	4.6	1.1	4.3	534018	718961
05-Apr	clear	-7	245639	158	12	890	810	6.3	5.6	0.4	0.7	5.7	1	5.4	534148	719126
06-Apr	cloud	-7	245797	181	12	760	640	6.3	5.6	0.3	0.6	6	1	5.3	534274	719312
07-Apr	cloud	-9	245978	185		810	710	6.3	5.6	0.5	0.4	4.4	1.9	4.7	534397	
08-Apr	rain	-1	246163	174		820	700	6.3	5.6	0.7	0.3	2.9	1.4	2.6	534526	
09-Apr	clear	2	246337	201	12	870	790	6.3	5.6	0.8	0.2	4.8	0.6	3.8	534654	719874
10-Apr	clear	2	246538	197	12	890	400	6.3	5.6	0.7	0.4	5.6	0.6	5.2	534783	720072
11-Apr	snow	0	246735	176	12	890	760	6.3	5.6	0.5	1	7.1	0.9	6.2	534901	720315
12-Apr	clear	-2	246911	173	12	880	790	6.3	5.6	0.5	0.6	8.2	1	7.7	535030	720504
13-Apr	clear	-5	247084	137		840	760	4.5	4.7	0.5	3	8	2	7	535072	720637
14-Apr	clear	-3	247221	143	12	820	750	4.5	4.7	0.3	6	8.8	3	8.8	535185	720887
15-Apr	clear	1	247364	156				4.5	4.7	0.4	2.2	7.2	1.8	6.8	535275	721068
16-Apr	clear	1	247520	169		910	860	4.5	4.7	0.6	1.7	8.4	0.5	7.8	535401	721359
17-Apr	snow	0	247689	133		880	700	4.5	4.7	0.2	0.7	6	0.7	4	535571	721458
18-Apr	clear	-2	247822	120	12	900	850	4.5	4.7	0.4	5.1	9	3.7	9.1	535702	
19-Apr	clear	-1	247942	123	12	900	800	4.5	4.7	0.3	6.4	9.9	5	10	535820	721888
20-Apr	clear	2	248065	102			750	4.5	4.7	0.2	7	10	6	10	535866	
21-Apr	cloud	1	248167	124			650	4.5	4.7	0.2	7	10	6	11	535974	
22-Apr	cloud	0	248291	95			700	4.5	4.7	0.2	8	10	6	11	536014	
23-Apr	clear	4	248386	116	12		550	4.5	4.7	0.4	6.5	11	5	11.4	536089	
24-Apr	cloud	4	248502	112	12	650	550	4.5	4.7	0.3	7.2	11	6	11.6	536203	
25-Apr	clear	4	248614	135		650	490	4.5	4.7	0.4	7.6	11	6	11.6	536241	
26-Apr	clear	2	248749	143		650	470	4.5	4.7	0.4	7.5	11	6	11.2	236325	
27-Apr	sun	5	248892	114			650	4.5	4.7	0.5	7.5	11	4.7	10.5	536444	723065
28-Apr	sun	8	249006	100			450	4.5	4.7	0.6	6	10.4	4	10.3	536500	723157
29-Apr	sun	4	249106	101	12		450	4.5	4.7	0.4	7.2	10.9	5.8	11	536560	
30-Apr	sun	8	249207	108			450	4.5	4.7	0.4	5.7	10.6	3.6	10.8	536682	
Summary			Average	144				5	5	0			1.4			
	Median	0	Max	201				4.5	4.7	0.4						
			Total	4325	168			156.6	151.8	13.9			Monthly total			

May

DATE	WEATHER	Temp	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 SSV	BR2 SSV	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	BR1 Anoxic zone D.O	BR1 Aeration zone D.O	BR2 Anoxic zone D.O	Br2 Aeration zone D.O	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
01-May	sun	8	249315	121		500	4400	4.5	4.7	0.3	8	10	5.4	10.7	536779	723631
02-May	sun	8	249436	116	12	4800	4300	4.5	4.7	0.4	8	10	6.5	11	536845	723699
03-May	sun	10	249552	89				4.5	4.7	0.3	6	10	4	10	536938	723837
04-May	sun	11	249641	77			400	4.5	4.7	0.2	6	10			537051	724007
05-May	sun	10	249718	82		750	offline	6.3		0.4	5.7	10			537081	724053
06-May	sun	12	249800	69		720		6.3		0.3	4	8			537173	724182
07-May	rain	12	249869	82		740		6.3		0.3	5	10			537290	724348
08-May	cloud	8	249951	81	12	600		6.3		0.4	4.8	10			537424	724538
09-May	cloud	4	250032	87				6.3		0.6	3.9	9.8			537424	724538
10-May	rain	8	250119	82				6.3		0.4	3	9.2			537553	724720
11-May	sun	6	250201	98				6.3		0.4	6.3	10.7			537671	724888
12-May	sun	10	250299	83		750		6.3		0.3	1.5	8.4			537717	724957
13-May	sun	10	250382	82	12	700		6.3		0.6	1.7	9.3			537797	725067
14-May	sun	10	250464	88		650	250	6.3	2.8	0.8	2.6	9	6.5	11	537941	725271
15-May	sun	12	250552	92		600	250	6.3	2.8	0.5	0.8	6.7	7.4	11.3	538071	725458
16-May	sun	12	250644	136	12	650	250	6.3	2.8	0.3	1.1	0.3	7.1	11.3	538201	725645
17-May	sun	10	250780	171		700	300	6.3	5.6	0.3	1.3	6.4	1.7	8	538333	725834
18-May	smoke	11	250951	114		700	350	6.3	5.6	0	1.6	7	0.5	9	538359	725880
19-May	clear	14	251065	95		offline	400	6.3	5.6	0.7			1.8	7.2	538475	726039
20-May	clear	16	251160	101			320		5.6	0.4			1.3	6.7	538620	726247
21-May	sun	12	251261	86			310		5.6	0.6			1.1	8	538761	726450
22-May	cloud	10	251347	119			500	1	5.6	0.5			0.4	4.5	538900	726659
23-May	rain	3	251466	113	12		400	1	5.6	0.5			4.2	8.2	539024	726833
24-May	sun	8	251579	124		100	500	6.3	5.6	0.5	8.3	9.8	1	8.3	539106	726954
25-May	cloud	10	251703	103		200	400	6.3	5.6	0.4	3.3	6.8	2.1	9	539165	727038
26-May	sun	11	251806	111		220	420	6.3	5.6	0.3	3.3	7.3	2.3	9	539302	727239
27-May	sun	13	251917	108		220	420	6.3	5.6	0.3	2.2	6.3	1.8	7.3	539422	727418
28-May	sun	12	252025	148		250	350	5.4	5.6		3.2	8.4	0.8	9.1	539542	
29-May	sun	12	252173	126		250	350	5.4	5.6		2.5	8	0.9	8.9	539601	727678
30-May	sun	10	252299	129	12	270	400	3.6	3.7		2	8	0.9	9.2	539703	727821
31-May	sun	10	252428	114		270	350	3.6	3.7		0.8	6	0.4	6	539820	728004
Summary			Average	104				5	5	0			1.4			
	Median	10	Max	171				6.3	5.6	0.4						
			Total	3227	72			157.7	107.4	11			Monthly total			

June

DATE	WEATHER	Temp	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 SSV	BR2 SSV	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	BR1 Anoxic zone D.O	BR1 Aeration zone D.O	BR2 Anoxic zone D.O	Br2 Aeration zone D.O	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
01-Jun	sun	15	252542	109		320	420	3.6	3.7	0.4	1.5	5	1.3	5.5	539952	728186
02-Jun	sun	11	252651	76		300	400	3.6	3.7	0.5	1.4	3.6	1.2	4.1	540056	728342
03-Jun	sun	16	252727	158		300	380	3.6	3.7	0.2	1.1	2	1.2	0.8	540123	728444
04-Jun	sun	12	252885	112		380	410	3.6	3.7	0.5	0.4	6	1	6.6	540240	728610
05-Jun	sun	12	252997	104	12	420	450	3.6	3.7	0.7	0.5	5.4	0.6	6.2	540379	728806
06-Jun	sun	12	253101	105		400	450	3.6	3.7	0.5	0.6	6	0.7	6.8	540513	729001
07-Jun	sun	12	253206	96		390	400	3.6	3.7	0.5	0.4	6	0.7	7.2	540636	729189
08-Jun	sun	18	253302	83		350	340	3.6	3.7	0.5	2.1	6.1	1.7	7.1	540759	729369
09-Jun	sun	20	253385	110		350	340	3.6	3.7	0.5	2	6.2	1.5	7.5	540779	729409
10-Jun	cloud	16	253495	110		360	320	3.6	3.7	0.7	1.3	3.7	1.2	5.2	540909	729590
11-Jun	sun	14	253605	123		500	360	3.6	3.7	1	0.4	4.7	0.5	5.7	541040	
12-Jun	sun	15	253728	105		600	400	4.5	4.7	1	0.3	4.9	0.7	7	541167	729972
13-Jun	sun	14	253833	114	12	550	400	4.5	4.7	0.9	0.5	6.1	0.8	7.3	541291	730156
14-Jun	rain	10	253947	127		400	300	4.5	4.7	1	0.3	3.5	0.7	5.4	541419	730347
15-Jun	cloud	11	254074	124				4.5	4.7						541559	730553
16-Jun	cloud	11	254198	110		380	360	4.5	4.7	0.7	1.4	6.1	1.3	4.9	541595	730615
17-Jun	cloud	11	254308	148				4.5	4.7							
18-Jun	rain	8	254456	148				4.5	4.7							
19-Jun	rain	5	254604	139				4.5	4.7	0.9					541957	731144
20-Jun	rain	7	254743	153				4.5	4.7	0.8	0.4	4.3	0.4	4.9	542088	731330
21-Jun	cloud	8	254896	107	12	600	400	4.5	4.7	0.7	0.3	5.3	0.6	6	542178	731473
22-Jun	sun	13	255003	109		510	400	4.5	4.7	0.6	1.3	2.4	0.9	3.5	542220	731542
23-Jun	cloud	9	255112	130		510	400	4.5	4.7	0.7	1.1	1	1	3.5	542356	731737
24-Jun	sun	11	255242	129		520	420	4.5	4.7	0.7	0.8	0.9	1.1	2.6	542494	731398
25-Jun	sun	11	255371	127		600	500	4.5	4.7	1.6	0.4	1	0.4	2.9	542631	732142
26-Jun	sun	14	255498	111	12	600	500	4.5	4.7	1.3	0.4	2.9	0.5	4.2	542683	732218
27-Jun	sun	14	255609	106		550	480	5.4	5.6	0.8	0.3	2.8	0.5	4.2	542811	732401
28-Jun	sun	15	255715	125	12			5.4	5.6	0.9	0.4	6.2	0.5	7.2	542948	732604
29-Jun	sun	14	255840	126				5.4	5.6	0.9	2.2	5.6	1.4	6.6	543084	732806
30-Jun	sun	14	255966	144		550	440	5.4	5.6	0.9	1.5	5.7	1.5	6.6	543210	732993
Summary			Average	119				4	4	1			1.4			
	Median	12	Max	158				4.5	4.7	0.7						
			Total	3568	60			128.7	133.6	20.4			Monthly total			

July

DATE	WEATHER	Temp	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 SSV	BR2 SSV	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	BR1 Anoxic zone D.O	BR1 Aeration zone D.O	BR2 Anoxic zone D.O	Br2 Aeration zone D.O	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
01-Jul	sun	18	256110	128		520	420	5.4	5.4	1.3	1.2	5.1	0.8	3.3	543344	733192
02-Jul	sun	10	256238	171		750	510	5.4	5.6	0.9	0.3	5	0.6	6.6	543478	733391
03-Jul	sun	10	256409	180	12	750	600	5.4	5.6	1	0.2	1.6	0.6	4.9	543645	733638
04-Jul	sun	11	256589	174	12	700	580	5.4	5.6	1.1	0.2	2.6	0.6	5.9	543795	733856
05-Jul	sun	10	256763	159	12	750	600	5.4	5.6	1.3	0.3	1.5	0.5	4.9	543865	733967
06-Jul	sun	14	256922	167		720	480	6.3	6.3	1	1.4	2.2	1.2	5	543989	734145
07-Jul	sun	17	257089	130		720	480	6.3	6.3	1.1	0.4	1.7	1.2	4.9	544157	734314
08-Jul	sun	15	257219	133		700	460	6.3	6.3	1	1.5	4.8	1.4	4.6	544308	734617
09-Jul	sun	15	257352	141		800	600	6.3	6.3	1.2	0.2	3.5	0.6	6.4	544452	734831
10-Jul	sun	18	257493	141	12	750	550	6.3	6.3	1.9	0.3	0.8	0.3	2.5	544561	734995
11-Jul	rain	13	257634	165	12	730	500	6.3	6.3	0.9	0.2	5.8	0.4	7	544640	735109
12-Jul	cloud	10	257799	163	10	670	550	6.3	6.3	0.8	0.4	3.9	0.4	6.4	544800	735347
13-Jul	smoke	10	257962	176		600	500	6.3	6.3	0.8	1.4	6.4	1.7	7.2	544941	735558
14-Jul	smoke	12	258138	164				6.3	6.3	0.6	0.4	3.2	1.2	5.2	545071	735753
15-Jul	smoke	16	258302	143	12	750	650	6.3	6.3	0.8	0.2	3	1	4.5	545201	735947
16-Jul	sun	14	258445	140		750	300	6.3	6.3	0.8	0.2	2	1	4.1	545337	736160
17-Jul	sun	14	258585	133	12			6.3	6.3	1.1	0.5	1.3	1.2	4.7	545458	736333
18-Jul	sun	12	258718	140		750	600	6.3	6.3	0.8	0.8	6.1	1.4	7.2	545596	736541
19-Jul	sun	13	258858	134	12	700	480	6.3	6.3	1.3	0.2	6	0.3	5	545680	736667
20-Jul	sun	13	258992	144		780	500	6.3	6.3	1	0.2	4	0.4	6	545762	736802
21-Jul	sun	16	259136	138	12	770	550	6.3	6.3	1.3	0.5	5	0.2	6	545888	736984
22-Jul	sun	15	259274	137		780	550	6.3	6.3	1.3	0.5	4.6	1.2	5.5	546053	737222
23-Jul	sun	14	259411	137	12	750	550	6.3	6.3	1.4	0.3	2.2	0.5	4	546208	737453
24-Jul	sun	16	259548	126	12	700	500	6.3	6.3	1.4	0.3	3.5	0.6	6	546337	737647
25-Jul	sun	13	259674	137		700	600	6.3	6.3	1.3	0.2	4.5	0.6	5.8	546495	737647
26-Jul	cloud	10	259811	177				6.3	6.3	1.3	0.4	6.5	0.5	7.4	546679	737917
27-Jul	sun	15	259988	171	12	750	600	6.3	6.3	1.4	0.4	6.5	0.3	7.1	546826	738138
28-Jul	sun	12	260159	151		750	600	6.3	6.3	1.9	0.3	4.7	0.5	6	546985	738377
29-Jul	sun	12	260310	155		750	600	6.3	6.3	1.8	0.3	2.8	0.3	4.4	547102	738553
30-Jul	sun	15	260465	145	11	800	600	6.3	6.3	1.4	0.2	1.7	0.4	4.9	547225	738739
31-Jul	sun	14	260610	146		730	500	6.3	6.3	1.9	0.4	3.3	0.5	6.2	547319	738876
Summary			Average	150				6	6	1			1.4			
	Median	14	Max	180				6.3	6.3	1.2						
			Total	4646	165			190.8	191.6	37.1			Monthly total			

August

DATE	WEATHER	Temp	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 SSV	BR2 SSV	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	BR1 Anoxic zone D.O	BR1 Aeration zone D.O	BR2 Anoxic zone D.O	Br2 Aeration zone D.O	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
01-Aug	sun	14	260756	157				6.3	6.3	1.7	0.2	0.5	0.3	4.8	547524	739177
02-Aug	sun	18	260913	153		730	470	6.3	6.3	1.4	0.3	3.4	0.3	5.4	597676	739409
03-Aug	sun	15	261066	107		650	450	6.3	6.3	1.4	0.2	5.3	0.5	4.3	547794	739582
04-Aug	smoke	12	261173	170		680	550	6.3	6.3	1.4	0.2	0.5	0.4	4.8	547864	739692
05-Aug	smoke	12	261343	160		700	500	6.3	6.3	2	0.2	1.9	0.4	4	548002	739895
06-Aug	smoke	14	261503	169		720	500	8.1	8.1	1.4	0.2	0.6	0.2	1.1	548205	740194
07-Aug	smoke	12	261672	152		700	500	8.1	8.1	1.3	0.2	0.5	0.3	1.5	548370	740441
08-Aug	smoke	13	261824	165		720	530	8.1	8.1	1	0.2	2.1	0.3	4.2	548512	740557
09-Aug	rain	13	261989	166		700	500	7.2	7.2	0.7	0.2	0.5	0.2	2.8	548650	740872
10-Aug	cloud	11	262155	150		700	500	7.2	7.2	1.2	0.4	0.6	0.3	2.3	548725	740976
11-Aug	sun	11	262305	140		700	500	7.2	7.2	1.1	0.2	0.6	0.2	0.4	548902	741233
12-Aug	cloud	12	262445	140		700	500	7.2	7.2	0.9	0.2	1.5	0.4	3.5	549053	74159
13-Aug	sun	13	262585	138		680	500	7.2	7.2	1.1	0.2	0.6	0.3	2.8	549197	741675
14-Aug	sun	14	262723	123		680	510	7.2	7.2	1	0.2	0.5	0.3	0.6	544345	741899
15-Aug	sun	12	262846	133				7.2	7.2	0.7					549489	
16-Aug	smoke	15	262979	135		540	350	7.2	7.2	0.6	0.2	4.6	0.6	5.4	549621	742296
17-Aug	smoke	16	263114	138		520	350	7.2	7.2	1.4	0.7	6.4	0.3	6.6	549763	742551
18-Aug	smoke	16	263252	140		540	350	7.2	7.2	1.5	0.8	3.2	0.2	3.8		
19-Aug	smoke	7	263392	146		500	350	7.2	7.2	2.1	0.3	4.2	0.3	2.5	550067	742967
20-Aug	smoke	7	263538	157		600	350	8.1	8.1	1.4	0.2	3.5	0.4	1.8	550163	743115
21-Aug	cloud	6	263695	168		600	400	8.1	8.1	1	0.2	3.5	0.5	4.2	550264	743248
22-Aug	rain	10	263863	191		620	370	8.1	8.1	1	0.3	5	0.4	3.8	550422	743501
23-Aug	cloud	12	264054	163		700	450	8.1	8.1	0.7	0.3	2.6	0.3	2.2	550614	743788
24-Aug	cloud	10	264217	147				8.1	8.1	0.5	0.2	2.6	0.2	3.6	550732	743968
25-Aug	sun	8	264364	142		620	420	8.1	8.1	0.5	0.3	5.4	0.3	5.8	550806	744082
26-Aug	sun	10	264506	136		650	450	8.1	8.1	1.2	0.3	1.3	0.4	1.9	550930	744265
27-Aug	sun	10	264642	141		650	450	8.1	8.1	1.3	0.3	2.8	0.5	3.7	551090	744507
28-Aug	sun	10	264783	130		580	400	8.1	8.1	0.8	0.3	3.4	0.6	4.6	551228	744717
29-Aug	sun	10	264913	135		580	300	8.1	8.1	0.6					551370	744942
30-Aug	cloud	8	265048	111		600	320	8.1	8.1	0.6	1.5	4.5	0.3	4.6	551547	745196
31-Aug	cloud	10	265159	125	161	500	320	8.1	8.1	0.5	0.9	5.2	1.3	5.3	551589	745268
Summary			Average	146				7	7	1			1.4			
	Median	12	Max	191				7.2	7.2	1.1						
			Total	4528	161			232.2	232.2	34			Monthly total			

September

DATE	WEATHER	TEMP	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 SSV	BR2 SSV	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	BR1 Anoxic zone D.O	BR1 Aeration zone D.O	BR2 Anoxic zone D.O	Br2 Aeration zone D.O	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
01-Sep	cloud	9	265284	131		500	290	8.1	8.1	0.7	0.2	3.3	0.5	5.5	551709	745443
02-Sep	sun	9	265415	138		600	300	8.1	8.1	0.7	0.3	1.3	0.4	2.2	551828	745624
03-Sep	sun	12	265553	160		550	310	8.1	8.1	0.6	0.4	2.4	0.4	0.7	551933	745790
04-Sep	cloud	10	265713	164		600	310	8.1	8.1	0.6	0.2	0.9	0.3	0.8	552091	746018
05-Sep	cloud	12	265877	134		500	400	8.1	8.1	0.5	0.5	4.9	0.5	5.1	552242	746253
06-Sep	cloud	10	266011	132		600	350	8.1	8.1	0.9	1.1	6.4	0.7	7.2	552396	746482
07-Sep	sun	9	266143	131		550	350	8.1	8.1	1.6	0.9	2.9	0.5	5.8	552521	746670
08-Sep	sun	9	266274	151		600	350	8.1	8.1	1.2	1.1	6.2	0.8	7.3		
09-Sep	sun	12	266425	132				8.1	8.1	1.1					552732	746989
10-Sep	sun	8	266557	134		550	330	8.1	8.1	0.6	0.4	5.6	0.5	6.9	552877	747209
11-Sep	sun	8	266691	156		550	300	8.1	8.1	0.5	0.4	6.5	0.7	8	552996	747391
12-Sep	sun	10	266847	124		650	350	7.2	7.2	0.4	1.1	7.4	0.7	6.9	553075	747513
13-Sep	cloud	8	266971	123		550	550	7.2	7.2	0.2	1.8	7.1	1.1	6.1	553190	747686
14-Sep	sun	12	267094	122		540	350	7.2	7.2	0.1	1.3	4.4	0.6	4.4	553328	747897
15-Sep	sun	12	267216	134		350	350	5.4	5.6	0.1	1.2	3.3	0.6	3.8	553466	748106
16-Sep	sun	12	267350	137		450	300	5.4	5.6	0.1	0.9	5.2	1.1	6.1	553628	748352
17-Sep	sun	12	267487	166		490	330	5.4	5.6	0.8	0.3	1.7	0.5	3.2	553638	748373
18-Sep	rain	12	267653	99		500	350	5.4	5.6	0.2	1	3.7	0.8	5	553807	748621
19-Sep	sun	8	267752	114		480	300	5.4	5.6	0.4	1.4	6.4	1	7	553939	748824
20-Sep	cloud		267866	116		440	330	5.4	5.6	0.4	1.2	6	1	6.5	554073	749027
21-Sep	cloud	8	267982	113		550	350	5.4	5.6	0.3	1.8	6.2	1.8	7	554132	749125
22-Sep	sun	3	268095	130		390	300	5.4	5.6	0.6	0.3	5.7	0.6	6.1	554226	749261
23-Sep	cloud	10	268225	149		400	300	6.3	6.3	0.5	0.2	5	0.5	4.8	554379	749494
24-Sep	cloud	5	268374	126		390	300	6.3	6.3	0.6	0.2	4.6	0.4	4.1	554529	749720
25-Sep	sun	7	268500	118		400	350	6.3	6.3	0.6	0.5	7.4	0.3	7.5	554673	749940
26-Sep	cloud	10	268618	103		350	340	3.6	3.6	0.5	0.6	6.6	0.3	6.8	554695	749980
27-Sep	sun	7	268721	98				3.6	3.6	1					554817	750160
28-Sep	rain	10	268819	96				3.6	3.6						554943	750352
29-Sep	cloud	12	268915	79		400	300	3.6	3.6	0	1.1	7.3	0.4	7.6	555089	750562
30-Sep	cloud	1	268994	113	93	400	300	3.6	3.6	0.1	1	7.6	0.4	7.3	555180	750689
<b>Summary</b>		<b>9</b>	<b>Average</b>	<b>127</b>				<b>6</b>	<b>6</b>	<b>1</b>						
	<b>Median</b>	<b>10</b>	<b>Max</b>	<b>166</b>				<b>6.3</b>	<b>6.3</b>	<b>0.5</b>						
			<b>Total</b>	<b>3823</b>	<b>93</b>			<b>190.8</b>	<b>192.4</b>	<b>15.9</b>			<b>Monthly total</b>			



October

DATE	WEATHER	TEMP	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 SSV	BR2 SSV	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	BR1 Anoxic zone D.O	BR1 Aeration zone D.O	BR2 Anoxic zone D.O	Br2 Aeration zone D.O	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
01-Oct	sun	-1	269107	100		550	300	3.6	3.6	0.5	1.1	8	0.3	7.7	555216	750769
02-Oct	cloud	4	269207	92		600	300	3.6	3.6	0.3	0.4	8	0.7	7.7	555356	750980
03-Oct	sun	2	269299	94		400	300	3.6	3.6	0.3	1	7.7	0.9	7.5	555481	751170
04-Oct	sun	4	269393	94		400	300	3.6	3.6	0.1	3.4	8	0.7	8.9	555537	751260
05-Oct	sun	4	269487	82		420	310	3.6	3.6	0.1	5.6	9.6	1.6	9.3	555617	751378
06-Oct	sun	2	269569	96		400	330	3.6	3.6	0	4.1	9.7	2.8	9.6	555736	751560
07-Oct	sun	2	269665	111		300	250	3.6	3.6	0.7	0.5	6.3	0.5	6.1	555862	751754
08-Oct	sun	2	269776	120		320	260	3.6	3.6	1.2	0.4	5.7	0.7	5.1	555981	751932
09-Oct	sun	3	269896	110		400	280	5.4	5.6	0.9	0.3	4.9	0.4	4	556051	758045
10-Oct	cloud	7	270006	95				5.4	5.6	0.5					556164	752219
11-Oct	cloud	5	270101	89		400	280	5.4	5.6	0.4	0.8	8.5	0.4	7.8	556278	752387
12-Oct	sun	8	270190	75				5.4	5.6						556404	752579
13-Oct	cloud	5	270265	99		380	280	5.4	5.6	0.4	4	9.2	2.9	8.9	556495	752720
14-Oct	cloud	3	270364	107		350	280	5.4	5.6	0.2	1.8	8.5	0.7	7.9	556549	752800
15-Oct	cloud	5	270471	103		400	280	3.6	3.7	0.6	0.8	7.4	0.6	6.7	556681	753002
16-Oct	cloud	6	270574	105		390	300	3.6	3.7	0.6	1.4	8.5	1.1	8.2	556819	753208
17-Oct	cloud	4	270679	107		370	260	3.6	3.7	0.5	1.9	8.7	0.9	8.6	556885	753315
18-Oct	rain	3	270786	109		350	250	3.6	3.7	0.3	3.7	9.1	2.2	9	556957	753423
19-Oct	rain	4	270895	78				3.6	3.7						557080	753612
20-Oct	fog	3	270973	71				3.6	3.7	0.2	6.2	9.5	4.6	9.4		
21-Oct	clear	2	271044	98		350	250	3.6	3.7	0.3	1.4	7.9	1.2	7.5	557208	753808
22-Oct	fog	1	271142	88		350	300	3.6	3.7	0.2	4.5	9.3	2.4	9.1	557342	754013
23-Oct	fog	-2	271230	91		350	300	3.6	3.7	0.3	6.4	9.7	5.5	9.5	557468	754204
24-Oct	snow	-5	271321	92		300	280	3.6	3.7	0.2	6	9.7	4.3	9.9		
25-Oct	clear	-4	271413	76		250	230	3.6	3.7	0.4	6.2	9.8	4	9.7	557599	754406
26-Oct	clear		271489	82		300	280	3.6	3.7	0.1	6.1	9.7	4	9.8	557729	754604
27-Oct	clear	-8	271571	71		280	250	3.6	3.7	0.3	8.1	10.8	6.1	10.8	557860	754804
28-Oct	clear	-11	271642	55			300	3.6	3.7	0.4			2.4	10.1	557860	754810
29-Oct	clear	-10	271697	84		200	300	3.6	3.7	0.1	9.8	11.6	7	12.2	557997	755007
30-Oct	clear	-8	271781	95		150	280	3.6	3.7	0.4	8.3	10.6	6.5	10.8	558116	755198
31-Oct	clear	-5	271876	99		160	250	1.8	3.7	0.5					558223	755359
Summary		1	Average		35			4	4	0						
	Median	2.5	Max					3.6	3.7	0.3						
			Total		0			117	125.3	11			Monthly total			

DATE	WEATHER	TEMP	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 SSV	BR2 SSV	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	BR1 Anoxic zone D.O	BR1 Aeration zone D.O	BR2 Anoxic zone D.O	Br2 Aeration zone D.O	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
01-Nov	cloud	-2	271975	49		150	270			0.2	Probe sent for Calibration				558223	755359
02-Nov	snow		272024	86		150	270			0.1					558375	755590
03-Nov	fog	-1	272110	69						3.7					558507	755792
04-Nov	rain	0	272179	93		150	230	1.8	3.7	0.4					558507	755792
05-Nov	fog	0	272272	83		160	250	1.8	3.7	0.5					558644	755999
06-Nov	clear	0	272355	94		200	300	3.6	3.7	0.5					558771	756192
07-Nov	cloud	0	272449	94					3.7	0.3					558823	756274
08-Nov	sun	-5	272543	91					3.7	0.3					559035	756294
09-Nov	clear	-1	272634	94					3.7	0.7					559178	756506
10-Nov	clear	0	272728	74		200	240		3.7	0.1					559311	756711
11-Nov	snow	-1	272802	106		200	200	1.8	3.7	0.5					559388	756832
12-Nov	clear	-3	272908	116		210	210	3.6	3.7	0.2					559454	756931
13-Nov	snow	-2	273024	112					3.7	0.2					559609	
14-Nov	clear	-2	273136	97					3.7	0.2					559811	
15-Nov	clear	-2	273233	96					3.7	0.2					559910	757628
16-Nov	clear	-2	273329	85					3.7	0.5					560194	
17-Nov	clear	-5	273414	107		230	260		3.7	0.4					560390	758354
18-Nov	clear	-8	273521	104		200	250		3.7	0.2					560550	758603
19-Nov	cloud	-6	273625	93		200	230		3.7	0.1					560793	758978
20-Nov	cloud	-7	273718	94		300	290		3.7	0.3					560857	
21-Nov	cloud	-7	273812	85		250	220		3.7	0.2					561077	
22-Nov	snow	-6	273897	86		250	250		3.7	0.2					561200	
23-Nov	clear	-4	273983	90		230	250		3.7	0.2						
24-Nov	clear	-10	274073	87					3.7	0.1					564489	760067
25-Nov	cloud	-8	274160	91					3.7	0.6					561561	
26-Nov	cloud	-7	274251	87		300	300	3.6	3.7	0.8					561625	
27-Nov	cloud	-8	274338	89		3000	300		3.7	0.4					561758	
28-Nov	cloud	-7	274427	83		250	270		3.7	0.5					561885	760679
29-Nov	cloud		274510	94					3.7	0.5					561963	760800
30-Nov	cloud		274604	87	48	240	240		3.7	0.2					562037	760919
<b>Summary</b>			<b>-4</b>	<b>Average</b>	<b>91</b>			<b>3</b>	<b>4</b>	<b>0</b>						
	<b>Median</b>		<b>-3</b>	<b>Max</b>	<b>116</b>			<b>2.7</b>	<b>3.7</b>	<b>0.3</b>						
				<b>Total</b>	<b>2716</b>	<b>48</b>		<b>16.2</b>	<b>103.6</b>	<b>9.6</b>			<b>Monthly total</b>			

December

DATE	WEATHER	TEMP	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 SSV	BR2 SSV	BR1 ClearPAC (l/d)	BR2 ClearPAC (l/d)	PO4 (mg/l)	BR1 Anoxic zone D.O	BR1 Aeration zone D.O	BR2 Anoxic zone D.O	Br2 Aeration zone D.O	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
01-Dec	cloud	-11	274691	100	187	220	220		3.7	0.2	Probe sent for Calibration				562170	761117
02-Dec	snow	-8	274791	105		230	250		3.7	0.9					562287	
03-Dec	clear	-7	274896	103		230	250	3.6	3.7	0.1					562361	
04-Dec	cloud	-5	274999	114				0.9	3.7	0.7					562451	
05-Dec	cloud	1	275113	100		220	220		3.7	0.2						
06-Dec	rain	0	275213	87		200	250		3.7	0.2						
07-Dec	fog	-1	275300	87		210	230		3.7	0.7						
08-Dec	clear	-4	275387	116		150	200		3.7	0.5					562872	
09-Dec	clear	-10	275503	99		190	210		3.7	1.5					563023	762431
10-Dec	cloud	-7	275602	96		200	230	3.6	3.7	0.8					563161	762644
11-Dec		-5	275698	106		290	280	3.6	3.7	0.5					563284	762832
12-Dec	clear	-4	275804	105		300	300		3.7	0.5					563316	762886
13-Dec	cloud	-7	275909	109		300	300		3.7	0.1					563452	763097
14-Dec	snow	-4	276018	97		280	280	1.8	3.7	1					563587	
15-Dec	clear	-5	276115	112		200	200	1.8	3.7	0.5					563720	763514
16-Dec	clear		276227	112		230	250	1.8	3.7	0.7					563787	763619
17-Dec	clear	-5	276339	114		340	250	3.6	5.6	0.8					563903	763798
18-Dec		-2	276453	90		350	290	1.8	5.6	0.3					564051	764028
19-Dec	snow	-2	276543	115		330	280	1.8	5.6	0.4					564185	764238
20-Dec	snow	0	276658	146		450	290	1.8	5.6	0.5					564290	764397
21-Dec	cloud	0	276804	139		380	380	3.6	5.6	1.7					564340	764483
22-Dec	clear	2	276943	131		400	300	3.6	5.6	0.4					564501	764727
23-Dec	clear	-5	277074	134		400	330	3.6	5.6	0.8	0.4	6.5	0.9	5.4	564646	764956
24-Dec	clear	-12	277208	152		500	300	3.6	5.6	1.3	0.4	6.1	0.6	5.1	564816	765215
25-Dec	cloud	-9	277360	154		400	350	7.2	6.3	0.7	0.5	6.3	0.5	5.5	564957	765435
26-Dec	cloud	-8	277514	170		450	320	7.2	6.3	0.7	0.4	3.8	0.5	3.4	565067	765614
27-Dec	clear	-7	277684	162		490	400	7.2	6.3	0.8	1.1	6.1	0.4	5.5	565278	765941
28-Dec	clear	-5	277846	177		520	480	7.2	6.3	1	1	3.4	1	1	565469	766227
29-Dec	clear	-4	278023	163		500	400	7.2	6.3	0.9	0.3	6.5	0.5	6.1	565604	766462
30-Dec	cloud	-6	278186	186				7.2	6.3	1	0.3	6.3	0.7	5.9	565741	766704
31-Dec	clear	-4	278372	199		600	490	7.2	6.3	1.1	2	6.8	1.2	5.8	565956	767060
<b>Summary</b>		<b>-5</b>	<b>Average</b>	<b>125</b>				<b>4</b>	<b>5</b>	<b>1</b>						
	<b>Median</b>	<b>-5</b>	<b>Max</b>	<b>199</b>				<b>3.6</b>	<b>3.7</b>	<b>0.7</b>						
			<b>Total</b>	<b>3880</b>	<b>187</b>			<b>90.9</b>	<b>148.1</b>	<b>21.5</b>			<b>Monthly total</b>			

		<b>Well 3 (Cum M3)</b>	<b>Monthly Total</b>	<b>Well 4 (Cum m3)</b>	<b>Monthly Total</b>	<b>Totals</b>	
<b>2023</b>	Jan	522347	3762	700909	5749	<b>9511</b>	
	Feb	526109	3558	706658	5902	<b>9460</b>	
	Mar	529667	3958	712560	5823	<b>9781</b>	
	Apr	533625	3154	718383	5248	<b>8402</b>	
	May	536779	3173	723631	4555	<b>7728</b>	
	Jun	539952	3392	728186	5006	<b>8398</b>	
	Jul	543344	4180	733192	5985	<b>10165</b>	
	Aug	547524	4185	739177	6266	<b>10451</b>	
	Sep	551709	3507	745443	5326	<b>8833</b>	
	Oct	555216	3007	750769	4590	<b>7597</b>	
	Nov	558223	3947	755359	5758	<b>9705</b>	
	Dec	562170	3904	761117	6173	<b>10077</b>	
<b>2024</b>	Jan	566074		767290			
		<b>Well 3 Total</b>	<b>43727</b>	<b>Well 4 Total</b>	<b>66381</b>	<b>110108</b>	<b>Yearly Total (m3)</b>

		Cum. Effluent on the 1st of the month	Monthly Total
<b>2023</b>	Jan	228711	5185
	Feb	233896	5460
	Mar	239356	5634
	Apr	244990	4325
	May	249315	3227
	Jun	252542	3568
	Jul	256110	4646
	Aug	260756	4528
	Sep	265284	3823
	Oct	269107	2868
	Nov	271975	2716
	Dec	274691	3880
<b>2024</b>	Jan	278571	
		<b>Plant effluent</b>	<b>49860</b>
			<b>Yearly Total (m3)</b>



## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>CG2300295</b>	Page	: 1 of 2
<b>Client</b>	: <b>Kicking Horse Mountain Resort LP</b>	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Telephone</b>	: 250 344 6003	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: RCR - Kicking Horse Mountain Resort	<b>Date Samples Received</b>	: 11-Jan-2023 11:05
<b>PO</b>	: ----	<b>Date Analysis</b>	: 11-Jan-2023
<b>C-O-C number</b>	: ----	<b>Commenced</b>	
<b>Sampler</b>	: TJ	<b>Issue Date</b>	: 17-Jan-2023 15:36
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



Page : 2 of 2  
 Work Order : CG2300295  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort

## 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
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less 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
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

## Analytical Results

CG2300295-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Plant Effluent - E256696

Client sampling date / time: 10-Jan-2023 11:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	9.4	3.0	mg/L	E160	-	16-Jan-2023	803547
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0164	0.0050	mg/L	E298	11-Jan-2023	11-Jan-2023	799677
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.131 <sup>DLHC</sup>	0.0020	mg/L	E378-U	11-Jan-2023	11-Jan-2023	799687
Phosphorus, total	7723-14-0	0.470 <sup>DLHC</sup>	0.0200	mg/L	E372-U	12-Jan-2023	17-Jan-2023	800593
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	17	1	CFU/100mL	E012.FC	-	11-Jan-2023	801075
Coliforms, Escherichia coli [E. coli]	----	10	1	MPN/100mL	E010	-	11-Jan-2023	801000
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	4.6	2.0	mg/L	E550	-	11-Jan-2023	799984

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

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## QUALITY CONTROL INTERPRETIVE REPORT

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<p><b>Work Order</b> : <b>CG2300295</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 6</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 11-Jan-2023 11:05</p> <p><b>Issue Date</b> : 17-Jan-2023 15:37</p>
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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.

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### ***Workorder Comments***

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

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### ***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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>											
<b>HDPE [BOD HT-48h]</b> Plant Effluent - E256696	E550	10-Jan-2023	----	----	----		11-Jan-2023	48 hrs	21 hrs	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass dissolved (lab preserved)</b> Plant Effluent - E256696	E298	10-Jan-2023	11-Jan-2023	3 days	1 days	✓	11-Jan-2023	28 days	0 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>											
<b>HDPE</b> Plant Effluent - E256696	E378-U	10-Jan-2023	11-Jan-2023	----	----		11-Jan-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass dissolved (lab preserved)</b> Plant Effluent - E256696	E372-U	10-Jan-2023	12-Jan-2023	3 days	2 days	✓	17-Jan-2023	28 days	5 days	✓	
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> Plant Effluent - E256696	E012.FC	10-Jan-2023	----	----	----		11-Jan-2023	30 hrs	25 hrs	✓	
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> Plant Effluent - E256696	E010	10-Jan-2023	----	----	----		11-Jan-2023	30 hrs	25 hrs	✓	



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		Eval	Analysis Date	Holding Times		
				Rec	Actual			Rec	Actual	Eval
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> Plant Effluent - E256696	E160	10-Jan-2023	----	----	----		16-Jan-2023	7 days	6 days	✔

Legend & Qualifier Definitions

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	799677	1	19	5.2	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	799984	1	13	7.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	799687	1	14	7.1	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	801075	1	20	5.0	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	801000	2	19	10.5	10.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	800593	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	803547	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	799677	1	19	5.2	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	799984	1	13	7.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	799687	1	14	7.1	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	800593	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	803547	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	799677	1	19	5.2	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	799984	1	13	7.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	799687	1	14	7.1	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	801075	1	20	5.0	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	801000	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	800593	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	803547	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	799677	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	799687	1	14	7.1	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	800593	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 Calgary - Environmental	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC Calgary - Environmental	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 Calgary - Environmental	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.
Ammonia by Fluorescence	E298 Calgary - Environmental	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: CG2300295</b>	<b>Page</b>	: 1 of 5
<b>Client</b>	: Kicking Horse Mountain Resort LP	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
<b>Telephone</b>	:	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: RCR - Kicking Horse Mountain Resort	<b>Date Samples Received</b>	: 11-Jan-2023 11:05
<b>PO</b>	: ----	<b>Date Analysis Commenced</b>	: 11-Jan-2023
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 17-Jan-2023 15:36
<b>Sampler</b>	: TJ                    250 344 6003		
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

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

This Quality Control Report contains the following information:

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

### Signatories

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

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Elke Tabora		Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

Page : 2 of 5  
Work Order : CG2300295  
Client : Kicking Horse Mountain Resort LP  
Project : RCR - Kicking Horse Mountain Resort

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## **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.

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 803547)</b>											
CG2300295-001	Plant Effluent - E256696	Solids, total suspended [TSS]	----	E160	3.0	mg/L	9.4	9.8	0.4	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 799677)</b>											
CG2300274-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0500	mg/L	0.469	0.486	0.0162	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 799687)</b>											
CG2300289-004	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 800593)</b>											
CG2300289-004	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0031	0.0028	0.0004	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 801000)</b>											
CG2300289-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2300292-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 801075)</b>											
CG2300288-001	Anonymous	Coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	<1	<1	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 799984)</b>											
CG2300268-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----





## Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 803547)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 799677)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 799687)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 800593)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Microbiological Tests (QCLot: 801000)</b>						
Coliforms, Escherichia coli [E. coli]	---	E010	1	MPN/100mL	<1	---
<b>Microbiological Tests (QCLot: 801075)</b>						
Coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 799984)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---



## Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report					
					Spike		Recovery (%)		Recovery Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier	
<b>Physical Tests (QCLot: 803547)</b>										
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	101	85.0	115	----	
<b>Anions and Nutrients (QCLot: 799677)</b>										
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----	
<b>Anions and Nutrients (QCLot: 799687)</b>										
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	99.3	80.0	120	----	
<b>Anions and Nutrients (QCLot: 800593)</b>										
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	99.3	80.0	120	----	
<b>Aggregate Organics (QCLot: 799984)</b>										
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	105	85.0	115	----	

## 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
<b>Anions and Nutrients (QCLot: 799677)</b>										
CG2300276-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 799687)</b>										
CG2300289-005	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0508 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 800593)</b>										
CG2300289-005	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0526 mg/L	0.05 mg/L	105	70.0	130	----

<b>Report To</b>		<b>Report Format / Distribution</b>				<b>Service Requested</b> (Rush for routine analysis subject to availability)																																																												
Company: Kicking Horse Mountain Water Utility Co. Ltd.		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other				<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)																																																												
Contact: Travis Jobin		<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax				<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT																																																												
Address: 1500 Kicking Horse Trail		Email 1: tjobin@kickinghorseresort.com				<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT																																																												
Phone: 250-344-6003    Fax:		Email 2: pmajer@skircr.com				<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT																																																												
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>Client / Project Information</b>				<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="10">Please indicate below Filtered, Preserved or both (F, P, F/P)</td> <td rowspan="5" style="writing-mode: vertical-rl; text-orientation: mixed;">Number of Containers</td> </tr> <tr> <td>BOD</td><td>TSS</td><td>Fecal Coliform</td><td>Ortho Phosphate</td><td>Total P</td><td>N-NH4</td><td>E.Coli</td><td></td><td></td><td></td> </tr> <tr> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>										Please indicate below Filtered, Preserved or both (F, P, F/P)										Number of Containers	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P	N-NH4	E.Coli				X	X	X	X	X	X	X																							
Please indicate below Filtered, Preserved or both (F, P, F/P)																Number of Containers																																																		
BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P	N-NH4												E.Coli																																																	
X	X	X	X	X	X												X																																																	
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Job #: RCR - Kicking Horse Mountain Resort																																																																
Company: Resorts of the Canadian Rockies		PO / AFE:																																																																
Contact: Patrick Majer		LSD:																																																																
Address: 1505 - 17th Ave SW Calgary AB		Quote #: Q33059																																																																
Phone:    Fax:		ALS Contact: PW		Sampler: TJ																																																														
Lab Work Order # (lab use only)																																																																		
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P	N-NH4	E.Coli																																																							
	Plant Effluent - E256696	10-Jan-23	11:00	Water	X	X	X	X	X	X	X								4																																															
	Sample State: WW																																																																	
	Sample Descriptor: MU																																																																	
	Sample Class: REG																																																																	
	Collection Mode: GRB																																																																	
	Permit#: E256696																																																																	

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2300295**




Telephone : +1 403 407 1600

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis Jobin	JAN 10	12:00		Jan 11/23	11:05	1.9 °C				



## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2301887</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 2</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 15-Feb-2023 11:03</p> <p><b>Date Analysis</b> : 15-Feb-2023</p> <p><b>Commenced</b> :</p> <p><b>Issue Date</b> : 22-Feb-2023 12:35</p>
---	--

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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Elke Tabora		Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



Page : 2 of 2  
 Work Order : CG2301887  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort

## 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
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less 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
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

## Analytical Results

CG2301887-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT EFFLUENT - E256696

Client sampling date / time: 14-Feb-2023 11:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	7.0	3.0	mg/L	E160	-	19-Feb-2023	839408
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.751	0.0050	mg/L	E298	15-Feb-2023	15-Feb-2023	835657
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.243 <sup>DLHC</sup>	0.0100	mg/L	E378-U	15-Feb-2023	15-Feb-2023	835601
Phosphorus, total	7723-14-0	0.566	0.0200	mg/L	E372-U	17-Feb-2023	22-Feb-2023	838575
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	4	1	CFU/100mL	E012.FC	-	15-Feb-2023	837374
Coliforms, Escherichia coli [E. coli]	----	2	1	MPN/100mL	E010	-	15-Feb-2023	837336
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	3.4	2.0	mg/L	E550	-	16-Feb-2023	837694

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

## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2301887</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 6</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 15-Feb-2023 11:03</p> <p><b>Issue Date</b> : 22-Feb-2023 12:35</p>
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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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> PLANT EFFLUENT - E256696	E550	14-Feb-2023	----	----	----		16-Feb-2023	3 days	2 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT - E256696	E298	14-Feb-2023	15-Feb-2023	----	----		15-Feb-2023	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
<b>HDPE</b> PLANT EFFLUENT - E256696	E378-U	14-Feb-2023	15-Feb-2023	----	----		15-Feb-2023	3 days	1 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT - E256696	E372-U	14-Feb-2023	17-Feb-2023	----	----		22-Feb-2023	28 days	8 days	✓
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E012.FC	14-Feb-2023	----	----	----		15-Feb-2023	30 hrs	26 hrs	✓
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E010	14-Feb-2023	----	----	----		15-Feb-2023	30 hrs	26 hrs	✓



Page : 4 of 6  
 Work Order : CG2301887  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> PLANT EFFLUENT - E256696	E160	14-Feb-2023	----	----	----		19-Feb-2023	7 days	5 days	✔

Legend & Qualifier Definitions

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	835657	1	15	6.6	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	837694	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	835601	1	19	5.2	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	837374	1	20	5.0	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	837336	2	20	10.0	10.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	838575	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	839408	1	10	10.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	835657	1	15	6.6	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	837694	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	835601	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	838575	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	839408	1	10	10.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	835657	1	15	6.6	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	837694	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	835601	1	19	5.2	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	837374	1	20	5.0	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	837336	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	838575	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	839408	1	10	10.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	835657	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	835601	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	838575	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 Calgary - Environmental	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC Calgary - Environmental	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 Calgary - Environmental	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.
Ammonia by Fluorescence	E298 Calgary - Environmental	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

**Work Order** : **CG2301887**  
**Client** : Kicking Horse Mountain Resort LP  
**Contact** : Travis Jobin  
**Address** : 1500 Kicking Horse Trail PO BOX 330  
 Golden BC Canada V0A 1H0  
**Telephone** :  
**Project** : RCR - Kicking Horse Mountain Resort  
**PO** : ----  
**C-O-C number** : ----  
**Sampler** : ---- 250 344 6003  
**Site** : ----  
**Quote number** : CG21-RESC100-0001  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 6  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Patryk Wojciak  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 15-Feb-2023 11:03  
**Date Analysis Commenced** : 15-Feb-2023  
**Issue Date** : 22-Feb-2023 12:36

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Elke Tabora		Calgary Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

Page : 2 of 6  
Work Order : CG2301887  
Client : Kicking Horse Mountain Resort LP  
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## **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**

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 839408)</b>											
CG2301861-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	22.4	22.4	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 835601)</b>											
CG2301880-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 835657)</b>											
CG2301886-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.125	mg/L	1.25	1.16	0.0857	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 838575)</b>											
CG2301886-003	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0040	mg/L	0.139	0.129	6.96%	20%	----
<b>Microbiological Tests (QC Lot: 837336)</b>											
CG2301859-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2301889-003	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 837374)</b>											
CG2301891-001	Anonymous	Coliforms, thermotolerant [fecal]	----	E012.FC	100	CFU/100mL	300	200	100	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 837694)</b>											
CG2301951-002	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



## Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 839408)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 835601)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 835657)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 838575)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Microbiological Tests (QCLot: 837336)</b>						
Coliforms, Escherichia coli [E. coli]	---	E010	1	MPN/100mL	<1	---
<b>Microbiological Tests (QCLot: 837374)</b>						
Coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 837694)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---



## Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 839408)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	89.9	85.0	115	----
<b>Anions and Nutrients (QCLot: 835601)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	105	80.0	120	----
<b>Anions and Nutrients (QCLot: 835657)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Anions and Nutrients (QCLot: 838575)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	87.7	80.0	120	----
<b>Aggregate Organics (QCLot: 837694)</b>									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	93.0	85.0	115	----

## 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
<b>Anions and Nutrients (QCLot: 835601)</b>										
CG2301880-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0482 mg/L	0.05 mg/L	96.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 835657)</b>										
CG2301886-003	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 838575)</b>										
CG2301887-001	PLANT EFFLUENT - E256696	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----



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Work Order : CG2301887  
Client : Kicking Horse Mountain Resort LP  
Project : RCR - Kicking Horse Mountain Resort

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## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2303189</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 2</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 17-Mar-2023 11:25</p> <p><b>Date Analysis</b> : 17-Mar-2023</p> <p><b>Commenced</b> : 22-Mar-2023 16:57</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



## General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

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.

Unit	Description
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less than.

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
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

## Analytical Results

CG2303189-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT EFFLUENT - E256696

Client sampling date / time: 16-Mar-2023 10:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	17.0	3.0	mg/L	E160	-	20-Mar-2023	869111
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.363	0.0250	mg/L	E298	17-Mar-2023	17-Mar-2023	867494
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.141	0.0020	mg/L	E378-U	17-Mar-2023	17-Mar-2023	867274
Phosphorus, total	7723-14-0	0.552 <sup>DLHC</sup>	0.0200	mg/L	E372-U	17-Mar-2023	19-Mar-2023	867473
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	16	1	CFU/100mL	E012.FC	-	17-Mar-2023	868981
Coliforms, Escherichia coli [E. coli]	----	13	1	MPN/100mL	E010	-	17-Mar-2023	868962
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	4.2	2.0	mg/L	E550	-	17-Mar-2023	867708

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

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## QUALITY CONTROL INTERPRETIVE REPORT

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<p><b>Work Order</b> : <b>CG2303189</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 6</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 17-Mar-2023 11:25</p> <p><b>Issue Date</b> : 22-Mar-2023 17:00</p>
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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.

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### ***Workorder Comments***

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

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### ***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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>											
<b>HDPE [BOD HT 3d]</b> PLANT EFFLUENT - E256696	E550	16-Mar-2023	----	----	----		17-Mar-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Ammonia by Fluorescence</b>											
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT - E256696	E298	16-Mar-2023	17-Mar-2023	----	----		17-Mar-2023	28 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>											
<b>HDPE</b> PLANT EFFLUENT - E256696	E378-U	16-Mar-2023	17-Mar-2023	----	----		17-Mar-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT - E256696	E372-U	16-Mar-2023	17-Mar-2023	----	----		19-Mar-2023	28 days	3 days	✓	
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E012.FC	16-Mar-2023	----	----	----		17-Mar-2023	30 hrs	26 hrs	✓	
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E010	16-Mar-2023	----	----	----		17-Mar-2023	30 hrs	26 hrs	✓	



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT EFFLUENT - E256696	E160	16-Mar-2023	----	----	----		20-Mar-2023	7 days	4 days	✔

**Legend & Qualifier Definitions**

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





## Quality Control Parameter Frequency Compliance

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

Matrix: **Water**

Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	867494	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	867708	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	867274	1	17	5.8	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	868981	1	20	5.0	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	868962	2	19	10.5	10.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	867473	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	869111	1	10	10.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	867494	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	867708	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	867274	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	867473	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	869111	1	10	10.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	867494	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	867708	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	867274	1	17	5.8	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	868981	1	20	5.0	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	868962	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	867473	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	869111	1	10	10.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	867494	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	867274	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	867473	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 Calgary - Environmental	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC Calgary - Environmental	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 Calgary - Environmental	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.
Ammonia by Fluorescence	E298 Calgary - Environmental	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

**Work Order** : **CG2303189**  
**Client** : Kicking Horse Mountain Resort LP  
**Contact** : Travis Jobin  
**Address** : 1500 Kicking Horse Trail PO BOX 330  
 Golden BC Canada V0A 1H0  
**Telephone** :  
**Project** : RCR - Kicking Horse Mountain Resort  
**PO** : ----  
**C-O-C number** : ----  
**Sampler** : ---- 250 344 6003  
**Site** : ----  
**Quote number** : CG21-RESC100-0001  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Patryk Wojciak  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 17-Mar-2023 11:25  
**Date Analysis Commenced** : 17-Mar-2023  
**Issue Date** : 22-Mar-2023 16:57

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

Page : 2 of 5  
Work Order : CG2303189  
Client : Kicking Horse Mountain Resort LP  
Project : RCR - Kicking Horse Mountain Resort

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## 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.

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 869111)</b>											
CG2303166-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	3.8	3.2	0.6	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 867274)</b>											
CG2303184-003	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 867473)</b>											
CG2303186-006	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0036	0.0032	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 867494)</b>											
CG2303166-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.110	0.111	0.817%	20%	----
<b>Microbiological Tests (QC Lot: 868962)</b>											
CG2303188-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2303203-005	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 868981)</b>											
CG2303203-002	Anonymous	Coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	<1	<1	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 867708)</b>											
CG2303180-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



## Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 869111)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 867274)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 867473)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 867494)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Microbiological Tests (QCLot: 868962)</b>						
Coliforms, Escherichia coli [E. coli]	---	E010	1	MPN/100mL	<1	---
<b>Microbiological Tests (QCLot: 868981)</b>						
Coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 867708)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---



### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 869111)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	94.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 867274)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 867473)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	95.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 867494)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Aggregate Organics (QCLot: 867708)</b>									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	101	85.0	115	----

### 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
<b>Anions and Nutrients (QCLot: 867274)</b>										
CG2303184-004	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0578 mg/L	0.05 mg/L	116	70.0	130	----
<b>Anions and Nutrients (QCLot: 867473)</b>										
CG2303186-007	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0471 mg/L	0.05 mg/L	94.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 867494)</b>										
CG2303186-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----



<b>Report To</b>			<b>Report Format / Distribution</b>			<b>Service Requested</b> (Rush for routine analysis subject to availability)																																																																																		
Company: Kicking Horse Mountain Water Utility Co. Ltd.			<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other			<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)																																																																																		
Contact: Travis Jobin			<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax			<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT																																																																																		
Address: 1500 Kicking Horse Trail			Email 1: tjjobin@kickinghorseresort.com			<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT																																																																																		
Phone: 250-344-6003 Fax:			Email 2: pmajer@skircr.com			<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT																																																																																		
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			<b>Client / Project Information</b>			<table border="1"> <tr> <td colspan="11">Please indicate below Filtered, Preserved or both (F, P, F/P)</td> <td rowspan="5">Number of Containers</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>											Please indicate below Filtered, Preserved or both (F, P, F/P)											Number of Containers																																																												
Please indicate below Filtered, Preserved or both (F, P, F/P)																	Number of Containers																																																																							
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			Job #: RCR - Kicking Horse Mountain Resort																																																																																					
Company: Resorts of the Canadian Rockies			PO / AFE:																																																																																					
Contact: Patrick Majer			LSD:																																																																																					
Address: 1505 - 17th Ave SW Calgary AB			Quote #: Q33059																																																																																					
Phone: Fax:			ALS Contact: PW																																																																																					
Lab Work Order # (lab use only)			Sampler: TJ																																																																																					
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P	N-NH4	E.Coli																																																																													
	Plant Effluent - E256696	16-Mar-23	1030	Water	X	X	X	X	X	X	X								4																																																																					
	Sample State: WW																																																																																							
	Sample Descriptor: MU																																																																																							
	Sample Class: REG																																																																																							
	Collection Mode: GRB																																																																																							
	Permit#: E256696																																																																																							
<b>Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/IAB Tier 1 - Natural, etc) / Hazardous Details</b>																																																																																								
<p>Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.</p> <p>By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.</p> <p>Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.</p>																																																																																								
SHIPMENT RELEASE (client use)					SHIPMENT RECEPTION (lab use only)					SHIPMENT VERIFICATION (lab use only)																																																																														
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF																																																																														
Travis Jobin	14-Feb-23	11:10	FG	17-02-23	11:26	3-6 °C																																																																																		

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2303189**



Telephone: +1 403 407 1800





## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2305490</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : WEEK 3 - 2023 SPRING EMS PROGRAM - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 4</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 03-May-2023 12:24</p> <p><b>Date Analysis Commenced</b> : 03-May-2023</p> <p><b>Issue Date</b> : 16-May-2023 16:15</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Patryk Wojciak	Account Manager	External Subcontracting, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



## General Comments

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

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

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

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

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).  
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
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.

<i>Unit</i>	<i>Description</i>
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less than.

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

<i>Qualifier</i>	<i>Description</i>
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).



## Analytical Results

CG2305490-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT EFFLUENT - E256696

Client sampling date / time: 02-May-2023 10:20

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	5.1	3.0	mg/L	E160/CG	-	09-May-2023	927270
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0718	0.0050	mg/L	E298/CG	03-May-2023	03-May-2023	920709
Nitrate (as N)	14797-55-8	11.1	0.0050	mg/L	E235.NO3-L/CG	03-May-2023	03-May-2023	920664
Nitrite (as N)	14797-65-0	0.0245	0.0010	mg/L	E235.NO2-L/CG	03-May-2023	03-May-2023	920665
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.0587	0.0010	mg/L	E378-U/CG	03-May-2023	03-May-2023	920886
Phosphorus, total	7723-14-0	0.188	0.0040	mg/L	E372-U/CG	04-May-2023	06-May-2023	921931
Nitrate + Nitrite (as N)	----	11.1	0.0051	mg/L	EC235.N+N/CG	-	04-May-2023	921769
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	<1	1	CFU/100m	E012.FC/CG	-	03-May-2023	922613
Enterococcus	----	>2419.6	1	MPN/100m	ENTERO.MF/2F	-	03-May-2023	-
Coliforms, Escherichia coli [E. coli]	----	<1	1	MPN/100m	E010/CG	-	03-May-2023	922557
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	<2.0	2.0	mg/L	E550/CG	-	04-May-2023	923233

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

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

## Analytical Results

CG2305490-002

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899

Client sampling date / time: 02-May-2023 10:45

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	90.7	3.0	mg/L	E160/CG	-	09-May-2023	927270
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298/CG	03-May-2023	03-May-2023	920709
Nitrate (as N)	14797-55-8	0.148	0.0050	mg/L	E235.NO3-L/CG	03-May-2023	03-May-2023	920664
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	03-May-2023	03-May-2023	920665
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	03-May-2023	03-May-2023	920886
Phosphorus, total	7723-14-0	0.0574	0.0020	mg/L	E372-U/CG	04-May-2023	06-May-2023	921931
Nitrate + Nitrite (as N)	----	0.148	0.0051	mg/L	EC235.N+N/CG	-	04-May-2023	921769
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	10 <sup>DLM</sup>	2	CFU/100m	E012.FC/CG	-	03-May-2023	922613
Enterococcus	----	1.0	1	MPN/100m	ENTERO.MF/2F	-	03-May-2023	-
Coliforms, Escherichia coli [E. coli]	----	4	1	MPN/100m	E010/CG	-	03-May-2023	922557

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

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



## Analytical Results

CG2305490-003

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: UPSTREAM - COLUMBIA RIVER UP IDZ - E256694

Client sampling date / time: 02-May-2023 11:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	212	3.0	mg/L	E160/CG	-	09-May-2023	927270
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0237	0.0050	mg/L	E298/CG	03-May-2023	03-May-2023	920709
Nitrate (as N)	14797-55-8	0.195	0.0050	mg/L	E235.NO3-L/CG	03-May-2023	03-May-2023	920664
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	03-May-2023	03-May-2023	920665
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	03-May-2023	03-May-2023	920886
Phosphorus, total	7723-14-0	0.102	0.0040	mg/L	E372-U/CG	04-May-2023	06-May-2023	921931
Nitrate + Nitrite (as N)	----	0.195	0.0051	mg/L	EC235.N+N/CG	-	04-May-2023	921769
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	14 <sup>DLM</sup>	2	CFU/100m	E012.FC/CG	-	03-May-2023	922613
Enterococcus	----	<1	1	MPN/100m	ENTERO.MF/2F	-	03-May-2023	-
Coliforms, Escherichia coli [E. coli]	----	12	1	MPN/100m	E010/CG	-	03-May-2023	922557

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

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

## Analytical Results

CG2305490-004

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: EAST SHORE - COLUMBIA RIVER 200M DN-E258898

Client sampling date / time: 02-May-2023 11:15

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	174	3.0	mg/L	E160/CG	-	09-May-2023	927270
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0151	0.0050	mg/L	E298/CG	03-May-2023	03-May-2023	920709
Nitrate (as N)	14797-55-8	0.187	0.0050	mg/L	E235.NO3-L/CG	03-May-2023	03-May-2023	920664
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	03-May-2023	03-May-2023	920665
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	03-May-2023	03-May-2023	920886
Phosphorus, total	7723-14-0	0.0990	0.0020	mg/L	E372-U/CG	04-May-2023	06-May-2023	921931
Nitrate + Nitrite (as N)	----	0.187	0.0051	mg/L	EC235.N+N/CG	-	04-May-2023	921769
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	4 <sup>DLM</sup>	2	CFU/100m	E012.FC/CG	-	03-May-2023	922613
Enterococcus	----	<1	1	MPN/100m	ENTERO.MF/2F	-	03-May-2023	-
Coliforms, Escherichia coli [E. coli]	----	1	1	MPN/100m	E010/CG	-	03-May-2023	922557

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.



## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2305490</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : WEEK 3 - 2023 SPRING EMS PROGRAM - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 10</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 03-May-2023 12:24</p> <p><b>Issue Date</b> : 16-May-2023 16:15</p>
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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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> PLANT EFFLUENT - E256696	E550	02-May-2023	----	----	----		04-May-2023	3 days	2 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E298	02-May-2023	03-May-2023	----	----		03-May-2023	28 days	1 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT - E256696	E298	02-May-2023	03-May-2023	----	----		03-May-2023	28 days	1 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E298	02-May-2023	03-May-2023	----	----		03-May-2023	28 days	1 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E298	02-May-2023	03-May-2023	----	----		03-May-2023	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001)</b>										
<b>HDPE</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E378-U	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001)</b>											
HDPE PLANT EFFLUENT - E256696	E378-U	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E378-U	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E378-U	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E235.NO3-L	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE PLANT EFFLUENT - E256696	E235.NO3-L	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E235.NO3-L	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E235.NO3-L	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E235.NO2-L	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE PLANT EFFLUENT - E256696	E235.NO2-L	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E235.NO2-L	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E235.NO2-L	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E372-U	02-May-2023	04-May-2023	----	----		06-May-2023	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) PLANT EFFLUENT - E256696	E372-U	02-May-2023	04-May-2023	----	----		06-May-2023	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E372-U	02-May-2023	04-May-2023	----	----		06-May-2023	28 days	4 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E372-U	02-May-2023	04-May-2023	----	----		06-May-2023	28 days	4 days	✓	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
Sterile HDPE (Sodium thiosulphate) EAST SHORE - COLUMBIA RIVER 200M DN-E258898	ENTERO.MF	02-May-2023	----	----	----		03-May-2023	24 hrs	28 hrs	* EHTR	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
Sterile HDPE (Sodium thiosulphate) UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	ENTERO.MF	02-May-2023	----	----	----		03-May-2023	24 hrs	28 hrs	* EHTR	



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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	ENTERO.MF	02-May-2023	----	----	----		03-May-2023	24 hrs	29 hrs	*	EHTR
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	ENTERO.MF	02-May-2023	----	----	----		03-May-2023	24 hrs	29 hrs	*	EHTR
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E012.FC	02-May-2023	----	----	----		03-May-2023	30 hrs	25 hrs	✓	
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E012.FC	02-May-2023	----	----	----		03-May-2023	30 hrs	26 hrs	✓	
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E012.FC	02-May-2023	----	----	----		03-May-2023	30 hrs	26 hrs	✓	
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E012.FC	02-May-2023	----	----	----		03-May-2023	30 hrs	26 hrs	✓	
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E010	02-May-2023	----	----	----		03-May-2023	30 hrs	25 hrs	✓	
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E010	02-May-2023	----	----	----		03-May-2023	30 hrs	26 hrs	✓	
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E010	02-May-2023	----	----	----		03-May-2023	30 hrs	26 hrs	✓	



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E010	02-May-2023	----	----	----		03-May-2023	30 hrs	26 hrs	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E160	02-May-2023	----	----	----		09-May-2023	7 days	7 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> PLANT EFFLUENT - E256696	E160	02-May-2023	----	----	----		09-May-2023	7 days	7 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E160	02-May-2023	----	----	----		09-May-2023	7 days	7 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E160	02-May-2023	----	----	----		09-May-2023	7 days	7 days	✔

**Legend & Qualifier Definitions**

EHTR: Exceeded ALS recommended hold time prior to sample receipt.  
 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	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	920709	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	923233	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	920886	1	14	7.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	920664	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	920665	1	19	5.2	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	922613	1	17	5.8	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	922557	2	20	10.0	10.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	921931	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	927270	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	920709	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	923233	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	920886	1	14	7.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	920664	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	920665	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	921931	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	927270	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	920709	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	923233	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	920886	1	14	7.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	920664	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	920665	1	19	5.2	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	922613	1	17	5.8	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	922557	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	921931	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	927270	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	920709	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	920886	1	14	7.1	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	920664	1	19	5.2	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	920665	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	921931	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 Calgary - Environmental	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC Calgary - Environmental	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 Calgary - Environmental	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.
Nitrite in Water by IC (Low Level)	E235.NO2-L Calgary - Environmental	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 Calgary - Environmental	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 Calgary - Environmental	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N Calgary - Environmental	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Enterococcus by (MF - mE)	ENTERO.MF  Nautilus Environmental (Calgary) - 10828 27 Street SE Calgary Alberta Canada T2Z 3V9	Water	APHA 9230C (mod)	Following filtration (0.45 µm), and incubation at 35.0 ±0.5°C for 48 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298  Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372  Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2305490</b></p> <p>Client : Kicking Horse Mountain Resort LP</p> <p>Contact : Travis Jobin</p> <p>Address : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p>Telephone :</p> <p>Project : WEEK 3 - 2023 SPRING EMS PROGRAM - WW</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : TJ                      250 344 6003</p> <p>Site : ----</p> <p>Quote number : CG21-RESC100-0001</p> <p>No. of samples received : 4</p> <p>No. of samples analysed : 4</p>	<p>Page : 1 of 6</p> <p>Laboratory : Calgary - Environmental</p> <p>Account Manager : Patryk Wojciak</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 03-May-2023 12:24</p> <p>Date Analysis Commenced : 03-May-2023</p> <p>Issue Date : 16-May-2023 16:25</p>
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Patryk Wojciak	Account Manager	Nautilus Environmental (Calgary) External Subcontracting, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

Page : 2 of 6  
Work Order : CG2305490  
Client : Kicking Horse Mountain Resort LP  
Project : WEEK 3 - 2023 SPRING EMS PROGRAM - WW

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## 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

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 927270)</b>											
CG2305463-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	26.5	25.3	1.2	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 920664)</b>											
CG2305488-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	15.2	15.2	0.412%	20%	----
<b>Anions and Nutrients (QC Lot: 920665)</b>											
CG2305488-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0064	0.0062	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 920709)</b>											
CG2305490-001	PLANT EFFLUENT - E256696	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0718	0.0705	1.83%	20%	----
<b>Anions and Nutrients (QC Lot: 920886)</b>											
CG2305490-001	PLANT EFFLUENT - E256696	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0587	0.0584	0.444%	20%	----
<b>Anions and Nutrients (QC Lot: 921931)</b>											
CG2305469-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0610	0.0660	7.96%	20%	----
<b>Microbiological Tests (QC Lot: 922557)</b>											
CG2305475-003	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2305489-006	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 922613)</b>											
GP2300796-001	Anonymous	Coliforms, thermotolerant [fecal]	----	E012.FC	1000	CFU/100mL	84000	79000	6.13%	65%	----
<b>Aggregate Organics (QC Lot: 923233)</b>											
CG2305487-018	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



## Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 927270)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 920664)</b>						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 920665)</b>						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 920709)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 920886)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 921931)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Microbiological Tests (QCLot: 922557)</b>						
Coliforms, Escherichia coli [E. coli]	---	E010	1	MPN/100mL	<1	---
<b>Microbiological Tests (QCLot: 922613)</b>						
Coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 923233)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---



## Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 927270)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	92.6	85.0	115	----
<b>Anions and Nutrients (QCLot: 920664)</b>									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.2	90.0	110	----
<b>Anions and Nutrients (QCLot: 920665)</b>									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 920709)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.2	85.0	115	----
<b>Anions and Nutrients (QCLot: 920886)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	103	80.0	120	----
<b>Anions and Nutrients (QCLot: 921931)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	98.4	80.0	120	----
<b>Aggregate Organics (QCLot: 923233)</b>									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	94.2	85.0	115	----



### 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
<b>Anions and Nutrients (QCLot: 920664)</b>										
CG2305488-010	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.37 mg/L	2.5 mg/L	94.7	75.0	125	----
<b>Anions and Nutrients (QCLot: 920665)</b>										
CG2305488-010	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.478 mg/L	0.5 mg/L	95.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 920709)</b>										
CG2305490-002	SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	Ammonia, total (as N)	7664-41-7	E298	0.118 mg/L	0.1 mg/L	118	75.0	125	----
<b>Anions and Nutrients (QCLot: 920886)</b>										
CG2305490-002	SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0513 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 921931)</b>										
CG2305469-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----



## Enterococcus Test Results

Sample collected May 2, 2023

Final Report

May 11, 2023

Submitted to: **ALS Environmental**  
Calgary, AB

### SAMPLE INFORMATION

Sample ID/ Internal ID	Dates		<i>Enterococcus</i> test initiation	Receipt temperature
	Collected	Received		
CG2305490-001 2223-2348-01	2-May-23 at 1020h	3-May-23 at 1420h	3-May-23 at 1545h	15.6°C
CG2305490-002 2223-2348-02	2-May-23 at 1045h	3-May-23 at 1420h	3-May-23 at 1545h	13.0°C
CG2305490-003 2223-2348-03	2-May-23 at 1100h	3-May-23 at 1420h	3-May-23 at 1545h	13.6°C
CG2305490-004 2223-2348-04	2-May-23 at 1115h	3-May-23 at 1420h	3-May-23 at 1545h	13.1°C

### TEST TYPES

- *Enterococcus* enumeration test

### RESULTS

#### Microbial test results

Sample ID	MPN/100 mL <i>Enterococcus</i>
CG2305490-001	>2419.6
CG2305490-002	1.0
CG2305490-003	<1
CG2305490-004	<1

MPN = Most Probable Number

### QA/QC

QA/QC summary	<i>Enterococcus</i>
Protocol deviations	See Below
Control performance	Acceptable
Test performance	Valid

The sample was received and analyzed outside of the required 24 hour hold time as per the client request.



---

Report By:  
Aishah Iqbal, BSc  
Biologist



---

Reviewed By:  
Daisy Meyer, BSc  
Biologist

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

### REFERENCES

Enterolert Test Kit Literature, IDEXX Laboratories Ltd., One IDEXX Drive, Westbrook, ME, 04092  
USA  
MPN Tables for IDEXX Quanti-Tray 2000 (<http://www.idexx.com/water>)

**APPENDIX A – Test data**

---





# Quanti-Tray Bench Sheet - *Enterococcus*

Client ALS106 Reference 2223-2350 48 km

**Test Initiation**

Date: 2023/05/03  
 Time: 1545  
 Technician: CC

**Sample Information**

Reagent used: Enterolert™  
 Dilution Factor: —  
 Reagent Lot#/Expiry: AW160 / 6.08 Feb 2024

Thermometer Serial #: 211007752  
 Incubator #: 7  
 Incubator Temperature: 41°C (must be 41 ± 0.5°C)

Quanti Tray 2000 Lot#/Expiry: K0015J (11/30/25)

Comments: \*set outside of hold time km  
set outside of hold time

**Results - 24 Hour Incubation**

Date: 2023/05/04 Time: 1545 Technician: DM

Incubator Temp: <u>41</u> (must be 41 ± 0.5°C)	Enterococci (Fluorescent)				
	CTL	<u>2-01</u>	<u>-02</u>	<u>-03</u>	<u>-04</u>
# Positive Large Wells:	0	49	1	0	0
# Ambiguous Large Wells:		0	0		
# Positive Small Wells (Tray 2000 only):	↓	48	↓	↓	↓
# Ambiguous Small Wells (Tray 2000 only):		0			
Most Probable Number at 24 hours:	21	2419.5 6 km	1.0	21	21

**Results - 28 Hour Incubation**

Date: \_\_\_\_\_ Time: \_\_\_\_\_ Technician: \_\_\_\_\_

Incubator Temp: _____ (must be 41 ± 0.5°C)	Enterococci (Fluorescent)				
	CTL				
# Confirmed Positive Large Wells:					
# Confirmed Positive Small Wells (Tray 2000 only):					
Most Probable Number at 28 hours:					

Confirmed positive wells includes the positive wells from 24 hours plus the ambiguous wells that became positive at 28 hours  
 At 28 hours only score marked ambiguous from 24 hours

Reviewed By: km Date Reviewed: 2023/05/05

**APPENDIX B – Chain-of-custody form**

---



Destination Lab: **Nautilus Environmental (Calgary)**  
 Address: 10828 27 Street SE Calgary AB Canada T2Z 3V9  
 Work Order Number: **CG2305490**  
 Original Receipt Date/Time: 03/05/2023 12:24  
 Instructions Received

Past Hold Time  
 Please Proceed

Relinquished By  
 Date/Time  
 Received By  
 Date/Time  
 Receipt Temp

Return as Indicated: Results: ALSClientServices@alsglobal.com Invoice: ALSClientServices@alsglobal.com Electronic Data: ALSClientServices@alsglobal.com  
 Attention: Patryk Wojciak

ALS Sample ID	Client ID	Matrix	Container Type	Test Codes	Method Description	Due Date	Sampling Date and Time	Remarks
CG2305490-001	PLANT EFFLUENT - E256696	Water	Sterile HDPE (Sodium thiosulphate)	ENTERO.MF -01	Enterococcus by (MF - mE)	10-05-2023 15.6°C	02/05/2023 10:20	
CG2305490-002	SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	Water	Sterile HDPE (Sodium thiosulphate)	ENTERO.MF -02	Enterococcus by (MF - mE)	10-05-2023 13.0°C	02/05/2023 10:45	
CG2305490-003	UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	Water	Sterile HDPE (Sodium thiosulphate)	ENTERO.MF -03	Enterococcus by (MF - mE)	10-05-2023 13.0°C	02/05/2023 11:00	
CG2305490-004	EAST SHORE - COLUMBIA RIVER 200M DN-E258898	Water	Sterile HDPE (Sodium thiosulphate)	ENTERO.MF -04	Enterococcus by (MF - mE)	10-05-2023 13.1°C	02/05/2023 11:15	

2223-2348  
 2023/05/03  
 14:20  
 Drop off  
 DC  
 4x400mL bottles  
 NoS/NoI  
 Good Condition

**END OF REPORT**

---



<b>Report To</b>		<b>Report Format / Distribution</b>			<b>Service Requested</b> (Rush for routine analysis subject to availability)																																																																																									
Company: Kicking Horse Mountain Resort Utility Corporation		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other			<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)																																																																																									
Contact: Travis Jobin		<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax			<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT																																																																																									
Address: 1500 Kicking Horse Trail		Email 1: tjobin@kickinghorseresort.com			<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT																																																																																									
Phone: 250-344-8442 Fax:		Email 2: pmaier@skircr.com			<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT																																																																																									
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>Client / Project Information</b>			<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <th colspan="13">Analysis Request</th> <th rowspan="6">Number of Containers</th> </tr> <tr> <th colspan="13">Please indicate below Filtered, Preserved or both (F, P, F/P)</th> </tr> <tr> <th>BOD5</th><th>TSS</th><th>N-NH4</th><th>N-NO3</th><th>N-NO2</th><th>Total P</th><th>Ortho P</th><th>Fecal Coliform</th><th>Enterococci</th><th>E. Coli</th><th colspan="2"></th><th></th> </tr> <tr> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td> </tr> <tr> <td></td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td> </tr> <tr> <td></td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td></td><td></td><td></td> </tr> </table>											Analysis Request													Number of Containers	Please indicate below Filtered, Preserved or both (F, P, F/P)													BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli				X	X	X	X	X	X	X	X	X	X	X				X	X	X	X	X	X	X	X	X					X	X	X	X	X	X	X	X	X			
Analysis Request																Number of Containers																																																																														
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	X	X	X	X													X	X	X	X	X																																																																									
	X	X	X	X	X	X	X	X	X																																																																																					
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input type="checkbox"/> No		Job #: Week 3 - 2023 Spring EMS program - WW																																																																																												
Company: Resorts of the Canadian Rockies		PO / AFE:																																																																																												
Contact: Patrick Majer		LSD:																																																																																												
Address: 1505 - 17th Ave SW Calgary AB		Quote #:																																																																																												
Phone: Fax:		ALS Contact: PW			Sampler: TJ																																																																																									
Lab Work Order # (lab use only)																																																																																														
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli																																																																																
	Plant Effluent - E256696 Temp: 8.4 pH: 7.2	02-May-23	10:20	Water	X	X	X	X	X	X	X	X	X	X	5																																																																															
	Side Channel - Columbia River 1KM DN-E258899 Temp: 13.7 pH: 7.8	02-May-23	10:45	Water		X	X	X	X	X	X	X	X	X	4																																																																															
	Upstream - Columbia River UP IDZ-E256694 Temp: 6.5 pH: 7.8	02-May-23	11:00	Water		X	X	X	X	X	X	X	X	X	4																																																																															
	East Shore - Columbia River 200m DN-E258898 Temp: 10.8 pH: 7.8	02-May-23	11:15	Water		X	X	X	X	X	X	X	X	X	4																																																																															
	Sample State: WW																																																																																													
	Sample Descriptor: MU																																																																																													
	Sample Class: REG																																																																																													
	Collection Mode: GRB																																																																																													
	Permit: 15474																																																																																													

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2305490**



Telephone: +1 403 407 1800

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic-Life/BC CSR - Commercial/AB Ti

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)			SHIPMENT VERIFICATION (lab use only)				
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis Jobin	2-May-23		<i>TJ</i>	May/23	12:05	14.3°C				



## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>CG2308638</b>	Page	: 1 of 2
<b>Client</b>	: <b>Kicking Horse Mountain Resort LP</b>	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Telephone</b>	: 250 344 6003	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: RCR - Kicking Horse Mountain Resort	<b>Date Samples Received</b>	: 28-Jun-2023 14:57
<b>PO</b>	: ----	<b>Date Analysis</b>	: 28-Jun-2023
<b>C-O-C number</b>	: ----	<b>Commenced</b>	
<b>Sampler</b>	: ----	<b>Issue Date</b>	: 06-Jul-2023 14:08
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



## General Comments

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

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

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

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

**Key :**  
 CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less than.

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

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

## Analytical Results

CG2308638-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT EFFLUENT- E256696

Client sampling date / time: 27-Jun-2023 11:10

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	3.5	3.0	mg/L	E160/CG	-	04-Jul-2023	1020263
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.106	0.0050	mg/L	E298/CG	29-Jun-2023	29-Jun-2023	1015905
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.228	0.0050	mg/L	E378-U/CG	28-Jun-2023	28-Jun-2023	1014130
Phosphorus, total	7723-14-0	0.330	0.0100	mg/L	E372-U/CG	29-Jun-2023	04-Jul-2023	1015355
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	4	1	CFU/100mL	E012.FC/CG	-	28-Jun-2023	1017448
Coliforms, total	----	56	1	MPN/100mL	E010/CG	-	28-Jun-2023	1017403
Coliforms, Escherichia coli [E. coli]	----	3	1	MPN/100mL	E010/CG	-	28-Jun-2023	1017403
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	2.3	2.0	mg/L	E550/CG	-	29-Jun-2023	1016997

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.



## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2308638</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 6</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 28-Jun-2023 14:57</p> <p><b>Issue Date</b> : 06-Jul-2023 14:10</p>
---	--

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)***

- No Analysis Holding Time Outliers exist.

### ***Outliers : Frequency of Quality Control Samples***

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



## 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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> PLANT EFFLUENT- E256696	E550	27-Jun-2023	----	----	----		29-Jun-2023	3 days	2 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT- E256696	E298	27-Jun-2023	29-Jun-2023	----	----		29-Jun-2023	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
<b>HDPE</b> PLANT EFFLUENT- E256696	E378-U	27-Jun-2023	28-Jun-2023	----	----		28-Jun-2023	3 days	1 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT- E256696	E372-U	27-Jun-2023	29-Jun-2023	----	----		04-Jul-2023	28 days	7 days	✓
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT- E256696	E012.FC	27-Jun-2023	----	----	----		28-Jun-2023	30 hrs	28 hrs	✓
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT- E256696	E010	27-Jun-2023	----	----	----		28-Jun-2023	30 hrs	28 hrs	✓



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT EFFLUENT- E256696	E160	27-Jun-2023	----	----	----		04-Jul-2023	7 days	7 days	✔

Legend & Qualifier Definitions

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1015905	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1016997	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1014130	1	18	5.5	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1017448	0	8	0.0	5.0	✖
Total Coliforms and E. coli (Enzyme Substrate)	E010	1017403	2	20	10.0	10.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1015355	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1020263	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1015905	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1016997	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1014130	1	18	5.5	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1015355	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1020263	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1015905	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1016997	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1014130	1	18	5.5	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1017448	1	8	12.5	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	1017403	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1015355	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1020263	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1015905	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1014130	1	18	5.5	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1015355	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 Calgary - Environmental	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC Calgary - Environmental	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 Calgary - Environmental	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.
Ammonia by Fluorescence	E298 Calgary - Environmental	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2308638</b></p> <p>Client : Kicking Horse Mountain Resort LP</p> <p>Contact : Travis Jobin</p> <p>Address : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p>Telephone :</p> <p>Project : RCR - Kicking Horse Mountain Resort</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : ----                    250 344 6003</p> <p>Site : ----</p> <p>Quote number : CG21-RESC100-0001</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 5</p> <p>Laboratory : Calgary - Environmental</p> <p>Account Manager : Patryk Wojciak</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 28-Jun-2023 14:57</p> <p>Date Analysis Commenced : 28-Jun-2023</p> <p>Issue Date : 06-Jul-2023 14:13</p>
---	--

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

Page : 2 of 5  
Work Order : CG2308638  
Client : Kicking Horse Mountain Resort LP  
Project : RCR - Kicking Horse Mountain Resort

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## **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**

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 1020263)</b>											
CG2308580-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	10.3	11.7	1.4	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1014130)</b>											
CG2308625-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0150	0.0149	1.07%	20%	----
<b>Anions and Nutrients (QC Lot: 1015355)</b>											
CG2308626-010	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0032	0.0028	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1015905)</b>											
CG2308619-022	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1017403)</b>											
CG2308628-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
		Coliforms, total	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2308634-002	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
		Coliforms, total	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1016997)</b>											
CG2308546-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----





## Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1020263)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1014130)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 1015355)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 1015905)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Microbiological Tests (QCLot: 1017403)</b>						
Coliforms, Escherichia coli [E. coli]	---	E010	1	MPN/100mL	<1	---
Coliforms, total	---	E010	1	MPN/100mL	<1	---
<b>Microbiological Tests (QCLot: 1017448)</b>						
Coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 1016997)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---



### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 1020263)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	90.7	85.0	115	----
<b>Anions and Nutrients (QCLot: 1014130)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 1015355)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	97.4	80.0	120	----
<b>Anions and Nutrients (QCLot: 1015905)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Aggregate Organics (QCLot: 1016997)</b>									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	105	85.0	115	----

### 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
<b>Anions and Nutrients (QCLot: 1014130)</b>										
CG2308626-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0474 mg/L	0.05 mg/L	94.7	70.0	130	----
<b>Anions and Nutrients (QCLot: 1015355)</b>										
CG2308629-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0488 mg/L	0.05 mg/L	97.5	70.0	130	----
<b>Anions and Nutrients (QCLot: 1015905)</b>										
CG2308619-023	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----




<b>Report To</b>	<b>Report Format / Distribution</b>	<b>Service Requested</b> (Rush for routine analysis subject to availability)
Company: Kicking Horse Mountain Water Utility Co. Ltd.	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other	<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)
Contact: Travis Jobin	<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax	<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address: 1500 Kicking Horse Trail	Email 1: tjobin@kickinghorseresort.com	<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Email 2: pmajer@skircr.com	<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Phone: 250-344-6003 Fax:	Email 3: mskyring@kickinghorseresort.com	<b>Analysis Request</b>	
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Client / Project Information</b>	Please indicate below Filtered, Preserved or both (F, P, F/P)	
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Job #: RCR - Kicking Horse Mountain Resort		
Company: Resorts of the Canadian Rockies	PO / AFE:		
Contact: Patrick Majer	LSD:		
Address: 1505 - 17th Ave SW Calgary AB	Quote #: Q33059		
Phone: Fax:			

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P	N-NH4	E.Coli	Number of Containers	
	Plant Effluent - E256696	27-Jun-23	11:10	Water	X	X	X	X	X	X	X		4
	Sample State: WW												
	Sample Descriptor: MU												
	Sample Class: REG												
	Collection Mode: GRB												
	Permit#: E256696												

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2308638**



Telephone : +1 403 407 1800

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

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 provided on a separate Excel tab.  
 Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis Jobin	JUN 27 24 Feb-23	17:00	<i>[Signature]</i>	6/26	14:57	15 °C				



**CERTIFICATE OF ANALYSIS**

<b>Work Order</b>	: <b>CG2309746</b>	<b>Page</b>	: 1 of 2
<b>Client</b>	: <b>Kicking Horse Mountain Resort LP</b>	<b>Laboratory</b>	: ALS Environmental - Calgary
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Telephone</b>	: 250 344 6003	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: RCR - Kicking Horse Mountain Resort	<b>Date Samples Received</b>	: 19-Jul-2023 12:00
<b>PO</b>	: ----	<b>Date Analysis</b>	: 19-Jul-2023
<b>C-O-C number</b>	: ----	<b>Commenced</b>	
<b>Sampler</b>	: TJ	<b>Issue Date</b>	: 24-Jul-2023 15:54
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



## General Comments

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

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

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

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

**Key :**  
 CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less than.

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

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

## Analytical Results

CG2309746-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT EFFLUENT - E256696

Client sampling date / time: 18-Jul-2023 11:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	3.1	3.0	mg/L	E160/CG	-	20-Jul-2023	1046409
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.112	0.0050	mg/L	E298/CG	19-Jul-2023	19-Jul-2023	1046296
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.244	0.0050	mg/L	E378-U/CG	19-Jul-2023	19-Jul-2023	1046463
Phosphorus, total	7723-14-0	0.337	0.0100	mg/L	E372-U/CG	19-Jul-2023	20-Jul-2023	1046330
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	<1	1	CFU/100mL	E012.FC/CG	-	19-Jul-2023	1048520
Coliforms, Escherichia coli [E. coli]	----	<1	1	MPN/100mL	E010/CG	-	19-Jul-2023	1048465
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	<2.0	2.0	mg/L	E550/CG	-	19-Jul-2023	1046876

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.

## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2309746</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 7</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Jul-2023 12:00</p> <p><b>Issue Date</b> : 24-Jul-2023 15:54</p>
---	--

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)***

- No Analysis Holding Time Outliers exist.

### ***Outliers : Frequency of Quality Control Samples***

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



## 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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> PLANT EFFLUENT - E256696	E550	18-Jul-2023	----	----	----		19-Jul-2023	3 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT - E256696	E298	18-Jul-2023	19-Jul-2023	28 days	1 days	✔	19-Jul-2023	27 days	0 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
<b>HDPE</b> PLANT EFFLUENT - E256696	E378-U	18-Jul-2023	19-Jul-2023	3 days	1 days	✔	19-Jul-2023	2 days	0 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT - E256696	E372-U	18-Jul-2023	19-Jul-2023	28 days	1 days	✔	20-Jul-2023	27 days	1 days	✔
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E012.FC	18-Jul-2023	----	----	----		19-Jul-2023	30 hrs	26 hrs	✔
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E010	18-Jul-2023	----	----	----		19-Jul-2023	30 hrs	26 hrs	✔



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 Work Order : CG2309746  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT EFFLUENT - E256696	E160	18-Jul-2023	----	----	----		20-Jul-2023	7 days	2 days	✔

**Legend & Qualifier Definitions**

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1046296	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1046876	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1046463	1	19	5.2	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1048520	0	11	0.0	5.0	✖
Total Coliforms and E. coli (Enzyme Substrate)	E010	1048465	2	19	10.5	10.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1046330	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1046409	1	17	5.8	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1046296	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1046876	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1046463	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1046330	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1046409	1	17	5.8	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1046296	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1046876	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1046463	1	19	5.2	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1048520	1	11	9.0	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	1048465	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1046330	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1046409	1	17	5.8	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1046296	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1046463	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1046330	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Calgary	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC ALS Environmental - Calgary	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 ALS Environmental - Calgary	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.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

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<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	ALS Environmental - Calgary			

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2309746</b></p> <p>Client : Kicking Horse Mountain Resort LP</p> <p>Contact : Travis Jobin</p> <p>Address : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p>Telephone :</p> <p>Project : RCR - Kicking Horse Mountain Resort</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : TJ                      250 344 6003</p> <p>Site : ----</p> <p>Quote number : CG21-RESC100-0001</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 5</p> <p>Laboratory : ALS Environmental - Calgary</p> <p>Account Manager : Patryk Wojciak</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 19-Jul-2023 12:00</p> <p>Date Analysis Commenced : 19-Jul-2023</p> <p>Issue Date : 24-Jul-2023 15:54</p>
---	--

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

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Work Order : CG2309746  
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Project : RCR - Kicking Horse Mountain Resort

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## **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**

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 1046409)</b>											
CG2309726-002	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1046296)</b>											
CG2309731-007	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0250	mg/L	0.218	0.225	0.0074	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1046330)</b>											
CG2309729-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0125	0.0124	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1046463)</b>											
CG2309737-008	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1048465)</b>											
CG2309740-002	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2309743-003	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1046876)</b>											
CG2309716-018	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	7.1	7.5	4.7%	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
<b>Physical Tests (QCLot: 1046409)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1046296)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1046330)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 1046463)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Microbiological Tests (QCLot: 1048465)</b>						
Coliforms, Escherichia coli [E. coli]	---	E010	1	MPN/100mL	<1	---
<b>Microbiological Tests (QCLot: 1048520)</b>						
Coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 1046876)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---





### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report					
					Spike		Recovery (%)		Recovery Limits (%)	
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier	
<b>Physical Tests (QCLot: 1046409)</b>										
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	101	85.0	115	----	
<b>Anions and Nutrients (QCLot: 1046296)</b>										
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.0	85.0	115	----	
<b>Anions and Nutrients (QCLot: 1046330)</b>										
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	99.7	80.0	120	----	
<b>Anions and Nutrients (QCLot: 1046463)</b>										
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	98.8	80.0	120	----	
<b>Aggregate Organics (QCLot: 1046876)</b>										
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	102	85.0	115	----	

### 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
<b>Anions and Nutrients (QCLot: 1046296)</b>										
CG2309731-008	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 1046330)</b>										
CG2309729-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0514 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 1046463)</b>										
CG2309737-009	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0512 mg/L	0.05 mg/L	102	70.0	130	----

<b>Report To</b>		<b>Report Format / Distribution</b>			<b>Service Requested</b> (Rush for routine analysis subject to availability)																	
Company: Kicking Horse Mountain Water Utility Co. Ltd.		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other			<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)																	
Contact: Travis Jobin		<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax			<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT																	
Address: 1500 Kicking Horse Trail		Email 1: <a href="mailto:tjobin@kickinghorseresort.com">tjobin@kickinghorseresort.com</a>			<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT																	
Phone: 250-344-6003 Fax: _____		Email 2: <a href="mailto:pmaier@skircr.com">pmaier@skircr.com</a>			<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT																	
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>Client / Project Information</b>			<b>Analysis Request</b>																	
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Job #: RCR - Kicking Horse Mountain Resort			Please indicate below Filtered, Preserved or both (F, P, F/P)																	
Company: Resorts of the Canadian Rockies		PO / AFE:			BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P	N-NH4	E.Coli										Number of Containers	
Contact: Patrick Majer		LSD:																				
Address: 1505 - 17th Ave SW Calgary AB		Quote #: Q33059																				
Lab Work Order # (lab use only)		ALS Contact: PW			Sampler: TJ																	
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P	N-NH4	E.Coli											
	Plant Effluent - E256696	18-Jul-23	1100	Water	X	X	X	X	X	X	X											4
	Sample State: WW																					
	Sample Descriptor: MU																					
	Sample Class: REG																					
	Collection Mode: GRB																					
	Permit#: E256696																					

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2309746**



Telephone : +1 403 407 1800

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.  
 Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

<b>SHIPMENT RELEASE</b> (client use)			<b>SHIPMENT RECEPTION</b> (lab use only)			<b>SHIPMENT VERIFICATION</b> (lab use only)				
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis Jobin	18-Jul-23	1200 1140	FG	19-07-23	1210	10.4°C				



## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>CG2311752</b>	Page	: 1 of 3
Client	: <b>Kicking Horse Mountain Resort LP</b>	Laboratory	: ALS Environmental - Calgary
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	Address	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
Telephone	: 250 344 6003	Telephone	: +1 403 407 1800
Project	: RCR- KICKING HORSE MOUNTAIN RESORT	Date Samples Received	: 25-Aug-2023 13:03
PO	: ----	Date Analysis	: 25-Aug-2023
C-O-C number	: ----	Commenced	
Sampler	: TJ	Issue Date	: 31-Aug-2023 12:52
Site	: ----		
Quote number	: CG21-RESC100-0001		
No. of samples received	: 1		
No. of samples analysed	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



## General Comments

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

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

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

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

Key : CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
LOR: Limit of Reporting (detection limit).  
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
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.

<i>Unit</i>	<i>Description</i>
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less than.

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

<i>Qualifier</i>	<i>Description</i>
DLHC	<i>Detection Limit Raised: Dilution required due to high concentration of test analyte(s).</i>
DLM	<i>Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).</i>



## Analytical Results

CG2311752-001

Sub-Matrix: **Water**

(Matrix: **Water**)

Client sample ID: PLANT ELUENT - E256696

Client sampling date / time: 24-Aug-2023 10:50

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
<b>Solids, total suspended [TSS]</b>	----	<3.0	3.0	mg/L	E160/CG	-	30-Aug-2023	1109184
<b>Anions and Nutrients</b>								
<b>Ammonia, total (as N)</b>	7664-41-7	0.0742	0.0050	mg/L	E298/CG	25-Aug-2023	25-Aug-2023	1104642
<b>Phosphate, ortho-, dissolved (as P)</b>	14265-44-2	0.135 <sup>DLHC</sup>	0.0020	mg/L	E378-U/CG	25-Aug-2023	25-Aug-2023	1104316
<b>Phosphorus, total</b>	7723-14-0	0.277	0.0100	mg/L	E372-U/CG	26-Aug-2023	29-Aug-2023	1104753
<b>Microbiological Tests</b>								
<b>Coliforms, thermotolerant [fecal]</b>	----	<2 <sup>DLM</sup>	2	CFU/100m	E012.FC/CG	-	25-Aug-2023	1107029
<b>Coliforms, Escherichia coli [E. coli]</b>	----	<1	1	MPN/100m	E010/CG	-	25-Aug-2023	1106970
<b>Aggregate Organics</b>								
<b>Biochemical oxygen demand [BOD]</b>	----	<2.0	2.0	mg/L	E550/CG	-	25-Aug-2023	1104967

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

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<p><b>Work Order</b> : <b>CG2311752</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR- KICKING HORSE MOUNTAIN RESORT</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 7</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 25-Aug-2023 13:03</p> <p><b>Issue Date</b> : 31-Aug-2023 12:59</p>
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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.

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### ***Workorder Comments***

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

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### ***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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> PLANT ELUENT - E256696	E550	24-Aug-2023	----	----	----		25-Aug-2023	3 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT ELUENT - E256696	E298	24-Aug-2023	25-Aug-2023	28 days	1 days	✔	25-Aug-2023	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
<b>HDPE</b> PLANT ELUENT - E256696	E378-U	24-Aug-2023	25-Aug-2023	3 days	1 days	✔	25-Aug-2023	3 days	1 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT ELUENT - E256696	E372-U	24-Aug-2023	26-Aug-2023	28 days	2 days	✔	29-Aug-2023	28 days	5 days	✔
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT ELUENT - E256696	E012.FC	24-Aug-2023	----	----	----		25-Aug-2023	30 hrs	27 hrs	✔
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT ELUENT - E256696	E010	24-Aug-2023	----	----	----		25-Aug-2023	30 hrs	27 hrs	✔





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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT ELUENT - E256696	E160	24-Aug-2023	----	----	----		30-Aug-2023	7 days	6 days	✔

Legend & Qualifier Definitions

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1104642	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1104967	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1104316	1	12	8.3	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1107029	1	15	6.6	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	1106970	2	14	14.2	10.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1104753	1	3	33.3	5.0	✔
TSS by Gravimetry	E160	1109184	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1104642	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1104967	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1104316	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1104753	1	3	33.3	5.0	✔
TSS by Gravimetry	E160	1109184	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1104642	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1104967	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1104316	1	12	8.3	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1107029	1	15	6.6	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	1106970	1	14	7.1	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1104753	1	3	33.3	5.0	✔
TSS by Gravimetry	E160	1109184	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1104642	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1104316	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1104753	1	3	33.3	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Calgary	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC ALS Environmental - Calgary	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 ALS Environmental - Calgary	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.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

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Work Order : CG2311752  
Client : Kicking Horse Mountain Resort LP  
Project : RCR- KICKING HORSE MOUNTAIN RESORT



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	ALS Environmental - Calgary			

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2311752</b></p> <p>Client : Kicking Horse Mountain Resort LP</p> <p>Contact : Travis Jobin</p> <p>Address : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p>Telephone :</p> <p>Project : RCR- KICKING HORSE MOUNTAIN RESORT</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : TJ                    250 344 6003</p> <p>Site : ----</p> <p>Quote number : CG21-RESC100-0001</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 5</p> <p>Laboratory : ALS Environmental - Calgary</p> <p>Account Manager : Patryk Wojciak</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 25-Aug-2023 13:03</p> <p>Date Analysis Commenced : 25-Aug-2023</p> <p>Issue Date : 31-Aug-2023 13:03</p>
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

Page : 2 of 5  
Work Order : CG2311752  
Client : Kicking Horse Mountain Resort LP  
Project : RCR- KICKING HORSE MOUNTAIN RESORT



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## 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.

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## Workorder Comments

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 1109184)</b>											
CG2311693-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1104316)</b>											
CG2311732-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0291	0.0296	1.60%	20%	----
<b>Anions and Nutrients (QC Lot: 1104642)</b>											
CG2311752-001	PLANT ELUENT - E256696	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0742	0.0733	1.22%	20%	----
<b>Anions and Nutrients (QC Lot: 1104753)</b>											
CG2311750-004	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0184	0.0175	0.0009	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1106970)</b>											
CG2311750-008	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2311751-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1107029)</b>											
CG2311727-003	Anonymous	Coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	<1	<1	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1104967)</b>											
CG2311735-006	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



## Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1109184)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1104316)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 1104642)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1104753)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Microbiological Tests (QCLot: 1106970)</b>						
Coliforms, Escherichia coli [E. coli]	---	E010	1	MPN/100mL	<1	---
<b>Microbiological Tests (QCLot: 1107029)</b>						
Coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 1104967)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---





### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 1109184)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	104	85.0	115	----
<b>Anions and Nutrients (QCLot: 1104316)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	95.1	80.0	120	----
<b>Anions and Nutrients (QCLot: 1104642)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 1104753)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	106	80.0	120	----
<b>Aggregate Organics (QCLot: 1104967)</b>									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	101	85.0	115	----

### 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
<b>Anions and Nutrients (QCLot: 1104316)</b>										
CG2311732-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0446 mg/L	0.05 mg/L	89.1	70.0	130	----
<b>Anions and Nutrients (QCLot: 1104642)</b>										
CG2311757-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 1104753)</b>										
CG2311752-001	PLANT ELUENT - E256696	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----





## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2313449</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : WEEK 1 - 2023 FALL EMS PROGRAM - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 4</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 26-Sep-2023 09:00</p> <p><b>Date Analysis</b> : 26-Sep-2023</p> <p><b>Commenced</b> : 02-Oct-2023 21:29</p> <p><b>Issue Date</b> : 02-Oct-2023 21:29</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



## General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

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.

<i>Unit</i>	<i>Description</i>
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less than.

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

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



## Analytical Results

CG2313449-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT EFFLUENT - E256696

Client sampling date / time: 25-Sep-2023 11:20

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	3.5	3.0	mg/L	E160/CG	-	29-Sep-2023	1161533
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.100	0.0050	mg/L	E298/CG	26-Sep-2023	26-Sep-2023	1154655
Nitrate (as N)	14797-55-8	0.0702	0.0050	mg/L	E235.NO3-L/CG	26-Sep-2023	26-Sep-2023	1154093
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	26-Sep-2023	26-Sep-2023	1154092
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.0828	0.0010	mg/L	E378-U/CG	26-Sep-2023	26-Sep-2023	1154020
Phosphorus, total	7723-14-0	0.187	0.0040	mg/L	E372-U/CG	26-Sep-2023	27-Sep-2023	1153871
Nitrate + Nitrite (as N)	----	0.0702	0.0051	mg/L	EC235.N+N/CG	-	27-Sep-2023	1155898
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	2	1	CFU/100m	E012.FC/CG	-	26-Sep-2023	1157228
Enterococcus	----	2	1	CFU/100m	E012.EN/CG	-	26-Sep-2023	1159638
Coliforms, Escherichia coli [E. coli]	----	2	1	MPN/100m	E010/CG	-	26-Sep-2023	1157185
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	<2.0	2.0	mg/L	E550/CG	-	26-Sep-2023	1154946

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

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

## Analytical Results

CG2313449-002

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899

Client sampling date / time: 25-Sep-2023 12:10

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	16.3	3.0	mg/L	E160/CG	-	29-Sep-2023	1161533
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0203	0.0050	mg/L	E298/CG	26-Sep-2023	26-Sep-2023	1154655
Nitrate (as N)	14797-55-8	0.0716	0.0050	mg/L	E235.NO3-L/CG	26-Sep-2023	26-Sep-2023	1154093
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	26-Sep-2023	26-Sep-2023	1154092
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	26-Sep-2023	26-Sep-2023	1154020
Phosphorus, total	7723-14-0	0.0095	0.0020	mg/L	E372-U/CG	26-Sep-2023	27-Sep-2023	1153871
Nitrate + Nitrite (as N)	----	0.0716	0.0051	mg/L	EC235.N+N/CG	-	27-Sep-2023	1155898
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	6	1	CFU/100m	E012.FC/CG	-	26-Sep-2023	1157228
Enterococcus	----	13	1	CFU/100m	E012.EN/CG	-	26-Sep-2023	1159638
Coliforms, Escherichia coli [E. coli]	----	4	1	MPN/100m	E010/CG	-	26-Sep-2023	1157185

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

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



## Analytical Results

CG2313449-003

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: UPSTREAM - COLUMBIA RIVER UP IDZ - E256694

Client sampling date / time: 25-Sep-2023 12:20

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	44.1	3.0	mg/L	E160/CG	-	29-Sep-2023	1161533
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298/CG	26-Sep-2023	26-Sep-2023	1154655
Nitrate (as N)	14797-55-8	0.0729	0.0050	mg/L	E235.NO3-L/CG	26-Sep-2023	26-Sep-2023	1154093
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	26-Sep-2023	26-Sep-2023	1154092
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	26-Sep-2023	26-Sep-2023	1154020
Phosphorus, total	7723-14-0	0.0114	0.0020	mg/L	E372-U/CG	26-Sep-2023	27-Sep-2023	1153871
Nitrate + Nitrite (as N)	----	0.0729	0.0051	mg/L	EC235.N+N/CG	-	27-Sep-2023	1155898
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	4	1	CFU/100m	E012.FC/CG	-	26-Sep-2023	1157228
Enterococcus	----	9	1	L	CFU/100m E012.EN/CG	-	26-Sep-2023	1159638
Coliforms, Escherichia coli [E. coli]	----	4	1	L	MPN/100m E010/CG	-	26-Sep-2023	1157185

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

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

## Analytical Results

CG2313449-004

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: EAST SHORE - COLUMBIA RIVER 200M DN-E258898

Client sampling date / time: 25-Sep-2023 12:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	11.7	3.0	mg/L	E160/CG	-	29-Sep-2023	1161533
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0051	0.0050	mg/L	E298/CG	26-Sep-2023	26-Sep-2023	1154655
Nitrate (as N)	14797-55-8	0.0746	0.0050	mg/L	E235.NO3-L/CG	26-Sep-2023	26-Sep-2023	1154093
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	26-Sep-2023	26-Sep-2023	1154092
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	26-Sep-2023	26-Sep-2023	1154020
Phosphorus, total	7723-14-0	0.0103	0.0020	mg/L	E372-U/CG	26-Sep-2023	27-Sep-2023	1153871
Nitrate + Nitrite (as N)	----	0.0746	0.0051	mg/L	EC235.N+N/CG	-	27-Sep-2023	1155898
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	2	1	CFU/100m	E012.FC/CG	-	26-Sep-2023	1157228
Enterococcus	----	4	1	L	CFU/100m E012.EN/CG	-	26-Sep-2023	1159638
Coliforms, Escherichia coli [E. coli]	----	2	1	L	MPN/100m E010/CG	-	26-Sep-2023	1157185

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

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<p><b>Work Order</b> : <b>CG2313449</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : WEEK 1 - 2023 FALL EMS PROGRAM - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 10</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 26-Sep-2023 09:00</p> <p><b>Issue Date</b> : 02-Oct-2023 21:29</p>
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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.

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### ***Workorder Comments***

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

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### ***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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> PLANT EFFLUENT - E256696	E550	25-Sep-2023	----	----	----		26-Sep-2023	3 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E298	25-Sep-2023	26-Sep-2023	28 days	1 days	✔	26-Sep-2023	28 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT - E256696	E298	25-Sep-2023	26-Sep-2023	28 days	1 days	✔	26-Sep-2023	28 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E298	25-Sep-2023	26-Sep-2023	28 days	1 days	✔	26-Sep-2023	28 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E298	25-Sep-2023	26-Sep-2023	28 days	1 days	✔	26-Sep-2023	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001)</b>										
<b>HDPE</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E378-U	25-Sep-2023	26-Sep-2023	3 days	1 days	✔	26-Sep-2023	3 days	1 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001)</b>											
HDPE PLANT EFFLUENT - E256696	E378-U	25-Sep-2023	26-Sep-2023	3 days	1 days	✓	26-Sep-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E378-U	25-Sep-2023	26-Sep-2023	3 days	1 days	✓	26-Sep-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E378-U	25-Sep-2023	26-Sep-2023	3 days	1 days	✓	26-Sep-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E235.NO3-L	25-Sep-2023	26-Sep-2023	3 days	1 days	✓	26-Sep-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE PLANT EFFLUENT - E256696	E235.NO3-L	25-Sep-2023	26-Sep-2023	3 days	1 days	✓	26-Sep-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E235.NO3-L	25-Sep-2023	26-Sep-2023	3 days	1 days	✓	26-Sep-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E235.NO3-L	25-Sep-2023	26-Sep-2023	3 days	1 days	✓	26-Sep-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E235.NO2-L	25-Sep-2023	26-Sep-2023	3 days	1 days	✓	26-Sep-2023	3 days	1 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE PLANT EFFLUENT - E256696	E235.NO2-L	25-Sep-2023	26-Sep-2023	3 days	1 days	✓	26-Sep-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E235.NO2-L	25-Sep-2023	26-Sep-2023	3 days	1 days	✓	26-Sep-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E235.NO2-L	25-Sep-2023	26-Sep-2023	3 days	1 days	✓	26-Sep-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E372-U	25-Sep-2023	26-Sep-2023	28 days	1 days	✓	27-Sep-2023	28 days	2 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) PLANT EFFLUENT - E256696	E372-U	25-Sep-2023	26-Sep-2023	28 days	1 days	✓	27-Sep-2023	28 days	2 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E372-U	25-Sep-2023	26-Sep-2023	28 days	1 days	✓	27-Sep-2023	28 days	2 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E372-U	25-Sep-2023	26-Sep-2023	28 days	1 days	✓	27-Sep-2023	28 days	2 days	✓	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
Sterile HDPE (Sodium thiosulphate) EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E012.EN	25-Sep-2023	----	----	----		26-Sep-2023	30 hrs	22 hrs	✓	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
Sterile HDPE (Sodium thiosulphate) SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E012.EN	25-Sep-2023	----	----	----		26-Sep-2023	30 hrs	22 hrs	✓	



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E012.EN	25-Sep-2023	----	----	----		26-Sep-2023	30 hrs	22 hrs	✔
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E012.EN	25-Sep-2023	----	----	----		26-Sep-2023	30 hrs	23 hrs	✔
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E012.FC	25-Sep-2023	----	----	----		26-Sep-2023	30 hrs	21 hrs	✔
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E012.FC	25-Sep-2023	----	----	----		26-Sep-2023	30 hrs	21 hrs	✔
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E012.FC	25-Sep-2023	----	----	----		26-Sep-2023	30 hrs	21 hrs	✔
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E012.FC	25-Sep-2023	----	----	----		26-Sep-2023	30 hrs	22 hrs	✔
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E010	25-Sep-2023	----	----	----		26-Sep-2023	30 hrs	22 hrs	✔
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E010	25-Sep-2023	----	----	----		26-Sep-2023	30 hrs	22 hrs	✔
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E010	25-Sep-2023	----	----	----		26-Sep-2023	30 hrs	22 hrs	✔



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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E010	25-Sep-2023	----	----	----		26-Sep-2023	30 hrs	23 hrs	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E160	25-Sep-2023	----	----	----		29-Sep-2023	7 days	4 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> PLANT EFFLUENT - E256696	E160	25-Sep-2023	----	----	----		29-Sep-2023	7 days	4 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	E160	25-Sep-2023	----	----	----		29-Sep-2023	7 days	4 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> UPSTREAM - COLUMBIA RIVER UP IDZ - E256694	E160	25-Sep-2023	----	----	----		29-Sep-2023	7 days	4 days	✔

**Legend & Qualifier Definitions**

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1154655	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1154946	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1154020	1	13	7.6	5.0	✓
Enterococcus by (MF - mE)	E012.EN	1159638	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1154093	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1154092	1	16	6.2	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1157228	1	10	10.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1157185	2	20	10.0	10.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1153871	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	1161533	1	17	5.8	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1154655	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1154946	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1154020	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1154093	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1154092	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1153871	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	1161533	1	17	5.8	5.0	✓
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1154655	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1154946	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1154020	1	13	7.6	5.0	✓
Enterococcus by (MF - mE)	E012.EN	1159638	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1154093	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1154092	1	16	6.2	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1157228	1	10	10.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1157185	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1153871	1	18	5.5	5.0	✓
TSS by Gravimetry	E160	1161533	1	17	5.8	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1154655	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1154020	1	13	7.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1154093	1	16	6.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1154092	1	16	6.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1153871	1	18	5.5	5.0	✓



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Calgary	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Enterococcus by (MF - mE)	E012.EN ALS Environmental - Calgary	Water	APHA 9230C (mod)	Following filtration (0.45 µm), and incubation at 35.0 ± 0.5°C for 48 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC ALS Environmental - Calgary	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 ALS Environmental - Calgary	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.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Calgary	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 - Calgary	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Calgary	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.



## QUALITY CONTROL REPORT

<b>Work Order</b>	<b>: CG2313449</b>	<b>Page</b>	<b>: 1 of 6</b>
<b>Client</b>	: Kicking Horse Mountain Resort LP	<b>Laboratory</b>	: ALS Environmental - Calgary
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5
<b>Telephone</b>	:	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: WEEK 1 - 2023 FALL EMS PROGRAM - WW	<b>Date Samples Received</b>	: 26-Sep-2023 09:00
<b>PO</b>	: ----	<b>Date Analysis Commenced</b>	: 26-Sep-2023
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 02-Oct-2023 21:29
<b>Sampler</b>	: ----                    250 344 6003		
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 4		
<b>No. of samples analysed</b>	: 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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

Page : 2 of 6  
Work Order : CG2313449  
Client : Kicking Horse Mountain Resort LP  
Project : WEEK 1 - 2023 FALL EMS PROGRAM - WW



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## 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.

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## Workorder Comments

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 1161533)</b>											
CG2313449-001	PLANT EFFLUENT - E256696	Solids, total suspended [TSS]	----	E160	3.0	mg/L	3.5	3.3	0.2	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1153871)</b>											
CG2313420-019	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0286	0.0278	2.80%	20%	----
<b>Anions and Nutrients (QC Lot: 1154020)</b>											
CG2313420-018	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0018	0.0014	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1154092)</b>											
CG2313460-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0029	0.0029	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1154093)</b>											
CG2313460-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	18.8	18.9	0.210%	20%	----
<b>Anions and Nutrients (QC Lot: 1154655)</b>											
CG2313449-001	PLANT EFFLUENT - E256696	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.100	0.101	0.695%	20%	----
<b>Microbiological Tests (QC Lot: 1157185)</b>											
CG2313445-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2313447-004	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1157228)</b>											
CG2313449-004	EAST SHORE - COLUMBIA RIVER 200M DN-E258898	Coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	2	1	1	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1159638)</b>											
CG2313449-001	PLANT EFFLUENT - E256696	Enterococcus	----	E012.EN	1	CFU/100mL	2	1	1	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1154946)</b>											
CG2313418-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



## Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1161533)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1153871)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 1154020)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 1154092)</b>						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 1154093)</b>						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1154655)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Microbiological Tests (QCLot: 1157185)</b>						
Coliforms, Escherichia coli [E. coli]	---	E010	1	MPN/100mL	<1	---
<b>Microbiological Tests (QCLot: 1157228)</b>						
Coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Microbiological Tests (QCLot: 1159638)</b>						
Enterococcus	---	E012.EN	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 1154946)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---



## Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 1161533)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	112	85.0	115	----
<b>Anions and Nutrients (QCLot: 1153871)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 1154020)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	97.7	80.0	120	----
<b>Anions and Nutrients (QCLot: 1154092)</b>									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	98.3	90.0	110	----
<b>Anions and Nutrients (QCLot: 1154093)</b>									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	99.5	90.0	110	----
<b>Anions and Nutrients (QCLot: 1154655)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.0	85.0	115	----
<b>Aggregate Organics (QCLot: 1154946)</b>									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	95.9	85.0	115	----




### 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  $\geq 1x$  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
<b>Anions and Nutrients (QCLot: 1153871)</b>										
CG2313420-020	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0543 mg/L	0.05 mg/L	108	70.0	130	----
<b>Anions and Nutrients (QCLot: 1154020)</b>										
CG2313420-019	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0446 mg/L	0.05 mg/L	89.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 1154092)</b>										
CG2313460-004	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.507 mg/L	0.5 mg/L	101	75.0	125	----
<b>Anions and Nutrients (QCLot: 1154093)</b>										
CG2313460-004	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.49 mg/L	2.5 mg/L	99.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 1154655)</b>										
CG2313449-002	SIDE CHANNEL - COLUMBIA RIVER 1KM DN-E258899	Ammonia, total (as N)	7664-41-7	E298	0.0992 mg/L	0.1 mg/L	99.2	75.0	125	----



<b>Report To</b>			<b>Report Format / Distribution</b>			<b>Service Requested (T)</b>										Environmental Division Calgary Work Order Reference <h1 style="margin: 0;">CG2313449</h1>  <p>Telephone : +1 403 407 1800</p>
Company: Kicking Horse Mountain Resort Utility Corporation			<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other			<input checked="" type="radio"/> Regular (Standard Turn)										
Contact: Travis Jobin			<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax			<input type="radio"/> Priority (2-4 Business D										
Address: 1500 Kicking Horse Trail			Email 1: tjobin@kickinghorseresort.com			<input type="radio"/> Emergency (1-2 Bus. D										
Phone: 250-344-8442 Fax:			Email 2: pmajer@skircr.com			<input type="radio"/> Same Day or Weekend										
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			<b>Client / Project Information</b>			Please indicate below										
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input type="checkbox"/> No			Job #: Week 1 - 2023 Fall EMS program - WW													
Company: Resorts of the Canadian Rockies			PO / AFE:													
Contact: Patrick Majer			LSD:													
Address: 1505 - 17th Ave SW Calgary AB			Quote #:													
Phone: Fax:																
Lab Work Order # (lab use only)			ALS Contact: PW		Sampler: TJ											
Sample #	Sample Identification (This description will appear on the report)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli	Number of Containers
	Plant Effluent - E256696 Temp: 15 pH: 6.9		25-Sep-23	11.20	Water	X	X	X	X	X	X	X	X	X	X	5
	Side Channel - Columbia River 1KM DN-E258899 Temp: 10.5 pH: 7		25-Sep-23	12.10	Water		X	X	X	X	X	X	X	X	X	4
	Upstream - Columbia River UP IDZ-E256694 Temp: 10.5 pH: 7		25-Sep-23	12.20	Water		X	X	X	X	X	X	X	X	X	4
	East Shore - Columbia River 200m DN-E258898 Temp: 10.3 pH: 7		25-Sep-23	12.30	Water		X	X	X	X	X	X	X	X	X	4
	Sample State: WW															
	Sample Descriptor: MU															
	Sample Class: REG															
	Collection Mode: GRB															
	Permit: 15474															
Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details																
<p>Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.</p> <p>By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.</p> <p>Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.</p>																
SHIPMENT RELEASE (client use)					SHIPMENT RECEPTION (lab use only)					SHIPMENT VERIFICATION (lab use only)						
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:						
Travis Jobin	09/25/23 <del>2 May 23</del>	1.00				10 °C	<i>dm</i>	9/26	9:00	Yes / No ? If Yes add SIF						



**CERTIFICATE OF ANALYSIS**

<b>Work Order</b>	: <b>CG2313991</b>	<b>Page</b>	: 1 of 4
<b>Client</b>	: <b>Kicking Horse Mountain Resort LP</b>	<b>Laboratory</b>	: ALS Environmental - Calgary
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Telephone</b>	: 250 344 6003	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: WEEK 2 - 2023 FALL EMS PROGRAM - WW	<b>Date Samples Received</b>	: 05-Oct-2023 08:50
<b>PO</b>	: ----	<b>Date Analysis</b>	: 05-Oct-2023
<b>C-O-C number</b>	: ----	<b>Commenced</b>	
<b>Sampler</b>	: TJ	<b>Issue Date</b>	: 10-Oct-2023 20:46
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 4		
<b>No. of samples analysed</b>	: 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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta





## General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

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.

<i>Unit</i>	<i>Description</i>
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less than.

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

<i>Qualifier</i>	<i>Description</i>
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).



## Analytical Results

CG2313991-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT EFFLUENT

Client sampling date / time: 04-Oct-2023 09:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	12.3	3.0	mg/L	E160/CG	-	07-Oct-2023	1170990
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0694	0.0050	mg/L	E298/CG	05-Oct-2023	05-Oct-2023	1171615
Nitrate (as N)	14797-55-8	16.5	0.0050	mg/L	E235.NO3-L/CG	05-Oct-2023	05-Oct-2023	1170287
Nitrite (as N)	14797-65-0	0.0261	0.0010	mg/L	E235.NO2-L/CG	05-Oct-2023	05-Oct-2023	1170288
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.0986	0.0020	mg/L	E378-U/CG	05-Oct-2023	05-Oct-2023	1170271
Phosphorus, total	7723-14-0	0.276 <sup>DLHC</sup>	0.0100	mg/L	E372-U/CG	06-Oct-2023	07-Oct-2023	1171231
Nitrate + Nitrite (as N)	----	16.5	0.0051	mg/L	EC235.N+N/CG	-	10-Oct-2023	1176854
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	<1	1	CFU/100m	E012.FC/CG L	-	05-Oct-2023	1173529
Enterococcus	----	2	1	CFU/100m	E012.EN/CG L	-	05-Oct-2023	1176872
Coliforms, Escherichia coli [E. coli]	----	<1	1	MPN/100m	E010/CG L	-	05-Oct-2023	1173467
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	<2.0	2.0	mg/L	E550/CG	-	05-Oct-2023	1171655

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

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

## Analytical Results

CG2313991-002

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: SIDE CHANNEL - COLUMBIA RIVER 1KM DN

Client sampling date / time: 04-Oct-2023 10:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	7.5	3.0	mg/L	E160/CG	-	07-Oct-2023	1170990
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298/CG	05-Oct-2023	05-Oct-2023	1171615
Nitrate (as N)	14797-55-8	0.0708	0.0050	mg/L	E235.NO3-L/CG	05-Oct-2023	05-Oct-2023	1170287
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	05-Oct-2023	05-Oct-2023	1170288
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	05-Oct-2023	05-Oct-2023	1170875
Phosphorus, total	7723-14-0	0.0064	0.0020	mg/L	E372-U/CG	06-Oct-2023	07-Oct-2023	1171231
Nitrate + Nitrite (as N)	----	0.0708	0.0051	mg/L	EC235.N+N/CG	-	10-Oct-2023	1176854
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	5	1	CFU/100m	E012.FC/CG L	-	05-Oct-2023	1173529
Enterococcus	----	2	1	CFU/100m	E012.EN/CG L	-	05-Oct-2023	1176872
Coliforms, Escherichia coli [E. coli]	----	2	1	MPN/100m	E010/CG L	-	05-Oct-2023	1173467

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

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



## Analytical Results

CG2313991-003

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: UPSTREAM - COLUMBIA RIVER UP IDZ

Client sampling date / time: 04-Oct-2023 10:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	8.5	3.0	mg/L	E160/CG	-	07-Oct-2023	1170990
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298/CG	05-Oct-2023	05-Oct-2023	1171615
Nitrate (as N)	14797-55-8	0.0779	0.0050	mg/L	E235.NO3-L/CG	05-Oct-2023	05-Oct-2023	1170287
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	05-Oct-2023	05-Oct-2023	1170288
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	05-Oct-2023	05-Oct-2023	1170875
Phosphorus, total	7723-14-0	0.0066	0.0020	mg/L	E372-U/CG	06-Oct-2023	07-Oct-2023	1171231
Nitrate + Nitrite (as N)	----	0.0779	0.0051	mg/L	EC235.N+N/CG	-	10-Oct-2023	1176854
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	3	1	CFU/100m	E012.FC/CG	-	05-Oct-2023	1173529
Enterococcus	----	15	1	CFU/100m	E012.EN/CG	-	05-Oct-2023	1176872
Coliforms, Escherichia coli [E. coli]	----	<1	1	MPN/100m	E010/CG	-	05-Oct-2023	1173467

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

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

## Analytical Results

CG2313991-004

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: EAST SHORE - COLUMBIA RIVER 200M DN

Client sampling date / time: 04-Oct-2023 11:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	12.9	3.0	mg/L	E160/CG	-	07-Oct-2023	1170990
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0051	0.0050	mg/L	E298/CG	05-Oct-2023	05-Oct-2023	1171615
Nitrate (as N)	14797-55-8	0.0807	0.0050	mg/L	E235.NO3-L/CG	05-Oct-2023	05-Oct-2023	1170287
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	05-Oct-2023	05-Oct-2023	1170288
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	05-Oct-2023	05-Oct-2023	1170875
Phosphorus, total	7723-14-0	0.0154	0.0020	mg/L	E372-U/CG	06-Oct-2023	07-Oct-2023	1171231
Nitrate + Nitrite (as N)	----	0.0807	0.0051	mg/L	EC235.N+N/CG	-	10-Oct-2023	1176854
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	2	1	CFU/100m	E012.FC/CG	-	05-Oct-2023	1173529
Enterococcus	----	11	1	CFU/100m	E012.EN/CG	-	05-Oct-2023	1176872
Coliforms, Escherichia coli [E. coli]	----	1	1	MPN/100m	E010/CG	-	05-Oct-2023	1173467

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.



## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2313991</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : WEEK 2 - 2023 FALL EMS PROGRAM - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 10</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 05-Oct-2023 08:50</p> <p><b>Issue Date</b> : 10-Oct-2023 20:46</p>
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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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> PLANT EFFLUENT	E550	04-Oct-2023	----	----	----		05-Oct-2023	3 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EAST SHORE - COLUMBIA RIVER 200M DN	E298	04-Oct-2023	05-Oct-2023	28 days	1 days	✔	05-Oct-2023	28 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT	E298	04-Oct-2023	05-Oct-2023	28 days	1 days	✔	05-Oct-2023	28 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN	E298	04-Oct-2023	05-Oct-2023	28 days	1 days	✔	05-Oct-2023	28 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> UPSTREAM - COLUMBIA RIVER UP IDZ	E298	04-Oct-2023	05-Oct-2023	28 days	1 days	✔	05-Oct-2023	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001)</b>										
<b>HDPE</b> EAST SHORE - COLUMBIA RIVER 200M DN	E378-U	04-Oct-2023	05-Oct-2023	3 days	1 days	✔	05-Oct-2023	3 days	1 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001)</b>											
HDPE PLANT EFFLUENT	E378-U	04-Oct-2023	05-Oct-2023	3 days	1 days	✔	05-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM DN	E378-U	04-Oct-2023	05-Oct-2023	3 days	1 days	✔	05-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ	E378-U	04-Oct-2023	05-Oct-2023	3 days	1 days	✔	05-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EAST SHORE - COLUMBIA RIVER 200M DN	E235.NO3-L	04-Oct-2023	05-Oct-2023	3 days	1 days	✔	05-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE PLANT EFFLUENT	E235.NO3-L	04-Oct-2023	05-Oct-2023	3 days	1 days	✔	05-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM DN	E235.NO3-L	04-Oct-2023	05-Oct-2023	3 days	1 days	✔	05-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ	E235.NO3-L	04-Oct-2023	05-Oct-2023	3 days	1 days	✔	05-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EAST SHORE - COLUMBIA RIVER 200M DN	E235.NO2-L	04-Oct-2023	05-Oct-2023	3 days	1 days	✔	05-Oct-2023	3 days	1 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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE PLANT EFFLUENT	E235.NO2-L	04-Oct-2023	05-Oct-2023	3 days	1 days	✓	05-Oct-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM DN	E235.NO2-L	04-Oct-2023	05-Oct-2023	3 days	1 days	✓	05-Oct-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ	E235.NO2-L	04-Oct-2023	05-Oct-2023	3 days	1 days	✓	05-Oct-2023	3 days	1 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) EAST SHORE - COLUMBIA RIVER 200M DN	E372-U	04-Oct-2023	06-Oct-2023	28 days	2 days	✓	07-Oct-2023	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) PLANT EFFLUENT	E372-U	04-Oct-2023	06-Oct-2023	28 days	2 days	✓	07-Oct-2023	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) SIDE CHANNEL - COLUMBIA RIVER 1KM DN	E372-U	04-Oct-2023	06-Oct-2023	28 days	2 days	✓	07-Oct-2023	28 days	3 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
Amber glass total (sulfuric acid) UPSTREAM - COLUMBIA RIVER UP IDZ	E372-U	04-Oct-2023	06-Oct-2023	28 days	2 days	✓	07-Oct-2023	28 days	3 days	✓	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
Sterile HDPE (Sodium thiosulphate) EAST SHORE - COLUMBIA RIVER 200M DN	E012.EN	04-Oct-2023	----	----	----		05-Oct-2023	30 hrs	25 hrs	✓	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
Sterile HDPE (Sodium thiosulphate) UPSTREAM - COLUMBIA RIVER UP IDZ	E012.EN	04-Oct-2023	----	----	----		05-Oct-2023	30 hrs	25 hrs	✓	





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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT	E012.EN	04-Oct-2023	----	----	----		05-Oct-2023	30 hrs	26 hrs	✓
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN	E012.EN	04-Oct-2023	----	----	----		05-Oct-2023	30 hrs	26 hrs	✓
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> EAST SHORE - COLUMBIA RIVER 200M DN	E012.FC	04-Oct-2023	----	----	----		05-Oct-2023	30 hrs	25 hrs	✓
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ	E012.FC	04-Oct-2023	----	----	----		05-Oct-2023	30 hrs	25 hrs	✓
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT	E012.FC	04-Oct-2023	----	----	----		05-Oct-2023	30 hrs	26 hrs	✓
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN	E012.FC	04-Oct-2023	----	----	----		05-Oct-2023	30 hrs	26 hrs	✓
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> EAST SHORE - COLUMBIA RIVER 200M DN	E010	04-Oct-2023	----	----	----		05-Oct-2023	30 hrs	25 hrs	✓
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ	E010	04-Oct-2023	----	----	----		05-Oct-2023	30 hrs	25 hrs	✓
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT	E010	04-Oct-2023	----	----	----		05-Oct-2023	30 hrs	26 hrs	✓



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		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN	E010	04-Oct-2023	----	----	----		05-Oct-2023	30 hrs	26 hrs	✓	
<b>Physical Tests : TSS by Gravimetry</b>											
<b>HDPE</b> EAST SHORE - COLUMBIA RIVER 200M DN	E160	04-Oct-2023	----	----	----		07-Oct-2023	7 days	3 days	✓	
<b>Physical Tests : TSS by Gravimetry</b>											
<b>HDPE</b> PLANT EFFLUENT	E160	04-Oct-2023	----	----	----		07-Oct-2023	7 days	3 days	✓	
<b>Physical Tests : TSS by Gravimetry</b>											
<b>HDPE</b> SIDE CHANNEL - COLUMBIA RIVER 1KM DN	E160	04-Oct-2023	----	----	----		07-Oct-2023	7 days	3 days	✓	
<b>Physical Tests : TSS by Gravimetry</b>											
<b>HDPE</b> UPSTREAM - COLUMBIA RIVER UP IDZ	E160	04-Oct-2023	----	----	----		07-Oct-2023	7 days	3 days	✓	

**Legend & Qualifier Definitions**

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1171615	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1171655	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1170271	2	40	5.0	5.0	✔
Enterococcus by (MF - mE)	E012.EN	1176872	1	5	20.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1170287	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1170288	1	20	5.0	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1173529	1	20	5.0	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	1173467	2	17	11.7	10.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1171231	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1170990	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1171615	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1171655	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1170271	2	40	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1170287	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1170288	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1171231	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1170990	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1171615	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1171655	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1170271	2	40	5.0	5.0	✔
Enterococcus by (MF - mE)	E012.EN	1176872	1	5	20.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1170287	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1170288	1	20	5.0	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1173529	1	20	5.0	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	1173467	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1171231	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1170990	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1171615	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1170271	2	40	5.0	5.0	✔
Nitrate in Water by IC (Low Level)	E235.NO3-L	1170287	1	20	5.0	5.0	✔
Nitrite in Water by IC (Low Level)	E235.NO2-L	1170288	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1171231	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Calgary	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Enterococcus by (MF - mE)	E012.EN ALS Environmental - Calgary	Water	APHA 9230C (mod)	Following filtration (0.45 µm), and incubation at 35.0 ± 0.5°C for 48 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC ALS Environmental - Calgary	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 ALS Environmental - Calgary	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.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Calgary	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 - Calgary	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	Water	APHA 5210 B (mod)	<p>Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter.</p> <p>Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.</p>
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Calgary	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2313991</b></p> <p><b>Client</b> : Kicking Horse Mountain Resort LP</p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> :</p> <p><b>Project</b> : WEEK 2 - 2023 FALL EMS PROGRAM - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ                    250 344 6003</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 6</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 05-Oct-2023 08:50</p> <p><b>Date Analysis Commenced</b> : 05-Oct-2023</p> <p><b>Issue Date</b> : 10-Oct-2023 20:46</p>
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

Page : 2 of 6  
Work Order : CG2313991  
Client : Kicking Horse Mountain Resort LP  
Project : WEEK 2 - 2023 FALL EMS PROGRAM - WW



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## 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.

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## Workorder Comments

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 1170990)</b>											
CG2313950-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	22.3	21.7	0.6	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1170271)</b>											
CG2313970-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0012	0.0014	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1170287)</b>											
CG2313951-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.100	mg/L	21.6	21.6	0.160%	20%	----
<b>Anions and Nutrients (QC Lot: 1170288)</b>											
CG2313951-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0200	mg/L	0.168	0.166	0.0028	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1170875)</b>											
CG2313989-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1171231)</b>											
CG2313990-011	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1171615)</b>											
CG2313987-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0079	0.0071	0.0008	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1173467)</b>											
CG2313976-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2313984-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1173529)</b>											
CG2313989-001	Anonymous	Coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	4	3	28.6%	65%	----
<b>Microbiological Tests (QC Lot: 1176872)</b>											
CG2313991-001	PLANT EFFLUENT	Enterococcus	----	E012.EN	1	CFU/100mL	2	3	1	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1171655)</b>											
CG2313981-002	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----





## Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1170990)</b>						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
<b>Anions and Nutrients (QCLot: 1170271)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 1170287)</b>						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 1170288)</b>						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 1170875)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 1171231)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Anions and Nutrients (QCLot: 1171615)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Microbiological Tests (QCLot: 1173467)</b>						
Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	----
<b>Microbiological Tests (QCLot: 1173529)</b>						
Coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	<1	----
<b>Microbiological Tests (QCLot: 1176872)</b>						
Enterococcus	----	E012.EN	1	CFU/100mL	<1	----
<b>Aggregate Organics (QCLot: 1171655)</b>						
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----



## Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 1170990)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	94.1	85.0	115	----
<b>Anions and Nutrients (QCLot: 1170271)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	96.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 1170287)</b>									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 1170288)</b>									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	97.8	90.0	110	----
<b>Anions and Nutrients (QCLot: 1170875)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	96.8	80.0	120	----
<b>Anions and Nutrients (QCLot: 1171231)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	107	80.0	120	----
<b>Anions and Nutrients (QCLot: 1171615)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	93.0	85.0	115	----
<b>Aggregate Organics (QCLot: 1171655)</b>									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	97.0	85.0	115	----



### 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
<b>Anions and Nutrients (QCLot: 1170271)</b>										
CG2313970-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0462 mg/L	0.05 mg/L	92.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 1170287)</b>										
CG2313951-004	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	ND mg/L	2.5 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 1170288)</b>										
CG2313951-004	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.534 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 1170875)</b>										
CG2313989-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0479 mg/L	0.05 mg/L	95.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 1171231)</b>										
CG2313990-012	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0479 mg/L	0.05 mg/L	95.8	70.0	130	----
<b>Anions and Nutrients (QCLot: 1171615)</b>										
CG2313991-001	PLANT EFFLUENT	Ammonia, total (as N)	7664-41-7	E298	0.102 mg/L	0.1 mg/L	102	75.0	125	----



Environmental Division  
 Calgary

Work Order Reference  
**CG2313991**



Telephone : +1 403 407 1800

Availability)  
 Firm TAT  
 Firm TAT  
 F/D)

<b>Report To</b>		<b>Report Format / Distribution</b>		<b>Service Request</b>	
Company: Kicking Horse Mountain Resort Utility Corporation		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other		<input checked="" type="radio"/> Regular (Standard)	
Contact: Travis Jobin		<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax		<input type="radio"/> Priority (2-4 Bus)	
Address: 1500 Kicking Horse Trail		Email 1: tjobin@kickinghorseresort.com		<input type="radio"/> Emergency (1-2)	
Phone: 250-344-8442 Fax:		Email 2: pmajer@skircr.com		<input type="radio"/> Same Day or We	
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>Client / Project Information</b>		Please indicate	
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input type="checkbox"/> No		Job #: Week 2 - 2023 Fall EMS program - WW			
Company: Resorts of the Canadian Rockies		PO / AFE:			
Contact: Patrick Majer		LSD:			
Address: 1505 - 17th Ave SW Calgary AB		Quote #:			
Phone: Fax:		ALS Contact: PW		Sampler: TJ	

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli
	Plant Effluent - E256696 Temp: 13.8 pH: 7.0	04-Oct-23	930	Water	X	X	X	X	X	X	X	X	X	X
	Side Channel - Columbia River 1KM DN-E258899 Temp: 9.8 pH: 7.0	04-Oct-23	1000	Water		X	X	X	X	X	X	X	X	4
	Upstream - Columbia River UP IDZ-E256694 Temp: 9.0 pH: 6.5	04-Oct-23	1030	Water		X	X	X	X	X	X	X	X	4
	East Shore - Columbia River 200m DN-E258898 Temp: 9.8 pH: 7.5	04-Oct-23	1100	Water		X	X	X	X	X	X	X	X	4
	Sample State: WW													
	Sample Descriptor: MU													
	Sample Class: REG													
	Collection Mode: GRB													
	Permit: 15474													

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2313991**

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis Jobin	2-May-23		Jan.	025,	8:50	10.4 °C				



## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2314334</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : WEEK 3 - 2023 FALL EMS PROGRAM - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 4</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 12-Oct-2023 08:57</p> <p><b>Date Analysis</b> : 12-Oct-2023</p> <p><b>Commenced</b> : 12-Oct-2023</p> <p><b>Issue Date</b> : 17-Oct-2023 22:00</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



Page : 2 of 4  
Work Order : CG2314334  
Client : Kicking Horse Mountain Resort LP  
Project : WEEK 3 - 2023 FALL EMS PROGRAM - WW

## 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).  
Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
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.

<i>Unit</i>	<i>Description</i>
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less than.

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

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

## Workorder Comments

Sample(s) 001-004: Exceeded Recommended Holding Time prior to receipt at the lab for Microbiology analysis.



## Analytical Results

CG2314334-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT EFFLUENT - E256696

Client sampling date / time: 10-Oct-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	15.4	3.0	mg/L	E160/CG	-	15-Oct-2023	1185425
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.124	0.0050	mg/L	E298/CG	12-Oct-2023	12-Oct-2023	1182261
Nitrate (as N)	14797-55-8	20.5	0.0050	mg/L	E235.NO3-L/CG	12-Oct-2023	12-Oct-2023	1181891
Nitrite (as N)	14797-65-0	0.0600	0.0010	mg/L	E235.NO2-L/CG	12-Oct-2023	12-Oct-2023	1181892
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.134	0.0020	mg/L	E378-U/CG	12-Oct-2023	12-Oct-2023	1181917
Phosphorus, total	7723-14-0	0.267	0.0100	mg/L	E372-U/CG	13-Oct-2023	16-Oct-2023	1183244
Nitrate + Nitrite (as N)	----	20.6	0.0051	mg/L	EC235.N+N/CG	-	16-Oct-2023	1187548
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	1	1	CFU/100m	E012.FC/CG	-	12-Oct-2023	1184495
Enterococcus	----	1	1	CFU/100m	E012.EN/CG	-	12-Oct-2023	1187610
Coliforms, Escherichia coli [E. coli]	----	<1	1	MPN/100m	E010/CG	-	12-Oct-2023	1184411
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	2.2	2.0	mg/L	E550/CG	-	12-Oct-2023	1182584

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

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

## Analytical Results

CG2314334-002

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: SIDE CHANNEL - COLUMBIA RIVER 1KM SN-E258899

Client sampling date / time: 10-Oct-2023 12:40

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	5.4	3.0	mg/L	E160/CG	-	15-Oct-2023	1185425
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298/CG	12-Oct-2023	12-Oct-2023	1182261
Nitrate (as N)	14797-55-8	0.0836	0.0050	mg/L	E235.NO3-L/CG	12-Oct-2023	12-Oct-2023	1181891
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	12-Oct-2023	12-Oct-2023	1181892
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	12-Oct-2023	12-Oct-2023	1181917
Phosphorus, total	7723-14-0	0.0076	0.0020	mg/L	E372-U/CG	13-Oct-2023	16-Oct-2023	1183244
Nitrate + Nitrite (as N)	----	0.0836	0.0051	mg/L	EC235.N+N/CG	-	16-Oct-2023	1187548
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	4	1	CFU/100m	E012.FC/CG	-	12-Oct-2023	1184495
Enterococcus	----	2	1	CFU/100m	E012.EN/CG	-	12-Oct-2023	1187610
Coliforms, Escherichia coli [E. coli]	----	1	1	MPN/100m	E010/CG	-	12-Oct-2023	1184411

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

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



## Analytical Results

CG2314334-003

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: UPSTREAM - COLUMBIA RIVER UP IDZ-E256694

Client sampling date / time: 10-Oct-2023 12:50

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	5.6	3.0	mg/L	E160/CG	-	15-Oct-2023	1185425
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298/CG	12-Oct-2023	12-Oct-2023	1182261
Nitrate (as N)	14797-55-8	0.0872	0.0050	mg/L	E235.NO3-L/CG	12-Oct-2023	12-Oct-2023	1181891
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	12-Oct-2023	12-Oct-2023	1181892
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	12-Oct-2023	12-Oct-2023	1181917
Phosphorus, total	7723-14-0	0.0058	0.0020	mg/L	E372-U/CG	13-Oct-2023	16-Oct-2023	1183244
Nitrate + Nitrite (as N)	----	0.0872	0.0051	mg/L	EC235.N+N/CG	-	16-Oct-2023	1187548
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	1	1	CFU/100m	E012.FC/CG	-	12-Oct-2023	1184495
Enterococcus	----	2	1	CFU/100m	E012.EN/CG	-	12-Oct-2023	1187610
Coliforms, Escherichia coli [E. coli]	----	1	1	MPN/100m	E010/CG	-	12-Oct-2023	1184411

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

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

## Analytical Results

CG2314334-004

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: EAST SHORE - COLUMBIA RIVER 200M DN-E258898

Client sampling date / time: 10-Oct-2023 13:10

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	6.4	3.0	mg/L	E160/CG	-	15-Oct-2023	1185425
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298/CG	12-Oct-2023	12-Oct-2023	1182261
Nitrate (as N)	14797-55-8	0.0867	0.0050	mg/L	E235.NO3-L/CG	12-Oct-2023	12-Oct-2023	1181891
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	12-Oct-2023	12-Oct-2023	1181892
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	12-Oct-2023	12-Oct-2023	1181917
Phosphorus, total	7723-14-0	0.0073	0.0020	mg/L	E372-U/CG	13-Oct-2023	16-Oct-2023	1183244
Nitrate + Nitrite (as N)	----	0.0867	0.0051	mg/L	EC235.N+N/CG	-	16-Oct-2023	1187548
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	1	1	CFU/100m	E012.FC/CG	-	12-Oct-2023	1184495
Enterococcus	----	2	1	CFU/100m	E012.EN/CG	-	12-Oct-2023	1187610
Coliforms, Escherichia coli [E. coli]	----	1	1	MPN/100m	E010/CG	-	12-Oct-2023	1184411

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.





## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2314334</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : WEEK 3 - 2023 FALL EMS PROGRAM - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 10</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 12-Oct-2023 08:57</p> <p><b>Issue Date</b> : 17-Oct-2023 22:00</p>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

**Key**

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

### ***Workorder Comments***

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

### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

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

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

***Outliers : Analysis Holding Time Compliance (Breaches)***

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

***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> PLANT EFFLUENT - E256696	E550	10-Oct-2023	----	----	----		12-Oct-2023	3 days	2 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E298	10-Oct-2023	12-Oct-2023	28 days	2 days	✔	12-Oct-2023	28 days	2 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT - E256696	E298	10-Oct-2023	12-Oct-2023	28 days	2 days	✔	12-Oct-2023	28 days	2 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM SN-E258899	E298	10-Oct-2023	12-Oct-2023	28 days	2 days	✔	12-Oct-2023	28 days	2 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> UPSTREAM - COLUMBIA RIVER UP IDZ-E256694	E298	10-Oct-2023	12-Oct-2023	28 days	2 days	✔	12-Oct-2023	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>										
<b>HDPE</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E378-U	10-Oct-2023	12-Oct-2023	3 days	2 days	✔	12-Oct-2023	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>										
<b>HDPE</b> PLANT EFFLUENT - E256696	E378-U	10-Oct-2023	12-Oct-2023	3 days	2 days	✔	12-Oct-2023	3 days	2 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM SN-E258899	E378-U	10-Oct-2023	12-Oct-2023	3 days	2 days	✔	12-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ-E256694	E378-U	10-Oct-2023	12-Oct-2023	3 days	2 days	✔	12-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E235.NO3-L	10-Oct-2023	12-Oct-2023	3 days	2 days	✔	12-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE PLANT EFFLUENT - E256696	E235.NO3-L	10-Oct-2023	12-Oct-2023	3 days	2 days	✔	12-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM SN-E258899	E235.NO3-L	10-Oct-2023	12-Oct-2023	3 days	2 days	✔	12-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ-E256694	E235.NO3-L	10-Oct-2023	12-Oct-2023	3 days	2 days	✔	12-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E235.NO2-L	10-Oct-2023	12-Oct-2023	3 days	2 days	✔	12-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE PLANT EFFLUENT - E256696	E235.NO2-L	10-Oct-2023	12-Oct-2023	3 days	2 days	✔	12-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM SN-E258899	E235.NO2-L	10-Oct-2023	12-Oct-2023	3 days	2 days	✔	12-Oct-2023	3 days	2 days	✔	



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

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> UPSTREAM - COLUMBIA RIVER UP IDZ-E256694	E235.NO2-L	10-Oct-2023	12-Oct-2023	3 days	2 days	✓	12-Oct-2023	3 days	2 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E372-U	10-Oct-2023	13-Oct-2023	28 days	3 days	✓	16-Oct-2023	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT - E256696	E372-U	10-Oct-2023	13-Oct-2023	28 days	3 days	✓	16-Oct-2023	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM SN-E258899	E372-U	10-Oct-2023	13-Oct-2023	28 days	3 days	✓	16-Oct-2023	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> UPSTREAM - COLUMBIA RIVER UP IDZ-E256694	E372-U	10-Oct-2023	13-Oct-2023	28 days	3 days	✓	16-Oct-2023	28 days	6 days	✓	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E012.EN	10-Oct-2023	----	----	----		12-Oct-2023	30 hrs	46 hrs	* EHTR	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM SN-E258899	E012.EN	10-Oct-2023	----	----	----		12-Oct-2023	30 hrs	47 hrs	* EHTR	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ-E256694	E012.EN	10-Oct-2023	----	----	----		12-Oct-2023	30 hrs	47 hrs	* EHTR	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E012.EN	10-Oct-2023	----	----	----		12-Oct-2023	30 hrs	48 hrs	* EHTR	



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

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E012.FC	10-Oct-2023	----	----	----		12-Oct-2023	30 hrs	46 hrs	* EHTR
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM SN-E258899	E012.FC	10-Oct-2023	----	----	----		12-Oct-2023	30 hrs	47 hrs	* EHTR
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ-E256694	E012.FC	10-Oct-2023	----	----	----		12-Oct-2023	30 hrs	47 hrs	* EHTR
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E012.FC	10-Oct-2023	----	----	----		12-Oct-2023	30 hrs	48 hrs	* EHTR
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E010	10-Oct-2023	----	----	----		12-Oct-2023	30 hrs	46 hrs	* EHTR
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1KM SN-E258899	E010	10-Oct-2023	----	----	----		12-Oct-2023	30 hrs	47 hrs	* EHTR
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ-E256694	E010	10-Oct-2023	----	----	----		12-Oct-2023	30 hrs	47 hrs	* EHTR
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E010	10-Oct-2023	----	----	----		12-Oct-2023	30 hrs	48 hrs	* EHTR
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> EAST SHORE - COLUMBIA RIVER 200M DN-E258898	E160	10-Oct-2023	----	----	----		15-Oct-2023	7 days	5 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT EFFLUENT - E256696	E160	10-Oct-2023	----	----	----		15-Oct-2023	7 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE SIDE CHANNEL - COLUMBIA RIVER 1KM SN-E258899	E160	10-Oct-2023	----	----	----		15-Oct-2023	7 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ-E256694	E160	10-Oct-2023	----	----	----		15-Oct-2023	7 days	5 days	✔

Legend & Qualifier Definitions

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

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	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1182261	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1182584	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1181917	1	20	5.0	5.0	✓
Enterococcus by (MF - mE)	E012.EN	1187610	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1181891	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1181892	1	19	5.2	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1184495	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1184411	2	17	11.7	10.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1183244	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1185425	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1182261	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1182584	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1181917	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1181891	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1181892	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1183244	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1185425	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1182261	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1182584	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1181917	1	20	5.0	5.0	✓
Enterococcus by (MF - mE)	E012.EN	1187610	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1181891	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1181892	1	19	5.2	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1184495	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1184411	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1183244	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1185425	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1182261	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1181917	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1181891	1	19	5.2	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1181892	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1183244	1	20	5.0	5.0	✓





## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Calgary	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Enterococcus by (MF - mE)	E012.EN ALS Environmental - Calgary	Water	APHA 9230C (mod)	Following filtration (0.45 µm), and incubation at 35.0 ± 0.5°C for 48 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC ALS Environmental - Calgary	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 ALS Environmental - Calgary	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.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Calgary	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 - Calgary	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Calgary	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2314334</b></p> <p><b>Client</b> : Kicking Horse Mountain Resort LP</p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> :</p> <p><b>Project</b> : WEEK 3 - 2023 FALL EMS PROGRAM - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ                    250 344 6003</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 6</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 12-Oct-2023 08:57</p> <p><b>Date Analysis Commenced</b> : 12-Oct-2023</p> <p><b>Issue Date</b> : 17-Oct-2023 22:00</p>
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

Page : 2 of 6  
Work Order : CG2314334  
Client : Kicking Horse Mountain Resort LP  
Project : WEEK 3 - 2023 FALL EMS PROGRAM - WW



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## 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

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 1185425)</b>											
CG2314305-002	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	3.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1181891)</b>											
CG2314303-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	14.2	14.2	0.346%	20%	----
<b>Anions and Nutrients (QC Lot: 1181892)</b>											
CG2314303-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0146	0.0153	0.0007	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1181917)</b>											
CG2314276-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0207	0.0209	1.06%	20%	----
<b>Anions and Nutrients (QC Lot: 1182261)</b>											
CG2314309-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.516	0.516	0.174%	20%	----
<b>Anions and Nutrients (QC Lot: 1183244)</b>											
CG2314329-003	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0350	0.0360	2.73%	20%	----
<b>Microbiological Tests (QC Lot: 1184411)</b>											
CG2314329-007	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	1	1	0	Diff <2x LOR	----
CG2314342-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1184495)</b>											
CG2314334-001	PLANT EFFLUENT - E256696	Coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	1	1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1187610)</b>											
CG2314300-002	Anonymous	Enterococcus	----	E012.EN	1	CFU/100mL	<1	<1	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1182584)</b>											
CG2314336-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



## Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1185425)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1181891)</b>						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1181892)</b>						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 1181917)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 1182261)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1183244)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Microbiological Tests (QCLot: 1184411)</b>						
Coliforms, Escherichia coli [E. coli]	---	E010	1	MPN/100mL	<1	---
<b>Microbiological Tests (QCLot: 1184495)</b>						
Coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Microbiological Tests (QCLot: 1187610)</b>						
Enterococcus	---	E012.EN	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 1182584)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---



## Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 1185425)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	97.5	85.0	115	----
<b>Anions and Nutrients (QCLot: 1181891)</b>									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	103	90.0	110	----
<b>Anions and Nutrients (QCLot: 1181892)</b>									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 1181917)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	98.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 1182261)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	104	85.0	115	----
<b>Anions and Nutrients (QCLot: 1183244)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	96.1	80.0	120	----
<b>Aggregate Organics (QCLot: 1182584)</b>									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	93.9	85.0	115	----



### 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
<b>Anions and Nutrients (QCLot: 1181891)</b>										
CG2314303-006	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.57 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 1181892)</b>										
CG2314303-006	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.517 mg/L	0.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 1181917)</b>										
CG2314276-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0512 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 1182261)</b>										
CG2314310-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	----
<b>Anions and Nutrients (QCLot: 1183244)</b>										
CG2314329-004	Anonymous	Phosphorus, total	7723-14-0	E372-U		----		70.0	130	----





Telephone: +1 403 407 1800

<b>Report To</b>	<b>Report Format / Distribution</b>	<b>Service Requested (Ru)</b>
Company: Kicking Horse Mountain Resort Utility Corporation	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other	<input checked="" type="radio"/> Regular (Standard Turnar
Contact: Travis Jobin	<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax	<input type="radio"/> Priority (2-4 Business Day
Address: 1500 Kicking Horse Trail	Email 1: tjobin@kickinghorsesort.com	<input type="radio"/> Emergency (1-2 Bus. Day
	Email 2: pmajer@skircr.com	<input type="radio"/> Same Day or Weekend E
Phone: 250-344-8442 Fax:	Email 3: claumet@kickinghorsesort.com	

<b>Invoice To</b> Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Client / Project Information</b>	<b>Please indicate below</b>
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input type="checkbox"/> No	Job #: Week 3 - 2023 Fall EMS program - WW	
Company: Resorts of the Canadian Rockies	PO / AFE:	
Contact: Patrick Majer	LSD:	
Address: 1505 - 17th Ave SW Calgary AB		
Phone: Fax:	Quote #:	

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

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli
	Plant Effluent - E256696 Temp: 14.4 pH: 7.0	10-Oct-23	1130AM	Water	X	X	X	X	X	X	X	X	X	X
	Side Channel - Columbia River 1KM DN-E258899 Temp: 11.0 pH: 7.5	10-Oct-23	1240 PM	Water		X	X	X	X	X	X	X	X	X
	Upstream - Columbia River UP IDZ-E256694 Temp: 10.4 pH: 7.5	10-Oct-23	1250 PM	Water		X	X	X	X	X	X	X	X	X
	East Shore - Columbia River 200m DN-E258898 Temp: 10.6 pH: 7.5	10-Oct-23	1310 PM	Water		X	X	X	X	X	X	X	X	X
	Sample State: WW													
	Sample Descriptor: MU													
	Sample Class: REG													
	Collection Mode: GRB													
	Permit: 15474													

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2314334**

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.  
 Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:
Travis Jobin	10-Oct-23		NC	10/12/23	08:57	9.9 °C				Yes / No ? If Yes add SIF



## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2314791</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Patrick Majer</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : Week 4 - 2023 Fall EMS program - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : CL</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 4</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Oct-2023 09:00</p> <p><b>Date Analysis</b> : 19-Oct-2023</p> <p><b>Commenced</b> :</p> <p><b>Issue Date</b> : 25-Oct-2023 16:06</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



Page : 2 of 4  
Work Order : CG2314791  
Client : Kicking Horse Mountain Resort LP  
Project : Week 4 - 2023 Fall EMS program - WW

## 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).

Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

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.

<i>Unit</i>	<i>Description</i>
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less than.

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

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

## Workorder Comments

Sample(s) 001-004: Exceeded Recommended Holding Time prior to receipt at the lab for Microbiology analysis.

## Qualifiers

<i>Qualifier</i>	<i>Description</i>
DLDS	Detection Limit Raised: Dilution required due to high Dissolved Solids / Electrical Conductivity.



## Analytical Results

CG2314791-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Plant Effluent

Client sampling date / time: 17-Oct-2023 10:20

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	5.1	3.0	mg/L	E160/CG	-	20-Oct-2023	1196452
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.103	0.0050	mg/L	E298/CG	19-Oct-2023	19-Oct-2023	1195074
Nitrate (as N)	14797-55-8	15.0	0.0050	mg/L	E235.NO3-L/CG	19-Oct-2023	19-Oct-2023	1194108
Nitrite (as N)	14797-65-0	0.0323	0.0010	mg/L	E235.NO2-L/CG	19-Oct-2023	19-Oct-2023	1194109
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.0762	0.0010	mg/L	E378-U/CG	19-Oct-2023	19-Oct-2023	1194525
Phosphorus, total	7723-14-0	0.254	0.0100	mg/L	E372-U/CG	20-Oct-2023	23-Oct-2023	1197661
Nitrate + Nitrite (as N)	----	15.0	0.0051	mg/L	EC235.N+N/CG	-	25-Oct-2023	1205560
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	<1	1	CFU/100m	E012.FC/CG L	-	19-Oct-2023	1197616
Enterococcus	----	<1	1	CFU/100m	E012.EN/CG L	-	19-Oct-2023	1200570
Coliforms, Escherichia coli [E. coli]	----	<1	1	MPN/100m	E010/CG L	-	19-Oct-2023	1197413
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	2.6	2.0	mg/L	E550/CG	-	19-Oct-2023	1195787

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

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

## Analytical Results

CG2314791-002

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Side Channel - Columbia River 1KM DN

Client sampling date / time: 17-Oct-2023 10:50

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	<3.0	3.0	mg/L	E160/CG	-	20-Oct-2023	1196452
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298/CG	19-Oct-2023	19-Oct-2023	1195074
Nitrate (as N)	14797-55-8	7.64	0.0250	mg/L	E235.NO3-L/CG	19-Oct-2023	19-Oct-2023	1194108
Nitrite (as N)	14797-65-0	<0.0050 <sup>DLDS</sup>	0.0050	mg/L	E235.NO2-L/CG	19-Oct-2023	19-Oct-2023	1194109
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	19-Oct-2023	19-Oct-2023	1194525
Phosphorus, total	7723-14-0	0.0065	0.0020	mg/L	E372-U/CG	20-Oct-2023	23-Oct-2023	1197661
Nitrate + Nitrite (as N)	----	7.64	0.0255	mg/L	EC235.N+N/CG	-	25-Oct-2023	1205560
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	7	1	CFU/100m	E012.FC/CG L	-	19-Oct-2023	1197616
Enterococcus	----	17	1	CFU/100m	E012.EN/CG L	-	19-Oct-2023	1200570
Coliforms, Escherichia coli [E. coli]	----	1	1	MPN/100m	E010/CG L	-	19-Oct-2023	1197413

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

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



## Analytical Results

CG2314791-003

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Upstream - Columbia River UP IDZ

Client sampling date / time: 17-Oct-2023 11:10

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	6.3	3.0	mg/L	E160/CG	-	20-Oct-2023	1196452
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0167	0.0050	mg/L	E298/CG	19-Oct-2023	19-Oct-2023	1195074
Nitrate (as N)	14797-55-8	0.0839	0.0050	mg/L	E235.NO3-L/CG	19-Oct-2023	19-Oct-2023	1194108
Nitrite (as N)	14797-65-0	0.0014	0.0010	mg/L	E235.NO2-L/CG	19-Oct-2023	19-Oct-2023	1194109
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	19-Oct-2023	19-Oct-2023	1194525
Phosphorus, total	7723-14-0	0.0142	0.0020	mg/L	E372-U/CG	20-Oct-2023	23-Oct-2023	1197661
Nitrate + Nitrite (as N)	----	0.0853	0.0051	mg/L	EC235.N+N/CG	-	25-Oct-2023	1205560
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	15	1	CFU/100m	E012.FC/CG	-	19-Oct-2023	1197616
Enterococcus	----	20	1	L	CFU/100m E012.EN/CG	-	19-Oct-2023	1200570
Coliforms, Escherichia coli [E. coli]	----	12	1	L	MPN/100m E010/CG	-	19-Oct-2023	1197413

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

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

## Analytical Results

CG2314791-004

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: East Shore - Columbia River 200m DN

Client sampling date / time: 17-Oct-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	53.1	3.0	mg/L	E160/CG	-	20-Oct-2023	1196452
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0065	0.0050	mg/L	E298/CG	19-Oct-2023	19-Oct-2023	1195074
Nitrate (as N)	14797-55-8	0.0834	0.0050	mg/L	E235.NO3-L/CG	19-Oct-2023	19-Oct-2023	1194108
Nitrite (as N)	14797-65-0	0.0015	0.0010	mg/L	E235.NO2-L/CG	19-Oct-2023	19-Oct-2023	1194109
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	19-Oct-2023	19-Oct-2023	1194525
Phosphorus, total	7723-14-0	0.0372	0.0020	mg/L	E372-U/CG	20-Oct-2023	23-Oct-2023	1197661
Nitrate + Nitrite (as N)	----	0.0849	0.0051	mg/L	EC235.N+N/CG	-	25-Oct-2023	1205560
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	16	1	CFU/100m	E012.FC/CG	-	19-Oct-2023	1197616
Enterococcus	----	19	1	L	CFU/100m E012.EN/CG	-	19-Oct-2023	1200570
Coliforms, Escherichia coli [E. coli]	----	7	1	L	MPN/100m E010/CG	-	19-Oct-2023	1197413

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

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<p><b>Work Order</b> : <b>CG2314791</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Patrick Majer</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : Week 4 - 2023 Fall EMS program - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : CL</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 10</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Oct-2023 09:00</p> <p><b>Issue Date</b> : 25-Oct-2023 16:08</p>
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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.

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### ***Workorder Comments***

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

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### ***Summary of Outliers***

#### ***Outliers : Quality Control Samples***

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

#### ***Outliers: Reference Material (RM) Samples***

- No Reference Material (RM) Sample outliers occur.

***Outliers : Analysis Holding Time Compliance (Breaches)***

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

***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> Plant Effluent	E550	17-Oct-2023	----	----	----		19-Oct-2023	3 days	2 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> East Shore - Columbia River 200m DN	E298	17-Oct-2023	19-Oct-2023	28 days	2 days	✔	19-Oct-2023	28 days	2 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> Plant Effluent	E298	17-Oct-2023	19-Oct-2023	28 days	2 days	✔	19-Oct-2023	28 days	2 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> Side Channel - Columbia River 1KM DN	E298	17-Oct-2023	19-Oct-2023	28 days	2 days	✔	19-Oct-2023	28 days	2 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> Upstream - Columbia River UP IDZ	E298	17-Oct-2023	19-Oct-2023	28 days	2 days	✔	19-Oct-2023	28 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>										
<b>HDPE</b> East Shore - Columbia River 200m DN	E378-U	17-Oct-2023	19-Oct-2023	3 days	2 days	✔	19-Oct-2023	3 days	2 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>										
<b>HDPE</b> Plant Effluent	E378-U	17-Oct-2023	19-Oct-2023	3 days	2 days	✔	19-Oct-2023	3 days	2 days	✔





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>											
HDPE Side Channel - Columbia River 1KM DN	E378-U	17-Oct-2023	19-Oct-2023	3 days	2 days	✔	19-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>											
HDPE Upstream - Columbia River UP IDZ	E378-U	17-Oct-2023	19-Oct-2023	3 days	2 days	✔	19-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE East Shore - Columbia River 200m DN	E235.NO3-L	17-Oct-2023	19-Oct-2023	3 days	2 days	✔	19-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE Plant Effluent	E235.NO3-L	17-Oct-2023	19-Oct-2023	3 days	2 days	✔	19-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE Side Channel - Columbia River 1KM DN	E235.NO3-L	17-Oct-2023	19-Oct-2023	3 days	2 days	✔	19-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE Upstream - Columbia River UP IDZ	E235.NO3-L	17-Oct-2023	19-Oct-2023	3 days	2 days	✔	19-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE East Shore - Columbia River 200m DN	E235.NO2-L	17-Oct-2023	19-Oct-2023	3 days	2 days	✔	19-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE Plant Effluent	E235.NO2-L	17-Oct-2023	19-Oct-2023	3 days	2 days	✔	19-Oct-2023	3 days	2 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE Side Channel - Columbia River 1KM DN	E235.NO2-L	17-Oct-2023	19-Oct-2023	3 days	2 days	✔	19-Oct-2023	3 days	2 days	✔	



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

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> Upstream - Columbia River UP IDZ	E235.NO2-L	17-Oct-2023	19-Oct-2023	3 days	2 days	✓	19-Oct-2023	3 days	2 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> East Shore - Columbia River 200m DN	E372-U	17-Oct-2023	20-Oct-2023	28 days	3 days	✓	23-Oct-2023	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> Plant Effluent	E372-U	17-Oct-2023	20-Oct-2023	28 days	3 days	✓	23-Oct-2023	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> Side Channel - Columbia River 1KM DN	E372-U	17-Oct-2023	20-Oct-2023	28 days	3 days	✓	23-Oct-2023	28 days	6 days	✓	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> Upstream - Columbia River UP IDZ	E372-U	17-Oct-2023	20-Oct-2023	28 days	3 days	✓	23-Oct-2023	28 days	6 days	✓	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> East Shore - Columbia River 200m DN	E012.EN	17-Oct-2023	----	----	----		19-Oct-2023	30 hrs	47 hrs	* EHTR	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> Side Channel - Columbia River 1KM DN	E012.EN	17-Oct-2023	----	----	----		19-Oct-2023	30 hrs	47 hrs	* EHTR	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> Upstream - Columbia River UP IDZ	E012.EN	17-Oct-2023	----	----	----		19-Oct-2023	30 hrs	47 hrs	* EHTR	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> Plant Effluent	E012.EN	17-Oct-2023	----	----	----		19-Oct-2023	30 hrs	48 hrs	* EHTR	



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

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> East Shore - Columbia River 200m DN	E012.FC	17-Oct-2023	----	----	----		19-Oct-2023	30 hrs	47 hrs	* EHTR
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> Side Channel - Columbia River 1KM DN	E012.FC	17-Oct-2023	----	----	----		19-Oct-2023	30 hrs	47 hrs	* EHTR
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> Upstream - Columbia River UP IDZ	E012.FC	17-Oct-2023	----	----	----		19-Oct-2023	30 hrs	47 hrs	* EHTR
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> Plant Effluent	E012.FC	17-Oct-2023	----	----	----		19-Oct-2023	30 hrs	48 hrs	* EHTR
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> East Shore - Columbia River 200m DN	E010	17-Oct-2023	----	----	----		19-Oct-2023	30 hrs	47 hrs	* EHTR
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> Side Channel - Columbia River 1KM DN	E010	17-Oct-2023	----	----	----		19-Oct-2023	30 hrs	47 hrs	* EHTR
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> Upstream - Columbia River UP IDZ	E010	17-Oct-2023	----	----	----		19-Oct-2023	30 hrs	47 hrs	* EHTR
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> Plant Effluent	E010	17-Oct-2023	----	----	----		19-Oct-2023	30 hrs	48 hrs	* EHTR
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> East Shore - Columbia River 200m DN	E160	17-Oct-2023	----	----	----		20-Oct-2023	7 days	3 days	✓



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE Plant Effluent	E160	17-Oct-2023	----	----	----		20-Oct-2023	7 days	3 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE Side Channel - Columbia River 1KM DN	E160	17-Oct-2023	----	----	----		20-Oct-2023	7 days	3 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE Upstream - Columbia River UP IDZ	E160	17-Oct-2023	----	----	----		20-Oct-2023	7 days	3 days	✔

**Legend & Qualifier Definitions**

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

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	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1195074	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1195787	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1194525	1	20	5.0	5.0	✓
Enterococcus by (MF - mE)	E012.EN	1200570	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1194108	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1194109	1	17	5.8	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1197616	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1197413	2	18	11.1	10.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1197661	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1196452	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1195074	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1195787	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1194525	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1194108	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1194109	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1197661	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1196452	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1195074	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1195787	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1194525	1	20	5.0	5.0	✓
Enterococcus by (MF - mE)	E012.EN	1200570	1	6	16.6	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1194108	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1194109	1	17	5.8	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1197616	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1197413	1	18	5.5	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1197661	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1196452	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1195074	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1194525	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1194108	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1194109	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1197661	1	20	5.0	5.0	✓



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Calgary	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Enterococcus by (MF - mE)	E012.EN ALS Environmental - Calgary	Water	APHA 9230C (mod)	Following filtration (0.45 µm), and incubation at 35.0 ± 0.5°C for 48 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC ALS Environmental - Calgary	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 ALS Environmental - Calgary	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.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Calgary	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 - Calgary	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	Water	APHA 5210 B (mod)	<p>Samples are diluted and incubated for a specified time period, after which the oxygen depletion is measured using a dissolved oxygen meter.</p> <p>Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.</p>
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Calgary	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2314791</b></p> <p><b>Client</b> : Kicking Horse Mountain Resort LP</p> <p><b>Contact</b> : Patrick Majer</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> :</p> <p><b>Project</b> : Week 4 - 2023 Fall EMS program - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : CL                    250 344 6003</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 6</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Oct-2023 09:00</p> <p><b>Date Analysis Commenced</b> : 19-Oct-2023</p> <p><b>Issue Date</b> : 25-Oct-2023 16:04</p>
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta



Page : 2 of 6  
Work Order : CG2314791  
Client : Kicking Horse Mountain Resort LP  
Project : Week 4 - 2023 Fall EMS program - WW



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## 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.

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## Workorder Comments

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 1196452)</b>											
CG2314655-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	7.1	6.7	0.4	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1194108)</b>											
CG2314762-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	30.5	30.5	0.0748%	20%	----
<b>Anions and Nutrients (QC Lot: 1194109)</b>											
CG2314762-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	0.0121	0.0120	0.0001	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1194525)</b>											
CG2314791-001	Plant Effluent	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0762	0.0765	0.406%	20%	----
<b>Anions and Nutrients (QC Lot: 1195074)</b>											
CG2314781-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	1.25	mg/L	21.0	21.2	1.23%	20%	----
<b>Anions and Nutrients (QC Lot: 1197661)</b>											
CG2314773-006	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	<0.0020	<0.0020	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1197413)</b>											
CG2314753-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2314791-003	Upstream - Columbia River UP IDZ	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	12	14	18.0%	65%	----
<b>Microbiological Tests (QC Lot: 1197616)</b>											
CG2314781-001	Anonymous	Coliforms, thermotolerant [fecal]	----	E012.FC	100	CFU/100mL	4600	3800	19.0%	65%	----
<b>Microbiological Tests (QC Lot: 1200570)</b>											
CG2314787-001	Anonymous	Enterococcus	----	E012.EN	1	CFU/100mL	<1	<1	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1195787)</b>											
CG2314769-010	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



## Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1196452)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1194108)</b>						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1194109)</b>						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 1194525)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 1195074)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1197661)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Microbiological Tests (QCLot: 1197413)</b>						
Coliforms, Escherichia coli [E. coli]	---	E010	1	MPN/100mL	<1	---
<b>Microbiological Tests (QCLot: 1197616)</b>						
Coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Microbiological Tests (QCLot: 1200570)</b>						
Enterococcus	---	E012.EN	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 1195787)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---



## Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 1196452)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	96.2	85.0	115	----
<b>Anions and Nutrients (QCLot: 1194108)</b>									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110	----
<b>Anions and Nutrients (QCLot: 1194109)</b>									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	99.6	90.0	110	----
<b>Anions and Nutrients (QCLot: 1194525)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	99.9	80.0	120	----
<b>Anions and Nutrients (QCLot: 1195074)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	----
<b>Anions and Nutrients (QCLot: 1197661)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	96.1	80.0	120	----
<b>Aggregate Organics (QCLot: 1195787)</b>									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	101	85.0	115	----



## 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  $\geq 1x$  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
<b>Anions and Nutrients (QCLot: 1194108)</b>										
CG2314773-006	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.67 mg/L	2.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 1194109)</b>										
CG2314773-006	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.537 mg/L	0.5 mg/L	107	75.0	125	----
<b>Anions and Nutrients (QCLot: 1194525)</b>										
CG2314791-002	Side Channel - Columbia River 1KM DN	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0503 mg/L	0.05 mg/L	101	70.0	130	----
<b>Anions and Nutrients (QCLot: 1195074)</b>										
CG2314786-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.110 mg/L	0.1 mg/L	110	75.0	125	----
<b>Anions and Nutrients (QCLot: 1197661)</b>										
CG2314786-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0500 mg/L	0.05 mg/L	100	70.0	130	----



<b>Report To</b>		<b>Report Format / Distribution</b>				<b>Service Requested</b> (Rush for routine analysis subject to availability)											
Company: Kicking Horse Mountain Resort Utility Corporation		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other				<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)											
Contact: Travis Jobin		<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax				<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT											
Address: 1500 Kicking Horse Trail		Email 1: <a href="mailto:tjobin@kickinghorsesort.com">tjobin@kickinghorsesort.com</a>				<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT											
		Email 2: <a href="mailto:pmaier@skircr.com">pmaier@skircr.com</a>				<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT											
Phone: 250-344-8442    Fax:		Email 3: <a href="mailto:claumet@kickinghorsesort.com">claumet@kickinghorsesort.com</a>				<b>Analysis Request</b>											
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>Client / Project Information</b>				Please indicate below Filtered, Preserved or both (F, P, F/P)											
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input type="checkbox"/> No		Job #: Week 4 - 2023 Fall EMS program - WW															
Company: Resorts of the Canadian Rockies		PO / AFE:															
Contact: Patrick Majer		LSD:															
Address: 1505 - 17th Ave SW Calgary AB		Quote #:															
Phone:    Fax:																	
Lab Work Order # (lab use only)		ALS Contact: PW		Sampler: CL													
Sample #	Sample Identification (This description will appear on the report)			Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli	Number of Containers
	Plant Effluent - E256696    Temp: 13 pH: 7			17-Oct-23	10.20	Water	X	X	X	X	X	X	X	X	X	X	5
	Side Channel - Columbia River 1KM DN-E258899    Temp: 8.7 pH: 7			17-Oct-23	10.50	Water		X	X	X	X	X	X	X	X	X	4
	Upstream - Columbia River UP IDZ-E256694    Temp: 6.7 pH: 6.8			17-Oct-23	11.10	Water		X	X	X	X	X	X	X	X	X	4
	East Shore - Columbia River 200m DN-E258898    Temp: 8.7 pH: 7			17-Oct-23	11.30	Water		X	X	X	X	X	X	X	X	X	4
	Sample State: WW																
	Sample Descriptor: MU																
	Sample Class: REG																
	Collection Mode: GRB																
	Permit: 15474																

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2314791**



Telephone : +1 403 407 1800

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natul**

**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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by: Charles Laumet	Date (dd-mmm-yy) 17-Oct-23	Time (hh-mm) 12.00	Received by: <i>[Signature]</i>	Date 10/19	Time 9:00	Temperature: 11 °C	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF



## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2315075</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : WEEK 5 - 2023 FALL EMS PROGRAM - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : CL</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 4</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 24-Oct-2023 09:10</p> <p><b>Date Analysis</b> : 24-Oct-2023</p> <p><b>Commenced</b></p> <p><b>Issue Date</b> : 30-Oct-2023 10:09</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



## General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

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.

<i>Unit</i>	<i>Description</i>
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less than.

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

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





## Analytical Results

CG2315075-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT EFFLUENT

Client sampling date / time: 23-Oct-2023 10:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	8.1	3.0	mg/L	E160/CG	-	28-Oct-2023	1210252
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0908	0.0050	mg/L	E298/CG	24-Oct-2023	24-Oct-2023	1203610
Nitrate (as N)	14797-55-8	15.8	0.0050	mg/L	E235.NO3-L/CG	24-Oct-2023	24-Oct-2023	1203226
Nitrite (as N)	14797-65-0	0.0267	0.0010	mg/L	E235.NO2-L/CG	24-Oct-2023	24-Oct-2023	1203225
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.0644	0.0010	mg/L	E378-U/CG	24-Oct-2023	24-Oct-2023	1203445
Phosphorus, total	7723-14-0	0.253	0.0100	mg/L	E372-U/CG	26-Oct-2023	27-Oct-2023	1207615
Nitrate + Nitrite (as N)	----	15.8	0.0051	mg/L	EC235.N+N/CG	-	27-Oct-2023	1209581
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	<1	1	CFU/100m	E012.FC/CG L	-	24-Oct-2023	1206894
Enterococcus	----	2	1	CFU/100m	E012.EN/CG L	-	24-Oct-2023	1206945
Coliforms, Escherichia coli [E. coli]	----	<1	1	MPN/100m	E010/CG L	-	24-Oct-2023	1206848
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	<2.0	2.0	mg/L	E550/CG	-	24-Oct-2023	1203856

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

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

## Analytical Results

CG2315075-002

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: SIDE CHANNEL - COLUMBIA RIVER 1 KM DN

Client sampling date / time: 23-Oct-2023 11:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	36.9	3.0	mg/L	E160/CG	-	28-Oct-2023	1210252
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0135	0.0050	mg/L	E298/CG	24-Oct-2023	24-Oct-2023	1203610
Nitrate (as N)	14797-55-8	0.115	0.0050	mg/L	E235.NO3-L/CG	24-Oct-2023	24-Oct-2023	1203226
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	24-Oct-2023	24-Oct-2023	1203225
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	24-Oct-2023	24-Oct-2023	1203445
Phosphorus, total	7723-14-0	0.0431	0.0020	mg/L	E372-U/CG	26-Oct-2023	27-Oct-2023	1207615
Nitrate + Nitrite (as N)	----	0.115	0.0051	mg/L	EC235.N+N/CG	-	27-Oct-2023	1209581
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	21	1	CFU/100m	E012.FC/CG L	-	24-Oct-2023	1206894
Enterococcus	----	111	1	CFU/100m	E012.EN/CG L	-	24-Oct-2023	1206945
Coliforms, Escherichia coli [E. coli]	----	14	1	MPN/100m	E010/CG L	-	24-Oct-2023	1206848

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

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



## Analytical Results

CG2315075-003

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: UPSTREAM - COLUMBIA RIVER UP IDZ

Client sampling date / time: 23-Oct-2023 11:15

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	22.9	3.0	mg/L	E160/CG	-	28-Oct-2023	1210252
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298/CG	24-Oct-2023	24-Oct-2023	1203610
Nitrate (as N)	14797-55-8	0.0995	0.0050	mg/L	E235.NO3-L/CG	24-Oct-2023	24-Oct-2023	1203226
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	24-Oct-2023	24-Oct-2023	1203225
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	24-Oct-2023	24-Oct-2023	1203445
Phosphorus, total	7723-14-0	0.0318	0.0020	mg/L	E372-U/CG	26-Oct-2023	27-Oct-2023	1207615
Nitrate + Nitrite (as N)	----	0.0995	0.0051	mg/L	EC235.N+N/CG	-	27-Oct-2023	1209581
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	27	1	CFU/100m	E012.FC/CG	-	24-Oct-2023	1206894
Enterococcus	----	82	1	L CFU/100m	E012.EN/CG	-	24-Oct-2023	1206945
Coliforms, Escherichia coli [E. coli]	----	26	1	L MPN/100m	E010/CG	-	24-Oct-2023	1206848

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

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

## Analytical Results

CG2315075-004

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: EAST SHORE - COLUMBIA RIVER 200M DN

Client sampling date / time: 23-Oct-2023 11:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	23.1	3.0	mg/L	E160/CG	-	28-Oct-2023	1210252
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0050	0.0050	mg/L	E298/CG	24-Oct-2023	24-Oct-2023	1203610
Nitrate (as N)	14797-55-8	0.118	0.0050	mg/L	E235.NO3-L/CG	24-Oct-2023	24-Oct-2023	1203226
Nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L/CG	24-Oct-2023	24-Oct-2023	1203225
Phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U/CG	24-Oct-2023	24-Oct-2023	1203445
Phosphorus, total	7723-14-0	0.0195	0.0020	mg/L	E372-U/CG	26-Oct-2023	27-Oct-2023	1207615
Nitrate + Nitrite (as N)	----	0.118	0.0051	mg/L	EC235.N+N/CG	-	27-Oct-2023	1209581
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	10	1	CFU/100m	E012.FC/CG	-	24-Oct-2023	1206894
Enterococcus	----	56	1	L CFU/100m	E012.EN/CG	-	24-Oct-2023	1206945
Coliforms, Escherichia coli [E. coli]	----	10	1	L MPN/100m	E010/CG	-	24-Oct-2023	1206849

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.



## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2315075</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : WEEK 5 - 2023 FALL EMS PROGRAM - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : CL</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 10</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 24-Oct-2023 09:10</p> <p><b>Issue Date</b> : 30-Oct-2023 10:09</p>
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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)***

- No Analysis Holding Time Outliers exist.

***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
HDPE [BOD HT 3d] PLANT EFFLUENT	E550	23-Oct-2023	----	----	----		24-Oct-2023	3 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) EAST SHORE - COLUMBIA RIVER 200M DN	E298	23-Oct-2023	24-Oct-2023	28 days	1 days	✔	24-Oct-2023	28 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) PLANT EFFLUENT	E298	23-Oct-2023	24-Oct-2023	28 days	1 days	✔	24-Oct-2023	28 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) SIDE CHANNEL - COLUMBIA RIVER 1 KM DN	E298	23-Oct-2023	24-Oct-2023	28 days	1 days	✔	24-Oct-2023	28 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) UPSTREAM - COLUMBIA RIVER UP IDZ	E298	23-Oct-2023	24-Oct-2023	28 days	1 days	✔	24-Oct-2023	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>										
HDPE EAST SHORE - COLUMBIA RIVER 200M DN	E378-U	23-Oct-2023	24-Oct-2023	3 days	1 days	✔	24-Oct-2023	3 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>										
HDPE PLANT EFFLUENT	E378-U	23-Oct-2023	24-Oct-2023	3 days	1 days	✔	24-Oct-2023	3 days	1 days	✔



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1 KM DN	E378-U	23-Oct-2023	24-Oct-2023	3 days	1 days	✔	24-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ	E378-U	23-Oct-2023	24-Oct-2023	3 days	1 days	✔	24-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE EAST SHORE - COLUMBIA RIVER 200M DN	E235.NO3-L	23-Oct-2023	24-Oct-2023	3 days	1 days	✔	24-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE PLANT EFFLUENT	E235.NO3-L	23-Oct-2023	24-Oct-2023	3 days	1 days	✔	24-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1 KM DN	E235.NO3-L	23-Oct-2023	24-Oct-2023	3 days	1 days	✔	24-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrate in Water by IC (Low Level)</b>											
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ	E235.NO3-L	23-Oct-2023	24-Oct-2023	3 days	1 days	✔	24-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE EAST SHORE - COLUMBIA RIVER 200M DN	E235.NO2-L	23-Oct-2023	24-Oct-2023	3 days	1 days	✔	24-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE PLANT EFFLUENT	E235.NO2-L	23-Oct-2023	24-Oct-2023	3 days	1 days	✔	24-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
HDPE SIDE CHANNEL - COLUMBIA RIVER 1 KM DN	E235.NO2-L	23-Oct-2023	24-Oct-2023	3 days	1 days	✔	24-Oct-2023	3 days	1 days	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis				
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval	
				Rec	Actual			Rec	Actual		
<b>Anions and Nutrients : Nitrite in Water by IC (Low Level)</b>											
<b>HDPE</b> UPSTREAM - COLUMBIA RIVER UP IDZ	E235.NO2-L	23-Oct-2023	24-Oct-2023	3 days	1 days	✔	24-Oct-2023	3 days	1 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> EAST SHORE - COLUMBIA RIVER 200M DN	E372-U	23-Oct-2023	26-Oct-2023	28 days	3 days	✔	27-Oct-2023	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT	E372-U	23-Oct-2023	26-Oct-2023	28 days	3 days	✔	27-Oct-2023	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> SIDE CHANNEL - COLUMBIA RIVER 1 KM DN	E372-U	23-Oct-2023	26-Oct-2023	28 days	3 days	✔	27-Oct-2023	28 days	4 days	✔	
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>											
<b>Amber glass total (sulfuric acid)</b> UPSTREAM - COLUMBIA RIVER UP IDZ	E372-U	23-Oct-2023	26-Oct-2023	28 days	3 days	✔	27-Oct-2023	28 days	4 days	✔	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> EAST SHORE - COLUMBIA RIVER 200M DN	E012.EN	23-Oct-2023	----	----	----		24-Oct-2023	30 hrs	24 hrs	✔	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ	E012.EN	23-Oct-2023	----	----	----		24-Oct-2023	30 hrs	24 hrs	✔	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1 KM DN	E012.EN	23-Oct-2023	----	----	----		24-Oct-2023	30 hrs	25 hrs	✔	
<b>Microbiological Tests : Enterococcus by (MF - mE)</b>											
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT	E012.EN	23-Oct-2023	----	----	----		24-Oct-2023	30 hrs	26 hrs	✔	



Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> EAST SHORE - COLUMBIA RIVER 200M DN	E012.FC	23-Oct-2023	----	----	----		24-Oct-2023	30 hrs	24 hrs	✔
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ	E012.FC	23-Oct-2023	----	----	----		24-Oct-2023	30 hrs	24 hrs	✔
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1 KM DN	E012.FC	23-Oct-2023	----	----	----		24-Oct-2023	30 hrs	25 hrs	✔
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT	E012.FC	23-Oct-2023	----	----	----		24-Oct-2023	30 hrs	26 hrs	✔
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> EAST SHORE - COLUMBIA RIVER 200M DN	E010	23-Oct-2023	----	----	----		24-Oct-2023	30 hrs	24 hrs	✔
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> UPSTREAM - COLUMBIA RIVER UP IDZ	E010	23-Oct-2023	----	----	----		24-Oct-2023	30 hrs	24 hrs	✔
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> SIDE CHANNEL - COLUMBIA RIVER 1 KM DN	E010	23-Oct-2023	----	----	----		24-Oct-2023	30 hrs	25 hrs	✔
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT	E010	23-Oct-2023	----	----	----		24-Oct-2023	30 hrs	26 hrs	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> EAST SHORE - COLUMBIA RIVER 200M DN	E160	23-Oct-2023	----	----	----		28-Oct-2023	7 days	5 days	✔





Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT EFFLUENT	E160	23-Oct-2023	----	----	----		28-Oct-2023	7 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE SIDE CHANNEL - COLUMBIA RIVER 1 KM DN	E160	23-Oct-2023	----	----	----		28-Oct-2023	7 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE UPSTREAM - COLUMBIA RIVER UP IDZ	E160	23-Oct-2023	----	----	----		28-Oct-2023	7 days	5 days	✔

Legend & Qualifier Definitions

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1203610	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1203856	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1203445	1	20	5.0	5.0	✓
Enterococcus by (MF - mE)	E012.EN	1206945	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1203226	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1203225	1	17	5.8	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1206894	1	12	8.3	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1206849	4	33	12.1	10.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1207615	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1210252	1	19	5.2	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1203610	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1203856	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1203445	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1203226	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1203225	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1207615	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1210252	1	19	5.2	5.0	✓
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1203610	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1203856	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1203445	1	20	5.0	5.0	✓
Enterococcus by (MF - mE)	E012.EN	1206945	1	4	25.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1203226	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1203225	1	17	5.8	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1206894	1	12	8.3	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	1206849	2	33	6.0	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1207615	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1210252	1	19	5.2	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1203610	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1203445	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	1203226	1	17	5.8	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	1203225	1	17	5.8	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1207615	1	20	5.0	5.0	✓



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Calgary	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Enterococcus by (MF - mE)	E012.EN ALS Environmental - Calgary	Water	APHA 9230C (mod)	Following filtration (0.45 µm), and incubation at 35.0 ± 0.5°C for 48 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC ALS Environmental - Calgary	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 ALS Environmental - Calgary	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.
Nitrite in Water by IC (Low Level)	E235.NO2-L ALS Environmental - Calgary	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 - Calgary	Water	EPA 300.1 (mod)	Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.



<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Nitrate and Nitrite (as N) (Calculation)	EC235.N+N ALS Environmental - Calgary	Water	EPA 300.0	Nitrate and Nitrite (as N) is a calculated parameter. Nitrate and Nitrite (as N) = Nitrite (as N) + Nitrate (as N).

<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2315075</b></p> <p><b>Client</b> : Kicking Horse Mountain Resort LP</p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> :</p> <p><b>Project</b> : WEEK 5 - 2023 FALL EMS PROGRAM - WW</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : CL                    250 344 6003</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 4</p> <p><b>No. of samples analysed</b> : 4</p>	<p><b>Page</b> : 1 of 6</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 24-Oct-2023 09:10</p> <p><b>Date Analysis Commenced</b> : 24-Oct-2023</p> <p><b>Issue Date</b> : 30-Oct-2023 10:09</p>
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

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Work Order : CG2315075  
Client : Kicking Horse Mountain Resort LP  
Project : WEEK 5 - 2023 FALL EMS PROGRAM - WW

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## 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

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 1210252)</b>											
CG2315020-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	12.1	11.3	0.8	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1203225)</b>											
CG2315093-001	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1203226)</b>											
CG2315093-001	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	0.0250	mg/L	<0.0250	<0.0250	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1203445)</b>											
CG2315046-022	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1203610)</b>											
CG2315075-001	PLANT EFFLUENT	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0908	0.0912	0.440%	20%	----
<b>Anions and Nutrients (QC Lot: 1207615)</b>											
CG2315053-007	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0040	mg/L	0.167	0.167	0.174%	20%	----
<b>Microbiological Tests (QC Lot: 1206848)</b>											
CG2315057-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2315063-002	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1206849)</b>											
CG2315075-004	EAST SHORE - COLUMBIA RIVER 200M DN	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	10	10	1.02%	65%	----
FJ2302826-010	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1206894)</b>											
CG2315075-002	SIDE CHANNEL - COLUMBIA RIVER 1 KM DN	Coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	21	19	10.0%	65%	----
<b>Microbiological Tests (QC Lot: 1206945)</b>											
CG2315075-001	PLANT EFFLUENT	Enterococcus	----	E012.EN	1	CFU/100mL	2	1	1	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1203856)</b>											
CG2315070-002	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



## Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1210252)</b>						
Solids, total suspended [TSS]	----	E160	3	mg/L	<3.0	----
<b>Anions and Nutrients (QCLot: 1203225)</b>						
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 1203226)</b>						
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 1203445)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	----
<b>Anions and Nutrients (QCLot: 1203610)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	----
<b>Anions and Nutrients (QCLot: 1207615)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	----
<b>Microbiological Tests (QCLot: 1206848)</b>						
Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	----
<b>Microbiological Tests (QCLot: 1206849)</b>						
Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	----
<b>Microbiological Tests (QCLot: 1206894)</b>						
Coliforms, thermotolerant [fecal]	----	E012.FC	1	CFU/100mL	<1	----
<b>Microbiological Tests (QCLot: 1206945)</b>						
Enterococcus	----	E012.EN	1	CFU/100mL	<1	----
<b>Aggregate Organics (QCLot: 1203856)</b>						
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	<2.0	----





## Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 1210252)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	97.0	85.0	115	----
<b>Anions and Nutrients (QCLot: 1203225)</b>									
Nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	100	90.0	110	----
<b>Anions and Nutrients (QCLot: 1203226)</b>									
Nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	101	90.0	110	----
<b>Anions and Nutrients (QCLot: 1203445)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	101	80.0	120	----
<b>Anions and Nutrients (QCLot: 1203610)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.4	85.0	115	----
<b>Anions and Nutrients (QCLot: 1207615)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	105	80.0	120	----
<b>Aggregate Organics (QCLot: 1203856)</b>									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	97.2	85.0	115	----



## 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  $\geq 1x$  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
<b>Anions and Nutrients (QCLot: 1203225)</b>										
CG2315093-002	Anonymous	Nitrite (as N)	14797-65-0	E235.NO2-L	0.521 mg/L	0.5 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 1203226)</b>										
CG2315093-002	Anonymous	Nitrate (as N)	14797-55-8	E235.NO3-L	2.57 mg/L	2.5 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 1203445)</b>										
CG2315046-023	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0532 mg/L	0.05 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 1203610)</b>										
CG2315075-002	SIDE CHANNEL - COLUMBIA RIVER 1 KM DN	Ammonia, total (as N)	7664-41-7	E298	0.104 mg/L	0.1 mg/L	104	75.0	125	----
<b>Anions and Nutrients (QCLot: 1207615)</b>										
CG2315053-008	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----

<b>Report To</b>			<b>Report Format / Distribution</b>			<b>Service Requested (Rush for routine analysis subject to availability)</b>																																																		
Company: Kicking Horse Mountain Resort Utility Corporation			<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other			<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)																																																		
Contact: Travis Jobin			<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax			<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT																																																		
Address: 1500 Kicking Horse Trail			Email 1: <a href="mailto:tjobin@kickinghorseresort.com">tjobin@kickinghorseresort.com</a>			<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT																																																		
Phone: 250-344-8442 Fax: _____			Email 2: <a href="mailto:pmajer@skircr.com">pmajer@skircr.com</a>			<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT																																																		
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			<b>Client / Project Information</b>			Please indicate below Filtered, Preserved or both (F, P, F/P)																																																		
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input type="checkbox"/> No			Job #: Week 5 - 2023 Fall EMS program - WW																																																					
Company: Resorts of the Canadian Rockies			PO / AFE:			<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>BOD5</td><td>TSS</td><td>N-NH4</td><td>N-NO3</td><td>N-NO2</td><td>Total P</td><td>Ortho P</td><td>Fecal Coliform</td><td>Enterococci</td><td>E. Coli</td><td rowspan="4" style="writing-mode: vertical-rl; transform: rotate(180deg);">Number of Containers</td> </tr> <tr> <td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td> </tr> <tr> <td></td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td> </tr> <tr> <td></td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td><td>X</td> </tr> </table>										BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli	Number of Containers	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X
BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P											Ortho P	Fecal Coliform	Enterococci	E. Coli	Number of Containers																																				
X	X	X	X	X	X											X	X	X	X																																					
	X	X	X	X	X											X	X	X	X																																					
	X	X	X	X	X	X	X	X	X																																															
Contact: Patrick Majer			LSD:																																																					
Address: 1505 - 17th Ave SW Calgary AB			Quote #:																																																					
Phone: _____ Fax: _____			ALS Contact: PW			Sampler: CL																																																		
Lab Work Order # (lab use only)																																																								
Sample #	Sample Identification (This description will appear on the report)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli	Number of Containers																																								
	Plant Effluent - E256696 Temp: 12 pH: 6.8		23-Oct-23	10:00	Water	X	X	X	X	X	X	X	X	X	X	5																																								
	Side Channel - Columbia River 1KM DN-E258899 Temp: 60 pH: 6.5		23-Oct-23	11:00	Water		X	X	X	X	X	X	X	X	X	4																																								
	Upstream - Columbia River UP IDZ-E256694 Temp: 6 pH: 7.0		23-Oct-23	11:15	Water		X	X	X	X	X	X	X	X	X	4																																								
	East Shore - Columbia River 200m DN-E258898 Temp: 6 pH: 7.0		23-Oct-23	11:30	Water		X	X	X	X	X	X	X	X	X	4																																								
	Sample State: WW																																																							
	Sample Descriptor: MU																																																							
	Sample Class: REG																																																							
	Collection Mode: GRB																																																							
	Permit: 15474																																																							

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2315075**



Telephone : + 1 403 407 1800

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natu

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 provided on a separate Excel tab.  
 Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis JOBIN	23-Oct-23	1100	NC	10/24/23	09:10	6.3 °C				



## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2316016</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 2</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 09-Nov-2023 14:30</p> <p><b>Date Analysis</b> : 09-Nov-2023</p> <p><b>Commenced</b> : 16-Nov-2023 11:09</p> <p><b>Issue Date</b> : 16-Nov-2023 11:09</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



## General Comments

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

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

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

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

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

LOR: Limit of Reporting (detection limit).

Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

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.

Unit	Description
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less than.

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

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

## Analytical Results

CG2316016-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT EFFLUENT - E256696

Client sampling date / time: 09-Nov-2023 09:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	6.8	3.0	mg/L	E160/CG	-	15-Nov-2023	1236819
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.0358	0.0050	mg/L	E298/CG	10-Nov-2023	10-Nov-2023	1232070
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.0937	0.0010	mg/L	E378-U/CG	10-Nov-2023	10-Nov-2023	1231852
Phosphorus, total	7723-14-0	0.318	0.0100	mg/L	E372-U/CG	10-Nov-2023	12-Nov-2023	1231359
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	1	1	CFU/100m L	E012.FC/CG	-	09-Nov-2023	1233130
Coliforms, Escherichia coli [E. coli]	----	2	1	MPN/100m L	E010/CG	-	09-Nov-2023	1233019
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	2.0	2.0	mg/L	E550/CG	-	10-Nov-2023	1233407

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

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<p><b>Work Order</b> : <b>CG2316016</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 7</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 09-Nov-2023 14:30</p> <p><b>Issue Date</b> : 16-Nov-2023 11:09</p>
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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.

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### ***Workorder Comments***

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

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### ***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)***

- No Analysis Holding Time Outliers exist.

### ***Outliers : Frequency of Quality Control Samples***

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



## Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> PLANT EFFLUENT - E256696	E550	09-Nov-2023	----	----	----		10-Nov-2023	3 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT - E256696	E298	09-Nov-2023	10-Nov-2023	28 days	1 days	✔	10-Nov-2023	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>										
<b>HDPE</b> PLANT EFFLUENT - E256696	E378-U	09-Nov-2023	10-Nov-2023	3 days	1 days	✔	10-Nov-2023	3 days	1 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
<b>Amber glass total (sulfuric acid)</b> PLANT EFFLUENT - E256696	E372-U	09-Nov-2023	10-Nov-2023	28 days	1 days	✔	12-Nov-2023	28 days	3 days	✔
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E012.FC	09-Nov-2023	----	----	----		09-Nov-2023	30 hrs	6 hrs	✔
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> PLANT EFFLUENT - E256696	E010	09-Nov-2023	----	----	----		09-Nov-2023	30 hrs	6 hrs	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> PLANT EFFLUENT - E256696	E160	09-Nov-2023	----	----	----		15-Nov-2023	7 days	6 days	✔



Page : 4 of 7  
Work Order : CG2316016  
Client : Kicking Horse Mountain Resort LP  
Project : RCR - Kicking Horse Mountain Resort

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**Legend & Qualifier Definitions**

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1232070	1	14	7.1	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1233407	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1231852	1	20	5.0	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1233130	1	17	5.8	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	1233019	1	14	7.1	10.0	✖
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1231359	1	13	7.6	5.0	✔
TSS by Gravimetry	E160	1236819	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1232070	1	14	7.1	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1233407	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1231852	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1231359	1	13	7.6	5.0	✔
TSS by Gravimetry	E160	1236819	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1232070	1	14	7.1	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1233407	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1231852	1	20	5.0	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1233130	1	17	5.8	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	1233019	1	14	7.1	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1231359	1	13	7.6	5.0	✔
TSS by Gravimetry	E160	1236819	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1232070	1	14	7.1	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1231852	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1231359	1	13	7.6	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Calgary	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC ALS Environmental - Calgary	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 ALS Environmental - Calgary	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.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

Page : 7 of 7  
Work Order : CG2316016  
Client : Kicking Horse Mountain Resort LP  
Project : RCR - Kicking Horse Mountain Resort



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	ALS Environmental - Calgary			

## QUALITY CONTROL REPORT

**Work Order** : **CG2316016**  
**Client** : Kicking Horse Mountain Resort LP  
**Contact** : Travis Jobin  
**Address** : 1500 Kicking Horse Trail PO BOX 330  
 Golden BC Canada V0A 1H0  
**Telephone** :  
**Project** : RCR - Kicking Horse Mountain Resort  
**PO** : ----  
**C-O-C number** : ----  
**Sampler** : TJ 250 344 6003  
**Site** : ----  
**Quote number** : CG21-RESC100-0001  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 5  
**Laboratory** : ALS Environmental - Calgary  
**Account Manager** : Patryk Wojciak  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Nov-2023 14:30  
**Date Analysis Commenced** : 09-Nov-2023  
**Issue Date** : 16-Nov-2023 11:09

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

Page : 2 of 5  
Work Order : CG2316016  
Client : Kicking Horse Mountain Resort LP  
Project : RCR - Kicking Horse Mountain Resort

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## 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

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

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### 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 1236819)</b>											
CG2316005-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1231359)</b>											
CG2316009-008	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0100	mg/L	0.266	0.261	2.06%	20%	----
<b>Anions and Nutrients (QC Lot: 1231852)</b>											
CG2315995-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0078	0.0087	0.0008	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1232070)</b>											
CG2316002-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.250	mg/L	2.62	2.49	5.20%	20%	----
<b>Microbiological Tests (QC Lot: 1233019)</b>											
FJ2302990-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1233130)</b>											
GP2302259-008	Anonymous	Coliforms, thermotolerant [fecal]	----	E012.FC	1000	CFU/100mL	31000	26000	17.5%	65%	----
<b>Aggregate Organics (QC Lot: 1233407)</b>											
CG2316028-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	3.9	4.3	8.3%	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
<b>Physical Tests (QCLot: 1236819)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1231359)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 1231852)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 1232070)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Microbiological Tests (QCLot: 1233019)</b>						
Coliforms, Escherichia coli [E. coli]	---	E010	1	MPN/100mL	<1	---
<b>Microbiological Tests (QCLot: 1233130)</b>						
Coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 1233407)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---





### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 1236819)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	101	85.0	115	----
<b>Anions and Nutrients (QCLot: 1231359)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	98.3	80.0	120	----
<b>Anions and Nutrients (QCLot: 1231852)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	102	80.0	120	----
<b>Anions and Nutrients (QCLot: 1232070)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	----
<b>Aggregate Organics (QCLot: 1233407)</b>									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	93.1	85.0	115	----

### 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
<b>Anions and Nutrients (QCLot: 1231359)</b>										
CG2316009-009	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 1231852)</b>										
CG2315995-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0496 mg/L	0.05 mg/L	99.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 1232070)</b>										
CG2316002-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----

<b>Report To</b>				<b>Report Format / Distribution</b>				<b>Service Requested</b> (Rush for routine analysis subject to a											
Company: Kicking Horse Mountain Water Utility Co. Ltd.				<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other				<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)											
Contact: Travis Jobin				<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax				<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to C											
Address: 1500 Kicking Horse Trail				Email 1: tjobin@kickinghorseresort.com				<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to I											
				Email 2: pmajer@skircr.com				<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT											
Phone: 250-344-6003 Fax:				Email 3: claumet@kickinghorseresort.com				<b>Analysis Request</b>											
<b>Invoice To</b> Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				<b>Client / Project Information</b>				Please indicate below Filtered, Preserved or both (F, P)											
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No				Job #: RCR - Kicking Horse Mountain Resort															
Company: Resorts of the Canadian Rockies				PO / AFE:															
Contact: Patrick Majer				LSD:															
Address: 1505 - 17th Ave SW Calgary AB				Quote #: Q33059															
Phone: Fax:																			
Lab/Work Order # (lab use only)				ALS Contact: PW		Sampler: TJ													
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P	N-NH4	E.Coli						Number of Containers		
	Plant Effluent - E256696	09-Nov-23	9:00AM	Water	X	X	X	X	X	X	X						4		
	Sample State: WW																		
	Sample Descriptor: MU																		
	Sample Class: REG																		
	Collection Mode: GRB																		
	Permit#: E256696																		

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2316016**



Telephone : +1 403 407 1800

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)			SHIPMENT VERIFICATION (lab use only)				
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis Jobin	8-Nov-23	10:00AM	<i>[Signature]</i>	11/9	19:30	9 °C				




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## CERTIFICATE OF ANALYSIS

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<p><b>Work Order</b> : <b>CG2316018</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 2</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 09-Nov-2023 14:30</p> <p><b>Date Analysis</b> : 10-Nov-2023</p> <p><b>Commenced</b> : 07-Dec-2023 08:34</p> <p><b>Issue Date</b> : 07-Dec-2023 08:34</p>
---	--

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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Patryk Wojciak	Account Manager	External Subcontracting, Calgary, Alberta



## General Comments

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

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

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

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

**Key :**  
 CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
-	no units

>: greater than.  
 <: less than.

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

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

## Analytical Results

CG2316018-001

Sub-Matrix: **Water**

(Matrix: **Water**)

Client sample ID: Plant Effluent

Client sampling date / time: 09-Nov-2023 08:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Bioassays</b>								
Trout bioassay LC50	----	See attached	-	-	TRT-LC50-96/2F	-	10-Nov-2023	-

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.

## Trout Test Summary

Client: LS Environmental - Calga

Client #: ALS106

Reference #: 2324-0739

Date Collected: 2023-11-09

Date Received: 2023-11-10

Date: 2023-11-14

If you have any questions, please contact the Laboratory Supervisor or Technical Lead. Please note these results are preliminary and have not gone through final quality verification.

	Sample Strength %	Cumulative Mortality %				Endpoint/Comments
		24 hrs	48 hrs	72 hrs	96 hrs	
Description: <u>CG2316018-001 Plant Effluent - E256696</u>  Method: <u>Rainbow trout</u>  Technician: <u>KZ</u>  Started: <u>2023/11/10</u>  Ended: <u>2023/11/14</u>	Control	0	0	0	0	
	6.25	0	0	0	0	
	12.5	0	0	0	0	
	25	0	0	0	0	
	50	0	0	0	0	
	100	0	0	0	0	

The document(s) included in this transmission are intended only for the recipient(s) named above and contain privileged and confidential information. Any unauthorized disclosure, dissemination or copying of this transmission is strictly prohibited. If you have received this transmission in error, please immediately notify us by telephone and destroy the transmission. Thank you.



# Acute Toxicity Test Results

Sample collected November 9, 2023

Final Report

December 1, 2023

Submitted to: **ALS Environmental – Calgary**  
Calgary, AB

## SAMPLE INFORMATION

Sample ID/ Internal ID	Dates		Rainbow trout test initiation	Receipt temperature
	Collected	Received		
CG2316018-001 Plant Effluent – E256696 2324-0739	9-Nov-23 at 0830h	10-Nov-23 at 1120h	10-Nov-23 at 1355h	5.7°C

## TEST TYPES

- Rainbow trout 96-h LC50 test

## RESULTS

### Toxicity test results

Sample ID	Rainbow trout LC50 (% v/v)
CG2316018-001 Plant Effluent – E256696	>100

LC = Lethal Concentration

## QA/QC

QA/QC summary	Rainbow trout
Reference toxicant LC50 (95% CL)	4.7 (4.3-5.0) g/L KCl <sup>1</sup>
Reference toxicant historical mean (2 SD Range)	3.8 (3.1-4.7) g/L KCl
Reference toxicant CV	7.2%
Organism health history	Acceptable
Protocol deviations	None
Water quality range deviations	None
Control performance	Acceptable
Test performance	Valid

<sup>1</sup> Test date, November 8, 2023

LC = Lethal Concentration, CL = Confidence Limit, SD = Standard Deviation, CV = Coefficient of Variation



---

Report By:  
Zhijun Zhao  
Laboratory Assistant



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Reviewed By:  
Mia Fearey, BSc, BIT  
Laboratory Supervisor

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.



**APPENDIX A – Summary of test conditions**

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**Table 1. Summary of test conditions: 96-h rainbow trout (*Oncorhynchus mykiss*) survival test.**

Test species	<i>Oncorhynchus mykiss</i>
Organism source	Fish hatchery
Organism age	Juvenile
Test type	Static
Test duration	96 hours
Test vessel	5 gallon glass aquariums
Test volume	10 - 20 L, depending on size of fish
Test solution depth	Minimum 15 cm
Test concentrations	Five concentrations, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	De-chlorinated City of Calgary tap water
Test solution renewal	None
Test temperature	15 ± 1°C
Feeding	None
Light intensity	100 to 500 lux
Photoperiod	16 hours light/8 hours dark
Aeration	6.5 ± 1 mL/min/L
Test Measurements	pH, conductivity, dissolved oxygen and temperature were measured at test initiation and test completion; salinity measured at test initiation; evaluated for survival daily
Test protocol	Environment Canada (2000), EPS 1/RM/13, with 2007 & 2016 amendments
Statistical software	None
Test endpoints	96-hour LC50
Test acceptability criteria for controls	Survival ≥ 90%
Reference toxicant	Potassium chloride (KCl)

**APPENDIX B – Toxicity test data**

---

Method TRD Client ALS106 Reference 2324-0739 Chamber: 2

**Test Log**

Day	Date	Time	Initial	Chem. Cart	Double Counted	Daily Data Review	Initial pH: Initial EC (µS/cm): Salinity (ppt):
0	2023/11/10	1355 *	KZ	7	CC	km	7.6 961 3
1	2023/11/11	0840	MS	-	-	BS	
2	2023/11/12	0815	MS	-	-	NA	
3	2023/11/13	0830	PK	-	-	NA	
4	2023/11/14	0840	JK/JP	7	-	CC	

**Sample Information**

Note: \* ; time when the test was loaded with fish

**Sample Pre-Aeration**

Aeration rate adjusted to 6.5 +/- 1 mL/min/L

Preaeration time

DO(mg/L) of 100%

Temp (°C) of 100%

yes/no	0 hours	0.5 hours	1 hour	1.5 hours	2 hours
	8.6	8.9			
	14				

DO in mg/L (70% - 100% saturation)\*\*

6.2 mg/L - 8.9 mg/L at 14°C

6.1 mg/L - 8.8 mg/L at 15°C

6.0 mg/L - 8.6 mg/L at 16°C

\*\*corrected for altitude

**Test Chemistry and Biology**

Conc.	CTL	6.25	12.5	25	50	100
-------	-----	------	------	----	----	-----

pH (units) (range: 5.5-8.5)

Day 0	7.7	7.7	7.6	7.6	7.6	7.6
Day 4	7.6	7.7	7.8	7.8	7.8	7.9

EC (µS/cm)

Day 0	386	427	458	497	611	854
Day 4	430	471	505	548	670	927

DO (mg/L) (70-100% saturation at test temp.)

Day 0	8.8	8.8	8.9	8.9	8.9	8.9
Day 4	8.8	8.8	8.8	8.8	8.8	8.8

Temperature (°C) (range: 14-16°C)

Day 0	15	15	14	14	14	14
Day 4	15	15	15	15	15	15

Number Alive (In brackets number stressed)

Day 0	10	10	10	10	10	10
Day 1	10	10	10	10	10	10
Day 2	10	10	10	10	10	10
Day 3	10	10	10	10	10	10
Day 4	10	10	10	10	10	10

Validity Criteria: must be ≤ 10% mortality and/or stressed behavior in the control

Unless otherwise noted, behavior is considered to be normal

Control Organism Data			Test Organism Information	
Control Fish	Length (cm)	Weight (g)	Batch	
1	3.5	0.4	20231005TR	
2	3.9	0.5	Source	LSL
3	3.7	0.5	Tank #	6
4	4.4	0.8	Held at 15± 2°C for ≥14 days	Y
5	3.6	0.4	(must be ≥14 days)	
6	3.4	0.5	Percent stock mortality	0
7	3.9	0.4	(7 days prior to test, must be <2%)	
8	4.2	0.5	Test Volume (L)	18
9	4.5	0.8		
10	3.2	0.34		
Loading Density (g/L):			0.3	
(must be ≤0.5 g/L)				
Mean Length (cm):			3.8	
Length Range (cm):			3.2-4.5	
Mean Weight (g):			0.5	
(Must be ≥0.3g)				
Weight Range (g):			0.3-0.8	

Comments :

Reviewed By: 

Date Reviewed: NOV 17 2023

**APPENDIX C – Chain-of-custody form**

---



Chain of Custody  
 ALS Environmental - Calgary  
 2559 29th Street NE Calgary AB  
 Canada T1Y 7B5

154122



Destination Lab: **Nautilus Environmental (Calgary)**  
 Address: 10828 27 Street SE Calgary AB Canada T2Z 3V9  
 Work Order Number: **CG2316018**  
 Original Receipt Date/Time: 09/11/2023 14:30  
 Instructions Received

Relinquished By  
 Date/Time  
 Received By  
 Date/Time  
 Receipt Temp

Return as Indicated: Results: ALSCGClientServices@alsglobal.com Invoice: ALSCGClientServices@alsglobal.com Electronic Data: ALSCGClientServices@alsglobal.com  
 Attention: Patryk Wojciak

ALS Sample ID	Client ID	Matrix	Container Type	Test Codes	Method Description	Due Date	Sampling Date and Time	Remarks
CG2316018-001	Plant Effluent - E256696	Water	LDPE carboy	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	01-12-2023	09/11/2023 08:30	
CG2316018-001	Plant Effluent - E256696	Water	LDPE carboy			01-12-2023	09/11/2023 08:30	

2324-0739  
 1120  
 Jazod  
 2x 20L carboys  
 DM/KZ  
 NOS/NOI  
 good condition  
 2023/11/10  
 5.7°C

**END OF REPORT**

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## CERTIFICATE OF ANALYSIS

---

<p><b>Work Order</b> : <b>CG2316018</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 2</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 09-Nov-2023 14:30</p> <p><b>Date Analysis</b> : 10-Nov-2023</p> <p><b>Commenced</b> : 07-Dec-2023 08:34</p>
---	---

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<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Patryk Wojciak	Account Manager	External Subcontracting, Calgary, Alberta



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LOR: Limit of Reporting (detection limit).

Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

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.

Unit	Description
-	no units

>: greater than.

<: less than.

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

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

## Analytical Results

CG2316018-001

Sub-Matrix: **Water**

(Matrix: **Water**)

Client sample ID: Plant Effluent

Client sampling date / time: 09-Nov-2023 08:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Bioassays</b>								
Trout bioassay LC50	----	See attached	-	-	TRT-LC50-96/2F	-	10-Nov-2023	-

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.

# Trout Test Summary

Client: LS Environmental - Calga

Client #: ALS106

Reference #: 2324-0739

Date Collected: 2023-11-09

Date Received: 2023-11-10

Date: 2023-11-14

If you have any questions, please contact the Laboratory Supervisor or Technical Lead. Please note these results are preliminary and have not gone through final quality verification.

	Sample Strength %	Cumulative Mortality %				Endpoint/Comments
		24 hrs	48 hrs	72 hrs	96 hrs	
Description: <u>CG2316018-001 Plant Effluent - E256696</u>	Control	0	0	0	0	
Method: <u>Rainbow trout</u>	6.25	0	0	0	0	
Technician: <u>KZ</u>	12.5	0	0	0	0	
Started: <u>2023/11/10</u>	25	0	0	0	0	
Ended: <u>2023/11/14</u>	50	0	0	0	0	
	100	0	0	0	0	

---

The document(s) included in this transmission are intended only for the recipient(s) named above and contain privileged and confidential information. Any unauthorized disclosure, dissemination or copying of this transmission is strictly prohibited. If you have received this transmission in error, please immediately notify us by telephone and destroy the transmission. Thank you.

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# Acute Toxicity Test Results

Sample collected November 9, 2023

Final Report

December 1, 2023

Submitted to: **ALS Environmental – Calgary**  
Calgary, AB

## SAMPLE INFORMATION

Sample ID/ Internal ID	Dates		Rainbow trout test initiation	Receipt temperature
	Collected	Received		
CG2316018-001 Plant Effluent – E256696 2324-0739	9-Nov-23 at 0830h	10-Nov-23 at 1120h	10-Nov-23 at 1355h	5.7°C

## TEST TYPES

- Rainbow trout 96-h LC50 test

## RESULTS

### Toxicity test results

Sample ID	Rainbow trout LC50 (% v/v)
CG2316018-001 Plant Effluent – E256696	>100

LC = Lethal Concentration

## QA/QC

QA/QC summary	Rainbow trout
Reference toxicant LC50 (95% CL)	4.7 (4.3-5.0) g/L KCl <sup>1</sup>
Reference toxicant historical mean (2 SD Range)	3.8 (3.1-4.7) g/L KCl
Reference toxicant CV	7.2%
Organism health history	Acceptable
Protocol deviations	None
Water quality range deviations	None
Control performance	Acceptable
Test performance	Valid

<sup>1</sup> Test date, November 8, 2023

LC = Lethal Concentration, CL = Confidence Limit, SD = Standard Deviation, CV = Coefficient of Variation



---

Report By:  
Zhijun Zhao  
Laboratory Assistant



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Reviewed By:  
Mia Fearey, BSc, BIT  
Laboratory Supervisor

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

**APPENDIX A – Summary of test conditions**

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**Table 1. Summary of test conditions: 96-h rainbow trout (*Oncorhynchus mykiss*) survival test.**

Test species	<i>Oncorhynchus mykiss</i>
Organism source	Fish hatchery
Organism age	Juvenile
Test type	Static
Test duration	96 hours
Test vessel	5 gallon glass aquariums
Test volume	10 - 20 L, depending on size of fish
Test solution depth	Minimum 15 cm
Test concentrations	Five concentrations, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	De-chlorinated City of Calgary tap water
Test solution renewal	None
Test temperature	15 ± 1°C
Feeding	None
Light intensity	100 to 500 lux
Photoperiod	16 hours light/8 hours dark
Aeration	6.5 ± 1 mL/min/L
Test Measurements	pH, conductivity, dissolved oxygen and temperature were measured at test initiation and test completion; salinity measured at test initiation; evaluated for survival daily
Test protocol	Environment Canada (2000), EPS 1/RM/13, with 2007 & 2016 amendments
Statistical software	None
Test endpoints	96-hour LC50
Test acceptability criteria for controls	Survival ≥ 90%
Reference toxicant	Potassium chloride (KCl)

**APPENDIX B – Toxicity test data**

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Method TRD Client ALS106 Reference 2324-0739 Chamber: 2

**Test Log**

Day	Date	Time	Initial	Chem. Cart	Double Counted	Daily Data Review	Initial pH: Initial EC (µS/cm): Salinity (ppt):
0	2023/11/10	1355 *	KZ	7	CC	km	7.6 961 3
1	2023/11/11	0840	MS	-	-	BS	
2	2023/11/12	0815	MS	-	-	NA	
3	2023/11/13	0830	PK	-	-	NA	
4	2023/11/14	0840	JK/JP	7	-	CC	

**Sample Information**

Note: \* ; time when the test was loaded with fish

**Sample Pre-Aeration**

Aeration rate adjusted to 6.5 +/- 1 mL/min/L

Preaeration time

DO(mg/L) of 100%

Temp (°C) of 100%

yes/no	0 hours	0.5 hours	1 hour	1.5 hours	2 hours
	8.6	8.9			
	14				

DO in mg/L (70% - 100% saturation)\*\*

6.2 mg/L - 8.9 mg/L at 14°C

6.1 mg/L - 8.8 mg/L at 15°C

6.0 mg/L - 8.6 mg/L at 16°C

\*\*corrected for altitude

**Test Chemistry and Biology**

Conc.	CTL	6.25	12.5	25	50	100
-------	-----	------	------	----	----	-----

pH (units) (range: 5.5-8.5)

Day 0	7.7	7.7	7.6	7.6	7.6	7.6
Day 4	7.6	7.7	7.8	7.8	7.8	7.9

EC (µS/cm)

Day 0	386	427	458	497	611	854
Day 4	430	471	505	548	670	927

DO (mg/L) (70-100% saturation at test temp.)

Day 0	8.8	8.8	8.9	8.9	8.9	8.9
Day 4	8.8	8.8	8.8	8.8	8.8	8.8

Temperature (°C) (range: 14-16°C)

Day 0	15	15	14	14	14	14
Day 4	15	15	15	15	15	15

Number Alive (In brackets number stressed)


Day 0	10	10	10	10	10	10
Day 1	10	10	10	10	10	10
Day 2	10	10	10	10	10	10
Day 3	10	10	10	10	10	10
Day 4	10	10	10	10	10	10

Validity Criteria: must be ≤ 10% mortality and/or stressed behavior in the control

Unless otherwise noted, behavior is considered to be normal

Control Organism Data			Test Organism Information	
Control Fish	Length (cm)	Weight (g)	Batch	
1	3.5	0.4	20231005TR	
2	3.9	0.5	Source	LSL
3	3.7	0.5	Tank #	6
4	4.4	0.8	Held at 15± 2°C for ≥14 days	Y
5	3.6	0.4	(must be ≥14 days)	
6	3.4	0.5	Percent stock mortality	0
7	3.9	0.4	(7 days prior to test, must be <2%)	
8	4.2	0.5	Test Volume (L)	18
9	4.5	0.8		
10	3.2	0.34		
Loading Density (g/L):			0.3	
(must be ≤0.5 g/L)				
Mean Length (cm):			3.8	
Length Range (cm):			3.2-4.5	
Mean Weight (g):			0.5	
(Must be ≥0.3g)				
Weight Range (g):			0.3-0.8	

Comments :

Reviewed By: 

Date Reviewed: NOV 17 2023

**APPENDIX C – Chain-of-custody form**

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Chain of Custody  
 ALS Environmental - Calgary  
 2559 29th Street NE Calgary AB  
 Canada T1Y 7B5

154122



Destination Lab:	<b>Nautilus Environmental (Calgary)</b>
Address:	10828 27 Street SE Calgary AB Canada T2Z 3V9
Work Order Number:	<b>CG2316018</b>
Original Receipt Date/Time	Instructions Received
09/11/2023 14:30	

Relinquished By
Date/Time
Received By
Date/Time
Receipt Temp

Return as Indicated: Results: ALSCGClientServices@alsglobal.com Invoice: ALSCGClientServices@alsglobal.com Electronic Data: ALSCGClientServices@alsglobal.com  
 Attention: Patryk Wojciak

ALS Sample ID	Client ID	Matrix	Container Type	Test Codes	Method Description	Due Date	Sampling Date and Time	Remarks
CG2316018-001	Plant Effluent - E256696	Water	LDPE carboy	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	01-12-2023	09/11/2023 08:30	
CG2316018-001	Plant Effluent - E256696	Water	LDPE carboy			01-12-2023	09/11/2023 08:30	

2324-0739  
 1120  
 Jazod  
 2x 20L carboys  
 DM/KZ  
 NOS/NOI  
 good condition  
 2023/11/10  
 5.7°C

**END OF REPORT**

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## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>CG2317807</b>	Page	: 1 of 2
<b>Client</b>	: <b>Kicking Horse Mountain Resort LP</b>	<b>Laboratory</b>	: ALS Environmental - Calgary
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Telephone</b>	: 250 344 6003	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: RCR- KICKING HORSE MOUNTAIN RESORT	<b>Date Samples Received</b>	: 19-Dec-2023 09:10
<b>PO</b>	: ----	<b>Date Analysis</b>	: 19-Dec-2023
<b>C-O-C number</b>	: ----	<b>Commenced</b>	
<b>Sampler</b>	: TJ	<b>Issue Date</b>	: 28-Dec-2023 10:05
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, Calgary, Alberta



## General Comments

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

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

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

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

**Key :**  
 CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
CFU/100mL	colony forming units per hundred millilitres
mg/L	milligrams per litre
MPN/100mL	most probable number per hundred millilitres

>: greater than.

<: less than.

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

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

## Analytical Results

CG2317807-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Plant Effluent -

Client sampling date / time: 18-Dec-2023 09:40

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	5.4	3.0	mg/L	E160/CG	-	20-Dec-2023	1282894
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	0.302	0.0050	mg/L	E298/CG	19-Dec-2023	19-Dec-2023	1282735
Phosphate, ortho-, dissolved (as P)	14265-44-2	0.134	0.0020	mg/L	E378-U/CG	19-Dec-2023	19-Dec-2023	1282765
Phosphorus, total	7723-14-0	0.286	0.0100	mg/L	E372-U/CG	19-Dec-2023	20-Dec-2023	1282684
<b>Microbiological Tests</b>								
Coliforms, thermotolerant [fecal]	----	2	1	CFU/100mL	E012.FC/CG	-	19-Dec-2023	1285104
Coliforms, Escherichia coli [E. coli]	----	<1	1	MPN/100mL	E010/CG	-	19-Dec-2023	1284203
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	<2.0	2.0	mg/L	E550/CG	-	19-Dec-2023	1283128

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

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<p><b>Work Order</b> : <b>CG2317807</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR- KICKING HORSE MOUNTAIN RESORT</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 7</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Dec-2023 09:10</p> <p><b>Issue Date</b> : 28-Dec-2023 10:05</p>
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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.

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### ***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)***

- No Analysis Holding Time Outliers exist.

### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> Plant Effluent	E550	18-Dec-2023	----	----	----		19-Dec-2023	3 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> Plant Effluent	E298	18-Dec-2023	19-Dec-2023	28 days	1 days	✔	19-Dec-2023	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>										
<b>HDPE</b> Plant Effluent	E378-U	18-Dec-2023	19-Dec-2023	3 days	1 days	✔	19-Dec-2023	3 days	1 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
<b>Amber glass total (sulfuric acid)</b> Plant Effluent	E372-U	18-Dec-2023	19-Dec-2023	28 days	1 days	✔	20-Dec-2023	28 days	2 days	✔
<b>Microbiological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> Plant Effluent	E012.FC	18-Dec-2023	----	----	----		19-Dec-2023	30 hrs	25 hrs	✔
<b>Microbiological Tests : Total Coliforms and E. coli (Enzyme Substrate)</b>										
<b>Sterile HDPE (Sodium thiosulphate)</b> Plant Effluent	E010	18-Dec-2023	----	----	----		19-Dec-2023	30 hrs	25 hrs	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> Plant Effluent	E160	18-Dec-2023	----	----	----		20-Dec-2023	7 days	2 days	✔

Page : 4 of 7  
Work Order : CG2317807  
Client : Kicking Horse Mountain Resort LP  
Project : RCR- KICKING HORSE MOUNTAIN RESORT

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**Legend & Qualifier Definitions**

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1282735	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1283128	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1282765	1	20	5.0	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1285104	1	5	20.0	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	1284203	2	19	10.5	10.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1282684	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1282894	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1282735	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1283128	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1282765	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1282684	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1282894	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1282735	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1283128	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1282765	1	20	5.0	5.0	✔
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	1285104	1	5	20.0	5.0	✔
Total Coliforms and E. coli (Enzyme Substrate)	E010	1284203	1	19	5.2	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1282684	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1282894	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1282735	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1282765	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1282684	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Total Coliforms and E. coli (Enzyme Substrate)	E010 ALS Environmental - Calgary	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at 35.0 ± 0.5°C for either 18 or 24 hours (dependent on reagent used).
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC ALS Environmental - Calgary	Water	APHA 9222 D (mod)	Following filtration (0.45 µm), and incubation at 44.5 ± 0.2°C for 22-26 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160 ALS Environmental - Calgary	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.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.

Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.



Page : 7 of 7  
Work Order : CG2317807  
Client : Kicking Horse Mountain Resort LP  
Project : RCR- KICKING HORSE MOUNTAIN RESORT



<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
	ALS Environmental - Calgary			

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2317807</b></p> <p>Client : Kicking Horse Mountain Resort LP</p> <p>Contact : Travis Jobin</p> <p>Address : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p>Telephone :</p> <p>Project : RCR- KICKING HORSE MOUNTAIN RESORT</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : TJ                      250 344 6003</p> <p>Site : ----</p> <p>Quote number : CG21-RESC100-0001</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 5</p> <p>Laboratory : ALS Environmental - Calgary</p> <p>Account Manager : Patryk Wojciak</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 19-Dec-2023 09:10</p> <p>Date Analysis Commenced : 19-Dec-2023</p> <p>Issue Date : 28-Dec-2023 10:05</p>
--	--

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Sunil Palak		Calgary Microbiology, Calgary, Alberta

Page : 2 of 5  
Work Order : CG2317807  
Client : Kicking Horse Mountain Resort LP  
Project : RCR- KICKING HORSE MOUNTAIN RESORT



---

## 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: <b>Water</b>					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
<b>Physical Tests (QC Lot: 1282894)</b>											
CG2317643-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	4.8	4.6	0.2	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1282684)</b>											
CG2317776-009	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0141	0.0140	0.00009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1282735)</b>											
CG2317786-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0500	mg/L	1.32	1.30	1.17%	20%	----
<b>Anions and Nutrients (QC Lot: 1282765)</b>											
CG2317786-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1284203)</b>											
CG2317802-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
CG2317810-001	Anonymous	Coliforms, Escherichia coli [E. coli]	----	E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	----
<b>Microbiological Tests (QC Lot: 1285104)</b>											
CG2317805-002	Anonymous	Coliforms, thermotolerant [fecal]	----	E012.FC	5	CFU/100mL	5	<5	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1283128)</b>											
CG2317808-006	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



## Method Blank (MB) Report

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

Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1282894)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1282684)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 1282735)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1282765)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Microbiological Tests (QCLot: 1284203)</b>						
Coliforms, Escherichia coli [E. coli]	---	E010	1	MPN/100mL	<1	---
<b>Microbiological Tests (QCLot: 1285104)</b>						
Coliforms, thermotolerant [fecal]	---	E012.FC	1	CFU/100mL	<1	---
<b>Aggregate Organics (QCLot: 1283128)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---



### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
<b>Physical Tests (QCLot: 1282894)</b>									
Solids, total suspended [TSS]	----	E160	3	mg/L	150 mg/L	109	85.0	115	----
<b>Anions and Nutrients (QCLot: 1282684)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	89.2	80.0	120	----
<b>Anions and Nutrients (QCLot: 1282735)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.3	85.0	115	----
<b>Anions and Nutrients (QCLot: 1282765)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	98.6	80.0	120	----
<b>Aggregate Organics (QCLot: 1283128)</b>									
Biochemical oxygen demand [BOD]	----	E550	2	mg/L	198 mg/L	96.5	85.0	115	----

### 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
<b>Anions and Nutrients (QCLot: 1282684)</b>										
CG2317776-010	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0517 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 1282735)</b>										
CG2317786-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 1282765)</b>										
CG2317786-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0461 mg/L	0.05 mg/L	92.3	70.0	130	----

<b>Report To</b>			<b>Report Format / Distribution</b>			<b>Service Requested</b> (Rush for routine analysis subject to availability)																																																																																
Company: Kicking Horse Mountain Water Utility Co. Ltd.			<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other			<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)																																																																																
Contact: Travis Jobin			<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax			<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT																																																																																
Address: 1500 Kicking Horse Trail			Email 1: tjobin@kickinghorseresort.com			<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT																																																																																
Phone: 250-344-6003 Fax:			Email 2: pmaier@skircr.com			<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT																																																																																
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			<b>Client / Project Information</b>			<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td colspan="10">Please indicate below Filtered, Preserved or both (F, P, F/P)</td> <td rowspan="6" style="writing-mode: vertical-rl; text-orientation: mixed;">Number of Containers</td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> <tr> <td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td> </tr> </table>										Please indicate below Filtered, Preserved or both (F, P, F/P)										Number of Containers																																																												
Please indicate below Filtered, Preserved or both (F, P, F/P)																Number of Containers																																																																						
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			Job #: RCR - Kicking Horse Mountain Resort																																																																																			
Company: Resorts of the Canadian Rockies			PO / AFE:																																																																																			
Contact: Patrick Majer			LSD:																																																																																			
Address: 1505 - 17th Ave SW Calgary AB			Quote #: Q33059																																																																																			
Phone: Fax:			ALS Contact: PW			Sampler: TJ																																																																																
Lab Work Order # (lab use only)																																																																																						
Sample #	Sample Identification (This description will appear on the report)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho Phosphate	Total P	N-NH4	E.Coli																																																																										
	Plant Effluent - E256696		18-Dec-23	9:40	Water	X	X	X	X	X	X	X								4																																																																		
	Sample State: WW																																																																																					
	Sample Descriptor: MU																																																																																					
	Sample Class: REG																																																																																					
	Collection Mode: GRB																																																																																					
	Permit#: E256696																																																																																					

**Environmental Division**  
**Calgary**  
 Work Order Reference  
**CG2317807**




Telephone: +1 403 407-1800

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB-Tier 1 - Natural, etc) / Hazardous Details**

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:
Travis Jobin	18-Dec-23	12:00		19/12/23	9:10	7.8 °C				Yes / No ? If Yes add SIF




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## CERTIFICATE OF ANALYSIS

---

<p><b>Work Order</b> : <b>CG2302157</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 2</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 22-Feb-2023 11:22</p> <p><b>Date Analysis</b> : 22-Feb-2023</p> <p><b>Commenced</b> :</p> <p><b>Issue Date</b> : 27-Feb-2023 15:42</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta





Page : 2 of 2  
 Work Order : CG2302157  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort

## 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
mg/L	milligrams per litre

>: greater than.

<: less 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
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

## Analytical Results

CG2302157-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT INFLUENT

Client sampling date / time: 20-Feb-2023

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	460 <sup>DLM</sup>	7.5	mg/L	E160	-	24-Feb-2023	842804
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	36.9	1.25	mg/L	E298	22-Feb-2023	22-Feb-2023	842262
Phosphate, ortho-, dissolved (as P)	14265-44-2	9.49	0.100	mg/L	E378-U	22-Feb-2023	22-Feb-2023	842125
Phosphorus, total	7723-14-0	16.4	0.400	mg/L	E372-U	25-Feb-2023	25-Feb-2023	845104
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	396	75.0	mg/L	E550	-	22-Feb-2023	842819

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

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## QUALITY CONTROL INTERPRETIVE REPORT

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<p><b>Work Order</b> : <b>CG2302157</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 22-Feb-2023 11:22</p> <p><b>Issue Date</b> : 27-Feb-2023 15:44</p>
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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.

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### ***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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
HDPE [BOD HT-48h] PLANT INFLUENT	E550	20-Feb-2023	----	----	----		22-Feb-2023	48 hrs	41 hrs	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E298	20-Feb-2023	22-Feb-2023	----	----		22-Feb-2023	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
HDPE PLANT INFLUENT	E378-U	20-Feb-2023	22-Feb-2023	----	----		22-Feb-2023	3 days	2 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E372-U	20-Feb-2023	25-Feb-2023	----	----		25-Feb-2023	28 days	5 days	✓
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT INFLUENT	E160	20-Feb-2023	----	----	----		24-Feb-2023	7 days	4 days	✓

### Legend & Qualifier Definitions

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	842262	1	19	5.2	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	842819	1	8	12.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	842125	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	845104	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	842804	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	842262	1	19	5.2	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	842819	1	8	12.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	842125	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	845104	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	842804	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	842262	1	19	5.2	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	842819	1	8	12.5	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	842125	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	845104	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	842804	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	842262	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	842125	1	12	8.3	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	845104	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 Calgary - Environmental	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 $104 \pm 1^\circ\text{C}$ , 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.
Ammonia by Fluorescence	E298 Calgary - Environmental	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

**Work Order** : **CG2302157**  
**Client** : Kicking Horse Mountain Resort LP  
**Contact** : Travis Jobin  
**Address** : 1500 Kicking Horse Trail PO BOX 330  
 Golden BC Canada V0A 1H0  
**Telephone** :  
**Project** : RCR - Kicking Horse Mountain Resort  
**PO** : ----  
**C-O-C number** : ----  
**Sampler** : TJ 250 344 6003  
**Site** : ----  
**Quote number** : CG21-RESC100-0001  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 4  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Patryk Wojciak  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 22-Feb-2023 11:22  
**Date Analysis Commenced** : 22-Feb-2023  
**Issue Date** : 27-Feb-2023 15:41

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta



## General Comments

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

Key :

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

## Workorder Comments

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

## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 842804)</b>											
CG2302089-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	14.7	14.3	0.4	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 842125)</b>											
CG2302151-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0010	0.0010	0.00002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 842262)</b>											
CG2302151-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.332	0.342	3.09%	20%	----
<b>Anions and Nutrients (QC Lot: 845104)</b>											
CG2302150-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0037	0.0043	0.0006	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 842819)</b>											
CG2302150-007	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----





### Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 842804)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 842125)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 842262)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 845104)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Aggregate Organics (QCLot: 842819)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 842804)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	89.9	85.0	115	---
<b>Anions and Nutrients (QCLot: 842125)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	106	80.0	120	---
<b>Anions and Nutrients (QCLot: 842262)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	99.4	85.0	115	---
<b>Anions and Nutrients (QCLot: 845104)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	105	80.0	120	---
<b>Aggregate Organics (QCLot: 842819)</b>									
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	101	85.0	115	---



### 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  $\geq 1 \times$  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
<b>Anions and Nutrients (QCLot: 842125)</b>										
CG2302151-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0533 mg/L	0.05 mg/L	106	70.0	130	----
<b>Anions and Nutrients (QCLot: 842262)</b>										
CG2302151-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0976 mg/L	0.1 mg/L	97.6	75.0	125	----
<b>Anions and Nutrients (QCLot: 845104)</b>										
CG2302150-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0476 mg/L	0.05 mg/L	95.3	70.0	130	----





## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2303190</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 2</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 17-Mar-2023 11:25</p> <p><b>Date Analysis</b> : 17-Mar-2023</p> <p><b>Commenced</b> : 22-Mar-2023 16:57</p> <p><b>Issue Date</b> : 22-Mar-2023 16:57</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta



Page : 2 of 2  
 Work Order : CG2303190  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort

## 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).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
mg/L	milligrams per litre

>: greater than.

<: less than.

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
DLM	Detection Limit Adjusted due to sample matrix effects (e.g. chemical interference, colour, turbidity).

## Analytical Results

CG2303190-001

Sub-Matrix: **Water**

(Matrix: **Water**)

Client sample ID: PLANT INFLUENT

Client sampling date / time: 16-Mar-2023 10:35

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	227	3.0	mg/L	E160	-	20-Mar-2023	869111
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	22.7	0.500	mg/L	E298	17-Mar-2023	17-Mar-2023	867494
Phosphate, ortho-, dissolved (as P)	14265-44-2	6.00	0.100	mg/L	E378-U	17-Mar-2023	17-Mar-2023	867274
Phosphorus, total	7723-14-0	9.84 <sup>DLM</sup>	0.200	mg/L	E372-U	17-Mar-2023	19-Mar-2023	867473
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	596	300	mg/L	E550	-	17-Mar-2023	867708

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



## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2303190</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 17-Mar-2023 11:25</p> <p><b>Issue Date</b> : 22-Mar-2023 16:59</p>
---	--

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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
HDPE [BOD HT 3d] PLANT INFLUENT	E550	16-Mar-2023	----	----	----		17-Mar-2023	3 days	1 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E298	16-Mar-2023	17-Mar-2023	----	----		17-Mar-2023	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
HDPE PLANT INFLUENT	E378-U	16-Mar-2023	17-Mar-2023	----	----		17-Mar-2023	3 days	1 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E372-U	16-Mar-2023	17-Mar-2023	----	----		19-Mar-2023	28 days	3 days	✓
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT INFLUENT	E160	16-Mar-2023	----	----	----		20-Mar-2023	7 days	4 days	✓

### Legend & Qualifier Definitions

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





## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	867494	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	867708	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	867274	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	867473	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	869111	1	10	10.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	867494	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	867708	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	867274	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	867473	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	869111	1	10	10.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	867494	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	867708	1	19	5.2	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	867274	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	867473	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	869111	1	10	10.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	867494	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	867274	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	867473	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 Calgary - Environmental	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 $104 \pm 1^\circ\text{C}$ , 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.
Ammonia by Fluorescence	E298 Calgary - Environmental	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

**Work Order** : **CG2303190**  
**Client** : Kicking Horse Mountain Resort LP  
**Contact** : Travis Jobin  
**Address** : 1500 Kicking Horse Trail PO BOX 330  
 Golden BC Canada V0A 1H0  
**Telephone** :  
**Project** : RCR - Kicking Horse Mountain Resort  
**PO** : ----  
**C-O-C number** : ----  
**Sampler** : ---- 250 344 6003  
**Site** : ----  
**Quote number** : CG21-RESC100-0001  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 4  
**Laboratory** : Calgary - Environmental  
**Account Manager** : Patryk Wojciak  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 17-Mar-2023 11:25  
**Date Analysis Commenced** : 17-Mar-2023  
**Issue Date** : 22-Mar-2023 16:56

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
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta



## General Comments

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

Key :

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

## Workorder Comments

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

## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 869111)</b>											
CG2303166-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	3.8	3.2	0.6	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 867274)</b>											
CG2303184-003	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 867473)</b>											
CG2303186-006	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0036	0.0032	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 867494)</b>											
CG2303166-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.110	0.111	0.817%	20%	----
<b>Aggregate Organics (QC Lot: 867708)</b>											
CG2303180-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



### Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 869111)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 867274)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 867473)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 867494)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Aggregate Organics (QCLot: 867708)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water

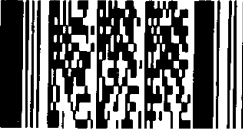
Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 869111)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	94.0	85.0	115	---
<b>Anions and Nutrients (QCLot: 867274)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	102	80.0	120	---
<b>Anions and Nutrients (QCLot: 867473)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	95.9	80.0	120	---
<b>Anions and Nutrients (QCLot: 867494)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	---
<b>Aggregate Organics (QCLot: 867708)</b>									
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	101	85.0	115	---



### 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.

					Matrix Spike (MS) Report					
					Spike		Recovery (%)	Recovery Limits (%)		
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
<b>Anions and Nutrients (QCLot: 867274)</b>										
CG2303184-004	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0578 mg/L	0.05 mg/L	116	70.0	130	----
<b>Anions and Nutrients (QCLot: 867473)</b>										
CG2303186-007	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0471 mg/L	0.05 mg/L	94.2	70.0	130	----
<b>Anions and Nutrients (QCLot: 867494)</b>										
CG2303186-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----

<b>Report To</b>			<b>Report Format / Distribution</b>				<b>Service Requested</b> (Rush for routine analysis subject to availability)											
Company: Kicking Horse Mountain Water Utility Co. Ltd.			<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other <input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax				<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days) <input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT <input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT <input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT											
Contact: Travis Jobin			Email 1: <a href="mailto:tjobin@kickinghorseresort.com">tjobin@kickinghorseresort.com</a>															
Address: 1500 Kicking Horse Trail			Email 2: <a href="mailto:pmaier@skircr.com">pmaier@skircr.com</a>															
Phone: 250-344-6003    Fax:			Email 3: <a href="mailto:mskyring@kickinghorseresort.com">mskyring@kickinghorseresort.com</a>				<b>Analysis Request</b>											
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			<b>Client / Project Information</b>				Please indicate below Filtered, Preserved or both (F, P, F/P)											
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No			Job #: RCR - Kicking Horse Mountain Resort															
Company: Resorts of the Canadian Rockies			PO / AFE:															
Contact: Patrick Majer			LSD:															
Address: 1505 - 17th Ave SW Calgary AB			Quote #: Q33059															
Phone:    Fax:																		
Lab Work Order # (lab use only)			ALS Contact: PW		Sampler: TJ													
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Ortho Phosphate	Total P	N-NH4							Number of Containers		
	Plant Influent	MAR 16	10 35	Water	X	X	X	X	X									3
<p>Environmental Division          Calgary          Work Order Reference  <b>CG2303190</b></p>  <p>Telephone: +1 403 407 1800</p>																		
<p><b>Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details</b></p>																		
<p>Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.</p> <p>By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.</p> <p>Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.</p>																		
SHIPMENT RELEASE (client use)					SHIPMENT RECEPTION (lab use only)					SHIPMENT VERIFICATION (lab use only)								
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF								
Travis Jobin			TJ	MAR 23	11:21	34 °C												



## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>CG2304732</b>	Page	: 1 of 2
<b>Client</b>	: <b>Kicking Horse Mountain Resort LP</b>	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Telephone</b>	: 250 344 6003	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: RCR - Kicking Horse Mountain Resort	<b>Date Samples Received</b>	: 19-Apr-2023 13:35
<b>PO</b>	: ----	<b>Date Analysis</b>	: 19-Apr-2023
<b>C-O-C number</b>	: ----	<b>Commenced</b>	
<b>Sampler</b>	: TJ	<b>Issue Date</b>	: 26-Apr-2023 17:30
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta





Page : 2 of 2  
 Work Order : CG2304732  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort

## 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).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
mg/L	milligrams per litre

>: greater than.

<: less than.

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

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

## Analytical Results

CG2304732-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT INFLUENT

Client sampling date / time: 19-Apr-2023 00:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	228	3.0	mg/L	E160	-	26-Apr-2023	910489
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	11.8	1.25	mg/L	E298	19-Apr-2023	19-Apr-2023	903616
Phosphate, ortho-, dissolved (as P)	14265-44-2	2.20	0.0250	mg/L	E378-U	19-Apr-2023	19-Apr-2023	903295
Phosphorus, total	7723-14-0	6.57	0.200	mg/L	E372-U	19-Apr-2023	21-Apr-2023	903427
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	108	75.0	mg/L	E550	-	20-Apr-2023	905446

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




---

## QUALITY CONTROL INTERPRETIVE REPORT

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<p><b>Work Order</b> : <b>CG2304732</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Apr-2023 13:35</p> <p><b>Issue Date</b> : 26-Apr-2023 17:31</p>
---	--

---

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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
HDPE [BOD HT 3d] PLANT INFLUENT	E550	19-Apr-2023	----	----	----		20-Apr-2023	3 days	1 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E298	19-Apr-2023	19-Apr-2023	----	----		19-Apr-2023	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
HDPE PLANT INFLUENT	E378-U	19-Apr-2023	19-Apr-2023	----	----		19-Apr-2023	3 days	1 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E372-U	19-Apr-2023	19-Apr-2023	----	----		21-Apr-2023	28 days	3 days	✓
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT INFLUENT	E160	19-Apr-2023	----	----	----		26-Apr-2023	7 days	7 days	✓

### Legend & Qualifier Definitions

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	903616	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	905446	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	903295	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	903427	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	910489	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	903616	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	905446	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	903295	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	903427	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	910489	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	903616	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	905446	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	903295	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	903427	1	13	7.6	5.0	✓
TSS by Gravimetry	E160	910489	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	903616	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	903295	1	13	7.6	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	903427	1	13	7.6	5.0	✓



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 Calgary - Environmental	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 $104 \pm 1^\circ\text{C}$ , 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.
Ammonia by Fluorescence	E298 Calgary - Environmental	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2304732</b></p> <p>Client : Kicking Horse Mountain Resort LP</p> <p>Contact : Travis Jobin</p> <p>Address : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p>Telephone :</p> <p>Project : RCR - Kicking Horse Mountain Resort</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : TJ                    250 344 6003</p> <p>Site : ----</p> <p>Quote number : CG21-RESC100-0001</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 4</p> <p>Laboratory : Calgary - Environmental</p> <p>Account Manager : Patryk Wojciak</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 19-Apr-2023 13:35</p> <p>Date Analysis Commenced : 19-Apr-2023</p> <p>Issue Date : 26-Apr-2023 17:31</p>
---	--

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta



## General Comments

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

Key :

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

## Workorder Comments

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

## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 910489)</b>											
CG2304732-001	PLANT INFLUENT	Solids, total suspended [TSS]	----	E160	3.0	mg/L	228	223	1.95%	20%	----
<b>Anions and Nutrients (QC Lot: 903295)</b>											
CG2304722-003	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 903427)</b>											
CG2304719-013	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0051	0.0047	0.0004	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 903616)</b>											
CG2304719-006	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.245	0.244	0.450%	20%	----
<b>Aggregate Organics (QC Lot: 905446)</b>											
CG2304707-018	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----





### Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 910489)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 903295)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 903427)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 903616)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Aggregate Organics (QCLot: 905446)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 910489)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	96.4	85.0	115	---
<b>Anions and Nutrients (QCLot: 903295)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	100	80.0	120	---
<b>Anions and Nutrients (QCLot: 903427)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	99.4	80.0	120	---
<b>Anions and Nutrients (QCLot: 903616)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	---
<b>Aggregate Organics (QCLot: 905446)</b>									
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	93.8	85.0	115	---



### 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
<b>Anions and Nutrients (QCLot: 903295)</b>										
CG2304722-008	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0508 mg/L	0.05 mg/L	102	70.0	130	----
<b>Anions and Nutrients (QCLot: 903427)</b>										
CG2304722-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0492 mg/L	0.05 mg/L	98.3	70.0	130	----
<b>Anions and Nutrients (QCLot: 903616)</b>										
CG2304719-007	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----



Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878

www.alsglobal.com

COC # \_\_\_\_\_

Page 1 of 1


<b>Report To</b>	<b>Report Format / Distribution</b>	<b>Service Requested</b> (Rush for routine analysis subject to availability)
Company: Kicking Horse Mountain Water Utility Co. Ltd.	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other	<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)
Contact: Travis Jobin	<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax	<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address: 1500 Kicking Horse Trail	Email 1: <a href="mailto:tjobin@kickinghorseresort.com">tjobin@kickinghorseresort.com</a>	<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Email 2: <a href="mailto:pmajer@skiror.com">pmajer@skiror.com</a>	<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT
Phone: 250-344-6003 Fax:	Email 3: <a href="mailto:mskyring@kickinghorseresort.com">mskyring@kickinghorseresort.com</a>	

<b>Invoice To</b> Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Client / Project Information</b>	<b>Analysis Request</b>										
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Job #: RCR - Kicking Horse Mountain Resort	Please indicate below Filtered, Preserved or both (F, P, F/P)										
Company: Resorts of the Canadian Rockies	PO / AFE:											Number of Containers
Contact: Patrick Majer	LSD:											
Address: 1505 - 17th Ave SW Calgary AB												
Phone: Fax:	Quote #: Q33059											

Lab Work Order # (lab use only)	ALS Contact: PW	Sampler: TJ
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Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Ortho Phosphate	Total P	N-NH4					Number of Containers
	Plant Influent	18-Apr-23	10:05	Water	X	X	X	X	X					3

Environmental Division  
Calgary  
Work Order Reference  
**CG2304732**



Telephone: +1 403 407 1800

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC/CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.  
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date	Time	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis Jobin				4/19	1335	70 °C				



## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>CG2305106</b>	Page	: 1 of 2
<b>Client</b>	: <b>Kicking Horse Mountain Resort LP</b>	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Telephone</b>	: 250 344 6003	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: RCR - Kicking Horse Mountain Resort	<b>Date Samples Received</b>	: 26-Apr-2023 13:25
<b>PO</b>	: ----	<b>Date Analysis</b>	: 26-Apr-2023
<b>C-O-C number</b>	: ----	<b>Commenced</b>	
<b>Sampler</b>	: TJ	<b>Issue Date</b>	: 03-May-2023 12:33
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta



Page : 2 of 2  
 Work Order : CG2305106  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort

## 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).

Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

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.

Unit	Description
mg/L	milligrams per litre

>: greater than.

<: less than.

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

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

## Analytical Results

CG2305106-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT INFLUENT

Client sampling date / time: 25-Apr-2023

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	132	3.0	mg/L	E160	-	02-May-2023	919314
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	9.13	0.500	mg/L	E298	26-Apr-2023	26-Apr-2023	912317
Phosphate, ortho-, dissolved (as P)	14265-44-2	1.50	0.0200	mg/L	E378-U	26-Apr-2023	26-Apr-2023	912164
Phosphorus, total	7723-14-0	3.14	0.100	mg/L	E372-U	27-Apr-2023	28-Apr-2023	913063
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	98.2	20.0	mg/L	E550	-	28-Apr-2023	914323

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




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## QUALITY CONTROL INTERPRETIVE REPORT

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<p><b>Work Order</b> : <b>CG2305106</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 26-Apr-2023 13:25</p> <p><b>Issue Date</b> : 03-May-2023 12:34</p>
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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.

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### ***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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
HDPE [BOD HT 3d] PLANT INFLUENT	E550	25-Apr-2023	----	----	----		28-Apr-2023	3 days	3 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E298	25-Apr-2023	26-Apr-2023	----	----		26-Apr-2023	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
HDPE PLANT INFLUENT	E378-U	25-Apr-2023	26-Apr-2023	----	----		26-Apr-2023	3 days	1 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E372-U	25-Apr-2023	27-Apr-2023	----	----		28-Apr-2023	28 days	3 days	✓
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT INFLUENT	E160	25-Apr-2023	----	----	----		02-May-2023	7 days	7 days	✓

### Legend & Qualifier Definitions

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





## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	912317	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	914323	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	912164	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	913063	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	919314	1	1	100.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	912317	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	914323	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	912164	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	913063	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	919314	1	1	100.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	912317	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	914323	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	912164	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	913063	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	919314	1	1	100.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	912317	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	912164	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	913063	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 Calgary - Environmental	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 $104 \pm 1^\circ\text{C}$ , 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.
Ammonia by Fluorescence	E298 Calgary - Environmental	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2305106</b></p> <p>Client : Kicking Horse Mountain Resort LP</p> <p>Contact : Travis Jobin</p> <p>Address : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p>Telephone :</p> <p>Project : RCR - Kicking Horse Mountain Resort</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : TJ                    250 344 6003</p> <p>Site : ----</p> <p>Quote number : CG21-RESC100-0001</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 4</p> <p>Laboratory : Calgary - Environmental</p> <p>Account Manager : Patryk Wojciak</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 26-Apr-2023 13:25</p> <p>Date Analysis Commenced : 26-Apr-2023</p> <p>Issue Date : 03-May-2023 12:33</p>
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta



## General Comments

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

Key :

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

## Workorder Comments

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

## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 919314)</b>											
CG2305106-001	PLANT INFLUENT	Solids, total suspended [TSS]	----	E160	3.0	mg/L	132	124	6.23%	20%	----
<b>Anions and Nutrients (QC Lot: 912164)</b>											
CG2305106-001	PLANT INFLUENT	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0200	mg/L	1.50	1.49	0.380%	20%	----
<b>Anions and Nutrients (QC Lot: 912317)</b>											
CG2305106-001	PLANT INFLUENT	Ammonia, total (as N)	7664-41-7	E298	0.500	mg/L	9.13	9.10	0.396%	20%	----
<b>Anions and Nutrients (QC Lot: 913063)</b>											
CG2305094-009	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0042	0.0043	0.00007	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 914323)</b>											
CG2305094-009	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



### Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 919314)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 912164)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 912317)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 913063)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Aggregate Organics (QCLot: 914323)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 919314)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	97.1	85.0	115	---
<b>Anions and Nutrients (QCLot: 912164)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	105	80.0	120	---
<b>Anions and Nutrients (QCLot: 912317)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 913063)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	97.1	80.0	120	---
<b>Aggregate Organics (QCLot: 914323)</b>									
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	89.1	85.0	115	---



### 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  $\geq 1 \times$  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
<b>Anions and Nutrients (QCLot: 912164)</b>										
CG2305116-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0497 mg/L	0.05 mg/L	99.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 912317)</b>										
CG2305117-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.103 mg/L	0.1 mg/L	103	75.0	125	----
<b>Anions and Nutrients (QCLot: 913063)</b>										
CG2305094-010	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0501 mg/L	0.05 mg/L	100	70.0	130	----





## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>CG2305497</b>	Page	: 1 of 2
<b>Client</b>	: <b>Kicking Horse Mountain Resort LP</b>	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Telephone</b>	: 250 344 6003	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: RCR - Kicking Horse Mountain Resort	<b>Date Samples Received</b>	: 03-May-2023 12:05
<b>PO</b>	: ----	<b>Date Analysis</b>	: 03-May-2023
<b>C-O-C number</b>	: ----	<b>Commenced</b>	
<b>Sampler</b>	: TJ	<b>Issue Date</b>	: 10-May-2023 10:27
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta





Page : 2 of 2  
 Work Order : CG2305497  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort

## 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).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
mg/L	milligrams per litre

>: greater than.

<: less than.

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

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

## Analytical Results

CG2305497-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT INFLUENT

Client sampling date / time: 02-May-2023 10:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	182	3.0	mg/L	E160	-	09-May-2023	927270
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	8.07	0.500	mg/L	E298	03-May-2023	03-May-2023	920709
Phosphate, ortho-, dissolved (as P)	14265-44-2	1.63	0.0200	mg/L	E378-U	03-May-2023	03-May-2023	920596
Phosphorus, total	7723-14-0	2.88	0.100	mg/L	E372-U	04-May-2023	06-May-2023	921931
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	76.8	20.0	mg/L	E550	-	04-May-2023	923233

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



## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2305497</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 03-May-2023 12:05</p> <p><b>Issue Date</b> : 10-May-2023 10:27</p>
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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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
HDPE [BOD HT 3d] PLANT INFLUENT	E550	02-May-2023	----	----	----		04-May-2023	3 days	2 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E298	02-May-2023	03-May-2023	----	----		03-May-2023	28 days	1 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
HDPE PLANT INFLUENT	E378-U	02-May-2023	03-May-2023	----	----		03-May-2023	3 days	1 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E372-U	02-May-2023	04-May-2023	----	----		06-May-2023	28 days	4 days	✓
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT INFLUENT	E160	02-May-2023	----	----	----		09-May-2023	7 days	7 days	✓

### Legend & Qualifier Definitions

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	920709	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	923233	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	920596	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	921931	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	927270	1	20	5.0	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	920709	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	923233	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	920596	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	921931	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	927270	1	20	5.0	5.0	✓
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	920709	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	923233	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	920596	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	921931	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	927270	1	20	5.0	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	920709	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	920596	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	921931	1	20	5.0	5.0	✓



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 Calgary - Environmental	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 $104 \pm 1^\circ\text{C}$ , 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.
Ammonia by Fluorescence	E298 Calgary - Environmental	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2305497</b></p> <p><b>Client</b> : Kicking Horse Mountain Resort LP</p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> :</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ                      250 344 6003</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 4</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 03-May-2023 12:05</p> <p><b>Date Analysis Commenced</b> : 03-May-2023</p> <p><b>Issue Date</b> : 10-May-2023 10:27</p>
---	--

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta



## General Comments

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

Key :

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

## Workorder Comments

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

## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 927270)</b>											
CG2305463-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	26.5	25.3	1.2	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 920596)</b>											
CG2305472-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0022	0.0024	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 920709)</b>											
CG2305490-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0718	0.0705	1.83%	20%	----
<b>Anions and Nutrients (QC Lot: 921931)</b>											
CG2305469-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0610	0.0660	7.96%	20%	----
<b>Aggregate Organics (QC Lot: 923233)</b>											
CG2305487-018	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----





### Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 927270)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 920596)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 920709)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 921931)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Aggregate Organics (QCLot: 923233)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 927270)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	92.6	85.0	115	---
<b>Anions and Nutrients (QCLot: 920596)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	110	80.0	120	---
<b>Anions and Nutrients (QCLot: 920709)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 921931)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	98.4	80.0	120	---
<b>Aggregate Organics (QCLot: 923233)</b>									
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	94.2	85.0	115	---



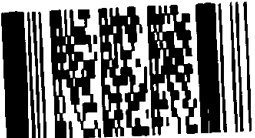
### Matrix Spike (MS) Report

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
<b>Anions and Nutrients (QCLot: 920596)</b>										
CG2305472-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0546 mg/L	0.05 mg/L	109	70.0	130	----
<b>Anions and Nutrients (QCLot: 920709)</b>										
CG2305490-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.118 mg/L	0.1 mg/L	118	75.0	125	----
<b>Anions and Nutrients (QCLot: 921931)</b>										
CG2305469-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----




<b>Report To</b>		<b>Report Format / Distribution</b>			<b>Service Requested</b> (Rush for routine analysis subject to availability)																
Company: Kicking Horse Mountain Water Utility Co. Ltd.		<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other			<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)																
Contact: Travis Jobin		<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax			<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT																
Address: 1500 Kicking Horse Trail		Email 1: tjobin@kickinghorseresort.com			<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT																
Phone: 250-344-6003 Fax:		Email 2: pmajer@skircr.com			<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT																
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		Email 3: mskyring@kickinghorseresort.com			<b>Analysis Request</b>																
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>Client / Project Information</b>			Please indicate below Filtered, Preserved or both (F, P, F/P)																
Company: Resorts of the Canadian Rockies		Job #: RCR - Kicking Horse Mountain Resort			BOD	TSS	Ortho Phosphate	Total P	N-NH4										Number of Containers		
Contact: Patrick Majer		PO / AFE:																			
Address: 1505 - 17th Ave SW Calgary AB		LSD:																			
Phone: Fax:		Quote #: Q33059																			
Lab Work Order # (lab use only)		ALS Contact: PW		Sampler: TJ																	
Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Ortho Phosphate	Total P	N-NH4												
	Plant Influent	02-May-23	10:00	Water	X	X	X	X	X												3
<p>Environmental Division          Calgary          Work Order Reference  <b>CG2305497</b></p>  <p>Telephone : +1 403 407 1800</p>																					

Special Instructions / Regulations with water or land use (CCME-Freshwater/Aquatic Life/BC CSR - Commercial/AB Tier 1- Natural, etc) / Hazardous Details

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)				SHIPMENT VERIFICATION (lab use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis Jobin	2-May-23	12:00		5/3	12:03	14.3°C				



## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>CG2308645</b>	Page	: 1 of 2
<b>Client</b>	: <b>Kicking Horse Mountain Resort LP</b>	<b>Laboratory</b>	: Calgary - Environmental
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Telephone</b>	: 250 344 6003	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: RCR - Kicking Horse Mountain Resort	<b>Date Samples Received</b>	: 28-Jun-2023 14:50
<b>PO</b>	: ----	<b>Date Analysis</b>	: 29-Jun-2023
<b>C-O-C number</b>	: ----	<b>Commenced</b>	
<b>Sampler</b>	: ----	<b>Issue Date</b>	: 06-Jul-2023 14:10
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta



Page : 2 of 2  
 Work Order : CG2308645  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort

## 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).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
mg/L	milligrams per litre

>: greater than.

<: less than.

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

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

## Analytical Results

CG2308645-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT EFFLUENT

Client sampling date / time: 27-Jun-2023 11:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	189	3.0	mg/L	E160/CG	-	04-Jul-2023	1020263
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	23.6	0.500	mg/L	E298/CG	29-Jun-2023	29-Jun-2023	1015905
Phosphate, ortho-, dissolved (as P)	14265-44-2	3.98	0.0010	mg/L	E378-U/CG	29-Jun-2023	29-Jun-2023	1016429
Phosphorus, total	7723-14-0	7.04	0.200	mg/L	E372-U/CG	29-Jun-2023	04-Jul-2023	1015356
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	196	75.0	mg/L	E550/CG	-	29-Jun-2023	1016998

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

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<p><b>Work Order</b> : <b>CG2308645</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 28-Jun-2023 14:50</p> <p><b>Issue Date</b> : 06-Jul-2023 14:09</p>
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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.

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### ***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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
HDPE [BOD HT 3d] PLANT EFFLUENT	E550	27-Jun-2023	----	----	----		29-Jun-2023	3 days	2 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) PLANT EFFLUENT	E298	27-Jun-2023	29-Jun-2023	----	----		29-Jun-2023	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
HDPE PLANT EFFLUENT	E378-U	27-Jun-2023	29-Jun-2023	----	----		29-Jun-2023	3 days	2 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
Amber glass total (sulfuric acid) PLANT EFFLUENT	E372-U	27-Jun-2023	29-Jun-2023	----	----		04-Jul-2023	28 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT EFFLUENT	E160	27-Jun-2023	----	----	----		04-Jul-2023	7 days	7 days	✓

### Legend & Qualifier Definitions

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





## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1015905	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1016998	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1016429	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1015356	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1020263	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1015905	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1016998	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1016429	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1015356	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1020263	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1015905	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1016998	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1016429	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1015356	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1020263	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1015905	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1016429	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1015356	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 Calgary - Environmental	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 $104 \pm 1^\circ\text{C}$ , 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.
Ammonia by Fluorescence	E298 Calgary - Environmental	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2308645</b></p> <p>Client : Kicking Horse Mountain Resort LP</p> <p>Contact : Travis Jobin</p> <p>Address : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p>Telephone :</p> <p>Project : RCR - Kicking Horse Mountain Resort</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : ----                    250 344 6003</p> <p>Site : ----</p> <p>Quote number : CG21-RESC100-0001</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 4</p> <p>Laboratory : Calgary - Environmental</p> <p>Account Manager : Patryk Wojciak</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 28-Jun-2023 14:50</p> <p>Date Analysis Commenced : 29-Jun-2023</p> <p>Issue Date : 06-Jul-2023 14:14</p>
---	--

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta



## General Comments

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

Key :

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

## Workorder Comments

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

## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 1020263)</b>											
CG2308580-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	10.3	11.7	1.4	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1015356)</b>											
CG2308640-010	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0606	0.0598	1.43%	20%	----
<b>Anions and Nutrients (QC Lot: 1015905)</b>											
CG2308619-022	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1016429)</b>											
CG2308624-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1016998)</b>											
CG2308640-002	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



### Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1020263)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1015356)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 1015905)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1016429)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Aggregate Organics (QCLot: 1016998)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 1020263)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	90.7	85.0	115	---
<b>Anions and Nutrients (QCLot: 1015356)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 1015905)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	---
<b>Anions and Nutrients (QCLot: 1016429)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	96.6	80.0	120	---
<b>Aggregate Organics (QCLot: 1016998)</b>									
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	103	85.0	115	---



### 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  $\geq 1 \times$  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
<b>Anions and Nutrients (QCLot: 1015356)</b>										
CG2308640-011	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 1015905)</b>										
CG2308619-023	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 1016429)</b>										
CG2308624-005	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0501 mg/L	0.05 mg/L	100	70.0	130	----



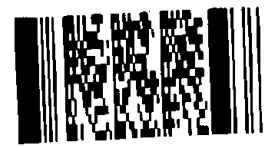
<b>Report To</b>	<b>Report Format / Distribution</b>	<b>Service Requested</b> (Rush for routine analysis subject to availability)
Company: Kicking Horse Mountain Water Utility Co. Ltd.	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other	<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)
Contact: Travis Jobin	<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax	<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address: 1500 Kicking Horse Trail	Email 1: tjobin@kickinghorseresort.com	<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Email 2: pmaier@skircr.com	<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Phone: 250-344-6003 Fax:	Email 3: mskyring@kickinghorseresort.com	<b>Analysis Request</b>	
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Client / Project Information</b>	Please indicate below Filtered, Preserved or both (F, P, F/P)	
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Job #: RCR - Kicking Horse Mountain Resort		
Company: Resorts of the Canadian Rockies	PO / AFE:		
Contact: Patrick Majer	LSD:		
Address: 1505 - 17th Ave SW Calgary AB			
Phone: Fax:	Quote #: Q33059		

Lab Work Order # (lab use only)	ALS Contact: PW	Sampler: TJ
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Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Ortho Phosphate	Total P	N-NH4									Number of Containers
	Plant Influent	27-Jun-23	1100	Water	X	X	X	X	X									3

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2308645**



Telephone : +1 403 407 1800

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc)

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)			SHIPMENT VERIFICATION (lab use only)				
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date	Time	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis Jobin	27-Jun-23	1200	<i>[Signature]</i>	6/23	151	19 °C				



## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2308645</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 2</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 28-Jun-2023 14:50</p> <p><b>Date Analysis</b> : 29-Jun-2023</p> <p><b>Commenced</b> : 06-Jul-2023 14:10</p> <p><b>Issue Date</b> : 06-Jul-2023 14:10</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta





Page : 2 of 2  
 Work Order : CG2308645  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort

## 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).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
mg/L	milligrams per litre

>: greater than.

<: less than.

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

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

## Analytical Results

CG2308645-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT EFFLUENT

Client sampling date / time: 27-Jun-2023 11:00

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	189	3.0	mg/L	E160/CG	-	04-Jul-2023	1020263
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	23.6	0.500	mg/L	E298/CG	29-Jun-2023	29-Jun-2023	1015905
Phosphate, ortho-, dissolved (as P)	14265-44-2	3.98	0.0010	mg/L	E378-U/CG	29-Jun-2023	29-Jun-2023	1016429
Phosphorus, total	7723-14-0	7.04	0.200	mg/L	E372-U/CG	29-Jun-2023	04-Jul-2023	1015356
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	196	75.0	mg/L	E550/CG	-	29-Jun-2023	1016998

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.



## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2308645</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : ----</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : Calgary - Environmental</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 28-Jun-2023 14:50</p> <p><b>Issue Date</b> : 06-Jul-2023 14:09</p>
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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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
HDPE [BOD HT 3d] PLANT EFFLUENT	E550	27-Jun-2023	----	----	----		29-Jun-2023	3 days	2 days	✓
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) PLANT EFFLUENT	E298	27-Jun-2023	29-Jun-2023	----	----		29-Jun-2023	28 days	2 days	✓
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
HDPE PLANT EFFLUENT	E378-U	27-Jun-2023	29-Jun-2023	----	----		29-Jun-2023	3 days	2 days	✓
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
Amber glass total (sulfuric acid) PLANT EFFLUENT	E372-U	27-Jun-2023	29-Jun-2023	----	----		04-Jul-2023	28 days	7 days	✓
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT EFFLUENT	E160	27-Jun-2023	----	----	----		04-Jul-2023	7 days	7 days	✓

### Legend & Qualifier Definitions

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1015905	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1016998	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1016429	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1015356	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1020263	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1015905	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1016998	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1016429	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1015356	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1020263	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1015905	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1016998	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1016429	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1015356	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1020263	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1015905	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1016429	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1015356	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 Calgary - Environmental	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 $104 \pm 1^\circ\text{C}$ , 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.
Ammonia by Fluorescence	E298 Calgary - Environmental	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U Calgary - Environmental	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U Calgary - Environmental	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.
Biochemical Oxygen Demand - 5 day	E550 Calgary - Environmental	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 Calgary - Environmental	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 Calgary - Environmental	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2308645</b></p> <p>Client : Kicking Horse Mountain Resort LP</p> <p>Contact : Travis Jobin</p> <p>Address : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p>Telephone :</p> <p>Project : RCR - Kicking Horse Mountain Resort</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : ---- 250 344 6003</p> <p>Site : ----</p> <p>Quote number : CG21-RESC100-0001</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 4</p> <p>Laboratory : Calgary - Environmental</p> <p>Account Manager : Patryk Wojciak</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 28-Jun-2023 14:50</p> <p>Date Analysis Commenced : 29-Jun-2023</p> <p>Issue Date : 06-Jul-2023 14:14</p>
--	--

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta



## General Comments

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

Key :

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

## Workorder Comments

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

## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 1020263)</b>											
CG2308580-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	10.3	11.7	1.4	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1015356)</b>											
CG2308640-010	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0606	0.0598	1.43%	20%	----
<b>Anions and Nutrients (QC Lot: 1015905)</b>											
CG2308619-022	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	<0.0050	<0.0050	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1016429)</b>											
CG2308624-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1016998)</b>											
CG2308640-002	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----





### Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1020263)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1015356)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 1015905)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1016429)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Aggregate Organics (QCLot: 1016998)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 1020263)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	90.7	85.0	115	---
<b>Anions and Nutrients (QCLot: 1015356)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	103	80.0	120	---
<b>Anions and Nutrients (QCLot: 1015905)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	101	85.0	115	---
<b>Anions and Nutrients (QCLot: 1016429)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	96.6	80.0	120	---
<b>Aggregate Organics (QCLot: 1016998)</b>									
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	103	85.0	115	---



### 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  $\geq 1x$  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
<b>Anions and Nutrients (QCLot: 1015356)</b>										
CG2308640-011	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 1015905)</b>										
CG2308619-023	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.109 mg/L	0.1 mg/L	109	75.0	125	----
<b>Anions and Nutrients (QCLot: 1016429)</b>										
CG2308624-005	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0501 mg/L	0.05 mg/L	100	70.0	130	----



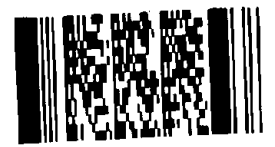
<b>Report To</b>	<b>Report Format / Distribution</b>	<b>Service Requested</b> (Rush for routine analysis subject to availability)
Company: Kicking Horse Mountain Water Utility Co. Ltd.	<input checked="" type="checkbox"/> Standard <input type="checkbox"/> Other	<input checked="" type="radio"/> Regular (Standard Turnaround Times - Business Days)
Contact: Travis Jobin	<input type="checkbox"/> PDF <input type="checkbox"/> Excel <input type="checkbox"/> Digital <input checked="" type="checkbox"/> Fax	<input type="radio"/> Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
Address: 1500 Kicking Horse Trail	Email 1: tjobin@kickinghorseresort.com	<input type="radio"/> Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
	Email 2: pmaier@skircr.com	<input type="radio"/> Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Phone: 250-344-6003 Fax:	Email 3: mskyring@kickinghorseresort.com	<b>Analysis Request</b>	
Invoice To Same as Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	<b>Client / Project Information</b>		Please indicate below Filtered, Preserved or both (F, P, F/P)
Hardcopy of Invoice with Report? <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	Job #: RCR - Kicking Horse Mountain Resort		
Company: Resorts of the Canadian Rockies	PO / AFE:		
Contact: Patrick Majer	LSD:		

Address: 1505 - 17th Ave SW Calgary AB	Quote #: Q33059
Phone: Fax:	ALS Contact: PW Sampler: TJ

Sample #	Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Ortho Phosphate	Total P	N-NH4	Number of Containers
	Plant Influent	27-Jun-23	1100	Water	X	X	X	X	X	3

Environmental Division  
 Calgary  
 Work Order Reference  
**CG2308645**



Telephone : +1 403 407 1800

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc)

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 provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)			SHIPMENT VERIFICATION (lab use only)				
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date	Time	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Travis Jobin	27-Jun-23	1200	<i>[Signature]</i>	6/28	151	19 °C				



## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2309747</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 2</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Jul-2023 12:00</p> <p><b>Date Analysis</b> : 19-Jul-2023</p> <p><b>Commenced</b> :</p> <p><b>Issue Date</b> : 24-Jul-2023 16:22</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta



Page : 2 of 2  
 Work Order : CG2309747  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort

## 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).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
mg/L	milligrams per litre

>: greater than.

<: less than.

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.

## Accreditation

Accreditation	Description	Laboratory	Address
A	CALA ISO/IEC 17025:2017	CG ALS Environmental - Calgary	2559 29th Street NE, Calgary, AB

Applicable accreditations are indicated in the Method/Lab column as superscripts.

## Qualifiers

Qualifier	Description
RRV	Reported result verified by repeat analysis.

## Analytical Results

CG2309747-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Plant Influent -

Client sampling date / time: 18-Jul-2023 10:50

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	255	7.5	mg/L	E160/CG A	-	20-Jul-2023	1046409
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	36.2	1.25	mg/L	E298/CG A	19-Jul-2023	19-Jul-2023	1046444
Phosphate, ortho-, dissolved (as P)	14265-44-2	5.76	0.100	mg/L	E378-U/CG A	19-Jul-2023	19-Jul-2023	1046463
Phosphorus, total	7723-14-0	9.90 <sup>RRV</sup>	1.00	mg/L	E372-U/CG A	19-Jul-2023	20-Jul-2023	1046330
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	254	75.0	mg/L	E550/CG A	-	19-Jul-2023	1046876

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.

## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2309747</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Jul-2023 12:00</p> <p><b>Issue Date</b> : 24-Jul-2023 16:24</p>
---	--

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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> Plant Influent	E550	18-Jul-2023	----	----	----		19-Jul-2023	3 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> Plant Influent	E298	18-Jul-2023	19-Jul-2023	28 days	1 days	✔	19-Jul-2023	27 days	0 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
<b>HDPE</b> Plant Influent	E378-U	18-Jul-2023	19-Jul-2023	3 days	1 days	✔	19-Jul-2023	2 days	0 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
<b>Amber glass total (sulfuric acid)</b> Plant Influent	E372-U	18-Jul-2023	19-Jul-2023	28 days	1 days	✔	20-Jul-2023	27 days	1 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> Plant Influent	E160	18-Jul-2023	----	----	----		20-Jul-2023	7 days	2 days	✔

### Legend & Qualifier Definitions

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





## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: \* = QC frequency outside specification; ✓ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1046444	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1046876	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1046463	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1046330	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1046409	1	17	5.8	5.0	✓
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1046444	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1046876	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1046463	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1046330	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1046409	1	17	5.8	5.0	✓
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1046444	1	20	5.0	5.0	✓
Biochemical Oxygen Demand - 5 day	E550	1046876	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1046463	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1046330	1	20	5.0	5.0	✓
TSS by Gravimetry	E160	1046409	1	17	5.8	5.0	✓
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1046444	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1046463	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1046330	1	20	5.0	5.0	✓



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 ALS Environmental - Calgary	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 $104 \pm 1^\circ\text{C}$ , 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.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2309747</b></p> <p><b>Client</b> : Kicking Horse Mountain Resort LP</p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> :</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ                    250 344 6003</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 4</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Jul-2023 12:00</p> <p><b>Date Analysis Commenced</b> : 19-Jul-2023</p> <p><b>Issue Date</b> : 24-Jul-2023 16:25</p>
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Anthony Calero	Supervisor - Inorganic	Calgary Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta



## General Comments

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

Key :

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

## Workorder Comments

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

## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 1046409)</b>											
CG2309726-002	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1046330)</b>											
CG2309729-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0125	0.0124	0.0002	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1046444)</b>											
CG2309744-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.330	0.333	1.12%	20%	----
<b>Anions and Nutrients (QC Lot: 1046463)</b>											
CG2309737-008	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1046876)</b>											
CG2309716-018	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	7.1	7.5	4.7%	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
<b>Physical Tests (QCLot: 1046409)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1046330)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 1046444)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1046463)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Aggregate Organics (QCLot: 1046876)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 1046409)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	101	85.0	115	---
<b>Anions and Nutrients (QCLot: 1046330)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	99.7	80.0	120	---
<b>Anions and Nutrients (QCLot: 1046444)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	95.2	85.0	115	---
<b>Anions and Nutrients (QCLot: 1046463)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	98.8	80.0	120	---
<b>Aggregate Organics (QCLot: 1046876)</b>									
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	102	85.0	115	---



### 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  $\geq$  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
<b>Anions and Nutrients (QCLot: 1046330)</b>										
CG2309729-002	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0514 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 1046444)</b>										
CG2309744-003	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 1046463)</b>										
CG2309737-009	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0512 mg/L	0.05 mg/L	102	70.0	130	----





## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2311757</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR- KICKING HORSE MOUNTAIN RESORT</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 2</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 25-Aug-2023 13:03</p> <p><b>Date Analysis</b> : 25-Aug-2023</p> <p><b>Commenced</b> : 25-Aug-2023</p> <p><b>Issue Date</b> : 31-Aug-2023 13:14</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta





## General Comments

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

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

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

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

**Key :**  
 CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
mg/L	milligrams per litre

>: greater than.

<: less than.

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
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).

## Analytical Results

CG2311757-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT INFLUENT

Client sampling date / time: 24-Aug-2023 10:40

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	245	3.0	mg/L	E160/CG	-	30-Aug-2023	1109184
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	36.1	0.500	mg/L	E298/CG	25-Aug-2023	25-Aug-2023	1104642
Phosphate, ortho-, dissolved (as P)	14265-44-2	4.49 <sup>DLHC</sup>	0.0500	mg/L	E378-U/CG	25-Aug-2023	25-Aug-2023	1104382
Phosphorus, total	7723-14-0	8.31	0.200	mg/L	E372-U/CG	26-Aug-2023	29-Aug-2023	1104753
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	261	75.0	mg/L	E550/CG	-	25-Aug-2023	1104967

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.



## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2311757</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR- KICKING HORSE MOUNTAIN RESORT</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 25-Aug-2023 13:03</p> <p><b>Issue Date</b> : 31-Aug-2023 13:10</p>
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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)***

- No Analysis Holding Time Outliers exist.

### ***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		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
HDPE [BOD HT 3d] PLANT INFLUENT	E550	24-Aug-2023	----	----	----		25-Aug-2023	3 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E298	24-Aug-2023	25-Aug-2023	28 days	1 days	✔	25-Aug-2023	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001</b>										
HDPE PLANT INFLUENT	E378-U	24-Aug-2023	25-Aug-2023	3 days	1 days	✔	25-Aug-2023	3 days	1 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E372-U	24-Aug-2023	26-Aug-2023	28 days	2 days	✔	29-Aug-2023	28 days	5 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT INFLUENT	E160	24-Aug-2023	----	----	----		30-Aug-2023	7 days	6 days	✔

### Legend & Qualifier Definitions

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		Evaluation
			QC	Regular	Actual	Expected	
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1104642	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1104967	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1104382	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1104753	1	3	33.3	5.0	✔
TSS by Gravimetry	E160	1109184	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1104642	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1104967	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1104382	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1104753	1	3	33.3	5.0	✔
TSS by Gravimetry	E160	1109184	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1104642	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1104967	1	15	6.6	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1104382	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1104753	1	3	33.3	5.0	✔
TSS by Gravimetry	E160	1109184	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1104642	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1104382	1	17	5.8	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1104753	1	3	33.3	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 ALS Environmental - Calgary	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 $104 \pm 1^\circ\text{C}$ , 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.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2311757</b></p> <p>Client : Kicking Horse Mountain Resort LP</p> <p>Contact : Travis Jobin</p> <p>Address : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p>Telephone :</p> <p>Project : RCR- KICKING HORSE MOUNTAIN RESORT</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : TJ                      250 344 6003</p> <p>Site : ----</p> <p>Quote number : CG21-RESC100-0001</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 4</p> <p>Laboratory : ALS Environmental - Calgary</p> <p>Account Manager : Patryk Wojciak</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 25-Aug-2023 13:03</p> <p>Date Analysis Commenced : 25-Aug-2023</p> <p>Issue Date : 31-Aug-2023 13:21</p>
--	--

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta



## General Comments

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

Key :

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

## Workorder Comments

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

## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 1109184)</b>											
CG2311693-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1104382)</b>											
CG2311735-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1104642)</b>											
CG2311752-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0742	0.0733	1.22%	20%	----
<b>Anions and Nutrients (QC Lot: 1104753)</b>											
CG2311750-004	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0184	0.0175	0.0009	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1104967)</b>											
CG2311735-006	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----





### Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1109184)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1104382)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Anions and Nutrients (QCLot: 1104642)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1104753)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Aggregate Organics (QCLot: 1104967)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 1109184)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	104	85.0	115	---
<b>Anions and Nutrients (QCLot: 1104382)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	94.5	80.0	120	---
<b>Anions and Nutrients (QCLot: 1104642)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 1104753)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	106	80.0	120	---
<b>Aggregate Organics (QCLot: 1104967)</b>									
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	101	85.0	115	---



### 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  $\geq 1x$  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
<b>Anions and Nutrients (QCLot: 1104382)</b>										
CG2311735-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0447 mg/L	0.05 mg/L	89.4	70.0	130	----
<b>Anions and Nutrients (QCLot: 1104642)</b>										
CG2311757-001	PLANT INFLUENT	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 1104753)</b>										
CG2311752-001	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----





## CERTIFICATE OF ANALYSIS

<b>Work Order</b>	: <b>CG2316019</b>	Page	: 1 of 2
<b>Client</b>	: <b>Kicking Horse Mountain Resort LP</b>	<b>Laboratory</b>	: ALS Environmental - Calgary
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Telephone</b>	: 250 344 6003	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: RCR - Kicking Horse Mountain Resort	<b>Date Samples Received</b>	: 09-Nov-2023 14:30
<b>PO</b>	: ----	<b>Date Analysis</b>	: 09-Nov-2023
<b>C-O-C number</b>	: ----	<b>Commenced</b>	
<b>Sampler</b>	: TJ	<b>Issue Date</b>	: 16-Nov-2023 11:10
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta



Page : 2 of 2  
 Work Order : CG2316019  
 Client : Kicking Horse Mountain Resort LP  
 Project : RCR - Kicking Horse Mountain Resort

## 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).

Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

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.

Unit	Description
mg/L	milligrams per litre

>: greater than.

<: less than.

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

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

## Analytical Results

CG2316019-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: PLANT INFLUENT

Client sampling date / time: 09-Nov-2023 09:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	64.6	3.0	mg/L	E160/CG	-	15-Nov-2023	1236819
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	10.0	1.25	mg/L	E298/CG	09-Nov-2023	09-Nov-2023	1231434
Phosphate, ortho-, dissolved (as P)	14265-44-2	1.71	0.0200	mg/L	E378-U/CG	10-Nov-2023	10-Nov-2023	1231852
Phosphorus, total	7723-14-0	2.94	0.100	mg/L	E372-U/CG	10-Nov-2023	12-Nov-2023	1231359
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	69.6	20.0	mg/L	E550/CG	-	10-Nov-2023	1233407

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.



## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2316019</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : TJ</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 09-Nov-2023 14:30</p> <p><b>Issue Date</b> : 16-Nov-2023 11:10</p>
---	--

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)***

- No Analysis Holding Time Outliers exist.

### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
HDPE [BOD HT 3d] PLANT INFLUENT	E550	09-Nov-2023	----	----	----		10-Nov-2023	3 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E298	09-Nov-2023	09-Nov-2023	28 days	0 days	✔	09-Nov-2023	28 days	0 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>										
HDPE PLANT INFLUENT	E378-U	09-Nov-2023	10-Nov-2023	3 days	1 days	✔	10-Nov-2023	3 days	1 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
Amber glass total (sulfuric acid) PLANT INFLUENT	E372-U	09-Nov-2023	10-Nov-2023	28 days	1 days	✔	12-Nov-2023	28 days	3 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
HDPE PLANT INFLUENT	E160	09-Nov-2023	----	----	----		15-Nov-2023	7 days	6 days	✔

### Legend & Qualifier Definitions

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





## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1231434	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1233407	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1231852	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1231359	1	13	7.6	5.0	✔
TSS by Gravimetry	E160	1236819	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1231434	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1233407	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1231852	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1231359	1	13	7.6	5.0	✔
TSS by Gravimetry	E160	1236819	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1231434	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1233407	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1231852	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1231359	1	13	7.6	5.0	✔
TSS by Gravimetry	E160	1236819	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1231434	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1231852	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1231359	1	13	7.6	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 ALS Environmental - Calgary	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 $104 \pm 1^\circ\text{C}$ , 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.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

**Work Order** : **CG2316019**  
**Client** : Kicking Horse Mountain Resort LP  
**Contact** : Travis Jobin  
**Address** : 1500 Kicking Horse Trail PO BOX 330  
 Golden BC Canada V0A 1H0  
**Telephone** :  
**Project** : RCR - Kicking Horse Mountain Resort  
**PO** : ----  
**C-O-C number** : ----  
**Sampler** : TJ 250 344 6003  
**Site** : ----  
**Quote number** : CG21-RESC100-0001  
**No. of samples received** : 1  
**No. of samples analysed** : 1

**Page** : 1 of 4  
**Laboratory** : ALS Environmental - Calgary  
**Account Manager** : Patryk Wojciak  
**Address** : 2559 29th Street NE  
 Calgary, Alberta Canada T1Y 7B5  
**Telephone** : +1 403 407 1800  
**Date Samples Received** : 09-Nov-2023 14:30  
**Date Analysis Commenced** : 09-Nov-2023  
**Issue Date** : 16-Nov-2023 11:09

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Catherine Fong	Lab Analyst	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta



## General Comments

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

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- 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

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## Laboratory Duplicate (DUP) Report

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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
<b>Physical Tests (QC Lot: 1236819)</b>											
CG2316005-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	<3.0	<3.0	0	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1231359)</b>											
CG2316009-008	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0100	mg/L	0.266	0.261	2.06%	20%	----
<b>Anions and Nutrients (QC Lot: 1231434)</b>											
CG2316009-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.165	0.165	0.182%	20%	----
<b>Anions and Nutrients (QC Lot: 1231852)</b>											
CG2315995-001	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0078	0.0087	0.0008	Diff <2x LOR	----
<b>Aggregate Organics (QC Lot: 1233407)</b>											
CG2316028-001	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	3.9	4.3	8.3%	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
<b>Physical Tests (QCLot: 1236819)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1231359)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 1231434)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1231852)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Aggregate Organics (QCLot: 1233407)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 1236819)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	101	85.0	115	---
<b>Anions and Nutrients (QCLot: 1231359)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	98.3	80.0	120	---
<b>Anions and Nutrients (QCLot: 1231434)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	103	85.0	115	---
<b>Anions and Nutrients (QCLot: 1231852)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	102	80.0	120	---
<b>Aggregate Organics (QCLot: 1233407)</b>									
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	93.1	85.0	115	---



### 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  $\geq$  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
<b>Anions and Nutrients (QCLot: 1231359)</b>										
CG2316009-009	Anonymous	Phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130	----
<b>Anions and Nutrients (QCLot: 1231434)</b>										
CG2316009-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 1231852)</b>										
CG2315995-002	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0496 mg/L	0.05 mg/L	99.3	70.0	130	----





## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2317818</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : Travis Jobin</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 2</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Dec-2023 09:10</p> <p><b>Date Analysis</b> : 19-Dec-2023</p> <p><b>Commenced</b> : 19-Dec-2023</p> <p><b>Issue Date</b> : 28-Dec-2023 10:01</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta





## General Comments

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

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

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

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

**Key :**  
 CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
mg/L	milligrams per litre

>: greater than.

<: less than.

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
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
PHA	pH adjusted before analysis.

## Analytical Results

CG2317818-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Plant Influent -

Client sampling date / time: 18-Dec-2023 09:50

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	329 <sup>DLHC</sup>	5.0	mg/L	E160/CG	-	20-Dec-2023	1282894
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	38.8	0.500	mg/L	E298/CG	19-Dec-2023	19-Dec-2023	1282735
Phosphate, ortho-, dissolved (as P)	14265-44-2	4.95	0.100	mg/L	E378-U/CG	19-Dec-2023	19-Dec-2023	1282766
Phosphorus, total	7723-14-0	9.73	0.200	mg/L	E372-U/CG	19-Dec-2023	20-Dec-2023	1282684
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	238 <sup>PHA</sup>	75.0	mg/L	E550/CG	-	19-Dec-2023	1283128

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

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<p><b>Work Order</b> : <b>CG2317818</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : Travis Jobin</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Dec-2023 09:10</p> <p><b>Issue Date</b> : 28-Dec-2023 10:01</p>
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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.

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### ***Workorder Comments***

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

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### ***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)***

- No Analysis Holding Time Outliers exist.

### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> Plant Influent	E550	18-Dec-2023	----	----	----		19-Dec-2023	3 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> Plant Influent	E298	18-Dec-2023	19-Dec-2023	28 days	1 days	✔	19-Dec-2023	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>										
<b>HDPE</b> Plant Influent	E378-U	18-Dec-2023	19-Dec-2023	3 days	1 days	✔	19-Dec-2023	3 days	1 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
<b>Amber glass total (sulfuric acid)</b> Plant Influent	E372-U	18-Dec-2023	19-Dec-2023	28 days	1 days	✔	20-Dec-2023	28 days	2 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> Plant Influent	E160	18-Dec-2023	----	----	----		20-Dec-2023	7 days	2 days	✔

### Legend & Qualifier Definitions

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



## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1282735	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1283128	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1282766	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1282684	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1282894	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1282735	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1283128	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1282766	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1282684	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1282894	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1282735	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1283128	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1282766	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1282684	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1282894	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1282735	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1282766	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1282684	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 ALS Environmental - Calgary	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 $104 \pm 1^\circ\text{C}$ , 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.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2317818</b></p> <p>Client : Kicking Horse Mountain Resort LP</p> <p>Contact : Travis Jobin</p> <p>Address : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p>Telephone :</p> <p>Project : RCR - Kicking Horse Mountain Resort</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : Travis Jobin 250 344 6003</p> <p>Site : ----</p> <p>Quote number : CG21-RESC100-0001</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 4</p> <p>Laboratory : ALS Environmental - Calgary</p> <p>Account Manager : Patryk Wojciak</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 19-Dec-2023 09:10</p> <p>Date Analysis Commenced : 19-Dec-2023</p> <p>Issue Date : 28-Dec-2023 10:01</p>
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta



## General Comments

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

Key :

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

## Workorder Comments

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

## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 1282894)</b>											
CG2317643-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	4.8	4.6	0.2	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1282684)</b>											
CG2317776-009	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0141	0.0140	0.00009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1282735)</b>											
CG2317786-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0500	mg/L	1.32	1.30	1.17%	20%	----
<b>Anions and Nutrients (QC Lot: 1282766)</b>											
CG2317818-001	Plant Influent	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.100	mg/L	4.95	4.86	1.83%	20%	----
<b>Aggregate Organics (QC Lot: 1283128)</b>											
CG2317808-006	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----





### Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1282894)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1282684)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 1282735)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1282766)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Aggregate Organics (QCLot: 1283128)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 1282894)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	109	85.0	115	---
<b>Anions and Nutrients (QCLot: 1282684)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	89.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 1282735)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.3	85.0	115	---
<b>Anions and Nutrients (QCLot: 1282766)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	97.1	80.0	120	---
<b>Aggregate Organics (QCLot: 1283128)</b>									
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	96.5	85.0	115	---



### 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  $\geq$  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
<b>Anions and Nutrients (QCLot: 1282684)</b>										
CG2317776-010	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0517 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 1282735)</b>										
CG2317786-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 1282766)</b>										
CG2317820-008	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0500 mg/L	0.05 mg/L	100.0	70.0	130	----





## CERTIFICATE OF ANALYSIS

<p><b>Work Order</b> : <b>CG2317818</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : Travis Jobin</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 2</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary AB Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Dec-2023 09:10</p> <p><b>Date Analysis</b> : 19-Dec-2023</p> <p><b>Commenced</b> : 19-Dec-2023</p> <p><b>Issue Date</b> : 28-Dec-2023 10:01</p>
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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

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Hannah Phung	Lab Assistant	Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Inorganics, Calgary, Alberta



## General Comments

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

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

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

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

**Key :**  
 CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
mg/L	milligrams per litre

>: greater than.

<: less than.

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
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).
PHA	pH adjusted before analysis.

## Analytical Results

CG2317818-001

Sub-Matrix: Water

(Matrix: Water)

Client sample ID: Plant Influent -

Client sampling date / time: 18-Dec-2023 09:50

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Physical Tests</b>								
Solids, total suspended [TSS]	----	329 <sup>DLHC</sup>	5.0	mg/L	E160/CG	-	20-Dec-2023	1282894
<b>Anions and Nutrients</b>								
Ammonia, total (as N)	7664-41-7	38.8	0.500	mg/L	E298/CG	19-Dec-2023	19-Dec-2023	1282735
Phosphate, ortho-, dissolved (as P)	14265-44-2	4.95	0.100	mg/L	E378-U/CG	19-Dec-2023	19-Dec-2023	1282766
Phosphorus, total	7723-14-0	9.73	0.200	mg/L	E372-U/CG	19-Dec-2023	20-Dec-2023	1282684
<b>Aggregate Organics</b>								
Biochemical oxygen demand [BOD]	----	238 <sup>PHA</sup>	75.0	mg/L	E550/CG	-	19-Dec-2023	1283128

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.



## QUALITY CONTROL INTERPRETIVE REPORT

<p><b>Work Order</b> : <b>CG2317818</b></p> <p><b>Client</b> : <b>Kicking Horse Mountain Resort LP</b></p> <p><b>Contact</b> : Travis Jobin</p> <p><b>Address</b> : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p><b>Telephone</b> : 250 344 6003</p> <p><b>Project</b> : RCR - Kicking Horse Mountain Resort</p> <p><b>PO</b> : ----</p> <p><b>C-O-C number</b> : ----</p> <p><b>Sampler</b> : Travis Jobin</p> <p><b>Site</b> : ----</p> <p><b>Quote number</b> : CG21-RESC100-0001</p> <p><b>No. of samples received</b> : 1</p> <p><b>No. of samples analysed</b> : 1</p>	<p><b>Page</b> : 1 of 5</p> <p><b>Laboratory</b> : ALS Environmental - Calgary</p> <p><b>Account Manager</b> : Patryk Wojciak</p> <p><b>Address</b> : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p><b>Telephone</b> : +1 403 407 1800</p> <p><b>Date Samples Received</b> : 19-Dec-2023 09:10</p> <p><b>Issue Date</b> : 28-Dec-2023 10:01</p>
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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)***

- No Analysis Holding Time Outliers exist.

### ***Outliers : Frequency of Quality Control Samples***

- No Quality Control Sample Frequency Outliers occur.



## Analysis Holding Time Compliance

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

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

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

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

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group : Analytical Method Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
<b>Aggregate Organics : Biochemical Oxygen Demand - 5 day</b>										
<b>HDPE [BOD HT 3d]</b> Plant Influent	E550	18-Dec-2023	----	----	----		19-Dec-2023	3 days	1 days	✔
<b>Anions and Nutrients : Ammonia by Fluorescence</b>										
<b>Amber glass total (sulfuric acid)</b> Plant Influent	E298	18-Dec-2023	19-Dec-2023	28 days	1 days	✔	19-Dec-2023	28 days	1 days	✔
<b>Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)</b>										
<b>HDPE</b> Plant Influent	E378-U	18-Dec-2023	19-Dec-2023	3 days	1 days	✔	19-Dec-2023	3 days	1 days	✔
<b>Anions and Nutrients : Total Phosphorus by Colourimetry (0.002 mg/L)</b>										
<b>Amber glass total (sulfuric acid)</b> Plant Influent	E372-U	18-Dec-2023	19-Dec-2023	28 days	1 days	✔	20-Dec-2023	28 days	2 days	✔
<b>Physical Tests : TSS by Gravimetry</b>										
<b>HDPE</b> Plant Influent	E160	18-Dec-2023	----	----	----		20-Dec-2023	7 days	2 days	✔

### Legend & Qualifier Definitions

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





## Quality Control Parameter Frequency Compliance

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

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
<b>Analytical Methods</b>							
<b>Laboratory Duplicates (DUP)</b>							
Ammonia by Fluorescence	E298	1282735	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1283128	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1282766	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1282684	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1282894	1	20	5.0	5.0	✔
<b>Laboratory Control Samples (LCS)</b>							
Ammonia by Fluorescence	E298	1282735	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1283128	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1282766	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1282684	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1282894	1	20	5.0	5.0	✔
<b>Method Blanks (MB)</b>							
Ammonia by Fluorescence	E298	1282735	1	20	5.0	5.0	✔
Biochemical Oxygen Demand - 5 day	E550	1283128	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1282766	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1282684	1	20	5.0	5.0	✔
TSS by Gravimetry	E160	1282894	1	20	5.0	5.0	✔
<b>Matrix Spikes (MS)</b>							
Ammonia by Fluorescence	E298	1282735	1	20	5.0	5.0	✔
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U	1282766	1	20	5.0	5.0	✔
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U	1282684	1	20	5.0	5.0	✔



## Methodology References and Summaries

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

Analytical Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
TSS by Gravimetry	E160 ALS Environmental - Calgary	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 $104 \pm 1^\circ\text{C}$ , 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.
Ammonia by Fluorescence	E298 ALS Environmental - Calgary	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)
Total Phosphorus by Colourimetry (0.002 mg/L)	E372-U ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level 0.001 mg/L)	E378-U ALS Environmental - Calgary	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.
Biochemical Oxygen Demand - 5 day	E550 ALS Environmental - Calgary	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.  Free chlorine is a negative interference in the BOD method; please advise ALS when free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Preparation for Ammonia	EP298 ALS Environmental - Calgary	Water		Sample preparation for Preserved Nutrients Water Quality Analysis.
Digestion for Total Phosphorus in water	EP372 ALS Environmental - Calgary	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.

## QUALITY CONTROL REPORT

<p><b>Work Order</b> : <b>CG2317818</b></p> <p>Client : Kicking Horse Mountain Resort LP</p> <p>Contact : Travis Jobin</p> <p>Address : 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0</p> <p>Telephone :</p> <p>Project : RCR - Kicking Horse Mountain Resort</p> <p>PO : ----</p> <p>C-O-C number : ----</p> <p>Sampler : Travis Jobin 250 344 6003</p> <p>Site : ----</p> <p>Quote number : CG21-RESC100-0001</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 4</p> <p>Laboratory : ALS Environmental - Calgary</p> <p>Account Manager : Patryk Wojciak</p> <p>Address : 2559 29th Street NE Calgary, Alberta Canada T1Y 7B5</p> <p>Telephone : +1 403 407 1800</p> <p>Date Samples Received : 19-Dec-2023 09:10</p> <p>Date Analysis Commenced : 19-Dec-2023</p> <p>Issue Date : 28-Dec-2023 10:01</p>
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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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Hannah Phung	Lab Assistant	Calgary Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Kevin Baxter	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Calgary Inorganics, Calgary, Alberta
Shirley Li	Team Leader - Inorganics	Calgary Inorganics, Calgary, Alberta



## General Comments

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

Key :

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

## Workorder Comments

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

## Laboratory Duplicate (DUP) Report

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

Sub-Matrix: **Water**

					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
<b>Physical Tests (QC Lot: 1282894)</b>											
CG2317643-001	Anonymous	Solids, total suspended [TSS]	----	E160	3.0	mg/L	4.8	4.6	0.2	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1282684)</b>											
CG2317776-009	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.0141	0.0140	0.00009	Diff <2x LOR	----
<b>Anions and Nutrients (QC Lot: 1282735)</b>											
CG2317786-001	Anonymous	Ammonia, total (as N)	7664-41-7	E298	0.0500	mg/L	1.32	1.30	1.17%	20%	----
<b>Anions and Nutrients (QC Lot: 1282766)</b>											
CG2317818-001	Plant Influent	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.100	mg/L	4.95	4.86	1.83%	20%	----
<b>Aggregate Organics (QC Lot: 1283128)</b>											
CG2317808-006	Anonymous	Biochemical oxygen demand [BOD]	----	E550	2.0	mg/L	<2.0	<2.0	0.0%	30%	----



### Method Blank (MB) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
<b>Physical Tests (QCLot: 1282894)</b>						
Solids, total suspended [TSS]	---	E160	3	mg/L	<3.0	---
<b>Anions and Nutrients (QCLot: 1282684)</b>						
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	<0.0020	---
<b>Anions and Nutrients (QCLot: 1282735)</b>						
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	<0.0050	---
<b>Anions and Nutrients (QCLot: 1282766)</b>						
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	<0.0010	---
<b>Aggregate Organics (QCLot: 1283128)</b>						
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	<2.0	---

### Laboratory Control Sample (LCS) Report

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

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		Qualifier
					Concentration	LCS	Low	High	
<b>Physical Tests (QCLot: 1282894)</b>									
Solids, total suspended [TSS]	---	E160	3	mg/L	150 mg/L	109	85.0	115	---
<b>Anions and Nutrients (QCLot: 1282684)</b>									
Phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.03 mg/L	89.2	80.0	120	---
<b>Anions and Nutrients (QCLot: 1282735)</b>									
Ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	98.3	85.0	115	---
<b>Anions and Nutrients (QCLot: 1282766)</b>									
Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	97.1	80.0	120	---
<b>Aggregate Organics (QCLot: 1283128)</b>									
Biochemical oxygen demand [BOD]	---	E550	2	mg/L	198 mg/L	96.5	85.0	115	---



### 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  $\geq$  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
<b>Anions and Nutrients (QCLot: 1282684)</b>										
CG2317776-010	Anonymous	Phosphorus, total	7723-14-0	E372-U	0.0517 mg/L	0.05 mg/L	103	70.0	130	----
<b>Anions and Nutrients (QCLot: 1282735)</b>										
CG2317786-002	Anonymous	Ammonia, total (as N)	7664-41-7	E298	ND mg/L	0.1 mg/L	ND	75.0	125	----
<b>Anions and Nutrients (QCLot: 1282766)</b>										
CG2317820-008	Anonymous	Phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0500 mg/L	0.05 mg/L	100.0	70.0	130	----






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## CERTIFICATE OF ANALYSIS

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<b>Work Order</b>	: <b>CG2316018</b>	Page	: 1 of 2
<b>Client</b>	: <b>Kicking Horse Mountain Resort LP</b>	<b>Laboratory</b>	: ALS Environmental - Calgary
<b>Contact</b>	: Travis Jobin	<b>Account Manager</b>	: Patryk Wojciak
<b>Address</b>	: 1500 Kicking Horse Trail PO BOX 330 Golden BC Canada V0A 1H0	<b>Address</b>	: 2559 29th Street NE Calgary AB Canada T1Y 7B5
<b>Telephone</b>	: 250 344 6003	<b>Telephone</b>	: +1 403 407 1800
<b>Project</b>	: RCR - Kicking Horse Mountain Resort	<b>Date Samples Received</b>	: 09-Nov-2023 14:30
<b>PO</b>	: ----	<b>Date Analysis</b>	: 10-Nov-2023
		<b>Commenced</b>	
<b>C-O-C number</b>	: ----	<b>Issue Date</b>	: 07-Dec-2023 08:34
<b>Sampler</b>	: TJ		
<b>Site</b>	: ----		
<b>Quote number</b>	: CG21-RESC100-0001		
<b>No. of samples received</b>	: 1		
<b>No. of samples analysed</b>	: 1		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Patryk Wojciak	Account Manager	External Subcontracting, Calgary, Alberta





## General Comments

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

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

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

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

**Key :**  
 CAS Number: Chemical Abstracts Services number is a unique identifier assigned to discrete substances  
 LOR: Limit of Reporting (detection limit).  
 Measurement Uncertainty: The reported uncertainties in this report are expanded uncertainties calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.  
 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.

Unit	Description
-	no units

>: greater than.  
 <: less than.

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

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

## Analytical Results

CG2316018-001

Sub-Matrix: **Water**

(Matrix: **Water**)

Client sample ID: Plant Effluent

Client sampling date / time: 09-Nov-2023 08:30

Analyte	CAS Number	Result	LOR	Unit	Method/Lab	Prep Date	Analysis Date	QCLot
<b>Bioassays</b>								
Trout bioassay LC50	----	See attached	-	-	TRT-LC50-96/2F	-	10-Nov-2023	-

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.

# Trout Test Summary

Client: LS Environmental - Calga

Client #: ALS106

Reference #: 2324-0739

Date Collected: 2023-11-09

Date Received: 2023-11-10

Date: 2023-11-14

If you have any questions, please contact the Laboratory Supervisor or Technical Lead. Please note these results are preliminary and have not gone through final quality verification.

	Sample Strength %	Cumulative Mortality %				Endpoint/Comments
		24 hrs	48 hrs	72 hrs	96 hrs	
Description: <u>CG2316018-001 Plant Effluent - E256696</u>	Control	0	0	0	0	
Method: <u>Rainbow trout</u>	6.25	0	0	0	0	
Technician: <u>KZ</u>	12.5	0	0	0	0	
Started: <u>2023/11/10</u>	25	0	0	0	0	
Ended: <u>2023/11/14</u>	50	0	0	0	0	
	100	0	0	0	0	

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The document(s) included in this transmission are intended only for the recipient(s) named above and contain privileged and confidential information. Any unauthorized disclosure, dissemination or copying of this transmission is strictly prohibited. If you have received this transmission in error, please immediately notify us by telephone and destroy the transmission. Thank you.

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# Acute Toxicity Test Results

Sample collected November 9, 2023

Final Report

December 1, 2023

Submitted to: **ALS Environmental – Calgary**  
Calgary, AB

## SAMPLE INFORMATION

Sample ID/ Internal ID	Dates		Rainbow trout test initiation	Receipt temperature
	Collected	Received		
CG2316018-001 Plant Effluent – E256696 2324-0739	9-Nov-23 at 0830h	10-Nov-23 at 1120h	10-Nov-23 at 1355h	5.7°C

## TEST TYPES

- Rainbow trout 96-h LC50 test

## RESULTS

### Toxicity test results

Sample ID	Rainbow trout LC50 (% v/v)
CG2316018-001 Plant Effluent – E256696	>100

LC = Lethal Concentration

## QA/QC

QA/QC summary	Rainbow trout
Reference toxicant LC50 (95% CL)	4.7 (4.3-5.0) g/L KCl <sup>1</sup>
Reference toxicant historical mean (2 SD Range)	3.8 (3.1-4.7) g/L KCl
Reference toxicant CV	7.2%
Organism health history	Acceptable
Protocol deviations	None
Water quality range deviations	None
Control performance	Acceptable
Test performance	Valid

<sup>1</sup> Test date, November 8, 2023

LC = Lethal Concentration, CL = Confidence Limit, SD = Standard Deviation, CV = Coefficient of Variation



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Report By:  
Zhijun Zhao  
Laboratory Assistant



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Reviewed By:  
Mia Fearey, BSc, BIT  
Laboratory Supervisor

This report has been prepared by Nautilus Environmental Company Inc. based on data and/or samples provided by our client and the results of this study are for their sole benefit. Any reliance on the data by a third party is at the sole and exclusive risk of that party. The results presented here relate only to the samples tested.

**APPENDIX A – Summary of test conditions**

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**Table 1. Summary of test conditions: 96-h rainbow trout (*Oncorhynchus mykiss*) survival test.**

Test species	<i>Oncorhynchus mykiss</i>
Organism source	Fish hatchery
Organism age	Juvenile
Test type	Static
Test duration	96 hours
Test vessel	5 gallon glass aquariums
Test volume	10 - 20 L, depending on size of fish
Test solution depth	Minimum 15 cm
Test concentrations	Five concentrations, plus laboratory control
Test replicates	1 per treatment
Number of organisms	10 per replicate
Control/dilution water	De-chlorinated City of Calgary tap water
Test solution renewal	None
Test temperature	15 ± 1°C
Feeding	None
Light intensity	100 to 500 lux
Photoperiod	16 hours light/8 hours dark
Aeration	6.5 ± 1 mL/min/L
Test Measurements	pH, conductivity, dissolved oxygen and temperature were measured at test initiation and test completion; salinity measured at test initiation; evaluated for survival daily
Test protocol	Environment Canada (2000), EPS 1/RM/13, with 2007 & 2016 amendments
Statistical software	None
Test endpoints	96-hour LC50
Test acceptability criteria for controls	Survival ≥ 90%
Reference toxicant	Potassium chloride (KCl)

**APPENDIX B – Toxicity test data**

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Method TRD Client ALS106 Reference 2324-0739 Chamber: 2

**Test Log**

Day	Date	Time	Initial	Chem. Cart	Double Counted	Daily Data Review	Initial pH: Initial EC (µS/cm): Salinity (ppt):
0	2023/11/10	1355 *	KZ	7	CC	km	7.6 961 3
1	2023/11/11	0840	MS	-	-	BS	
2	2023/11/12	0815	MS	-	-	NA	
3	2023/11/13	0830	PK	-	-	NA	
4	2023/11/14	0840	JK/JP	7	-	CC	

**Sample Information**

Note: \* ; time when the test was loaded with fish

**Sample Pre-Aeration**

Aeration rate adjusted to 6.5 +/- 1 mL/min/L

Preaeration time

DO(mg/L) of 100%

Temp (°C) of 100%

yes/no	0 hours	0.5 hours	1 hour	1.5 hours	2 hours
	8.6	8.9			
	14				

DO in mg/L (70% - 100% saturation)\*\*

6.2 mg/L - 8.9 mg/L at 14°C

6.1 mg/L - 8.8 mg/L at 15°C

6.0 mg/L - 8.6 mg/L at 16°C

\*\*corrected for altitude

**Test Chemistry and Biology**

Conc.	CTL	6.25	12.5	25	50	100
-------	-----	------	------	----	----	-----

pH (units) (range: 5.5-8.5)

Day 0	7.7	7.7	7.6	7.6	7.6	7.6
Day 4	7.6	7.7	7.8	7.8	7.8	7.9

EC (µS/cm)

Day 0	386	427	458	497	611	854
Day 4	430	471	505	548	670	927

DO (mg/L) (70-100% saturation at test temp.)

Day 0	8.8	8.8	8.9	8.9	8.9	8.9
Day 4	8.8	8.8	8.8	8.8	8.8	8.8

Temperature (°C) (range: 14-16°C)

Day 0	15	15	14	14	14	14
Day 4	15	15	15	15	15	15

Number Alive (In brackets number stressed)

Day 0	10	10	10	10	10	10
Day 1	10	10	10	10	10	10
Day 2	10	10	10	10	10	10
Day 3	10	10	10	10	10	10
Day 4	10	10	10	10	10	10

Validity Criteria: must be ≤ 10% mortality and/or stressed behavior in the control

Unless otherwise noted, behavior is considered to be normal

Control Organism Data			Test Organism Information	
Control Fish	Length (cm)	Weight (g)	Batch	
1	3.5	0.4	20231005TR	
2	3.9	0.5	Source	LSL
3	3.7	0.5	Tank #	6
4	4.4	0.8	Held at 15± 2°C for ≥14 days	Y
5	3.6	0.4	(must be ≥14 days)	
6	3.4	0.5	Percent stock mortality	0
7	3.9	0.4	(7 days prior to test, must be <2%)	
8	4.2	0.5	Test Volume (L)	18
9	4.5	0.8		
10	3.2	0.34		
Loading Density (g/L):			0.3	
(must be ≤0.5 g/L)				
Mean Length (cm):			3.8	
Length Range (cm):			3.2-4.5	
Mean Weight (g):			0.5	
(Must be ≥0.3g)				
Weight Range (g):			0.3-0.8	

Comments :

Reviewed By: 

Date Reviewed: NOV 17 2023

**APPENDIX C – Chain-of-custody form**

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Chain of Custody  
 ALS Environmental - Calgary  
 2559 29th Street NE Calgary AB  
 Canada T1Y 7B5

154122



Destination Lab: **Nautilus Environmental (Calgary)**  
 Address: 10828 27 Street SE Calgary AB Canada T2Z 3V9  
 Work Order Number: **CG2316018**  
 Original Receipt Date/Time: 09/11/2023 14:30  
 Instructions Received

Relinquished By  
 Date/Time  
 Received By  
 Date/Time  
 Receipt Temp

Return as Indicated: Results: ALSCGClientServices@alsglobal.com Invoice: ALSCGClientServices@alsglobal.com Electronic Data: ALSCGClientServices@alsglobal.com  
 Attention: Patryk Wojciak

ALS Sample ID	Client ID	Matrix	Container Type	Test Codes	Method Description	Due Date	Sampling Date and Time	Remarks
CG2316018-001	Plant Effluent - E256696	Water	LDPE carboy	TRT-LC50-96	Survival/LC50 Rainbow Trout (96 hours)	01-12-2023	09/11/2023 08:30	
CG2316018-001	Plant Effluent - E256696	Water	LDPE carboy			01-12-2023	09/11/2023 08:30	

2324-0739  
 1120  
 Jazod  
 2x 20L carboys  
 DM/KZ  
 NOS/NOI  
 good condition  
 2023/11/10  
 5.7°C

**END OF REPORT**

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