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April 27<sup>th</sup>, 2022 File No. W2020-20.2021

### 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

Dear Mr. Majer:

#### Re: KICKING HORSE MOUNTAIN RESORT WASTEWATER TREATMENT PLANT 2021 ANNUAL REPORT

Forwarded is a pdf copy of the 2021 Annual Wastewater Report for the above property.

Should you have any questions, please call us at 403-238-9510or email to jana@iqwater.ca.

Sincerely,

IQWATER INC.

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



# 2021 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.

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> April 27<sup>th</sup>, 2022 Report # W2020-020.2021

	TABLE OF CONTENTS	Page No.
1.0	INTRODUCTION 1.1 BACKGROUND 1.2 RESORT CONSTRUCTION AND OCCUPANCY	1 1
2.0	REGISTRATION REQUIREMENTS2.1PARAMETERS2.2REGISTRATION LETTER OPERATING CONDITIONS2.3REPORTING REQUIREMENTS2.4SAMPLING FREQUENCY	2 2 3 3
3.0	SEWAGE FLOW RECORDS	5
4.0	SEWAGE FLOW PROJECTION	13
5.0	OVERVIEW OF COLUMBIA RIVER SAMPLE RESULTS	16
6.0	OVERVIEW OF EFFLUENT RESULTS 6.1 RESULTS ANALYSIS 6.2 COMPLIANCE SUMMARY	20 20 23
7.0	SLUDGE PRODUCTION AND DISPOSAL	24
8.0	PLANT IMPROVEMENTS & BYPASS EVENTS	25
9.0	PHOSPHORUS REMOVAL	26
10.0	ASSESSMENT SUMMARY	29
11.0	AUTHORITIZATION AND CLOSING	31
12.0	REFERENCES	32
13.0	TERMS AND CONDITIONS	33
APPE	<ul> <li>Table 10 – Kicking Horse Resort Estimated Sewage Generation (m<sup>3</sup>/day)</li> </ul>	

- Kicking Horse Mountain Resort North Map
- Kicking Horse Mountain Resort South Map
- WWTP Registration No.: 15474
- 2021 WWTP Data
- Laboratory Test Data
- LC50 Toxicity

## 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 2021.

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, multifamily, 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 paramete	rs are to be monitored:
рН	Field Sample
Temperature	Field Sample, measured in Celsius
Flow	Field Samples, measured as m <sup>3</sup> /d
BOD₅	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.

Parameter	Limit	Unit
Flow	300	m³/d
BOD₅	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

#### Table 1 Effluent Limits

\*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.

			Location		
Parameter	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	River side channel	Effluent
EMS Number	E256694	E258898	E258899	E258897	E256696
	Winter/Summer	Winter/Summer	Winter	Summer	Winter/Summer
pН	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>	1	/	/	/	W
TSS	WS/G	WS/G	WS/G	WS/G	WS/G+Q/G
NH3-N	WS/G	WS/G	WS/G	WS/G	WS/G
NO3-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

Table 2 Sampling Location/Frequency/Type

Where:

WS

Q Ŵ G

Weekly seasonal (weekly samples for a period of 5 week	s)
--	----

- Quarterly Weekly
- Grab 1/3Y
  - Once every 3 years

## 3.0 SEWAGE FLOW RECORDS

This section provides data and analysis regarding plant effluent flows, and compares 2021 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 2021 was 44,546 m<sup>3</sup> with an average of 122 m<sup>3</sup>/day. Available monthly total effluent flow meter records for 2021 are provided in Figure 1a.

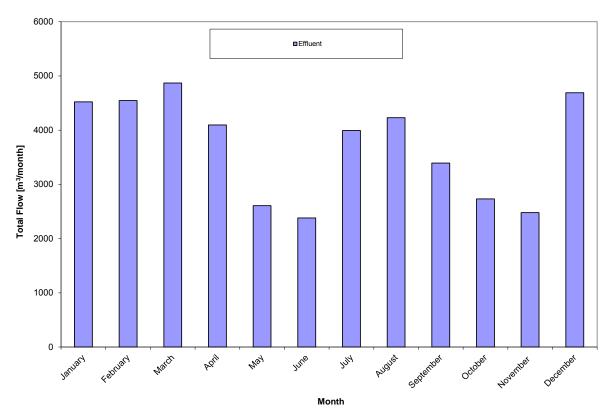


Figure 1a 2021 Effluent Flow Meter Monthly Flow Totals

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. The highest monthly flow was observed in March at 4,870 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 2021 was 154 m<sup>3</sup>/day compared to the last year average at 150 m<sup>3</sup>/day.

Please note that in the previous reports the highest plant flow was compared to four months ie January, February, March, April and December. In 2021 the flow for these five months was higher at 151 m<sup>3</sup>/day than that of 2020 at 135 m<sup>3</sup>/day, 2019 at 147 m<sup>3</sup>/day and similar to 2018 at 150.2 m<sup>3</sup>/day.

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

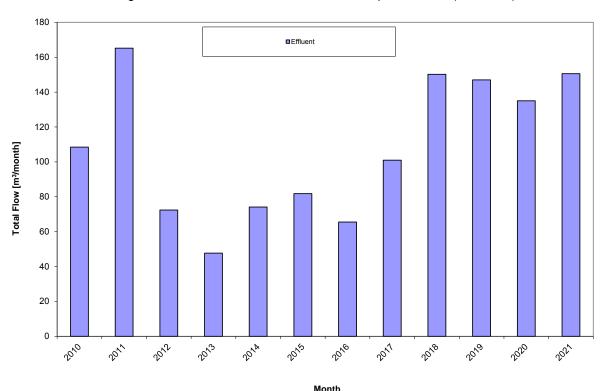


Figure 1b Average Effluent Flow in Peak Period – Jan to April and Dec (Historical)

Peak flow for the year reached was 263 m<sup>3</sup>/day on April 1, 2021, which is below the allowable limit of 300 m<sup>3</sup>/day.

The peak flow is higher than that at 247  $m^3$ /day in 2020 and comparable to pre-Covid levels of the previous two years at 265  $m^3$ /day in 2019 and 262  $m^3$ /day in 2018. It is higher to 2017 with peak flow at 244  $m^3$ /day. The peak flow day occurred during the ski season.

Historical peak flows were 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.

Neer	Sewage FI	Days		
Year	Total	Average	Peak	Over Limit
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

A summary of sewage flow for years 2009 through 2021 is provided in Table 3 and Figures 2 and 3:

Table 3 2009 – 2021 Flow Comparisons

\*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. It should be noted that the highest daily flow was recorded on April 1<sup>st</sup> at 263 m<sup>3</sup>/day. There were no daily flow limit exceedances observed in 2021.

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 (April to June and September 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

1

- ✓ Administration office, day-care facilities, general store and rental shop
- The Cedars Phase 3 (10 units

OCCUPANCY*	Family Residences	Hotel Units	Allocation	EQ Bed Units
Seasonal				
Multi-story condos (3 units)	-	155	2	310
Commercial Lodges (3)	-	-	As per tarrif	122
Single Family Residences	98	- varies		718
Multi-Family Units (Duplex & Triplex)	116	-	varies	448
Non-residential				
5 Restaurants	-	-	As per tarrif	241
Office	-	_	As per tarrif	4
Daylodge	-	_	As per tarrif	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 – Updated April 22, 2021 = 2448 BU

Figure 2 provides historical average and peak flow and Figure 3 shows historical total flows for 2009 to 2021 for comparison.

Figure 2 Historical (2009 – 2021) Average and Peak Sewage Effluent Flow Comparison Graph

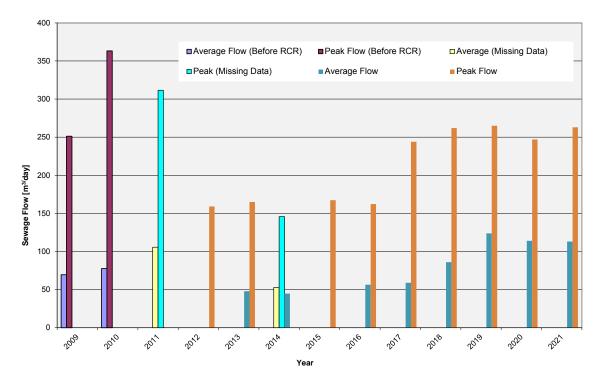
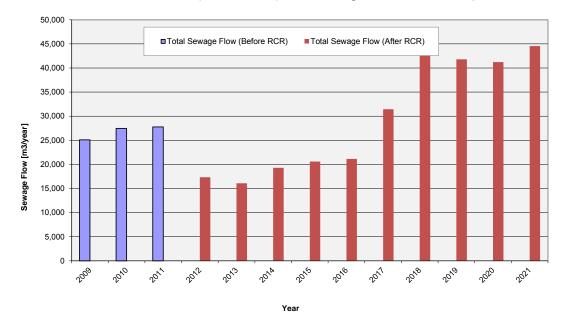


Figure 3 Historical (2009 – 2021) Total Sewage Effluent Flow Graph



Page 10 of 34

Figure 4 below shows average and peak flows for 2021.

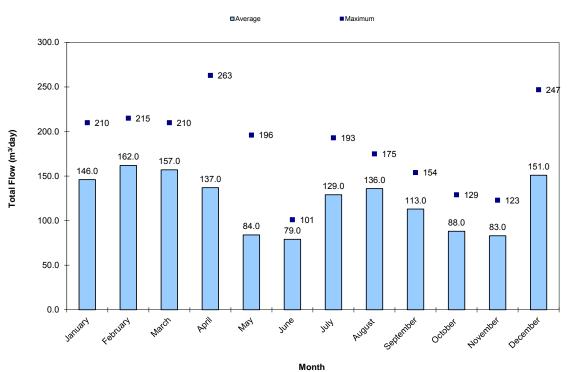


Figure 4 2021 Sewage Effluent Average and Peak Flows by Month

This year, the total effluent discharged was equal to 49.0 % 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. Please note that the total water production included in the calculation and graph below does not include 2225  $m^3$  from snow making in December 2021.

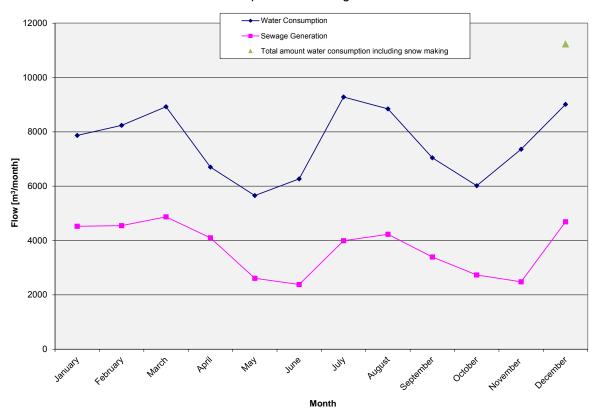


Figure 5 2021 Water Consumption and Sewage Effluent Generation

## 4.0 SEWAGE FLOW PROJECTION

This section shows projected wastewater flow for 2011 through 2021 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. Averaged correction factor for the last eight years (2012 to 2020) 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 and in 2020 it was calculated at 0.35. The correction factor for 2021 was calculated at 0.37 and the average correction factor for 2011 to 2019 was 0.30.

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, and 2021 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 2021 flow data, the plant has an unused capacity of 37 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 2022 and further considered when adding additional development.

	2011	2012	2013	2014
Estimated Wastewater Flow (m³/day)	705.5*	705.5*	705.5*	705.5
Actual and Corrected (m <sup>3</sup> /day)	312** (a)	312** (a) 159 (a)		146 (a)
	2015	2016	2017	2018
Estimated Wastewater Flow (m <sup>3</sup> /day)	705.5	705.5	705.5	705.5
Actual and Corrected (m³/day)	167 (a)	162 (a)	244 (a)	262 (a)

Table 4
Projected Peak Flows: 2011-2022

\*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
Estimated Wastewater Flow (m³/day)	705.5	707.2	711.2*	711.2*
Actual and Corrected (m³/day)	265 (a)	247 (a)	263 (a)	213 (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 faction for 2011 2021 correction factor:

2011	correction factor of	312*/705.5.	0.44
2012	ű	159/705.5	0.22
2013	ű	165/705.5	0.23
2014	ű	146/705.5	0.21
2015	ű	167/705.5	0.24
2016	ű	162/705.5	0.23
2017	u	244/705.5	0.34
2018	u	262/705.5	0.37
2019	u	265/705.5	0.38
2020	u	247/707.2	0.35
2021	u	263/711.2	0.37
	AVERAGE		0.31

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

#### Figure 6a

#### **Historical Correction Factors**

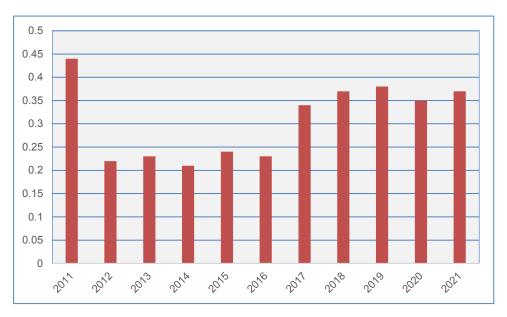
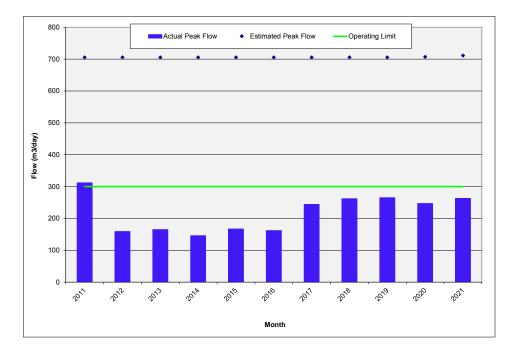




Figure 6b Estimated vs Actual Peak Flows (Historical)



## 5.0 OVERVIEW OF COLUMBIA RIVER SAMPLE RESULTS

This section provides data and analysis for the Columbia River samples taken during 2021.

Table 5 provides a summary record of the Columbia River test results for the period of April 14<sup>th</sup> to May 11<sup>th</sup>, 2020 and September 28<sup>th</sup> to October 26<sup>th</sup>, 2021. Please note that the outfall was not sampled during the spring monitoring events due to difficulties accessing the site.

Sample Date	NH <sub>4</sub> -N			Ortho-P		Fed	Fecal Coliform E.Coli		То	Total P mg/L					
yyyy/mm/dd	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN
2021-04-14	0.050	-	0.050	0.005	-	0.005	79	-	8	19	-	6	0.032	-	0.008
2021-04-21	0.050	-	0.050	0.005	-	0.005	2	-	2	1	-	2	0.013	-	0.061
2021-04-27	0.050	-	0.050	0.005	-	0.005	2	-	2	1	-	2	0.006	-	0.005
2021-05-05	0.050	-	0.050	0.005	-	0.005	2	-	2	2	-	1	0.012	-	0.006
2021-05-11	0.166	-	0.050	0.005	-	0.005	7	-	3	1	-	2	0.005	-	0.010
2021-09-28	0.050	0.050	0.050	0.005	0.005	0.005	21	34	26	14	16	24	0.047	0.029	0.047
2021-10-05	0.005	0.007	0.005	0.001	0.001	0.001	6	4	2	5	4	2	0.009	0.015	0.010
2021-10-12	0.050	0.050	0.050	0.005	0.005	0.005	1	2	2	2	2	2	0.006	0.005	0.011
2021-10-20	0.050	0.051	0.050	0.005	0.005	0.005	3	1	2	3	1	1	0.006	0.096	0.006
2021-10-26	0.050	0.050	0.050	0.005	0.005	0.005	1	1	1	1	1	1	0.005	0.005	0.005
# Samples	10	5	10	10	5	10	10	5	10	8	5	8	10	5	10
Average	0.057	0.042	0.046	0.005	0.004	0.005	12	8	5	6	6	5	0.014	0.030	0.017
Maximum	0.166	0.051	0.050	0.005	0.005	0.005	79	34	26	19	16	24	0.047	0.096	0.061
Minimum	0.005	0.007	0.005	0.001	0.001	0.001	1.0	1.0	1.0	1.0	1.0	1.0	0.005	0.005	0.005

Table 5
2021 Columbia River Sample Results

Sample Date	Field pH		TSS		NO <sub>3</sub> -N			NO <sub>2</sub> -N			Enterococcus				
yyyy/mm/dd	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN	UP	SIDE	DN
2021-04-14	6.8	-	7.8	20.9	-	6.7	0.107	-	0.221	0.010	-	0.010	1.0	-	36.4
2021-04-21	8.0	-	7.8	37.9	-	23.7	0.125	-	0.109	0.010	-	0.010	5.1	-	1.0
2021-04-27	7.8	-	7.9	11.5	-	11.3	0.123	-	0.130	0.010	-	0.010	3.0	-	1.0
2021-05-05	7.8	-	7.6	17.0	-	16.4	0.182	-	0.183	0.010	-	0.010	1.0	-	1.0
2021-05-11	8.0	-	7.8	15.2	-	21.8	0.191	-	0.191	0.010	-	0.010	1.0	-	1.0
2021-09-28	7.8	7.8	7.8	95.9	39.3	66.0	0.091	0.075	0.089	0.010	0.010	0.010	4.1	4.1	4.1
2021-10-05	7.7	7.7	7.7	15.4	10.0	11.2	0.093	0.086	0.082	0.010	0.001	0.010	1.0	1.0	1.0
2021-10-12	7.7	7.7	7.7	6.1	5.5	7.5	0.088	0.070	0.390	0.010	0.010	0.010	1.0	1.0	1.0
2021-10-20	7.8	7.8	7.8	4.7	3.5	6.7	0.101	0.096	0.105	0.010	0.010	0.010	1.0	1.0	1.0
2021-10-26	7.8	7.6	7.8	6.3	3.3	8.9	0.089	0.093	0.085	0.010	0.010	0.010	1.0	3.0	1.0
# Samples	10	5	10	10	5	10	10	5	10	10	5	10	10	5	10
Average	7.7	7.9	7.8	23.1	12.3	18.0	0.119	0.084	0.159	0.01	0.01	0.01	1.9	2.0	4.9
Maximum	8.0	8.0	7.9	95.9	39.3	66.0	0.191	0.096	0.390	0.01	0.01	0.01	5.1	4.1	36.4
Minimum	6.8	7.8	7.6	4.7	3.3	6.7	0.088	0.070	0.082	0.01	0.00	0.01	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

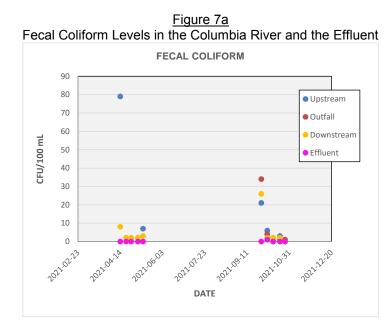
UP – Upstream

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

### Fecal coliforms, E-coli and Enterococci

Elevated Fecal coliforms and E.Coli were observed in the upstream on April 14<sup>th</sup> and in the upstream, side-stream, and down-steam samples on September 28<sup>th</sup>, 2021. Elevated Enterococcus results were also recorded in the downstream on April 14<sup>th</sup> and in all three locations on September 18<sup>th</sup>. The results were below the detection limits tested in the effluent on the same dates.

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



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

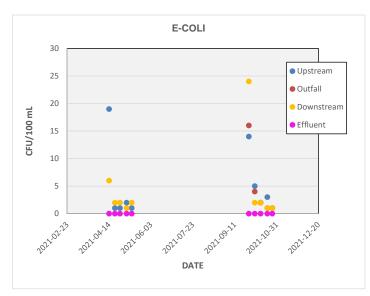


Figure 7b E.Coli Levels in the Columbia River and the Effluent

A graph below shows high levels of Enterococci downstream at the beginning of the season. There are no results available for the outfall, however, the effluent results are below the detection limit. The result downstream is not likely due to the effluent impact. The remaining results at the outfall and downstream are low.

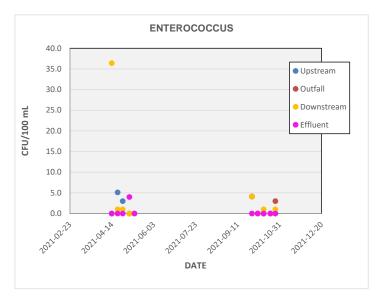


Figure 7c Enterococci Levels in the Columbia River and the Effluent

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The highest TSS levels were recorded on September 28<sup>th</sup> in the river upstream at 95.9 mg/L. TSS concentration at the side-stream was 39.3 mg/L and at the down-stream was 66.0 mg/L, while the effluent significantly lower at only 3.7 mg/L, indicating that the effluent was not likely the source of high TSS results in the river.

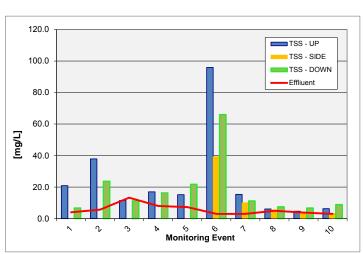


Figure 8 TSS Levels in the Columbia River and the Effluent

There was four instances where the down-stream results were above the up-stream results. Only once on May 11<sup>th</sup> the changes were more than 5 mg/L (B.C. Approved Water Quality Guidelines; Aquatic Life, Wildlife and Agriculture, August 2019; further BC AWQG) between the upstream and downstream values. The level of TSS in the effluent was low on May 11<sup>th</sup> and the side-stream was not tested on that day.

### Ammonia-N, Nitrate-N and Nitrite-N

The ammonia-n and nitrite-n levels at the outfall were below their respective detection limits. The nitrate-n outfall levels were low with a maximum of 0.096 mg/L on October 20<sup>th</sup>. The corresponding levels in the river upstream and downstream were 0.101 and 0.105 mg/L. Note that all the downstream results were within the BC AWQG Long Term Chronic threshold at 3.0 mg/L.

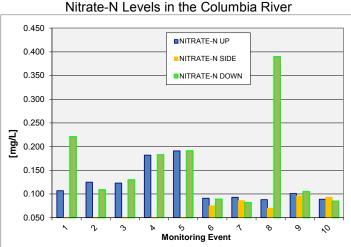


Figure 9 Nitrate-N Levels in the Columbia River

No significant changes were observed in <u>**pH**</u> or <u>**phosphorus**</u> concentrations during any of the river sample periods. pH results in the downstream samples followed closely those in the upstream with no guideline (6.5 - 9.0) exceedance.

All the ortho-phosphorus values at the up-stream, outfall and downstream were below the respective detection limits. Total phosphorus was the highest downstream on April 21<sup>st</sup> at 0.0.061 mg/L with the upstream values at 0.013 and effluent at 0.212 mg/L. The outfall was not sampled on that day.

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 2021.

A total of 18 effluent samples were collected and analysed. Table 6 summarizes effluent test results for 2021.

Date	2021 Effluent Results Summary												
			Field				Coliforms						
Sampled	Flow	Temp	рΗ	NH4-N	BOD	P-OP04	Fecal	E.Coli	Total P	TSS	NO <sub>3</sub> -N	NO <sub>2</sub> -N	Enterococci
yyyy/mm/dd	m³/d	С		mg/L	mg/L	mg/L	cfu/100ml	cfu/100ml	mg/L	mg/L	mg/L	mg/L	cfu/100ml
2021-01-12	150	-3.0	-	-	3.0	0.171	1.0	-	0.336	5.4	-	-	-
2021-02-16	175	-15.0	-	-	7.6	0.813	54	-	1.120	9.2	-	-	-
2021-04-06	176	-6.0	-	-	2.0	0.169	1	-	0.284	5.4	-	-	-
2021-04-14	110	-1.0	6.8	0.060	2.2	0.061	1.0	1.0	0.202	3.5	13	0.050	1
2021-04-21	108	-2.0	6.8	0.082	2.0	0.137	1.0	1.0	0.212	3.0	9.0	0.016	1
2021-04-27	107	5.0	6.7	0.050	2.6	0.157	1.0	1.0	0.290	5.9	6.3	0.018	1
2021-05-05	97	2.0	7.2	0.420	2.0	0.112	1.0	1.0	0.337	8.4	4.3	0.033	4
2021-05-11	78	13.0	6.8	0.190	2.0	0.120	1.0	1.0	0.257	4.8	8.2	0.018	1
2021-06-29	97	28.0	-	0.059	2.0	0.492	1.0	1.0	0.540	3.0	5.7	0.013	-
2021-08-05	139	12.0	-	-	2.0	0.039	24	-	0.467	3.0	-	-	-
2021-08-25	159	6.0	-	0.052	2.0	0.464	1.0	1.0	0.550	3.0	-	-	-
2021-09-28	110	4.0	6.8	0.171	2.0	0.426	1.0	1.0	0.519	3.7	10.3	0.018	1
2021-10-05	101	3.0	6.8	0.630	2.0	0.411	1	1.0	0.495	3.0	17.4	0.090	1
2021-10-12	86	-5.0	6.8	4.300	2.0	0.564	1.0	1.0	0.643	3.0	11.4	0.033	1
2021-10-20	71	4.0	6.8	0.136	2.0	0.251	1.0	1.0	0.328	3.0	15.2	0.047	1
2021-10-26	85	4.0	6.8	0.050	2.0	0.226	1.0	1.0	0.323	3.3	13.8	0.010	1
2021-11-23	80	-1.0	-	0.050	2.0	0.091	400	1.0	0.207	4.5	-	-	-
2021-12-14	114	-7.0	-	-	2.9	0.191	1.0	1.0	0.300	4.3	-	-	-
# Samples	18	18	10	13	18	18	18	14	18	18	10	10	10
Average	114	2.3	6.8	0.597	2.5	0.263	29	1.0	0.405	4.4	10.1	0.031	1.3
High	176	28.0	7.20	4.300	7.6	0.813	400	1.0	1.12	9.2	17.4	0.09	4.1
Low	71	-15.0	6.70	0.050	2	0.039	1	1.0	0.20	3.0	4.3	0.01	1.0
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	2	1	0	1	0	N/A	N/A	0

### Table 6 2021 Effluent Results

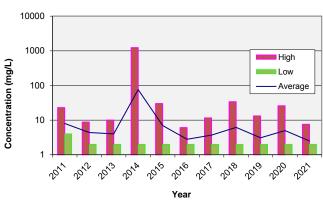
1. Shaded squares show tests reported at less that the stated value, for calculations these are listed as equal to the value stated, ie; <0.05 is assumed to be 0.05

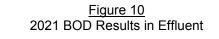
2. Geometric mean is used for coliform results

### 6.1 **RESULTS ANALYSIS**

Effluent <u>ammonia-n</u> concentrations were generally low throughout the year with the highest level at 4.3 mg/L on October 12<sup>th</sup>, 2021. The results for ammonia-nitrogen were comparable or lower than to those in previous years. The levels at all three locations at the river were below laboratory detection limits.

The average <u>**BOD**</u> in the effluent was low at 2.5 mg/L, which is similar to the previous years. The highest BOD results were recorded in the effluent on February 16<sup>th</sup>, 2021 at 7.6 mg/L, however, BOD was below the MSR limits for all the samples.





**TSS** results averaged at 4.4 mg/L with a maximum concentration of 9.2 mg/L, both which were similar to the results during the previous years. TSS was below the MSR limits for all the samples.

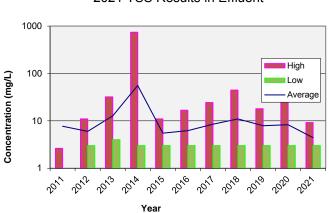


Figure 11 2021 TSS Results in Effluent

<u>Nitrate-N</u> averaged in the effluent at 10.1 mg/L with a maximum concentration at 17.4 mg/L on October 5<sup>th</sup>, 2021. As shown on the graph below the average and maximum values were lower than most years and similar to 2013 and 2018 levels.

<u>*Nitrite-N*</u> averaged in the effluent at 0.031 mg/L with a maximum concentration at 0.09 mg/L. The 2021 results were similar to the previous years.

Note that nitrate-n levels in the river downstream were similar to the upstream or the side stream values. All nitrite-n values in the river downstream were below the detection limit.

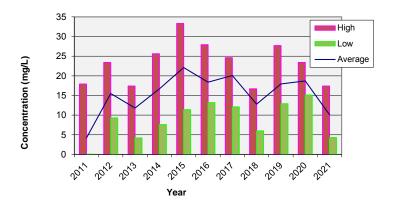


Figure 12 2021 NO₃-N Results in Effluent

### Fecal Coliforms and E-coli

Majority of the results for fecal coliforms were below the detection limits with the exception of elevated results on February 16<sup>th</sup>, August 5<sup>th</sup>, and November 23<sup>rd</sup>, 2021. The November result exceeded the MSR limits.

All E-coli test results were below the detection limits on the day of the testing and, therefore, below the MSR limits.

#### <u>Enterococci</u>

All but one of the results were at or below their respective detection limits and, all the results were below the MSR limit.

#### Phosphorus and Ortho-phosphorus

Two out of 18 samples for ortho-phosphorus and one for total phosphorus exceeded the MSR discharge limits.

The 2021 average for total phosphorus was 0.405 mg/L which was lower than previous years. The 2020 average for total phosphorus 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 results could have been due to a sampling error).

The 2020 average for ortho-phosphorus was 0.263 mg/L which is similar to 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.

One result for ortho-phosphorus and one for phosphorus exceeded the MSR limit in 2020. Two results for ortho-phosphorus and one for phosphorus exceeded the MSR limit in 2019. Six results for ortho-phosphorus and four results for phosphorus exceeded the MSR limits in 2018. Twelve samples out of sixteen for ortho phosphorus and eleven out of sixteen for total phosphorus were above MSR discharge limits in 2017. Ten samples out of fourteen for ortho phosphorus and six out of fourteen for total phosphorus were over the limits in 2016. Ten samples out of ten for ortho phosphorus and nine out of ten samples for total phosphorus were over the limits in 2015. Ten samples for ortho phosphorus and eight samples for total phosphorus were over the limits in 2014. Nine samples for ortho phosphorus and seven samples for total phosphorus were over the limits in 2013 and five samples for total and ortho phosphorus were over the limits in 2012. Only one sample for total

phosphorus was over the limit in 2011. In 2009 and 2010, there were no exceedances for total phosphorus or ortho phosphorus. Phosphorus is further discussed in Section 11. 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.

The bioassay toxicity testing was completed in 2020 as it is to be done every 3 years. The most recent testing showed that plant effluent was non-toxic. The results of the 2020 tests are shown below in Table 7.

Table 7
<b>Toxicity Test Results</b>

Sample Date	Result
2020-10-15	Pass

### 6.2 COMPLIANCE SUMMARY

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

### Table 8

2020 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	122	263	0
BOD₅	mg/l	45	18	2.5	7.6	0
TSS	mg/l	45	18	4.4	9.2	0
Total Phosphorus	mg/l	1	18	0.405	1.12	1*
Ortho Phosphate	mg/l	0.5	18	0.263	0.813	2*
Fecal Coliforms	CFU/100ml	200	18	29	400	1*
Enterococci	CFU/100ml	20	10	<1	4	0
E.Coli	CFU/100ml	77	14	<1	<1	0
96 hr LC50 Bioassay**	1	Non-toxic	1	Pass	Pass	0

\*This year the test results indicated that out of all the samples collected there were 2 exceedances for ortho-phosphorus and 1 exceedance for total phosphorus; 1 fecal coliform results exceed the limits.

\*\*The most recent test was done in 2020.

## 7.0 SLUDGE PRODUCTION AND DISPOSAL

This section provides data regarding the disposal of bio-solids (sludge) from the treatment facility in 2021.

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.

Vol. Month Pumped (m<sup>3</sup>) 212 January 192 February 186 March 150 April 45 May 57 June July 60 August 125 116 September October 32 162 November 104 December Total 1441

2021 Pumped Solids Data

Table 9

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 2021.

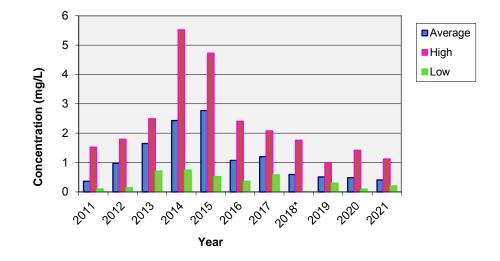
## 9.0 PHOSPHORUS REMOVAL

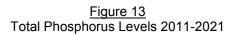
This section describes the phosphorus monitoring and removal strategy being implemented to bring the plant into compliance with effluent limits.

During 2021 total *phosphorus* varied between 0.20 and 1.12 mg/L with an average value at 0.405 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 2021 were low and similar to the previous year at an average value of 0.405 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.





During 2021 <u>ortho-phosphorus</u> varied between 0.039 and 0.813 mg/L with an average value at 0.263 mg/L, which was very similar to 2020 at average value of 0.26 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.

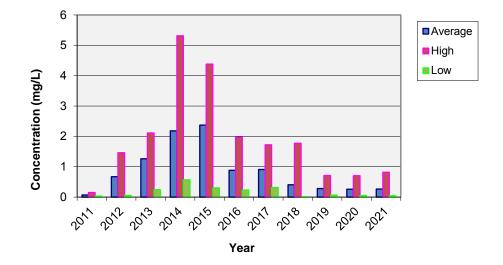


Figure 14 Ortho-Phosphorus Levels 2011-2021

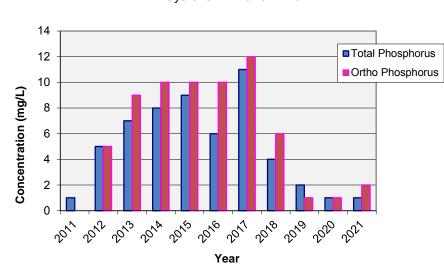
The days over limit for both phophorus and othro-phosphorus were increasing from 2011 to 2014 and then were fairly consistent for several years (10 days over limit for 2014, 2015 and 2016), increased again in 2017 at 12 days over the limit and then decreased to 6 days over the limit in 2018. The days 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 and 2021 with only two days over limit for orthophosphorus and one day over limit for total phosphorus in 2021.

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, 2020, and 2021 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 dosage levels. KHMUC has also agreed to collect a laboratory sample in first week of January going forward in order to better characterize/monitoring 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 exceedance is shown on the graph below, the 2021 exceedances for both total phosphorus and ortho-phosphorus are the lowest since 2011 indicating the current phosphorus reduction strategy has been successful.



<u>Figure 15</u> Days over Limit 2011-2021

## 10.0 ASSESSMENT SUMMARY

The total effluent flow recorded for 2021 was 44,546 m<sup>3</sup> with an average of 122 m<sup>3</sup>/day and a maximum peak flow at 263 m<sup>3</sup>/day. There were no days where the flow was over the allowable limit.

Effluent <u>ammonia-n</u> concentrations were generally low throughout the year with the highest level at 4.3 mg/L on October 12<sup>th</sup>, 2021. The results for ammonia-nitrogen were comparable or lower than to those in previous years. The levels at all three locations at the river were below laboratory detection limits.

The average <u>**BOD**</u> in the effluent was low at 2.5 mg/L, which is similar to the previous years. The highest BOD results were recorded in the effluent on February 16<sup>th</sup>, 2021 at 7.6 mg/L, however, BOD was below the MSR limits for all the samples.

**TSS** results averaged at 4.4 mg/L with a maximum concentration of 9.2 mg/L, both which were similar to the results during the previous years. TSS was below the MSR limits for all the samples.

<u>Nitrate-N</u> averaged in the effluent at 10.1 mg/L with a maximum concentration at 17.4 mg/L on October 5<sup>th</sup>, 2021. As shown on the graph below the average and maximum values were lower than most years and similar to 2013 and 2018 levels.

<u>*Nitrite-N*</u> averaged in the effluent at 0.031 mg/L with a maximum concentration at 0.09 mg/L. The 2021 results were similar to previous years.

Note that nitrate-n levels in the river downstream were similar to the upstream or the side stream values. All nitrite-n values in the river downstream were below the detection limit.

#### Fecal Coliforms and E-coli

Majority of the results for fecal coliforms were below the detection limits with the exception of elevated results on February 16<sup>th</sup>, August 5<sup>th</sup>, and November 23<sup>rd</sup>. The November result exceeded the MSR limits.

All E-coli test results were below the detection limits on the day of the testing and, therefore, below the MSR limits.

#### <u>Enterococci</u>

All but one of the results were at or below their respective detection limits and, all the results were below the MSR limit.

#### Phosphorus and Ortho-phosphorus

During 2021 total *phosphorus* varied between 0.20 and 1.12 mg/L with an average value at 0.405 mg/L. The levels of phosphorus were increasing from 2011 until 2015 (average at 2.77 mg/L) and there had been a continuous decrease since 2015.

During 2021 <u>ortho-phosphorus</u> varied between 0.039 and 0.813 mg/L with an average value at 0.263 mg/L, which was very similar to 2020 at average value of 0.26 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.

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, and 2021 with only two days over limit for orthophosphorus and one day over limit for total phosphorus in 2021.

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 2020 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) is currently constructed and waiting for subdivision approval. Flows will be monitored closely and additional improvements may be required as growth at the resort continues.

## **11.0 AUTHORITIZATION AND CLOSING**

This report, titled *2021 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. J. ZVERINA Mul 104/2022 Jana Zverina, M.Sc., P. Eng.

IQWater Inc. Permit #1003055

27/04/2022)

iqw/jobs/W2020-020.2021

## 12.0 REFERENCES

- American Public Health Association, American Water Works Association and the Water Environment Federation: Standard Methods for Examination of Water and Wastewater
- American Public Health Association, American Water Works Association and Water Environment Federation. Standard Methods for the Examination of Water and Wastewater. 23<sup>rd</sup> Edition
- BC Environmental Management Act, Municipal Wastewater Regulation B.C. Reg. 87/2012, lasts Amended April 1<sup>st</sup>, 2018 by B.C. Reg. 46/2018
- BC Ministry of Health, Health Protection Branch, Sewerage System Standard Practice Manual, Version 3, September 2014
- BC Ministry of Environment & Climate Change Strategy, British Columbia Approved Water Quality Guidelines; Aquatic Life, Wildlife and Agriculture, August 2019
- 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. June 2019

### 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 Iaw.

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 affection 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 nay 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

2021 WASTEWATER TREATMENT PLANT ANNUAL REPORT Kicking Horse Mountain Resort April 27<sup>th</sup>, 2022

# **APPENDIX**

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

Current Development	Flow*		2011	2018	Flow*		2019	2020		2021	2022
	(l/unit/day)	Units	Generation (m3/day)	Generation (m3/day)	(l/unit/day)	Units	Generation (m3/day)	Generation (m3/day)	Units	Generation (m3/day)	Generation (m3/day)
Single Family	318	972	309.1	309.1	1300	98	127.4	127.4	98	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
Lodges (EBU)	318	296	94.1	94.1	700	296	207.2	207.2	296	207.2	207.2
Condominiums	318	952	302.7	302.7	1000	155	155.0	155.0	155	155.0	155.0
	Subtotal	2220	706.0	706.0	Subtotal	661	601.6	601.6	665	605.6	605.6

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

Dining Facilites/Bars	Flow*	Area	2011	2018	Flow*	Area	2019	2020	Area	2021	2022
Dining Facilities/Bars	(l/m²/day)	(m2)	Generation (m3/day)	Generation (m3/day)	(l/m²/day)	(m2)	Generation (m3/day)	Generation (m3/day)	(m2)	Generation (m3/day)	Generation (m3/day)
Peaks Grill	97	256	0	0.0	97	256	0.0	24.8	256	24.8	24.8
Double Black	97	190	0	0.0	97	190	0.0	18.4	190	18.4	18.4
Whitetooth Grill	97	300	0	0.0	97	300	0.0	29.1	300	29.1	29.1
Copperhorse Steak House	97	110	0	0.0	97	110	0.0	10.7	110	10.7	10.7
Winston	97	220	0	0.0	97	220	0.0	21.3	220	21.3	21.3
<b>.</b>	Subtotal	1076	0	0.0	Subtotal	1076	0.0	104.4	1076	104.4	104.4

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

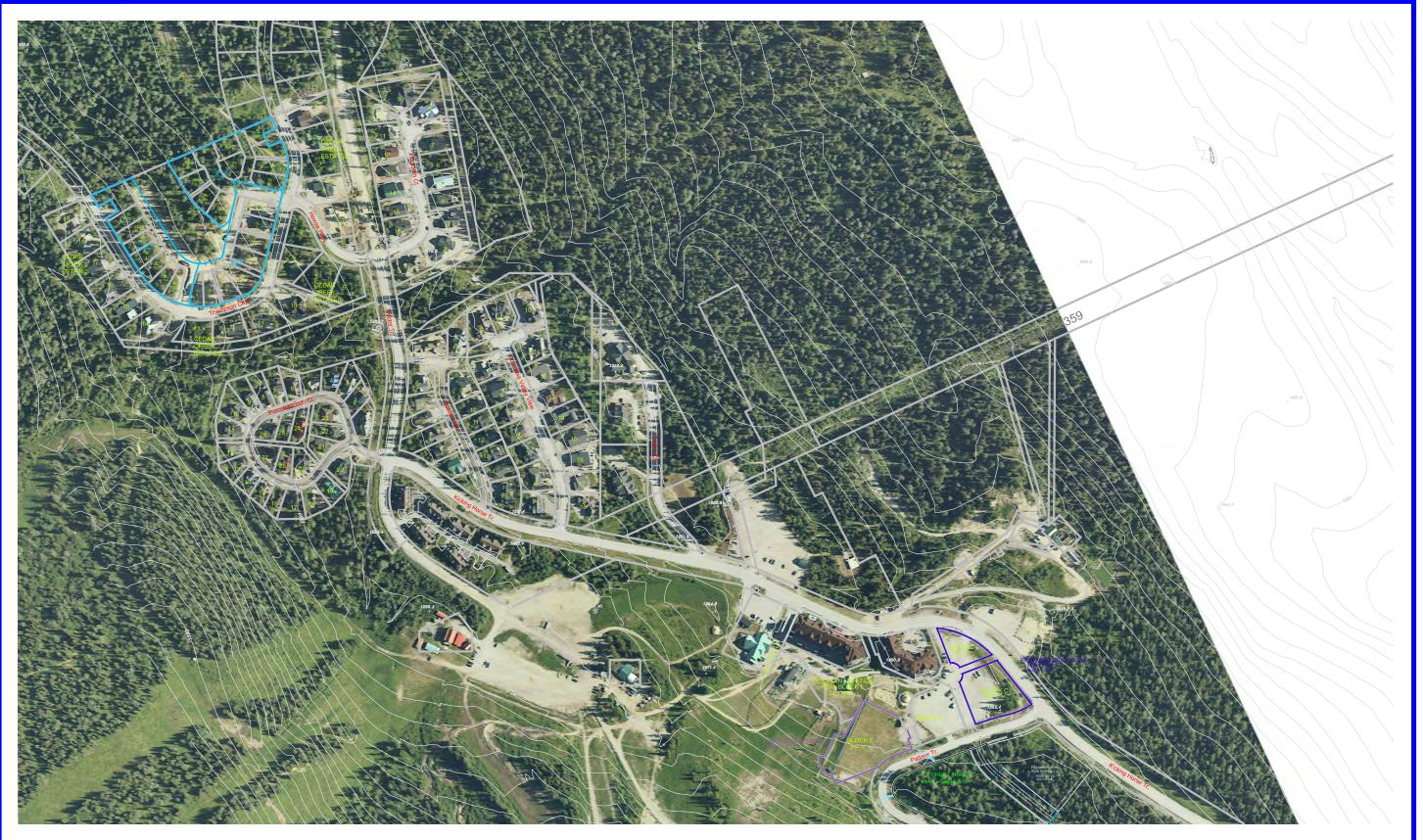
705.5	707.2
265 (actual)	247 (actual)

 711.2
 711.2

 263
 213 (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 ¼ of Section 14 and 15, all of Township 27, R22 West of 5<sup>th</sup> Meridian, and <u>Unsurveyed Crown Foreshore, being part of the Columbia River, Kootenay District</u>

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. <u>Outfall</u>

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.

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Telephone: (250) 489-8540 Facsimile: (250) 489-8506 http://www.gov.bc.ca/ http://www.gov.bc.ca/wlap/

#### 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 ¼ 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

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.
- 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.

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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

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	ТЕМР	Skier Visits	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (mg/l)	BR2 MLSS (mg/l)	BR1 ClearPAC	BR2 ClearPAC	PO4 (mg/l)	TSS	BOD	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
1-Jan	clear	-10		138054	201		5800	6100	8.4	11	1.2			439340	586154
2-Jan	snow	-6		138264	210		5900	6300	5.6	5.6	2.3			439499	586322
3-Jan	snow	-2		138447	183		5800	6400	5.6	5.6	18			439586	
4-Jan	cloud	-5		138608	161		5600	6300	5.6	5.6	1.6			439734	
5-Jan	cloud	-5		138761	153		5500	6300	5.6	5.6	1.4			439856	586873
6-Jan	snow	-5		138915	154		5500	6000	5.6	5.6	13			439980	
7-Jan	clear	-5		139063	148		5500	5900	5.6	5.6	1			440012	
8-Jan	cloud	-4		139215	152				5.6	5.6	0.9			440149	587326
9-Jan	clear	-6		139359	144		5800	5800	5.6	5.6	1			440282	
10-Jan	clear	-7		139504	145		5700	5600	5.6	5.6	0.9			440414	587734
11-Jan	cloud	-8		139688	184		5900	5600	5.6	5.6	1.3			440537	587925
12-Jan	snow	-3		139838	150				5.6	5.6	1.2			440607	588029
13-Jan	snow	-1		139980	142		5900	5600	5.6	5.6	0.9			440675	
14-Jan	clear	-6		140105	125		6000	5300	2.8	2.8	0.4			440804	
15-Jan	clear	-6		140221	116				2.8	2.8	0			440923	588524
16-Jan	clear	-8		140339	118				2.8	2.8	0			441000	588644
17-Jan	snow	-5		140460	121		5800	4800	2.8	2.8	2			441076	588761
18-Jan	clear	-4		140584	124				2.8	2.8				441237	589008
19-Jan	cloud	-5		140730	146		5500	4800	2.8	2.8	1.1			441350	
20-Jan	sun	-10		140870	140				2.8	2.8	1.8			441436	
21-Jan	sun	-10		141014	144		5300	4900	2.8	2.8	2.3			441485	
22-Jan	clear	-14		141122	108				2.8	2.8	1.4			441618	
23-Jan	clear	-13		141252	130				5.6	3.6	2.1				
24-Jan	clear	-12		141360	108		5000	5000	5.6	3.6	1.4			441847	589956
25-Jan	clear	-12		141475	115				5.6	3.6	1.4			441886	590023
26-Jan	clear	-9		141619	144		4900	4900	5.6	3.6	1.1			442077	590234
27-Jan	clear	-10		141770	151		4900	4900	5.6	3.6	1.1			442145	590419
28-Jan	clear	-4		141835	65		4700	4700	5.6	3.6	1.6			442260	
29-Jan	cloud	-7		142003	168		4900	4800	5.6	3.6	0.5			442281	
30-Jan	cloud	-6		142202	199				5.6	3.6	3.3			442447	590888
31-Jan	cloud	-3		142376	174	212	4900	5000	5.6	3.6	3.3			442258	591103
Summary	Average	-7		Average	146				5	4	2				
	Median	-6		Max	210				5.6	3.6	1.35				
				Total	4523	212			151.2	135.8	69.5			Monthly total	7867

FEBRUARY
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				Cumulative	Total Flow	Bags	BR1 MLSS	BR2 MLSS	BR1 ClearPAC	BR2 ClearPAC	PO4			Well 3 Cum.	Well 4 Cum.
DATE	WEATHER	TEMP	Skier Visits	Flow (m3)	(m3/dy)	Rem'd	(mg/l)	(mg/i)	(l/d)	(l/d)	(mg/l)	TSS	BOD	Flow (m3)	Flow (m3)
1-Feb	snow	-2		142454	78		4800	5400	5.6	5.6	3.3			442465	591385
2-Feb	snow	-1		142637	183				5.6	5.6	3.3				
3-Feb	sun	-5		142792	155		5200	5300	5.6	5.6	0.7			442835	591495
4-Feb	snow	-3		142961	169		5200	5300	5.6	5.6	0.9			442981	
5-Feb	snow	-6		143133	172				5.6	5.6	0.7			443105	591912
6-Feb	snow	-9		143303	170		5400	5200	5.6	5.6	1.1			443243	592126
7-Feb	cloud	-15		143461	158		5500	5200	5.6	5.6	1.5			443380	592341
8-Feb	clear	-18		143597	136		5400	5000	5.6		0.7			443431	
9-Feb	clear	-12		143772	175		5400	5000	2.8		0.8			443531	592576
10-Feb		-21		143890	118		5500	5000	2.8		0.9			443661	
11-Feb	clear	-29		144030	140				2.8	2.8	1.1			443777	
12-Feb	clear	-24		144162	132		5300	4700	2.8	2.8	1.5				
13-Feb	clear	-22		144331	169		5400	4800	2.8	2.8	3			443970	
14-Feb	clear	-16		144496	165		5300	4700	8.4	8.4	3.3			444120	
15-Feb	clear	-18		144688	192				8.4	8.4	3.3			444262	593714
16-Feb	clear	-15		144863	175		5400	5000	8.4	8.4	2.6			444391	
17-Feb	cloud	-12		145058	195		5500	5100	8.4	8.4	1.3			444521	594122
18-Feb	clear	-17		145234	176		5300	4700	8.4	8.4	2.3			444662	
19-Feb	snow	-5		145442	208				5.6	5.6	0.8			444697	
20-Feb	cloud	-8		145598	156		4900	5100	5.6	5.6	3			444853	594640
21-Feb		-7		145780	182		5200	5100	8.4	8.4	2.4			445000	
22-Feb	snow	-2		145965	185				8.4	8.4				445136	
23-Feb	snow	-3		146180	215		5300	4800	5.6	5.6	0.2			445275	
24-Feb		-12		146323	143		5400	5100	5.6		0.3			445342	
25-Feb	cnow	-8		146491	168		5300	5000	5.6	5.6	0.6			445431	595552
26-Feb	cloud	-7		146641	150				5.6	5.6	0.3			445574	
27-Feb	clear	-6		146783	142		5200	5000	5.6		1			445710	595995
28-Feb	clear	-6		146923	140		5200	4900	5.6	5.6	0.5			445859	596230
_						192						-			
Summary	Average	-11		Average	162				6	6					
	Median	-8.5		Median	168.5	192			5.6	5.6	1.1				
				Total	4547	192			162.4	162.4	41.4			Monthly total	8239

#### March

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (mg/l)	BR2 MLSS (mg/l)	BR1 ClearPAC	BR2 ClearPAC	PO4 (mg/l)	TSS	BOD	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
1-Mar	clear	-3		147051	128		5100	4600	5.6	5.6	1			445952	596388
2-Mar	clear	-2		147176	125		5300	4700	5.6	5.6	0.6			446003	
3-Mar	sun	-1		147350	174		5300	4600	5.6	5.6	1.4			446188	596708
4-Mar	sun	-4		147494	144		5300	4500	5.6	5.6	1.4			446274	
5-Mar	clear	-4		147633	139				5.6	5.6	1.5			446343	
6-Mar	snow	-3		147757	124		6100	4800	5.6	5.6	2			446479	597205
7-Mar	cloud	-4		147887	130		5600	4200	5.6	5.6	1			446618	
8-Mar	clear	-6		148097	210		5500	4500	5.6	5.6	1.6			446746	597638
9-Mar	sun	-10		148269	172		5200	4300	5.6	5.6	2.1			446875	597843
10-Mar	snow	-1		148424	155		5200	4300	5.6	5.6	2.1			446904	
11-Mar	sun	-9		148579	155		5100	4200	5.6	5.6	1			447031	598099
12-Mar	cloud	-6		148721	142				5.6	5.6	0.8			447162	598310
13-Mar	cleear	-3		148877	156		5200	4600	5.6	5.6	1.2			447294	598522
14-Mar	clear	-6		149037	160		5300	4500	5.6	5.6	1.5			447314	598686
15-Mar	clear	-2		149201	164		5100	4600	5.6	5.6	0.7			447481	598840
16-Mar	clear	-2		149375	174		5100	4600	5.6	5.6	1.4			447619	
17-Mar	clear	-5		149517	142		500	4600	5.6	5.6	1.2			447745	599273
18-Mar	snun	-1		149690	173		4900	4400	5.6	5.6	0.8			447806	599311
19-Mar	clear	1		149862	172				5.6	5.6	1			447897	59952
20-Mar	snow	-1		150016	154		5100	5100	5.6	5.6	1.3				
21-Mar	snow	-3		150174	158		5000	5000	5.6	5.6	1.7			448209	600043
22-Mar	clear	-3		150298	124		5200	5000	5.6	5.6	1.3			448310	600208
23-Mar	clear	-3		150473	175		5200	5100	5.6	5.6	1.1			448398	600360
24-Mar	snow	-1		150640	167		5300	5300	5.6	5.6	1			448500	
25-Mar	cloud	-1		150779	139		4800	4800	5.6	5.6	1.1			448618	
26-Mar	clear	-3		150938	159				5.6	5.6	1.3			448730	
27-Mar	clear	-3		151132	194		5100	5200	5.6	5.6				448791	601014
28-Mar	rain	1		151302	170		5200	5500	5.6	5.6	1.9			448951	601289
29-Mar	clear	1		151478	176		5100	5300	11.2	11.2				449100	601546
30-Mar	sun	1		151653	175				11.2	11.2	0.8			449115	601571
31-Mar	sun	1		151793	140	186	5200	5200	5.6	5.6	1.8			449334	601929
Summary	Average	-3		Average	157	186			6	6	1				
	Median	-3		Max	210	186			5.6	5.6	1.3				
				Total	4870	186			184.8	184.8	39.3			Monthly total	8923

#### APRIL

DATE	WEATHER	TEMP	Skier Visits		Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)		BR2 ClearPAC (I/d)	PO4	TSS	BOD		Well 4 Cum. Flow (m3)
1-Apr	cloud	0		152056	263				5.6	5.6	1.8			449464	602155
2-Apr	clear	0		152287	231		5200	5500	5.6	5.6	1.7			449552	602300
3-Apr	clear	1		152451	164				5.6	5.6	2			449642	602476
4-Apr	clear	0		152621	170		5600	6000	5.6	5.6	2.6			449803	602761
5-Apr	clear	-7		152774	153		5900	6200	5.6	5.6	1.8			450090	
6-Apr	clear	-6		152950	176		5400	5600	5.6	5.6					
7-Apr	clear	1		153108	158		5400	5800	5.6	5.6	0.8			450090	603259
8-Apr	snow	-2		153316	208		5600	5700	5.6	5.6	2.8			450192	
9-Apr	clear	-2		153483	167				5.6	5.6	2.1			450315	603259
10-Apr	clear	-2		153610	127		5500	6000	5.6	5.6	1.2			450397	603684
11-Apr	clear	-5		153738	128		5600	6000	5.6	5.6	1.9			450521	603913
12-Apr	clear	-7		153858	120		5700	6000	5.6	5.6	1.2			450636	604104
13-Apr	clear	-6		153973	115		5700	6000	5.6	5.6	1.7				
14-Apr	clear	-1		154083	110		5800	6000	2.8	2.8	0.5			450764	604311
15-Apr	sun	-3		154182	99		5800	5900	2.8	2.8	0.3				
16-Apr	sun	3		154302	120				2.8	2.8	1.7				
17-Apr	sun	18		154420	118		5700	5800	2.8	2.8	0.7				
18-Apr	clear	5		154538	118				2.8	2.8				451115	
19-Apr	sun	-4		154697	159		5500	5600	2.8	2.8	0.3				
20-Apr	sun	-2		154797	100		6000	5500	2.8	2.8	0.9			451261	
21-Apr	sun	-2		154905	108		6000	5500	2.8	2.8	0.4				
22-Apr	cloud	2		155024	119			5500	2.8	2.8	0.5				
23-Apr	snow	-1		155145	121		5200	5300	2.8	2.8	0.7				
24-Apr	clear	-1		155284	139		5000	5200	2.8	2.8	1				
25-Apr	snow	1		155393	109		4800	5100	2.8	2.8	0.7			451623	
26-Apr	sun	14		155502	109		4800	5200	2.8	2.8	0.9			451739	
27-Apr		5		155609	107		4400	5000	0	0	0.5			451810	605959
28-Apr	sun	7		155697	88		4300	5000	0	0	0.9		İ		
29-Apr	cloud	10		155793	96		4200	4800	0	0	1.4			451975	
30-Apr		8		155890	97				0		1.3		İ	451990	606333
ľ	İ					150							İ		
Summary	Average	1		Average	137	150			4	4	1				
	Median	-0.5		Max	263	150			2.8	2.8	1.1				
		0.0		Total	4097	150			109.2	109.2	34.3			Monthly total	6704

#### MAY

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)		BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)	BR1 ClearPAC <sup>(I/d)</sup>	BR2 ClearPAC (I/d)	PO4	TSS	BOD	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
1-May	cloud	7		156003	113				0	0	0.7			452098	606450
2-May	sun	0		156107	104		4300	5100	2.8	2.8	1.3			452211	
3-May	sun	1		156207	100		4300	4600	2.8	2.8	1			452300	606703
4-May	rain	2		156303	96			4300	2.8	2.8	1.3			452338	606760
5-May	sun	2		156400	97		4000	4200	2.8	2.8	0.6			452450	606924
6-May	cloud	3		156484	84		3800	4200	2.8	2.8	0.6			452450	606924
7-May	cloud	8		156560	76				0	0	0.5			452453	606934
8-May	cloud	7		156661	101				0	0	0.4			452686	607259
9-May	cloud	4		156759	98		3800	4100	2.8	2.8	0.6			452735	607442
10-May	sun	6		156839	80				2.8	2.8	0.7				
11-May	sun	13		156917	78		3700	4000	2.8	2.8	1			452929	
12-May	sun	3		156994	77		3600	3900	2.8	2.8	0.8			452964	607659
13-May	sun	6		157074	80		3800	4200	2.8	2.8	0.5			453049	607772
14-May	sun	11		157147	73				0	0	0.5			453161	607933
15-May	sun	9		157215	68				0	0	0.6			453162	
16-May	sun	7		157297	82				2.8	2.8	1.1			453288	608114
17-May	cloud	10		157368	71		3800	3900	2.8	2.8	1.1			453400	608283
18-May	rain	8		157450	82				2.8	2.8	0.9				
19-May	sun	0		157646	196				2.8	2.8					
20-May	sun	0		157666	20				0	2.8				453597	608565
21-May	sun	6		157696	30		3900	4000	2.8	2.8	0.5			453597	608626
22-May	sun	8		157772	76				2.8	2.8	0.6			453703	608771
23-May	cloud	6		157850	78				2.8	2.8	1.8			453817	608938
24-May	rain	7		157939	89				2.8	2.8	1.6			453897	609058
25-May	rain	7		158027	88				2.8	0	2.2			453938	609115
26-May	cloud	8		158106	79		3600	3800	2.8	0				454051	609281
27-May	sun	14		158175	69				0	0	2.2			454107	609367
28-May	cloud	5		158256	81				0	0				454170	609456
29-May	cloud	7		158334	78				2.8	2.8	2.1			454278	609617
30-May	sun	10		158414	80				2.8	2.8	1.8			454301	
31-May	sun	8		158498	84	45			2.8	2.8	1.5			454408	609796
Summary	Average	8		Average	84				2		1				
	Median	7		max	196				2.8		0.9				
				Total	2608	45			64.4		28.5			Monthly total	5656

#### JUNE

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)		ClearPAC	BR2 ClearPAC (I/d)	PO4	TSS	BOD	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
1-Jun	cloud	8		158567	69				2.8	2.8	1.4			454512	610052
2-Jun	sun	8		158640	73				2.8	2.8	1.1			454622	610102
3-Jun	sun	8		158707	67				2.8	2.8				454630	610164
4-Jun	sun	14		158770	63				2.8	0	1.1			454767	610332
5-Jun	cloud	12		158837	67		3800	3800	2.8	0	1.5			454852	610467
6-Jun	sun	10		158915	78		3900	3800	2.8	5.6	1.6			454878	610505
7-Jun	cloud	5		159001	86				2.8	2.8	1.1			454998	610681
8-Jun	cloud	6		159080	79		3900	3800	2.8	2.8	0.7			455098	610795
9-Jun	cloud	7		159150	70				2.8	2.8	0.7			455115	610853
10-Jun	sun	16		159226	76		3700	3800	2.8	2.8	0.8			455230	610024
11-Jun	sn	5		159293	67		3700	3800	2.8	2.8	1.3			455334	611177
12-Jun	sun	8		159380	87				2.8	2.8	0.8			455351	611204
13-Jun	cloud	7		159460	80		3800	3800	2.8	2.8	1.1			455465	611373
14-Jun	thunder	8		159561	101				2.8	2.8	1.2			455582	611547
15-Jun	rain	11		159638	77		3800	3900	2.8	2.8	0.9			455702	
16-Jun	sun	9		159730	92				2.8	2.8	1.1			455819	611898
17-Jun	sun	8		159813	83				2.8	2.8					
18-Jun	sun	12		159882	69				2.8	2.8	1.2			455819	611898
19-Jun	cloud	9		159964	82				2.8	2.8	0.2			455956	612098
20-Jun	cloud	10		160056	92				0	2.8	0.8			456071	612269
21-Jun	sun	15		160147	91				0	2.8	0.9			456110	612323
22-Jun	sun	10		160225	78				0	2.8					
23-Jun	sun	26		160295	70		3700	3800	0	2.8	1.4			456349	612675
24-Jun	cloud	20		160373	78		3700	3700	2.8	2.8	1.5			456440	612812
25-Jun	sun	17		160451	78		3600	3700	2.8	2.8	1.4			456488	612881
26-Jun	sun	15		160537	86				2.8	2.8	1.6			456612	613063
27-Jun	sun	15		160623	86		3600	4000	2.8	2.8	1.5			456741	613253
28-Jun	sun	28		160708	85		3700	3800	2.8	2.8	1.5			456863	613433
29-Jun	sun	28		160805	97				2.8	2.8				456983	613613
30-Jun	sun	20		160879	74		3700	3800	0	0	2.6			457078	613754
						57									
Summary	Average	13		Average	79	57			2	3	1				
	Median	10		Max	101	57			2.8	2.8	1.15				
				Total	2381	57			70	78.4	31			Monthly tota	6268

JULY															
DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)	BR1 ClearPAC (I/d)	BR2 ClearPAC (I/d)	PO4	TSS	BOD	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
1-Jul	sun	24		160961	82				0	0	3.2			457139	613848
2-Jul	sun	15		161044	83				2.8	2.8	2.1			457268	614032
3-Jul	sun	13		161144	100		4100	4100	2.8	2.8	1.1			457421	614257
4-Jul	cloud	16		161282	138				5.6	5.6	1.3			457569	614475
5-Jul	rain	25		161435	153				5.6	5.6				457695	614660
6-Jul	sun	18		161595	160		4800	4800	5.6	5.6	2.2			457816	614840
7-Jul	sun	23		161782	187		5000	4800	5.6	5.6	2.2			457816	614840
8-Jul	sun	12		161864	82		5100	4800	5.6	5.6	1.3			457958	615051
9-Jul	sun	16		161976	112				5.6	5.6	2.2			458082	615236
10-Jul	mon	17		162125	149		5000	4700	5.6	5.6	2.1			458214	615432
11-Jul	tue	14		162259	134				5.6	5.6	1.9			458345	615627
12-Jul	wed	12		162380	121		5500	4800	5.6	5.6	2.2			458462	615802
13-Jul	thu	13		162491	111				5.6	5.6				458582	615980
14-Jul	sun	13		162596	105		5400	4700	5.6					458697	616153
15-Jul	sun	13		162697	101				5.6	5.6	1.1			458803	616311
16-Jul	sun	12		162796	99		4400	3700	5.6	5.6	1			458924	616493
17-Jul	sun	14		162914	118				5.6	5.6	1.1			459049	616680
18-Jul	sun	16		163043	129				5.6	5.6	1.7			459175	616869
19-Jul	sun	13		163157	114		4700	4000	5.6	5.6	1.6			459302	617057
20-Jul	sun	15		163300	143		4700	4100	5.6		1.3			459441	617265
21-Jul	sun	13		163394	94		4700	4200	5.6		1.4			459570	617458
22-Jul	sun	9		163512	118				5.6	5.6	1.3			459693	617643
23-Jul	sun	9		163648	136		4800	4300	5.6		1.3			459807	617815
24-Jul	smoke	12		163731	83				5.6		1.7			459960	
25-Jul	sun	16		163924	193		5000	4600	8.4	8.4	1.9			460186	618096
26-Jul	sun	12		164074	150				7.2	7.2				460356	618346
27-Jul	sun	10		164247	173		5500	5100	7.2	7.2	1.7			460477	618532
28-Jul	sun	9		164400	153		5300	5000	7.2	7.2	1.3			460599	618714
29-Jul	sun	11		164556	156		5400	5000	7.2	7.2	1.4			460718	618895
30-Jul		12		164727	171		5400	5000	5.6		1.4			460836	619075
31-Jul	sun	12		164873	146	60	5400	5000	5.6	7.2	1.5		<u> </u>	460980	619289
Summary	Average	14		Average	129				6	-	2				
	Median	13		Max	193				5.6	5.6	1.5				
				Total	3994	60			171.6	174.8	44.5			Monthly total	9282

#### AUGUST

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)	Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS	BR1 ClearPAC <sup>(I/d)</sup>	BR2 ClearPAC (I/d)	PO4	TSS	BOD	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
1-Aug	sun	13		164997	124		5800	5200	5.6		1.4			461120	619500
2-Aug	cloud	17		165100	103		5500	5200	5.6		1.4			461243	619684
3-Aug	cloud	17		165224	124		5300	5200	5.6	7.2	1.6			461375	619884
4-Aug	cloud	13		165368	144		5600	5200	5.6	7.2	1.2			461487	620050
5-Aug	cloud	12		165507	139		5600	5200	5.6		1.5			461543	620140
6-Aug	cloud	14		165657	150		5400	5200	5.6	7.2	1.3			461692	620356
7-Aug	cloud	10		165825	168		5600	5500	5.6		1.5			461831	620564
8-Aug	cloud	11		165995	170		5700	5800	5.6	7.2	1.6			461970	620772
9-Aug	cloud	9		166153	158		5900	6000	5.6	7.2	1.4			462107	620976
10-Aug	cloud	14		166282	129		5900	6100	5.6	7.2				462154	621052
11-Aug	sun	13		166408	126		5800	5900	5.6		1.2			462274	621227
12-Aug	sun	21		166533	125		5400	5500	5.6	7.2	1			462422	621448
13-Aug	sun	18		166649	116				5.6	5.6	1.2			462554	621647
14-Aug	smoke	14		166750	101		5200	5400	5.6	5.6	1.2			462684	621842
15-Aug	smoke	11		166861	111		5200	5300	5.6	5.6	1.2			462814	622037
16-Aug	smoke	13		166992	131		5200	5300	5.6	5.6	1.2			462935	622219
17-Aug	rain	9		167167	175		5300	5200	5.6	5.6	1.4			463065	622394
18-Aug	sun	5		167318	151		5200	5400	5.6	5.6	1.6			463154	622547
19-Aug	cloud	11		167451	133		5200	5400	5.6	5.6	1.2			463273	622583
20-Aug	cloud	12		167593	142			5500	5.6	5.6	2.9			463409	622783
21-Aug	cloud	10		167733	140				5.6	5.6				463539	623008
22-Aug	cloud	10		167886	153		5000	5300	5.6	5.6	2.6			463708	623233
23-Aug	cloud	4		168035	149		4900	5500	5.6	5.6	1.7			463769	623366
24-Aug	sun	5		168165	130		4900	5400	5.6	5.6	1.3			463896	623513
25-Aug	sun	6		168324	159		6000	6500	8.4		8.4			464041	623730
26-Aug	sun	6		168473	-		5900	6400	5.6		8.4			464163	623916
27-Aug		8		168600					5.6		5.6			464286	624100
28-Aug	sun	11		168744	144		6000	6600	5.6		5.6			464338	624183
29-Aug	sun	12		168870	126		6300	6600	5.6		5.6			464466	
30-Aug	sun	9		168975	105				5.6		5.6			464593	624562
31-Aug	cloud	8		169103	128	125	6000	6500	0		5.6			464717	624749
Summary	Average	11		Average	136				6	6	3				
	Median	11		Max	175				5.6	6.4	1.5				
				Total	4230	125			170.8	153.6	77.4			Monthly tota	8846

#### SEPTEMBER

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)		Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS (m3/dy)		BR2 ClearPAC <sup>(1/d)</sup>	PO4	TSS	BOD	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
1-Sep	cloud	5		169230	127		6000	6500	0	5.6	2.5			464769	624831
2-Sep	cloud	4		169362	132		6300	6400	0		2.3			464853	624954
3-Sep	sun	8		169506	144		6300	6400	7.2	7.2	2.9			464990	625161
4-Sep	sun	9		169660	154				5.6	5.6	1.8				
5-Sep	sun	10		169782	122		6200		5.6					465256	625563
6-Sep	sun	10		169919	137		6000	6000	5.6	5.6	1.7			465362	625563
7-Sep	sun	9		170030	111		5800	5800	5.6	5.6	1.6			465649	625592
8-Sep	sun	9		170122	92		5700	5500	5.6	5.6	1.1			465740	625731
9-Sep	sun	5		170219	97				5.6	5.6	1.1			465903	
10-Sep	sun	11		170326	107		5500	5400	5.6	5.6	1			466104	625891
11-Sep	cloud	7		170421	95				5.6	5.6				466233	626091
12-Sep	rain	7		170538	117				5.6	5.6	1			466289	626182
13-Sep	cloud	8		170653	115				2.8	2.8				466385	
14-Sep	sun	2		170755	102		5500	5500	2.8	2.8	0.9			466509	626511
15-Sep	cloud	2		170864	109				2.8	2.8				466509	626682
16-Sep	cloud	3		170963	99		5400	5500	2.8	2.8				466576	
17-Sep	cloud	4		171072	109				2.8	2.8	0.9			466706	
18-Sep	rain	7		171201	129				2.8	2.8	1.3			466832	627217
19-Sep	cloud	6		171333	132		6000	5400	2.8	2.8	1			466920	627350
20-Sep	cloud	5		171454	121		5800	5400	2.8	2.8	1.2			466973	627428
21-Sep	cloud	6		171555	101				2.8	2.8				467103	627625
22-Sep	cloud	6		171654	99		5500	5100	2.8	2.8	1.2			467221	627801
23-Sep	sun	6		171747	93		5400	5000	0	2.8	1			467301	
24-Sep	sun	7		171849	102		5400	5000	2.8	2.8					
25-Sep	clear	7		171951	102				2.8	2.8	1.4			367475	628188
26-Sep	clear	11		172075	124		5700	5000	2.8	2.8	1.8			467587	628356
27-Sep	rain	8		172196	121				2.8	2.8				467607	628394
28-Sep	cloud	4		172306	110		5800	5300	2.8	2.8	1.4				
29-Sep	cloud	3		172407	101		5600	5100	2.8	2.8				467852	628758
30-Sep	cloud	6		172496	89	116	5400	5000	2.8	2.8	1.3			467856	628790
Summary	Average	7		Average	113				4	4	1				
	Median	6.5		Max	154				2.8	2.8	1.3				
				Total	3393	116			105.2	120.8	30.4			Monthly tota	7046

#### OCTOBER

DATE	WEATHER	TEMP	Skier Visits		Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS	ClearPAC		PO4	TSS	BOD	Well 3 Cum. Flow (m3)	Well 4 Cum. Flow (m3)
1-Oct		8		172595	92		5260	4900	2.8	2.8	1.38			467890	62895
2-Oct		7		172687	105				2.8	2.8	1.2			468096	62913
3-Oct		7		172792	99				2.8	2.8	1.3			468159	62922
4-Oct		2		172891	84		5100	4700	2.8	2.8	1.2			165237	62934
5-Oct		3		172975	101		5100		2.8	2.8				468350	62951
6-Oct	cloud	6		173076	85		5100	4700	2.8	2.8	1.2			468472	62970
7-Oct		1		173161	95				2.8	2.8	1			468472	62970
8-Oct	cloud	-2		173256	92				2.8	2.8	1.1			468592	62988
9-Oct	cloud	-1		173348	128				2.8	2.8	1.1			468660	62999
10-Oct	cloud	3		173476	129		5100	4800	2.8	2.8	2.1			468748	
11-Oct		-4		173605	107		5200	5100	2.8	5.6				468888	63033
12-Oct		-5		173712	86		5200	5100	2.8	5.6	1.5			469001	63050
13-Oct		-2		173798	78		5200	5100	2.8	5.6	1.5			469011	63052
14-Oct	cloud	-5		173876	82				2.8	5.6	0.5			469122	63068
15-Oct	cloud	-6		173958	78				2.8	2.8	0.8			469207	63070
16-Oct	rain	5		174036	87				2.8	2.8	0.9			469314	63086
17-Oct	clear	8		174123	78		5200	5200	2.8	2.8	0.8			569426	63103
18-Oct	clear	1		174201	69		5200	5100	2.8	2.8	0.9			469426	63103
19-Oct	sun	5		174270	72		5200	5100	2.8	2.8	0.8			469546	63121
20-Oct	clear	4		174342	71		5300	5100	2.8	2.8	0.9			469623	63133
21-Oct	sun	2		174413	75		5200	5100	2.8	2.8	0.9			469659	63138
22-Oct				174488	122		5500	5200	2.8	2.8	0.5			469774	
23-Oct	cloud	4		174610	82				2.8	2.8	0.9			469807	63163
24-Oct	cloud	5		174692	84				2.8	2.8	1.3			469897	63174
25-Oct	cloud	5		174776	75		5300	5200	2.8	2.8	0.98			470012	63192
26-Oct	clear	4		174851	85		5400	5200	2.8	2.8	0.99			470012	63192
27-Oct	clear	2		174936	75		5400		2.8	2.8	0.87			470136	63210
28-Oct		0		175011	87		5400	5200	2.8	2.8	0.6			470249	63222
29-Oct	cloud	1		175098	75				2.8	2.8	0.3			470249	63228
30-Oct	cloud	-5		175173	99				2.8	2.8	0.7			470365	
31-Oct	clear	-6		175272	56	32			2.8	2.8	0.9			470376	63248
Summary	Average	2			88	32			3	3	1				
	Median	2		Median	85	32			2.8	2.8	0.9				
				Total	2733	32			86.8	98	29.12			Monthly tota	601

#### NOVEMBER

DATE	WEATHER	TEMP	Skier Visits		Total Flow (m3/dy)	Bags Rem'd	BR1 MLSS (m3/dy)	BR2 MLSS	BR1 ClearPAC (I/d)	BR2 ClearPAC (I/d)	PO4	TSS	BOD		Well 4 Cum. Flow (m3)
1-Nov	clear	-9		175355	80				2.8	2.8				470485	632640
2-Nov	sun	-5		175435	73				2.8	2.8				470594	632807
3-Nov	cloud	0		175508	67		5500	5200	2.8	2.8	0.8			470595	632807
4-Nov	rain	1		175575	76		5400	5300	2.8	2.8	0.3			470709	632981
5-Nov	cloud	2		175651	78		5400	5300	2.8	2.8	0.5			470805	633126
6-Nov	clear	-3		175729	108		5300	5000	2.8	2.8	0.3			470824	633155
7-Nov	cloud	-2		175837	59				2.8	2.8				470995	633337
8-Nov	snow	-1		175896	75		5300	5200	2.8	2.8	0.5				
9-Nov	snow	-3		175971	72		5400	5200	2.8	2.8	0.5				
10-Nov	snow	-1		176043	77		5400	5200	2.8	2.8	0.6				
11-Nov	cloud	-4		176120	80		5500	5300	2.8	2.8	0.5				
12-Nov	snow	-3		176200	110		5400	5200	2.8	2.8	1.5			471469	
13-Nov	clear	-2		176310	99				2.8	2.8	0.6			471469	634128
14-Nov	snow	-2		176409	80		5900	5600	2.8	2.8	0.9				
15-Nov	rain	0		176489	109		5900	5600	2.8	2.8					
16-Nov	clear	-2		176598	86		5900	5500	2.8	2.8	0.3				
17-Nov	clear	-10		176684	71		5900	5500	2.8	2.8	0.5			471969	
18-Nov	clear	-10		176755	123				2.8	2.8	0.3				
19-Nov	clear	-7		176878	75				2.8	2.8				472266	635320
20-Nov	clear	-7		176953	78		6000	5600	2.8	2.8	0.5			472522	
21-Nov	clear	-8		177031	79				2.8	2.8	0.5			472566	635782
22-Nov	clear	-4		177110	63				2.8	2.8	0.5				
23-Nov	cloud	-1		177173	80		5600	5400	2.8	2.8	0.3			472790	636112
24-Nov	clear	-5		177253	85				2.8	2.8					
25-Nov	snow	-1		177338	86				2.8	2.8					
26-Nov	snow	-1		177424	70		5900	5600	2.8	2.8				473093	636571
27-Nov	clear	-3		177494	82				2.8		0.4			473112	636609
28-Nov	snow	-1		177576	83		6000	5600	2.8	2.8	0.4				
29-Nov	cloud	0		177659	82		5900	5600	2.8	2.8	0.3				
30-Nov	rain	2		177741	93	162	5900	5600	2.8	2.8	0.3			473435	637050
Summary	Average	-3			83	162			3	3	1				
	Median	-2		Median	80	162			2.8	2.8	0.5				
				Total	2479	162			84		11.3			Monthly total	7360

#### December

DATE	WEATHER	TEMP	Skier Visits	Cumulative Flow (m3/dy)		Bags Rem'd		BR2 MLSS (m3/dy)		BR2 ClearPAC (I/d)	PO4	TSS	BOD	Well 3 Cum. Flow (m3)	Well 4 Cum.	Snow making Daily totals (m3)
1-Dec	rain	5		177879	141		5500	5400	2.8	2.8				473540	637250	
2-Dec	rain	2		178020	220		5400	5100	2.8		-			473540	637250	
3-Dec	rain	-6		178240	102		5600	5300			0.5					199
4-Dec	clear	-10		178342	121		5700		2.8	2.8	0.7			473857		218
5-Dec	clear	-12		178463	115		5600	5600	2.8					474071	638025	218
6-Dec	snow	-10		178578	106		5600	5800	2.8	2.8	0.5					218
7-Dec	clear	-13		178684	111		5600	5800	2.8	2.8	0.5			474524	638672	209
8-Dec	snow	-7		178795	90		5700	5800	2.8	2.8	0.3			474701	638930	162
9-Dec	snow	-8		178885	81		5700	5800	2.8	2.8	0.1			474826	639115	75
10-Dec	powerout	-10		178966	103				off	off						
11-Dec	snow	-7		179069	103				2.8	2.8	1.8			475015	639257	
12-Dec	snow	-5		179172	131		5600	5800	5.6	5.6	1.4			475206	639531	
13-Dec	clear	-6		179303	115		560	5800	5.6	5.6	1.1			475322	639706	
14-Dec	snow	-7		179418	114		5900	6000	5.6	5.6	1.1			475417		90
15-Dec	clear	-10		179532	88		5500	5800	5.6	5.6	0.3			475563	640063	170
16-Dec	snow	-9		179620	108		5600	5800	5.6	5.6	0.5			475761	640352	145
17-Dec	clear	-15		179728	121		5300	5800	5.6	5.6	0.5			475961		116
18-Dec	snow	-12		179849	164				5.6	5.6	0.3			476138	640906	201
19-Dec	snow	-12		180013	127		5600	5800	5.6	5.6	0.9			476332	641188	129
20-Dec	snow	-12		180140	233		5800	5800	5.6	5.6	0.7			476604	641584	55
21-Dec	clear	-14		180373	223		5900	5800	5.6	5.6	2.1			476691	641719	
22-Dec	snow	-11		180596	166		6000	6200	5.6	5.6	2.4			476864		
23-Dec	snow	-11		180762	182		5700	6300	5.6	5.6	2.8			477009	642197	
24-Dec	snow	-11		180944	177		5700	6200	5.6	5.6	2.3			477140	642387	
25-Dec	clear	-17		181121	189		5800	6100	5.6	5.6	1.8					
26-Dec	snow	-23		181310	187		5700	6100	5.6	5.6	2			477405	642787	
27-Dec	clear	-24		181497	206		5700	6000	5.6	5.6	2.1			477547	643001	
28-Dec	clear	-22		181703	205		5700	5800	5.6	5.6	2			477689		
29-Dec	clear	19		181908	203		5800	6000	5.6	5.6	0			477838		
30-Dec	clear	-20		182111	212		5900	5900	5.6	5.6	3.1			477982	643659	
31-Dec	clear	-22		182323	247		6000	6000	5.6	5.6	3.2			478135	643890	
Summary	Average	-10		46851	151	104			5	5	3					
	Median	-11		97074	131				5.6	5.6	2.8					
				Total	4691	0			140	140	35.9			Monthly total	11235	2225

	Sludge Bags removed
January	212
February	192
March	186
April	150
May	45
June	57
July	60
August	125
September	116
October	32
November	162
December	104
Total	1441

	Water consumption (m3)
January	7867
February	8239
March	8923
April	6704
May	5656
June	6268
July	9282
August	8846
September	7046
October	6016
November	7360
December	11235
Total	93442

2225 was used by snowmaking

Date	Effluent Flow (m3/dy)
1-Jul	
2-Jul	
3-Jul	
4-Jul	
5-Jul	
6-Jul	
7-Jul	
8-Jul	
9-Jul	
10-Jul	
11-Jul	
12-Jul	
13-Jul	
14-Jul	
15-Jul	
16-Jul	
17-Jul	
18-Jul	
19-Jul	
20-Jul	
21-Jul	
22-Jul	
23-Jul	
24-Jul	
25-Jul	
26-Jul	
27-Jul	
28-Jul	
29-Jul	
30-Jul	
31-Jul	
Avg	
Max	
Total	

Data	Effluent Flow
Date	(m3/dy)
1-Aug	
2-Aug	
3-Aug	
4-Aug	
5-Aug	
6-Aug	
7-Aug	
8-Aug	
9-Aug	
10-Aug	
11-Aug	
12-Aug	
13-Aug	
14-Aug	
15-Aug	
16-Aug	
17-Aug	
18-Aug	
19-Aug	
20-Aug	
21-Aug	
22-Aug	
23-Aug	
24-Aug	
25-Aug	
26-Aug	
27-Aug	
28-Aug	
29-Aug	
30-Aug	
31-Aug	
Avg	
Max	
Total	

Date	Effluent Flow (m3/dy)
1-Sep	
2-Sep	
3-Sep	
4-Sep	
5-Sep	
6-Sep	
7-Sep	
8-Sep	
9-Sep	
10-Sep	
11-Sep	
12-Sep	
13-Sep	
14-Sep	
15-Sep	
16-Sep	
17-Sep	
18-Sep	
19-Sep	
20-Sep	
21-Sep	
22-Sep	
23-Sep	
24-Sep	
25-Sep	
26-Sep	
27-Sep	
28-Sep	
29-Sep	
30-Sep	
Avg	
Max	
Total	



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received:13-JAN-21Report Date:19-JAN-21 08:09 (MT)Version:FINAL

Client Phone: 250-344-8442

## Certificate of Analysis

Lab Work Order #: L2547716 Project P.O. #: NOT SUBMITTED Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2547716-1 UV TROUGH							
Sampled By: TJ on 12-JAN-21 @ 09:00							
Matrix: Water							
Miscellaneous Parameters							
Biochemical Oxygen Demand	3.0		2.0	mg/L		13-JAN-21	R5352405
Orthophosphate-Dissolved (as P)	0.171	DLHC	0.020	mg/L		13-JAN-21	R5345886
Coliform Bacteria - Fecal	<1		1	CFU/100mL		13-JAN-21	R5346945
Phosphorus (P)-Total	0.336		0.0050	mg/L		15-JAN-21	R5348336
Total Suspended Solids	5.4		3.0	mg/L		17-JAN-21	R5350981

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## **Reference Information**

#### Sample Parameter Qualifier Key:

Qualifier	Description		
DLHC	Detection Limit Raise	ed: Dilution required due to high concentration c	f test analyte(s).
est Method	References:		
ALS Test Cod	le Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode
oxygen demar dissolved oxyg	nd (BOD) are determined gen meter. Dissolved BO	by diluting and incubating a sample for a spec	ochemical Oxygen Demand (BOD)". All forms of biochemical fied time period, and measuring the oxygen depletion using a nple through a glass fibre filter prior to dilution. Carbonaceous or to incubation.
FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D
Coliform bacte involves an ini	eria is enumerated by cul tial 24 hour incubation at	turing and colony counting. A known sample vo	brane Filter Technique for Members of the Coliform Group". Jume is filtered through a 0.45 micron membrane filter. The test e growth medium. This method is specific for thermotolerant
P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
	s carried out using proce gestion of the sample.	dures adapted from APHA Method 4500-P "Ph	osphorus". Total Phosphorus is determined colourimetrically afte
PO4-DO-COL-	-CL Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
		dures adapted from APHA Method 4500-P "Ph been lab or field filtered through a 0.45 micron	osphorus". Dissolved Orthophosphate is determined membrane filter.
TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		dures adapted from APHA Method 2540 "Solid nple through a glass fibre filter, and by drying th	s". Solids are determined gravimetrically. Total suspended solids e filter at 104 deg. C.
ALS test met	hods may incorporate mo	odifications from specified reference methods to	o improve performance.
The last two le	etters of the above test co	ode(s) indicate the laboratory that performed an	alytical analysis for that test. Refer to the list below:
Laboratory De		ratory Location	

CL

ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

#### **Chain of Custody Numbers:**

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million. < - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## **Quality Control Report**

		Workorder:	L254771	6 Re	eport Date: 19-	JAN-21	Pa	ige 1 of 2
Client:	KICKING HORSE MOUN 1500 Kicking Horse Trail Golden BC V0A 1H0	ITAIN UTILITY C	ORPORATIC	DN				
Contact:	TRAVIS JOBIN							
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	Water							
Batch	R5352405							
WG3475088- Biochemical	5 LCS Oxygen Demand		97.4		%		85-115	13-JAN-21
WG3475088- Biochemical	4 MB Oxygen Demand		<2.0		mg/L		2	13-JAN-21
FCC-MF-CL	Water							
Batch	R5346945							
WG3473636- Coliform Bac		<b>L2547716-1</b> <1	<1	RPD-NA	CFU/100mL	N/A	65	13-JAN-21
WG3473636- Coliform Bac			<1		CFU/100mL		1	13-JAN-21
P-T-COL-CL	Water							
Batch	R5348336							
WG3474025- Phosphorus			93.4		%		80-120	15-JAN-21
WG3474025- Phosphorus			<0.0050		mg/L		0.005	15-JAN-21
PO4-DO-COL-C	L Water							
Batch	R5345886							
WG3473074-								
Orthophosph	nate-Dissolved (as P)		99.9		%		80-120	13-JAN-21
WG3473074- Orthophosph	1 MB nate-Dissolved (as P)		<0.0050		mg/L		0.005	13-JAN-21
TSS-CL	Water							
Batch	R5350981							
WG3474536-								
Total Susper	nded Solids		92.4		%		85-115	17-JAN-21
WG3474536- Total Susper			<3.0		mg/L		3	17-JAN-21

Workorder: L2547716

Report Date: 19-JAN-21

#### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

#### Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

## Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878

Page

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Report To	Report Fo	Report Format / Distribution Service Requested (Rush for routine analysis subject to availability)															
Company: Kicking Horse Mountain Water Utility Co. Ltd.	Standard	t 🗌 Other			Regular (Standard Turnaround Times - Business Days)												
Contact: Travis Jobin	DF																
Address: 1500 Kicking Horse Trail	Email 1:	Email 1:       tjobin@kickinghorseresort.com       O Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT         Email 2:       pmaier@skircr.com       O Same Day or Weekend Emergency - Contact ALS to Confirm TAT															
	Email 2:	pmajer@skircr.	<u>com</u>		O s	ime Da	y or W	eekend			<u> </u>	_	_	ifirm T/	AT		_
Phone: 250-344-6003 Fax:	Email 3:	mskyring@kick	nghorseresort o	com								eques					
Invoice To Same as Report ?  Yes  No	Client / P	roject Informati	on		Plea	ase in	dicate	e belo	w Fil	tered	l, Pres	served	d or b	oth (F	, P, F	/P)	
Hardcopy of Invoice with Report? Yes I No	Job #:	RCR - Kicking H	lorse Mountain	Resort													
Company: Resorts of the Canadian Rockies	PO/AFE:						1										
Contact: Patrick Majer	LSD:																
Address: 1505 - 17th Ave SW Calgary AB																	Jers
Phone: Fax:	Quote #:	Q33059															ntaiı
Lab Work Order # (lab use only)	ALS Contact:	PW	Sampler:	TJ			Fecal Coliform	Ortho Phosphate									Number of Containers
Sample Sample Identification # (This description will appear on the re	port)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal C	Ortho F	Total P								Numb
UV trough		12-Jan-21	9:00	Water	X	X	X	X	Χ					I			4
L2547716-COFC								-			<u> </u>	$\vdash$		┝──┨			
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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 RELE	ASE (client use	)	SHIP	MENT RECEPTI	ON (lab use only	Ø.	SHIPM	ENTVERIFICA	FION (lab use o	nly)
	Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations:
	-		930		1/12	50	4				Yes / No ?
1	T Jobin	12-Jan-21		Rh		$ 0\rangle$					If Yes add SIF

GENF 20.00 Front



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received:17-FEB-21Report Date:24-FEB-21 15:38 (MT)Version:FINAL

Client Phone: 250-344-8442

## Certificate of Analysis

Lab Work Order #: L2557949 Project P.O. #: NOT SUBMITTED Job Reference: RCR-KICKING HORSE MOUNTAIN RESORT C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2557949-1 UV TROUGH							
Sampled By: TJ on 16-FEB-21 @ 09:15							
Matrix: WATER Miscellaneous Parameters							
Biochemical Oxygen Demand	7.6		2.0	mg/L		18-FEB-21	R5388878
Orthophosphate-Dissolved (as P)	0.813	DLHC	2.0 0.050	mg/L		17-FEB-21	R5378868
Coliform Bacteria - Fecal		DLIIC		CFU/100mL		17-FEB-21 17-FEB-21	
	54	DLHC	1			17-FEB-21 19-FEB-21	R5380122
Phosphorus (P)-Total	1.12	DLHC	0.050	mg/L			R5381338
Total Suspended Solids	9.2		3.0	mg/L		21-FEB-21	R5384053

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## **Reference Information**

#### Sample Parameter Qualifier Key:

Qualifier	Description		
DLHC	Detection Limit Raise	d: Dilution required due to high concentration c	f test analyte(s).
est Method	References:		
ALS Test Cod	e Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode
oxygen deman dissolved oxyg	d (BOD) are determined en meter. Dissolved BO	by diluting and incubating a sample for a speci	ochemical Oxygen Demand (BOD)". All forms of biochemical fied time period, and measuring the oxygen depletion using a nple through a glass fibre filter prior to dilution. Carbonaceous or to incubation.
FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D
Coliform bacte involves an init	ria is enumerated by cultitial 24 hour incubation at	turing and colony counting. A known sample vo	brane Filter Technique for Members of the Coliform Group". Jume is filtered through a 0.45 micron membrane filter. The test e growth medium. This method is specific for thermotolerant
P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
	s carried out using proce gestion of the sample.	dures adapted from APHA Method 4500-P "Ph	osphorus". Total Phosphorus is determined colourimetrically afte
PO4-DO-COL-	CL Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
		dures adapted from APHA Method 4500-P "Ph been lab or field filtered through a 0.45 micron	osphorus". Dissolved Orthophosphate is determined membrane filter.
rss-cl	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		dures adapted from APHA Method 2540 "Solid pple through a glass fibre filter, and by drying th	s". Solids are determined gravimetrically. Total suspended solids e filter at 104 deg. C.
ALS test meth	nods may incorporate mo	odifications from specified reference methods to	o improve performance.
The last two le	tters of the above test co	ode(s) indicate the laboratory that performed an	alytical analysis for that test. Refer to the list below:
Laboratory De	finition Code Labo	ratory Location	

CL

ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

#### **Chain of Custody Numbers:**

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

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## **Quality Control Report**

				, <b>e</b> e				
		Workorder:	L255794	9	Report Date: 24-	EB-21	Pa	ge 1 of 2
Client:	KICKING HORSE MOUN 1500 Kicking Horse Trail Golden BC V0A 1H0	TAIN UTILITY C	ORPORATIC	N				
Contact:	TRAVIS JOBIN							
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	Water							
WG3492749-	R5388878 2 LCS Oxygen Demand		91.6		%		85-115	18-FEB-21
WG3492749- Biochemical	1 MB Oxygen Demand		<2.0		mg/L		2	18-FEB-21
FCC-MF-CL	Water							
Batch WG3489893- Coliform Bac			<1		CFU/100mL		1	17-FEB-21
P-T-COL-CL	Water							
Batch WG3490192- Phosphorus			89.7		%		80-120	19-FEB-21
WG3490192- Phosphorus			<0.0050		mg/L		0.005	19-FEB-21
PO4-DO-COL-C	L Water							
WG3489196-	R5378868 2 LCS hate-Dissolved (as P)		96.0		%		80-120	17-FEB-21
WG3489196-			<0.0050		mg/L		0.005	17-FEB-21
TSS-CL	Water							
	R5384053							
WG3490834- Total Susper			86.5		%		85-115	21-FEB-21
WG3490834- Total Susper			<3.0		mg/L		3	21-FEB-21

### **Quality Control Report**

Workorder: L2557949

Report Date: 24-FEB-21

#### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

#### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

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Report To		Report Fo	rmat / Distributi	ion		Serv	ice R	eque	sted	Rush	for rou	utine a	inalysis	subjec	t to avail	ability)	
Company:	Kicking Horse Mountain Water Utility Co. Ltd.	Standard	i Other			🔘 R	egular	(Stand	ard Tu	narou	nd Time	es - Bu	siness D	ays)	. `		
Contact:	Travis Jobin	PDF Excel Digital 🖌 Fax			O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT												
Address:	1500 Kicking Horse Trail	Email 1: tjobin@kickinghorseresort.com		O Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT													
	· · · · · · · · · · · · · · · · · · ·	Email 2:	pmajer@skircr.c	om		Same Day or Weekend Emergency - Contact ALS to Confirm TAT											
Phone:	250-344-6003 Fax	Email 3:	mskyring@kicki	nghorseresort.c	om					_			quest				
Invoice To	Same as Report ? Yes J No	Client / Pr	oject Informatio	on <sup>i</sup>		Plea	ase in	dicat	e belo	w Fil	tered,	Pres	erved	or both	(F, P, I	F/P)	
Hardcopy of	Invoice with Report? Yes Vo	Job #:	RCR - Kicking H	lorse Mountain I	Resort												
Company:	Resorts of the Canadian Rockies	PO / AFE:		-													
Contact:	Patrick Majer	LSD:															"Ì
Address:	1505 - 17th Ave SW Calgary AB																ner
Phone:	Fax:	Quote #:	Q33059						a								ntai
190 C	Nork Order #. b use only)	ALS Contact:	PW	Sampler:	TJ			oliform	Ortho Phosphate		***				i i		Number of Containers
Sample #	Sample Identification (This description will appear on the report)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Coliform	Ortho P	Total P							Numbe
	UV trough	<u> </u>	16-Feb-21	9:15	Water	X	Х	X	Х	Х							4
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	Special Instructions / Regulations with water or land	l use (CCM	E-Freshwater A	ouatic Life/BC	CSR - Commerc	ial/AE	1 3 Tier	1 - N	atura	I. etc	)/Ha	zardo	ous De	tails			
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KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received:19-FEB-21Report Date:25-FEB-21 14:46 (MT)Version:FINAL

Client Phone: 250-344-8442

## Certificate of Analysis

Lab Work Order #: L2559180 Project P.O. #: NOT SUBMITTED Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
_2559180-1 INFLUENT							
Sampled By: TJ on 17-FEB-21 @ 05:30							
Matrix: WATER							
Miscellaneous Parameters							
Biochemical Oxygen Demand	204	DLHC	75	mg/L		19-FEB-21	R5389016
Total Suspended Solids	310		3.0	mg/L		21-FEB-21	R5384053

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

### **Reference Information**

#### Sample Parameter Qualifier Key:

Qualifier	Description							
DLHC Detection Limit Raised: Dilution required due to high concentration of test analyte(s).								
est Method R	eferences:							
ALS Test Code Matrix		Test Description	Method Reference**					
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode					
oxygen demand dissolved oxyge	(BOD) are determined n meter. Dissolved BC	d by diluting and incubating a sample for a spe	Biochemical Oxygen Demand (BOD)". All forms of biochemical ecified time period, and measuring the oxygen depletion using a sample through a glass fibre filter prior to dilution. Carbonaceous prior to incubation.					
TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric					
,	01	edures adapted from APHA Method 2540 "So nple through a glass fibre filter, and by drying	lids". Solids are determined gravimetrically. Total suspended solids the filter at 104 deg. C.					

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
Chain of Custody Numbers:	

#### ······

#### GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

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		Workorder	: L255918	30	Report Date: 2	25-FEB-21	Pa	ge 1 of 2
Client:	KICKING HORSE MOI 1500 Kicking Horse Tra Golden BC V0A 1H0		ORPORATI	ON				
Contact:	TRAVIS JOBIN							
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	Water							
Batch	R5389016							
WG349278 Biochemica	<b>8-2 LCS</b> al Oxygen Demand		91.9		%		85-115	19-FEB-21
WG349278 Biochemica	<b>8-1 MB</b> al Oxygen Demand		<2.0		mg/L		2	19-FEB-21
TSS-CL	Water							
Batch	R5384053							
WG349083 Total Susp	4-2 LCS bended Solids		86.5		%		85-115	21-FEB-21
WG349083 Total Susp	<b>4-1 MB</b> bended Solids		<3.0		mg/L		3	21-FEB-21

Workorder: L2559180

Report Date: 25-FEB-21

#### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

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#### Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

Page 1 of 1

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#### Service Requested (Rush for routine analysis subject to availability) Report Format / Distribution Report To Kicking Horse Mountain Water Utility Co. Ltd. Regular (Standard Turnaround Times - Business Days) Standard Other Company: Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT √ Fax PDF Travis Jobin Excel Digital Contact: C Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT 1500 Kicking Horse Trail Address Email 1: tjobin@kickinghorseresort.com Same Day or Weekend Emergency - Contact ALS to Confirm TAT Email 2: pmajer@skircr.com Email 3: mskyring@kickinghorseresort.com **Analysis Request** 250-344-6003 Phone: Fax: Please indicate below Filtered, Preserved or both (F, P, F/P) No No Client / Project Information 1 Invoice To Same as Report ? T Yes V No RCR - Kicking Horse Mountain Resort Yes Job #: Hardcopy of Invoice with Report? PO / AFF **Resorts of the Canadian Rockies** Company: \_SD: Patrick Majer Contact: Number of Containers Address: 1505 - 17th Ave SW Calgary AB Q33059 Fax: Phone: Quote #: Ortho Phosphate Lab Work Order # Fecal Coliform ALS PW Sampler: ΤJ Contact: (lab use only) Sample Identification Sample Date Time BOD fotal Sample Type **TSS** (dd-mmm-yy) (hh:mm) (This description will appear on the report) # Х Х 2 5:30 Water 17-Feb-21 Influent 湯 . Ser 1 2559180-COEC • 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 RECEPTION (lab use only) SHIPMENT VERIFICATION (lab use only) SHIPMENT RELEASE (client use) 140 L 16 L Received by: Verified by: Time: Observations: Date: Temperature: Date: Date (dd-mmm-yy) Time (hh-mm) Time: Released by: Yes / No?? P1~ 19- Feb - 21 Si30m °C h If Yes add SIF Mark Skyring 30-Sep-19

GENF 20.00 Front



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received:15-APR-21Report Date:28-APR-21 16:25 (MT)Version:FINAL

Client Phone: 250-344-8442

## Certificate of Analysis

Lab Work Order #: L2576829 Project P.O. #: NOT SUBMITTED Job Reference: WEEK 1 - 2021 SPRING EMS PROGRAM C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298 ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Environmental 🕽

www.alsglobal.com

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2576829-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ/JD on 14-APR-21 @ 08:15							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.060		0.050	mg/L		22-APR-21	R5438156
Biochemical Oxygen Demand	2.2		2.0	mg/L		16-APR-21	R5436756
Orthophosphate-Dissolved (as P)	0.0609		0.0050	mg/L		17-APR-21	R5430260
Enterococcus	See Attached					15-APR-21	R5442695
Coliform Bacteria - Fecal	<1		1	CFU/100mL		15-APR-21	R5429205
MPN - E. coli	<1		1	MPN/100mL		15-APR-21	R5429156
Phosphorus (P)-Total	0.202		0.050	mg/L		23-APR-21	R5440552
Total Suspended Solids	3.5		3.0	mg/L		20-APR-21	R5435600
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC	10.0	DI LIO	0.40				DE (00500
Nitrate (as N)	13.0	DLHC	0.10	mg/L		17-APR-21	R5436532
Nitrate+Nitrite Nitrate and Nitrite (as N)	13.0		0.11	mg/L		27-APR-21	
Nitrite in Water by IC	13.0		0.11	ing/L		21-74F 14-21	
Nitrite (as N)	<0.050	DLHC	0.050	mg/L		17-APR-21	R5436532
L2576829-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ/JD on 14-APR-21 @ 09:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		22-APR-21	R5438156
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		17-APR-21	R5430260
Enterococcus	See Attached					15-APR-21	R5442695
Coliform Bacteria - Fecal	79		1	CFU/100mL		15-APR-21	R5429205
MPN - E. coli	19	OCR	1	MPN/100mL		15-APR-21	R5429156
Phosphorus (P)-Total	0.0323		0.0050	mg/L		26-APR-21	R5441212
Total Suspended Solids	20.9		3.0	mg/L		20-APR-21	R5435600
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.107		0.020	mg/L		17-APR-21	R5436532
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.107		0.022	mg/L		27-APR-21	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		17-APR-21	R5436532
			0.010	iiig/∟		17-AF N-21	R0400052
L2576829-3 COLUMBIA RIVER DOWN STREAM (IS	LAND)						
Sampled By: TJ/JD on 14-APR-21 @ 09:00							
Matrix: WATER Miscellaneous Parameters							
	.0.050		0.050	m ~/l			DE420450
Ammonia, Total (as N)	<0.050		0.050	mg/L		22-APR-21 17-APR-21	R5438156
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L			R5430260
Enterococcus Coliform Bacteria - Fecal	See Attached		4	CELUADO		15-APR-21	R5442695
Collform Bacteria - Fecal MPN - E. coli	8	OCR	1	CFU/100mL MPN/100mL		15-APR-21 15-APR-21	R5429205
	6	UUK	1			-	R5429156
Phosphorus (P)-Total	0.0077		0.0050	mg/L		26-APR-21	R5441212
Total Suspended Solids	6.7		3.0	mg/L		20-APR-21	R5435600
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC Nitrate (as N)	0.221		0.020	mg/L		17-APR-21	R5436532
Nitrate+Nitrite	0.221		0.020	g/L			110-00002
	1	1		1		1	1

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2576829-3 COLUMBIA RIVER DOWN STREAM (IS Sampled By: TJ/JD on 14-APR-21 @ 09:00 Matrix: WATER	LAND)						
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		17-APR-21	R5436532
Nitrite in Water by IC	<0.010		0.010	mg/L		17-APR-21	R5436532

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

### **Reference Information**

#### Sample Parameter Qualifier Key:

	Description		
DLHC	Detection Limit Raise	ed: Dilution required due to high concentration	of test analyte(s).
OCR	Parameter is out of c	lient specific range.	
est Method R	eferences:		
ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode
oxygen demand dissolved oxyge	(BOD) are determined n meter. Dissolved BO	by diluting and incubating a sample for a spec	iochemical Oxygen Demand (BOD)". All forms of biochemical ified time period, and measuring the oxygen depletion using a mple through a glass fibre filter prior to dilution. Carbonaceous or to incubation.
EC-MPN-CL	Water	MPN - E. coli	APHA 9223B
Substrate Colifo sample is mixed The packet is in	rm Test". E. coli and To with a mixture hydroly cubated for 18 or 24 ho unted. The final result Holding Time:	edures adapted from APHA Method 9223 "Enziotal Coliform are determined simultaneously. Table substrates and then sealed in a multi-we purs and then the number of wells exhibiting a is obtained by comparing the positive response	he Il packet. positive
FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D
Coliform bacteria	a is enumerated by cul I 24 hour incubation at	turing and colony counting. A known sample v	nbrane Filter Technique for Members of the Coliform Group". Jolume is filtered through a 0.45 micron membrane filter. The test are growth medium. This method is specific for thermotolerant
N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
			dified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society on of trace levels of ammonium in seawater", Roslyn J. Waston et
NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)
norganic anions	are analyzed by Ion C	hromatography with conductivity and/or UV de	tection.
103-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)
norganic anions	are analyzed by Ion C	hromatography with conductivity and/or UV de	tection.
P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
	carried out using proce estion of the sample.	dures adapted from APHA Method 4500-P "PI	nosphorus". Total Phosphorus is determined colourimetrically after
PO4-DO-COL-C	L Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
		dures adapted from APHA Method 4500-P "Pl been lab or field filtered through a 0.45 micron	nosphorus". Dissolved Orthophosphate is determined membrane filter.
FSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		dures adapted from APHA Method 2540 "Solid pple through a glass fibre filter, and by drying t	ds". Solids are determined gravimetrically. Total suspended solids ne filter at 104 deg. C.
ALS test metho	ods may incorporate mo	odifications from specified reference methods	o improve performance.
The last two lette	are of the above test of	ada(s) indicate the laboratory that performed a	nalytical analysis for that test. Refer to the list below:

Laboratory Demittion Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
Chain of Custody Numbers:	

### **Reference Information**

#### **Test Method References:**

ALS Test Code	Matrix	<b>Test Description</b>	Method Reference**
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#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2576829

Report Date: 28-APR-21

Page 1 of 3

Client:	KICKING HORSE MOUNTAIN UTILITY CORPORATION
	1500 Kicking Horse Trail
	Golden BC V0A 1H0
Contact:	TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	Water							
Batch R5436756								
WG3521905-3 DUP Biochemical Oxygen De	emand	<b>L2576829-1</b> 2.2	2.1		mg/L	4.7	30	16-APR-21
WG3521905-2 LCS Biochemical Oxygen De	emand		94.3		%		85-115	16-APR-21
WG3521905-1 MB Biochemical Oxygen De	emand		<2.0		mg/L		2	16-APR-21
EC-MPN-CL	Water							
Batch R5429156 WG3519392-1 MB MPN - E. coli			<1		MPN/100mL		1	15-APR-21
	<b>W</b>							
FCC-MF-CL Batch R5429205	Water							
WG3519408-1 MB Coliform Bacteria - Fec			<1		CFU/100mL		1	15-APR-21
NH3-F-CL	Water							
Batch R5438156								
WG3522146-2 LCS Ammonia, Total (as N)			95.4		%		85-115	22-APR-21
WG3522146-1 MB Ammonia, Total (as N)			<0.050		mg/L		0.05	22-APR-21
NO2-IC-N-CL	Water							
Batch R5436532								
WG3521848-2 LCS Nitrite (as N)			108.2		%		90-110	17-APR-21
WG3521848-5 LCS Nitrite (as N)			107.2		%		90-110	17-APR-21
WG3521848-1 MB Nitrite (as N)			<0.010		mg/L		0.01	17-APR-21
WG3521848-4 MB Nitrite (as N)			<0.010		mg/L		0.01	17-APR-21
NO3-IC-N-CL	Water							
Batch R5436532								
WG3521848-2 LCS Nitrate (as N)			100.7		%		90-110	17-APR-21
WG3521848-5 LCS								



	Workorder: L257682	29 Report Date: 2	8-APR-21	Pa	ge 2 of 3
Test Matrix	Reference Result	Qualifier Units	RPD	Limit	Analyzed
NO3-IC-N-CL Water					
Batch R5436532					
WG3521848-5 LCS Nitrate (as N)	99.0	%		90-110	17-APR-21
WG3521848-1 MB Nitrate (as N)	<0.020	mg/L		0.02	17-APR-21
WG3521848-4 MB Nitrate (as N)	<0.020	mg/L		0.02	17-APR-21
P-T-COL-CL Water					
Batch R5440552					
WG3523330-2 LCS Phosphorus (P)-Total	95.0	%		80-120	23-APR-21
WG3523330-1 MB Phosphorus (P)-Total	<0.0050	mg/L		0.005	23-APR-21
Batch R5441212					
WG3524115-11 LCS Phosphorus (P)-Total	98.9	%		80-120	26-APR-21
WG3524115-10 MB Phosphorus (P)-Total	<0.0050	mg/L		0.005	26-APR-21
PO4-DO-COL-CL Water					
Batch R5430260					
WG3519710-2 LCS					
Orthophosphate-Dissolved (as P)	99.1	%		80-120	17-APR-21
WG3519710-1 MB Orthophosphate-Dissolved (as P)	<0.0050	mg/L		0.005	17-APR-21
TSS-CL Water					
Batch R5435600					
WG3520820-2 LCS Total Suspended Solids	86.7	%		85-115	20-APR-21
WG3520820-1 MB Total Suspended Solids	<3.0	mg/L		3	20-APR-21

Workorder: L2576829

Report Date: 28-APR-21

#### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

#### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# **Microbial Test Results**

Samples collected April 14, 2021

**Final Report** 

April 28, 2021

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

#4, 6125 12 Street SE, Calgary, AB T2H 2K1



#### SAMPLE INFORMATION

		Dates		
Sample ID/			Enterococcus	Receipt
Internal ID	Collected	Received	test initiation	temperature
L2576829-1 WWTP EFFLUENT – UV TROUGH /	14-Apr-21 at 0815h	15-Apr-21 at 1020h	15-Apr-21 at 1530h	11.8°C
2021-1260-01	001511	102011	15501	
L2576829-2 COLUMBIA RIVER UPSTREAM /	14-Apr-21 at 0930h	15-Apr-21 at 1020h	15-Apr-21 at 1530h	12.3°C
2021-1260-02	095011	102011	133011	
L2576829-3 COLUMBIA RIVER DOWN STREAM (ISLAND) /	14-Apr-21 at 0900h	15-Apr-21 at 1020h	15-Apr-21 at 1530h	13.6°C
2021-1260-03	090011	102011	133011	

#### **TEST TYPES**

• *Enterococcus* enumeration test

#### RESULTS

#### **Microbial test results**

Comple ID	MPN/100 mL
Sample ID —	Enterococcus
L2576829-1 WWTP EFFLUENT – UV TROUGH	<1
L2576829-2 COLUMBIA RIVER UPSTREAM	<1
L2576829-3 COLUMBIA RIVER DOWN STREAM (ISLAND)	36.4

MPN = Most Probable Number

#### QA/QC

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

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



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Reviewed By: Leila Oosterbroek, BSc Environmental Scientist

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

Report By:

Biologist

Shae Cole, BSc

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** 

L		~
AUTILUS ENVIRONMENTAL	Quanti-Tray Bench Sheet - Enterococcus	ccus
	Client ALSION Reference 2021-1200	
Test Initiation Date: 2021/04/115 Time: 1530 Techician: MF	Sample Information       Reagent used: Enterolert <sup>™</sup> Sample Information       Reagent Lot#/Expiry:     MSL 008       OU <upn 2522<="" td="">     Comments:</upn>	
Thermometer Serial #:	Quanti Tray 2000 Lot#/Expiry: GSO21 0112012023	
Results - 24 Hour Incubation Date: Jour Joy 11 10	1530 Technician: SC	
Incubator Temp: 41 (must be 41 ± 0.5°C)	Enterococci (Fluorescent)	
# Positive Large Wells: # Ambiguous Large Wells:		
# Positive Small Wells (Tray 2000 only): # Ambiguous Small Wells (Tray 2000 only):		
t	Time: 07,0 Technician: SC	_
	Enterococci (Fluorescent)	_
	cri - 61	
# Confirmed Positive Large Wells: # Confirmed Positive Small Wells (Trav 2000 milv):		
Most Probable Number at 28 hours:		
Confirmed positive wells includes the positive wells from 24 hours At 28 hours only score marked ambiguos from 24 hours	ours plus the ambiguous wells that became positive at 28 hours	
Rev	Reviewed By: $3\sqrt{51}$ Date Reviewed: $2\sqrt{64}$ ( 20	
Written by KS on 2006/07/11 Ambiguous We (15 Revised by LO on 2021/03/17	File	File: ENT F106
	and the second s	



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



#### Subcontract Request Form

#### Subcontract To:

## NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

#4, 6125-12 STREET SE CALGARY,AB T2H 2K1

NOTES: Please reference on final ALS requires QC data to	be provided with your final resul	1576829 Its. Proceed if Past	Beld fire
Please see enclosed <u>3</u> sam	ple(s) in <u>3</u> Container(s	5)	
SAMPLE NUMBER ANALYTI	CAL REQUIRED 2021-1260	DATE SAMPLED DUE DATE	Priority Flag
L2576829-1 WWTP EFFLUENT - UV TROUGH	- Ol cus (ENTERO-HQ 1)	4/14/2021 Sissing 4/27/2021	11.8%
L2576829-2 COLUMBIA RIVER UPSTREAM Enterococ	cus (ENTERO-HQ 1)	4/14/2021 4/27/2021	12.3°C
L2576829-3 COLUMBIA RIVER DOWN STREAM (ISLAND) Enterocod	-03 ccus (ENTERO-HQ 1)	<b>4/14/2021</b> 4/27/2021	13.6°C
Subcontract Info Contact: Analysis and reporting info contact:	John Forbes (403) 291-9897 Patryk Wojciak, B.Sc., P.Chen 2559 29 STREET NE CALGARY,AB T1Y 7B5 Phone: (403) 291-9897	2021/04/15 Good Condition 10:20 n. Drop off 3c 3x400 mL bottles NoS/NoL Email: patryk.wojciak@alsglo	
Please email confirmation of rece	ipt to: patryk.wojcia	ak@alsglobal.com	
Shipped By:	Date Shipped		
Received By:	Date Received	f:	
Verified By:	Date Verified:		
	Temperature:		
Sample Integrity Issues:			



**END OF REPORT** 



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#### Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com 1. ve

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COC #	
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(ALS)	Enutro L2576	829-COFC		<u>www.</u> a	alsglobal.com	1. AP									Pa	ige	1	of	1
Report To			∌port F	ormat / Distribu	tion		Serv	ice Re	eque	sted	(Rush	for ro	utine	analys	sis sut	oject to	availa	ability)	
Company:	Kicking Horse Mountain Resort Ut	tility Corporation	Standar	d 🚺 Other	1.			legular (											
Contact:	Travis Jobin		DF	Excel	Digita	al 🗹 Fax	O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT												
Address:	1500 Kicking Horse Trail		Email 1:	tjobin@kickingt	orseresort.con	<u>n</u>	O Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT												
			Email 2:	pmajer@skircr	com		Same Day or Weekend Emergency - Contact ALS to Confirm TAT												
Phone:	250-344-8442 Fax:		Email 3:	mskyring@kick	inghorseresort	com			_				sis Re						
Invoice To	Same as Report ? Yes	✓ No	Client / P	roject Informati	on		Ple	ase in	dicat	e belo	ow Fil	tered	, Pres	serve	d or b	oth (F	<sup>:</sup> , P, F	:/P)	_
Hardcopy of	Invoice with Report? Yes	✓ No	Job #:	WEEK 1 - 202	1 Spring EMS	orogram													
Company:	Resorts of the Canadian Rockies		PO / AFE	:															
Contact:	Patrick Majer		LSD:		ž														
Address:	1505 - 17th Ave SW Calgary AB					_													5 D
Phone:	Fax:		Quote #:	WW - Q33059														1	5
	Vork Order # o use only)		ALS Contact:	LS	Sampler:	TJ/JD								oliform	occi			Mumber of Containors	555
Sample #	Sample (This description w	Identification	e report)	Date (dd-mmm-yy)	(hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total P	Ortho P	Fecal Coliform	Enterococci	E. Coli		- Mirin	
	WWTP Effluent - UV trough	Temp: 8,2 pl	н: 6, 8	14-Apr-21	8:15	Water	X	X	X	Х	X	Х	X	Х	X	Х		5	;
		Temp: 3,5 pl		14-Apr-21	9:30	Water		x	x	Х	X	X	X	X	x	X			  -
	Columbia River Down stream (Isla		2,2 pH: 7.8	14-Apr-21	9:00	Water		X	x	х	x	x	х	X	x	х			ـــــ ۱
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	Special Instructions / Regi	ulations with w	ater or land use (CCN	IE-Freshwater A	quatic Life/BC	CCSR - Commerci	ial/AB	Tier '	1 - N	atura	l, etc)	) / Ha	zardo	ous D	)etail	S			
Please return	fresh bottles for next weeks sampl	ing- Thanks																	
			mplete all portions o	f this form may	delay analysis	s. Please fill in thi	s forr	n LEG	BL	(.									٦
	By the use o Also provided on another Exce		user acknowledges a																
	SHIPMENT RELEASE (client use			MENT RECEPT			a vali									-	lý)		
Released by			Received by:	Date:	Time:	Tenperature:	Verif	fied/by			Date		<u></u>	Time		A monthly with	2. 10 × 291/2017 W	rvations	<u>8</u> 2
<b>,</b>	14-Apr-21					°C	$\cap$	٦ľ	1		ſζ	10	4	Z	>:5	2	Yes /		
L					<u>L</u>			1					<u> </u>	<u></u>	(		20.00		



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received: 22-APR-21 Report Date: 05-MAY-21 12:38 (MT) Version: FINAL

Client Phone: 250-344-8442

## Certificate of Analysis

Lab Work Order #: L2579184 Project P.O. #: NOT SUBMITTED Job Reference: WEEK 2 - 2021 SPRING EMS PROGRAM - WW C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

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Environmental 🕽

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2579184-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ/JLD on 21-APR-21 @ 08:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.082		0.050	mg/L		04-MAY-21	R5448846
Biochemical Oxygen Demand	<2.0		2.0	mg/L		23-APR-21	R5442714
Orthophosphate-Dissolved (as P)	0.137	DLHC	0.010	mg/L		23-APR-21	R5440700
Enterococcus	See Attached					22-APR-21	R5449856
Coliform Bacteria - Fecal	<1		1	CFU/100mL		22-APR-21	R5440527
MPN - E. coli	<2	DLIS	2	MPN/100mL		22-APR-21	R5440489
Phosphorus (P)-Total	0.212	DLHC	0.025	mg/L		26-APR-21	R5441212
Total Suspended Solids	<3.0		3.0	mg/L		28-APR-21	R5442337
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC Nitrate (as N)	9.00		0.020	mg/L		24-APR-21	R5441370
Nitrate+Nitrite	5.00		0.020	iiig/L		24 /111/21	113441370
Nitrate and Nitrite (as N)	9.02		0.022	mg/L		26-APR-21	
Nitrite in Water by IC				3			
Nitrite (as N)	0.016		0.010	mg/L		24-APR-21	R5441370
L2579184-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ/JLD on 21-APR-21 @ 08:40							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		04-MAY-21	R5448846
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		23-APR-21	R5440700
Enterococcus	See Attached					22-APR-21	R5449856
Coliform Bacteria - Fecal	2		1	CFU/100mL		22-APR-21	R5440527
MPN - E. coli	1	OCR	1	MPN/100mL		22-APR-21	R5440489
Phosphorus (P)-Total	0.0130		0.0050	mg/L		26-APR-21	R5441212
Total Suspended Solids	37.9		3.0	mg/L		28-APR-21	R5442337
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.125		0.020	mg/L		24-APR-21	R5441370
<b>Nitrate+Nitrite</b> Nitrate and Nitrite (as N)	0.125		0.022	mg/L		26-APR-21	
Nitrite in Water by IC	0.125		0.022	iiig/L		20-AF K-21	
Nitrite (as N)	<0.010		0.010	mg/L		24-APR-21	R5441370
L2579184-3 COLUMBIA RIVER ISLAND DOWNSTR							
Sampled By: TJ/JLD on 21-APR-21 @ 08:20							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		04-MAY-21	R5448846
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		23-APR-21	R5440700
Enterococcus	See Attached		0.0000			22-APR-21	R5449856
Coliform Bacteria - Fecal	2		1	CFU/100mL		22-APR-21	R5440527
MPN - E. coli	2	OCR	1	MPN/100mL		22-APR-21	R5440489
Phosphorus (P)-Total	0.0605		0.0050	mg/L		26-APR-21	R5441212
Total Suspended Solids	23.7		3.0	mg/L		28-APR-21	R5442337
NO2, NO3 and Sum of NO2/NO3	23.1		5.0	ing/L			110442007
Nitrate in Water by IC			0.07-				
Nitrate (as N)	0.109		0.020	mg/L		24-APR-21	R5441370
Nitrate+Nitrite	0.400		0.000	ma/l		26 4 00 24	
Nitrate and Nitrite (as N)	0.109		0.022	mg/L		26-APR-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2579184-3 COLUMBIA RIVER ISLAND DOWNSTRE Sampled By: TJ/JLD on 21-APR-21 @ 08:20 Matrix: WATER	EAM						
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		24-APR-21	R5441370
Nitrite (as N)	<0.010		0.010	mg/L		24-APR-21	R5441370

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

### **Reference Information**

#### Sample Parameter Qualifier Key:

Qualifier	Description		
DLHC	Detection Limit Rais	ed: Dilution required due to high concentration	of test analyte(s).
DLIS	Detection Limit Adju	sted: Insufficient Sample	
OCR	Parameter is out of o	client specific range.	
est Method R	eferences:		
ALS Test Code		Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode
This analysis is oxygen demand dissolved oxyge	carried out using proce (BOD) are determined n meter. Dissolved BC	edures adapted from APHA Method 5210B - "E d by diluting and incubating a sample for a spe	Biochemical Oxygen Demand (BOD)". All forms of biochemical cified time period, and measuring the oxygen depletion using a ample through a glass fibre filter prior to dilution. Carbonaceous
EC-MPN-CL	Water	MPN - E. coli	APHA 9223B
Substrate Colifo sample is mixed The packet is in	rm Test". E. coli and T d with a mixture hydroly cubated for 18 or 24 h bunted. The final result Holding Time:	edures adapted from APHA Method 9223 "Enz Total Coliform are determined simultaneously. yzable substrates and then sealed in a multi-w ours and then the number of wells exhibiting a is obtained by comparing the positive respons	The ell packet. positive
FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D
Coliform bacteria	a is enumerated by cu al 24 hour incubation a	Ituring and colony counting. A known sample v	mbrane Filter Technique for Members of the Coliform Group". volume is filtered through a 0.45 micron membrane filter. The test ate growth medium. This method is specific for thermotolerant il.
N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
			odified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society on of trace levels of ammonium in seawater", Roslyn J. Waston et
NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)
norganic anions	s are analyzed by Ion (	Chromatography with conductivity and/or UV d	etection.
NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions	s are analyzed by Ion (	Chromatography with conductivity and/or UV d	etection.
P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
	carried out using procession of the sample.	edures adapted from APHA Method 4500-P "P	hosphorus". Total Phosphorus is determined colourimetrically afte
PO4-DO-COL-C	L Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
This analysis is colourimetrically	carried out using proc	edures adapted from APHA Method 4500-P "P been lab or field filtered through a 0.45 micror	hosphorus". Dissolved Orthophosphate is determined membrane filter.
TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		edures adapted from APHA Method 2540 "Soli mple through a glass fibre filter, and by drying	ids". Solids are determined gravimetrically. Total suspended solids the filter at 104 deg. C.
(155) are deter			

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
Chain of Custody Numbers:	

### **Reference Information**

#### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Client:

Contact: Test

BOD-BC-CL

	Workorder:	L257918	34	Report Date:	05-MAY-21	Pa	age 1 of 4
KICKING HORSE MOUN 1500 Kicking Horse Trail Golden BC V0A 1H0 TRAVIS JOBIN	TAIN UTILITY C	ORPORATIO	NC				
Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
Water							
R5442714							

Batch R5442								
WG3525707-3 D Biochemical Oxyge	<b>UP</b> en Demand	<b>L2579184-1</b> <2.0	<2.0	RPD-NA	mg/L	N/A	30	23-APR-21
WG3525707-2 Lo Biochemical Oxyge			88.6		%		85-115	23-APR-21
WG3525707-1 M Biochemical Oxyge	I <b>B</b> en Demand		<2.0		mg/L		2	23-APR-21
EC-MPN-CL	Water							
Batch R5440 WG3523287-1 M MPN - E. coli	)489  B		<1		MPN/100mL		1	22-APR-21
FCC-MF-CL	Water							
Batch R5440 WG3523325-2 D Coliform Bacteria -	UP	<b>L2579184-1</b> <1	<1	RPD-NA	CFU/100mL	N/A	65	22-APR-21
WG3523325-1 M Coliform Bacteria -	-		<1		CFU/100mL		1	22-APR-21
NH3-F-CL	Water							
Batch R5448								
WG3528942-2 Lo Ammonia, Total (as			104.1		%		85-115	04-MAY-21
<b>WG3528942-1 M</b> Ammonia, Total (as	I <b>B</b> s N)		<0.050		mg/L		0.05	04-MAY-21
NO2-IC-N-CL	Water							
Batch R5441	1370							
WG3524270-13 Lo Nitrite (as N)	cs		100.7		%		90-110	24-APR-21
WG3524270-2 Lo Nitrite (as N)	CS		98.8		%		90-110	24-APR-21
WG3524270-6 LO Nitrite (as N)	CS		99.0		%		90-110	24-APR-21
WG3524270-9 Lo Nitrite (as N)	CS		101.4		%		90-110	24-APR-21
WG3524270-1 M Nitrite (as N)	B		<0.010		mg/L		0.01	24-APR-21
WG3524270-12 M Nitrite (as N)	В		<0.010		mg/L		0.01	24-APR-21
WG3524270-5 M	IB							



		\//orleardar	1 257040	1	Poport Data: 0		-	
Test	Matrix	Workorder: Reference	L257918 	4 Qualifier	Report Date: 0	5-MAY-21 	Pa Limit	ge 2 of 4 Analyzed
		NEIGIGIICE	NESUIL	Qualifier	Units	ĸfd	Liillit	Analyzeu
NO2-IC-N-CL	Water							
Batch R54413								
WG3524270-5 MB Nitrite (as N)			<0.010		mg/L		0.01	24-APR-21
WG3524270-8 MB								
Nitrite (as N)			<0.010		mg/L		0.01	24-APR-21
NO3-IC-N-CL	Water							
Batch R54413	70							
WG3524270-13 LCS	6							
Nitrate (as N)			100.1		%		90-110	24-APR-21
WG3524270-2 LCS Nitrate (as N)	3		98.3		%		90-110	24-APR-21
WG3524270-6 LCS			30.5		70		90-110	24-AFR-21
Nitrate (as N)	2		98.1		%		90-110	24-APR-21
WG3524270-9 LCS	6							
Nitrate (as N)			99.9		%		90-110	24-APR-21
WG3524270-1 MB								
Nitrate (as N)			<0.020		mg/L		0.02	24-APR-21
WG3524270-12 MB								
Nitrate (as N)			<0.020		mg/L		0.02	24-APR-21
WG3524270-5 MB			<0.020		~~/l		0.00	
Nitrate (as N)			<0.020		mg/L		0.02	24-APR-21
WG3524270-8 MB Nitrate (as N)			<0.020		mg/L		0.02	24-APR-21
P-T-COL-CL	Water						0.02	24741121
Batch R54412								
WG3524115-2 LCS								
Phosphorus (P)-Tota			101.3		%		80-120	26-APR-21
WG3524115-1 MB								
Phosphorus (P)-Tota	l		<0.0050		mg/L		0.005	26-APR-21
PO4-DO-COL-CL	Water							
Batch R54407	00							
WG3523418-2 LCS Orthophosphate-Diss			97.0		%		80-120	
			31.0		70		00-120	23-APR-21
WG3523418-1 MB Orthophosphate-Diss			<0.0050		mg/L		0.005	23-APR-21
					J –		0.000	20701121
TSS-CL	Water							



		Workorder	: L257918	34	Report Date:	05-MAY-21	Pa	ige 3 of 4
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-CL	Water							
Batch R544 WG3525002-2 L Total Suspended S	LCS		92.6		%		85-115	28-APR-21
WG3525002-1 M Total Suspended S	<b>MB</b> Solids		<3.0		mg/L		3	28-APR-21

Workorder: L2579184

Report Date: 05-MAY-21

#### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

#### Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# **Microbial Test Results**

Sample collected April 21, 2021

**Final Report** 

May 5, 2021

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

#4, 6125 12 Street SE, Calgary, AB T2H 2K1



#### SAMPLE INFORMATION

Sample ID/	Dates			Dessint
Sample ID/ Internal ID	Collected	Received	Enterococcus test initiation	<ul> <li>Receipt temperature</li> </ul>
L2579184-1 WWTP EFFLUENT – UV TROUGH/	21-Apr-21 at 0800h	22-Apr-21 at 1015h	22-Apr-21 at 1120h	6.8°C
2021-1290-01	000011			
L2579184-2 COLUMBIA RIVER UPSTREAM/	21-Apr-21 at 0840h	22-Apr-21 at 1015h	22-Apr-21 at 1120h	7.4°C
2021-1290-02	064011			
L2579184-3 COLUMBIA RIVER ISLAND DOWNSTREAM/	21-Apr-21 at	22-Apr-21 at 1015h	22-Apr-21 at 1120h	8.3°C
2021-1290-03	0820h			

#### **TEST TYPES**

• *Enterococcus* enumeration test

#### RESULTS

#### **Microbial test results**

Samula ID	MPN/100 mL	
Sample ID	Enterococcus	
L2579184-1 WWTP EFFLUENT – UV TROUGH	<1	
L2579184-2 COLUMBIA RIVER UPSTREAM	5.1	
L2579184-3 COLUMBIA RIVER ISLAND DOWNSTREAM	1.0	

MPN = Most Probable Number

#### QA/QC

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

Samples were received and testing initiated outside of the required 24-hour hold time at the client's request.



Michael Ulrublesti

Report By: Michael Wrubleski, BSc Biologist

Destalaret

Reviewed By: Leila Oosterbroek, BSc Environmental Scientist

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.

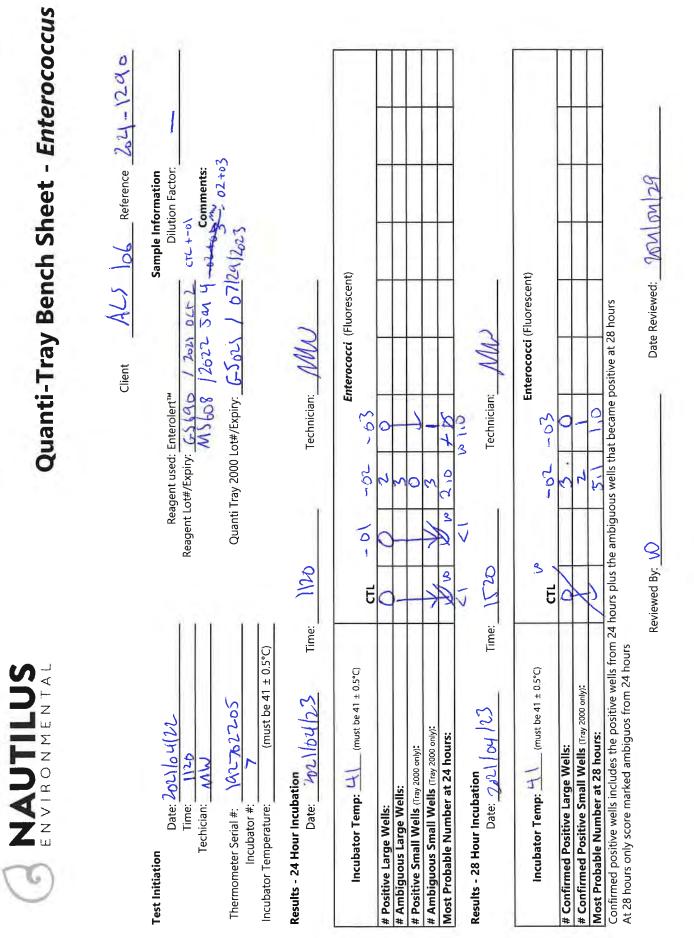
#### REFERENCES

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** 



Nautilus Environmental (Calgary)

Written by KS on 2006/07/11 Revised by LO on 2021/03/17

File: ENT F106



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



# Subcontract Request Form

## Subcontract To:

# NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

#4, 6125-12 STREET SE CALGARY,AB T2H 2K1

NOTES: Please reference on fina ALS requires QC data to	가 이렇게 가지 것 같아? 동안에 가지 못 했는데.	the second second second second second second second second second second second second second second second s	2 <u>579184</u> ults.		
Pe	ist ho	19 4	ime -	Please	Proceed
Please see enclosed <u>3</u> sar	nple(s) in <u>3</u>	Container(	(s)		
SAMPLE NUMBER ANALYT	ICAL REQUIRED 20	21-1290	DATE S	AMPLED DUE DATE	Priority Flag
L2579184-1 WWTP EFFLUENT - UV TROUGH Enterocod	ccus (ENTERO-HQ 1)	-01	4/21/2 3.8°C	<b>021</b> S C 5/4/2021	20
L2579184-2 COLUMBIA RIVER UPSTREAM Enterocod	cus (ENTERO-HQ 1)	-02 7.4	4/21/2	<b>021</b>	40
L2579184-3 COLUMBIA RIVER ISLAND DOWNSTREAM Enterocod	cus (ENTERO-HQ 1)	-03 8.3	3°C 4/21/20	<b>021</b> 5/4/2021	20
Subcontract Info Contact: Analysis and reporting info contact:	John Forbes (403) Patryk Wojciak, B 2559 29 STREET I CALGARY,AB T1Y Phone: (403) 29	.Sc., P.Chen NE 7B5	32,400 mL be Nos/NoI		lition. global.com
Please email confirmation of receiption of receiption of receiption of receiption of the second se	pt to: pa	tryk.wojcia	k@alsglobal.c		
Shipped By:	Da	ate Shipped:			
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**END OF REPORT** 



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# Canada Toll Free: 1 800 668 9878 www.alsglobal.com

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COC#

Page 1 of 1

(ALS)E	șuroni																184.5
Report To	· · · · · · · · · · · · · · · · · · ·	Report Fo	ormat / Distribut	ion		Service Requested (Rush for routine analysis subject to availability)											
Company:	Kicking Horse Mountain Resort Utility Corporation	Standard				Regular (Standard Turnaround Times - Business Days)											
Contact:	Travis Jobin	D PDF	Excel	Digital	✓ Fax	Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT     Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT											
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickingh			-	-				_	_	the second second second second second second second second second second second second second second second s			_	1  A  
· · · · · · · · · · · · · · · · · · ·			pmajer@skircr.c			() Sa	ime Da	y or W	eekend		_	_			nfirm TA		
Phone:	250-344-8442 Fax:		mskyring@kicki		<u>om</u>							is Re					
Invoice To	Same as Report ? Yes I No	Client / Pr	roject Informatio			Plea	ase in	dicate	e belo	w Fill	ered	Pres			oth (F	, P, F/	<u>-)</u>
Hardcopy of Ir	nvoice with Report? Yes I No	Job #:	Week 2 - 2021	Spring EMS pro	ogram - WW				-								
Company:	Resorts of the Canadian Rockies	PO / AFE:			· · · · · · · · · · · · · · · · · · ·			i									
Contact: 1	Patrick Majer	LSD:															y y
Address:	1505 - 17th Ave SW Calgary AB																iner
Phone:	, Fax:	Quote #:	Q33059														nta
Lab W	/ork Order #	ALS	D\4(	Commission	TJ/JD								Ę				ပို
S	use only)	Contact:	PW	Sampler:	IJĮJD								olifo	occi			o l
Sample	Sample Identification		Date	Time		22		Ŧ	03	8	μ	Ρ	Fecal Coliforn	Enterococci	Coli		Number of Containers
#	(This description will appear on the report)		(dd-mmm-yy)	(hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total	Ortho	Fec	Ē	Ш		n z
	WWTP Effluent - UV trough Temp: 9.8 pH: 6.8	}	21-Apr-21	800	Water	X	Х	Х	Х	X	Х	X	X	X	Χ		5
	Columbia River Upstream Temp: 67 pH: 8.0		21-Apr-21	940	Water		X	X	Х	X	X	X	X	Х	Х		4
	Columbia River Island Down stream Temp: 🎉 pH:	7.8	21-Apr-21	820	Water		X	X	X	X	X	X	Х	X	Х		4
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# **CERTIFICATE OF ANALYSIS**

Work Order	: KS2101010	Page	: 1 of 3
Client	: Resorts of the Canadian Rockies Inc.	Laboratory	: Kamloops - Environmental
Contact	: Travis Jobin	Account Manager	Patryk Wojciak
Address	: 1505 17th Avenue SW	Address	: 1445 McGill Road, Unit 2B
	Calgary AB Canada T2T 0E2		Kamloops BC Canada V2C 6K7
Telephone	: 250 344 6003	Telephone	: +1 250 372 3588
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 07-Apr-2021 14:00
PO	:	Date Analysis Commenced	: 07-Apr-2021
C-O-C number	:	Issue Date	: 17-Apr-2021 15:56
Sampler	: TJ		
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.

Signatories	Position	Laboratory Department
Amanda Lampreau	Laboratory _ Supervisor	Microbiology, Kamloops, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia



#### **General Comments**

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

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

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

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

Unit	Description
CFU/100mL	colony forming units per 100 mL
mg/L	milligrams per litre

<: less than.

>: greater than.

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

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

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



# Analytical Results

Sub-Matrix: Water			С	lient sample ID	UV Trough	 	 
(Matrix: Water)							
Client sampling date / time						 	 
Analyte	CAS Number	Method	LOR	Unit	KS2101010-001	 	 
					Result	 	 
Physical Tests							
solids, total suspended [TSS]		E160-H	3.0	mg/L	5.4	 	 
Anions and Nutrients							
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.169	 	 
phosphorus, total	7723-14-0	E372-U	0.0020	mg/L	0.284	 	 
Bacteriological Tests							
coliforms, thermotolerant [fecal]		E012.FC	1	CFU/100mL	1	 	 
Aggregate Organics							
biochemical oxygen demand [BOD]		E550	2.0	mg/L	<2.0	 	 

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



# **CERTIFICATE OF ANALYSIS**

Work Order	KS2101010	Page	÷ 1 of 2
Client	: Resorts of the Canadian Rockies Inc.	Laboratory	: Kamloops - Environmental
Contact	: Travis Jobin	Account Manager	Patryk Wojciak
Address	: 1505 17th Avenue SW Calgary AB Canada T2T 0E2	Address	1445 McGill Road, Unit 2B Kamloops BC Canada V2C 6K7
Telephone	: 250 344 6003	Telephone	: +1 250 372 3588
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 07-Apr-2021 14:00
PO	:	Date Analysis Commenced	: 07-Apr-2021
C-O-C number	:	Issue Date	: 17-Apr-2021 15:56
Sampler	: TJ		
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 FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Amanda Lampreau Lindsay Gung		Microbiology, Kamloops, British Columbia Inorganics, Burnaby, British Columbia



#### **General Comments**

for analysis.

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

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 100 mL
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.

## Analytical Results

#### KS2101010-001

Sub-Matrix:Water

#### (Matrix: Water)

Client sample ID: UV Trough Client sampling date / time: 06-Apr-2021 10:30

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
solids, total suspended [TSS]		5.4	3.0	mg/L	E160-H	-	13-Apr-2021	177650
Anions and Nutrients								
phosphate, ortho-, dissolved (as P)	14265-44-2	0.169	0.0100	mg/L	E378-U	10-Apr-2021	10-Apr-2021	176728
phosphorus, total	7723-14-0	0.284	0.0200	mg/L	E372-U	09-Apr-2021	10-Apr-2021	175918
Bacteriological Tests								
coliforms, thermotolerant [fecal]		1	1	CFU/100mL	E012.FC	-	07-Apr-2021	175612
Aggregate Organics								
biochemical oxygen demand [BOD]		<2.0	2.0	mg/L	E550	-	08-Apr-2021	175411

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



# QUALITY CONTROL INTERPRETIVE REPORT

Work Order	: KS2101010	Page	: 1 of 5
Client	: Resorts of the Canadian Rockies Inc.	Laboratory	: Kamloops - Environmental
Contact	: Travis Jobin	Account Manager	Patryk Wojciak
Address	: 1505 17th Avenue SW	Address	: 1445 McGill Road, Unit 2B
	Calgary AB Canada T2T 0E2		Kamloops, British Columbia Canada V2C 6K7
Telephone	: 250 344 6003	Telephone	: +1 250 372 3588
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 07-Apr-2021 14:00
PO	:	Issue Date	: 17-Apr-2021 15:56
C-O-C number	:		
Sampler	: TJ		
Site	:		
Quote number	: CG21-RESC100-0001		
No. of samples received	:1		
No. of samples analysed	:1		

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

#### 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 Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

**RPD: Relative Percent Difference.** 

# **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**

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

## RIGHT SOLUTIONS | RIGHT PARTNER



# 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 15:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 15:00 is used for calculation purposes.

Matrix: Water					Ev	aluation: × =	Holding time excee	edance ; 🖻	= Within	Holding Tim
Analyte Group	Method	Sampling Date	Ext	traction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT 3d]										
UV Trough	E550	06-Apr-2021					08-Apr-2021	3 days	2 days	1
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vel)									
HIDPE										
UV Trough	E378-U	06-Apr-2021					10-Apr-2021	3 days	4 days	¥ EHT
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
UV Trough	E372-U	06-Apr-2021	09-Apr-2021	28 days	2 days	✓	10-Apr-2021	25 days	0 days	~
Bacteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)										
Sterile HDPE (Sodium thiosulphate)										
UV Trough	E012.FC	06-Apr-2021					07-Apr-2021	30 hrs	28 hrs	1
Physical Tests : TSS by Gravimetry										
HDPE										
UV Trough	E160-H	06-Apr-2021					13-Apr-2021	7 days	6 days	1

Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

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



# **Quality Control Parameter Frequency Compliance**

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

Matrix: Water		Evaluati	on: × = QC frequ	ency outside spe	ecification; 🗸 = 0	QC frequency wit	hin specification
Quality Control Sample Type			Co	ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand - 5 day	E550	175411	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	176728	1	9	11.1	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	175612	0	1	0.0	5.0	×
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	175918	1	8	12.5	5.0	✓
TSS by Gravimetry	E160-H	177650	1	20	5.0	5.0	✓
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand - 5 day	E550	175411	1	12	8.3	5.0	1
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	176728	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	175918	1	8	12.5	5.0	✓
TSS by Gravimetry	E160-H	177650	1	20	5.0	5.0	✓
Method Blanks (MB)							
Biochemical Oxygen Demand - 5 day	E550	175411	1	12	8.3	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	176728	1	9	11.1	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	175612	1	1	100.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	175918	1	8	12.5	5.0	✓
TSS by Gravimetry	E160-H	177650	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	176728	1	9	11.1	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	175918	1	8	12.5	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
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	Water	APHA 9222 D (mod)	Following filtration (0.45 $\mu$ m), and incubation at 45.5 $\pm 0.2^\circ C$ for 24 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and
	Kamloops -			confirmed.
	Environmental			
TSS by Gravimetry	E160-H	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 $104 \pm 1^{\circ}$ C, with gravimetric measurement of the
	Vancouver -			filtered solids. Samples containing very high dissolved solid content (i.e. seawaters,
	Environmental			brackish waters) may produce a positive bias by this method. Alternate analysis methods are available for these types of samples.
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	Water	APHA 4500-P E (mod).	Total Phosphorus is determined colourimetrically using a discrete analyzer after heated persulfate digestion of the sample.
	Vancouver -			
	Environmental			
Dissolved Orthophosphate by Colourimetry	E378-U	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water sample that has
(Ultra Trace Level)				been lab or field filtered through a 0.45 micron membrane filter. Field filtration is
	Vancouver -			recommended to ensure test results represent conditions at time of sampling.
	Environmental			
Biochemical Oxygen Demand - 5 day	E550	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.
	Vancouver -			Free chlorine is a negative interference in the BOD method; please advise ALS when
	Environmental			free chlorine is present in samples.
Preparation Methods	Method / Lab	Matrix	Method Reference	Method Descriptions
Digestion for Total Phosphorus in water	EP372	Water	APHA 4500-P E (mod).	Samples are heated with a persulfate digestion reagent.
	Vancouver -			
	Environmental			



# **QUALITY CONTROL REPORT**

Work Order	KS2101010	Page	: 1 of 4
Client	Resorts of the Canadian Rockies Inc.	Laboratory	: Kamloops - Environmental
Contact	: Travis Jobin	Account Manager	Patryk Wojciak
Address	: 1505 17th Avenue SW Calgary AB Canada T2T 0E2	Address	: 1445 McGill Road, Unit 2B Kamloops, British Columbia Canada V2C 6K7
Telephone	: 250 344 6003	Telephone	:+1 250 372 3588
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 07-Apr-2021 14:00
PO		Date Analysis Commenced	07-Apr-2021
C-O-C number	:	Issue Date	: 17-Apr-2021 15:56
Sampler	: TJ		
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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

## 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
Amanda Lampreau	Laboratory _ Supervisor	Microbiology, Kamloops, British Columbia
Lindsay Gung	Supervisor - Water Chemistry	Inorganics, Burnaby, British Columbia



#### **General Comments**

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

Key :

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

#### Laboratory Duplicate (DUP) Report

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

Sub-Matrix: Water		Laboratory Duplicate (DUP) Report										
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier	
Physical Tests (QC	Lot: 177650)											
KS2100999-001	Anonymous	solids, total suspended [TSS]		E160-H	3.0	mg/L	12.4	13.2	0.8	Diff <2x LOR		
Anions and Nutrien	ts (QC Lot: 175918)											
KS2100995-001	Anonymous	phosphorus, total	7723-14-0	E372-U	0.200	mg/L	2.43	2.66	9.09%	20%		
Anions and Nutrien	ts (QC Lot: 176728)											
KS2101010-001	UV Trough	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0100	mg/L	0.169	0.175	3.19%	20%		
Aggregate Organics	(QC Lot: 175411)											
KS2100999-001	Anonymous	biochemical oxygen demand [BOD]		E550	2.0	mg/L	7.8	7.0	10.8%	30%		



## Method Blank (MB) Report

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

Sub-Matrix: Water						
Analyte	CAS Number M	lethod	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 177650)						
solids, total suspended [TSS]	E	160-H	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 175918)						
phosphorus, total	7723-14-0 E	372-U	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 176728)						
phosphate, ortho-, dissolved (as P)	14265-44-2 E	378-U	0.001	mg/L	<0.0010	
Bacteriological Tests (QCLot: 175612)						
coliforms, thermotolerant [fecal]	E	012.FC	1	CFU/100mL	<1	
Aggregate Organics (QCLot: 175411)						
biochemical oxygen demand [BOD]	E	550	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 Co	ontrol Sample (LCS)	Report			
					Spike	Recovery (%)	Recovery	Limits (%)	
Analyte	CAS Number	CAS Number Method		Unit	Concentration	LCS	Low	High	Qualifier
Physical Tests (QCLot: 177650)									
solids, total suspended [TSS]		E160-H	3	mg/L	150 mg/L	101	85.0	115	
Anions and Nutrients (QCLot: 175918)									
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	0.05 mg/L	86.2	80.0	120	
Anions and Nutrients (QCLot: 176728)									
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.03 mg/L	102	80.0	120	
Aggregate Organics (QCLot: 175411)									
biochemical oxygen demand [BOD]		E550	2	mg/L	198 mg/L	96.7	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											
					Spi	ke	Recovery (%)	Recovery	Limits (%)					
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier				
Anions and Nutrie	ents (QCLot: 175918)													
KS2101010-001	UV Trough	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.05 mg/L	ND	70.0	130					
Anions and Nutrie	ents (QCLot: 176728)													
KS2101013-001	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	ND mg/L	3 mg/L	ND	70.0	130					

Mark Skyring	Released by:															#	Sample	Lab V (lab	Phone:	Address:	Contact:	Company:	Hardcopy of	Invoice To	Phone:		Address:	Contact:	Company:	Report To	ALS	
		SHIPMENT REL	Also provided of		opecial ins	0									UV trough			(lab use only)		1505 - 17th Ave	Patrick Majer	Resorts of the C	Hardcopy of Invoice with Report?	Same as Report	250-344-6003		1500 Kicking Horse Trail	Travis Jobin	Kicking Horse N		Environmental	
6-Apr-21	Date (dd-mmm-yy) T	SHIPMENT RELEASE (client use)	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.		special instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CS			Teleph						Env		(This description will appear on the report)	Sample Id	KSai	Fax:	1505 - 17th Ave SW Calgary AB		Resorts of the Canadian Rockies	ort? Ves	t? Yes	Fax		orse Trail		Kicking Horse Mountain Water Utility Co. Ltd		iental	
	Time (hh-mm) F		ab are the ALS	Failure to com	tions with wat			Telephone: +1 250 372 3588		355		101201	Work Order Reference	Environmental Division		appear on the I	Sample Identification	01010					No.	~ No					ty Co. Ltd.			
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APR 0 7 2021 20M	Time:	SHIPMENT RECEPTION (lab use only)	the Terms and rs and sample	dolay analysis	Aquatic Life/BC										10:30	(hh:mm)	Time	Sampler:					RCR - Kicking Horse Mountain Resort	ion	mskyring@kickinghorseresort.com	.com	tiobin@kickinghorseresort.com	Digital		ution	www.alsglobal.com	Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 0879
9 °C	Temperature:	1)	Conditions as p container / pres		CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details										Water	sample type	Cample Tune	L					Resort		com			I Fax			0 3010	equest Form
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Yes / No ? If Yes add	Obser	N)																					12	U		TAT	to Conf	to Confi		to avai	1	
Yes / No ? If Yes add SIF	Observations:							_															1.11	E/D/			ITTT TAT	TN TAT	(income)	ability	1 of	
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GENF 20.00 Front



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received: 28-APR-21 Report Date: 13-MAY-21 18:04 (MT) Version: FINAL

Client Phone: 250-344-8442

# Certificate of Analysis

Lab Work Order #: L2581059 Project P.O. #: NOT SUBMITTED Job Reference: WEEK 2 - 2021 SPRING 2021 EMS PROGRAM -WW

C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298 ALS CANADA LTD Part of the ALS Group An ALS Limited Company

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www.alsglobal.com

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2581059-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ/JD on 27-APR-21 @ 08:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		05-MAY-21	R5450818
Biochemical Oxygen Demand	2.6		2.0	mg/L		28-APR-21	R5446436
Orthophosphate-Dissolved (as P)	0.157	DLHC	0.010	mg/L		29-APR-21	R5443919
Enterococcus	See Attached					28-APR-21	R5456815
Coliform Bacteria - Fecal	<1		1	CFU/100mL		28-APR-21	R5443323
MPN - E. coli	<1		1	MPN/100mL		28-APR-21	R5443303
Phosphorus (P)-Total	0.29		0.10	mg/L		06-MAY-21	R5453038
Total Suspended Solids	5.9		3.0	mg/L		04-MAY-21	R5450538
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC Nitrate (as N)	6.25		0.020	mg/L		28-APR-21	R5443116
Nitrate+Nitrite				0			
Nitrate and Nitrite (as N)	6.27		0.022	mg/L		29-APR-21	
Nitrite in Water by IC							
Nitrite (as N)	0.018		0.010	mg/L		28-APR-21	R5443116
L2581059-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ/JD on 27-APR-21 @ 08:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		05-MAY-21	R5450818
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		29-APR-21	R5443919
Enterococcus	See Attached					28-APR-21	R5456815
Coliform Bacteria - Fecal	2		1	CFU/100mL		28-APR-21	R5443323
MPN - E. coli	1	OCR	1	MPN/100mL		28-APR-21	R5443303
Phosphorus (P)-Total	0.0059		0.0050	mg/L		06-MAY-21	R5453038
Total Suspended Solids	11.5		3.0	mg/L		04-MAY-21	R5450538
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.123		0.020	mg/L		28-APR-21	R5443116
Nitrate+Nitrite	0.400					00 4 5 5 04	
Nitrate and Nitrite (as N)	0.123		0.022	mg/L		29-APR-21	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		28-APR-21	R5443116
			0.010	iiig/L		20 AI IC 21	1(3443110
L2581059-3 COLUMBIA RIVER ISLAND DOWN STI							
Sampled By: TJ/JD on 27-APR-21 @ 08:45 Matrix: WATER							
Matrix: WATER Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		05-MAY-21	R5450818
Orthophosphate-Dissolved (as P)	<0.050		0.050	mg/L		29-APR-21	R5450818 R5443919
Enterococcus	See Attached		0.0050	iiig/L		29-APR-21 28-APR-21	R5443919 R5456815
Coliform Bacteria - Fecal			4	CFU/100mL		28-APR-21 28-APR-21	
MPN - E. coli	2	OCR	1 1	MPN/100mL		28-APR-21 28-APR-21	R5443323 R5443303
Phosphorus (P)-Total						26-MAY-21	
Total Suspended Solids	0.0054		0.0050	mg/L			R5453038
NO2, NO3 and Sum of NO2/NO3	11.3		3.0	mg/L		04-MAY-21	R5450538
Noz, Noz and Sum of Noz/Noz Nitrate in Water by IC							
Nitrate (as N)	0.130		0.020	mg/L		28-APR-21	R5443116
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.130		0.022	mg/L		29-APR-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2581059-3 COLUMBIA RIVER ISLAND DOWN STR Sampled By: TJ/JD on 27-APR-21 @ 08:45 Matrix: WATER Nitrite in Water by IC Nitrite (as N)	EAM <0.010		0.010	mg/L		28-APR-21	R5443116

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# **Reference Information**

### On and a Demonstration Overliften Kern

Qualifier	Description		
DLHC	Detection Limit Raise	d: Dilution required due to high concentratio	n of test analyte(s).
MS-B	Matrix Spike recovery	could not be accurately calculated due to h	igh analyte background in sample.
OCR	Parameter is out of cl	ient specific range.	
Test Method	References:		
ALS Test Cod	le Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode
oxygen demar dissolved oxyg	nd (BOD) are determined gen meter. Dissolved BOI	by diluting and incubating a sample for a sp	"Biochemical Oxygen Demand (BOD)". All forms of biochemical ecified time period, and measuring the oxygen depletion using a sample through a glass fibre filter prior to dilution. Carbonaceous prior to incubation.

The packet is incubated for 18 or 24 hours and then the number of wells exhibiting a positive response are counted. The final result is obtained by comparing the positive responses to a probability table. Recommended Holding Time: Sample: 1 day Reference: APHA FCC-MF-CL Water Fecal Coliform Count-MF APHA 9222D This analysis is carried out using procedures adapted from APHA Method 9222 "Membrane Filter Technique for Members of the Coliform Group". Coliform bacteria is enumerated by culturing and colony counting. A known sample volume is filtered through a 0.45 micron membrane filter. The test involves an initial 24 hour incubation at 44.5 degrees C of the filter with the appropriate growth medium. This method is specific for thermotolerant bacteria (Fecal) and is used for non-turbid water with a low background bacteria level. N2N3-CALC-CL Water Nitrate+Nitrite CALCULATION NH3-F-CL J. ENVIRON. MONIT., 2005, 7, 37-42, RSC Water Ammonia by Fluorescence This analysis is carried out, on sulfuric acid preserved samples, using procedures modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of Chemistry, "Flow-injection analysis with fluorescence detection for the determination of trace levels of ammonium in seawater", Roslyn J. Waston et al. Nitrite in Water by IC NO2-IC-N-CL Water EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. NO3-IC-N-CL Water Nitrate in Water by IC EPA 300.1 (mod) Inorganic anions are analyzed by Ion Chromatography with conductivity and/or UV detection. P-T-COL-CL Total P in Water by Colour **APHA 4500-P PHOSPHORUS** Water This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Total Phosphorus is determined colourimetrically after persulphate digestion of the sample. PO4-DO-COL-CL Water Diss. Orthophosphate in Water by Colour APHA 4500-P PHOSPHORUS

This analysis is carried out using procedures adapted from APHA Method 4500-P "Phosphorus". Dissolved Orthophosphate is determined colourimetrically on a sample that has been lab or field filtered through a 0.45 micron membrane filter.

TSS-CL Water **Total Suspended Solids**  APHA 2540 D-Gravimetric

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

sample is mixed with a mixture hydrolyzable substrates and then sealed in a multi-well packet.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
Chain of Custody Numbers:	

# **Reference Information**

#### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**
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#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



# **Quality Control Report**

		Workorder:	L258105	9	Report Date: 13-I	MAY-21	Pa	ge 1 of 3
Client:	KICKING HORSE MOUN 1500 Kicking Horse Trail Golden BC V0A 1H0		ORPORATIC	DN				
Contact:	TRAVIS JOBIN							
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	Water							
WG3528259-	R5446436 5 LCS Oxygen Demand		95.9		%		85-115	28-APR-21
WG3528259- Biochemical	4 MB Oxygen Demand		<2.0		mg/L		2	28-APR-21
EC-MPN-CL	Water							
Batch WG3526560- MPN - E. col			<1		MPN/100mL		1	28-APR-21
FCC-MF-CL	Water							
Batch WG3526579- Coliform Bac			<1		CFU/100mL		1	28-APR-21
NH3-F-CL	Water							
	R5450818							
<b>WG3529618-</b> Ammonia, To			96.3		%		85-115	05-MAY-21
<b>WG3529618-</b> Ammonia, To			<0.050		mg/L		0.05	05-MAY-21
NO2-IC-N-CL	Water							
	R5443116							
WG3526367- Nitrite (as N)			100.7		%		90-110	28-APR-21
WG3526367- Nitrite (as N)			100.4		%		90-110	28-APR-21
WG3526367- Nitrite (as N)			101.1		%		90-110	28-APR-21
WG3526367- Nitrite (as N)	1 MB		<0.010		mg/L		0.01	28-APR-21
WG3526367-	5 MB				-			
Nitrite (as N) WG3526367-			<0.010		mg/L		0.01	28-APR-21
Nitrite (as N)			<0.010		mg/L		0.01	28-APR-21

NO3-IC-N-CL

Water



# **Quality Control Report**

				-	-			
		Workorder:	L258105	9	Report Date: 1	3-MAY-21	Pa	ige 2 of 3
<b>Fest</b>	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-CL	Water							
Batch R5443116 WG3526367-2 LCS Nitrate (as N)	5		98.9		%		90-110	28-APR-21
WG3526367-6 LCS Nitrate (as N)			98.7		%		90-110	28-APR-21
WG3526367-9 LCS Nitrate (as N)			99.1		%		90-110	28-APR-21
WG3526367-1 MB Nitrate (as N)			<0.020		mg/L		0.02	28-APR-21
WG3526367-5 MB Nitrate (as N)			<0.020		mg/L		0.02	28-APR-21
<b>WG3526367-8 MB</b> Nitrate (as N)			<0.020		mg/L		0.02	28-APR-21
P-T-COL-CL	Water							
Batch R5453038 WG3530243-2 LCS Phosphorus (P)-Total	3		99.95		%		80-120	06-MAY-21
WG3530243-1 MB Phosphorus (P)-Total			<0.0050		mg/L		0.005	06-MAY-21
WG3530243-4 MS Phosphorus (P)-Total		L2581059-1	N/A	MS-B	%		-	06-MAY-21
PO4-DO-COL-CL	Water							
Batch R5443919 WG3526348-6 LCS								
Orthophosphate-Disso	lved (as P)		93.0		%		80-120	29-APR-21
WG3526348-5 MB Orthophosphate-Disso	lved (as P)		<0.0050		mg/L		0.005	29-APR-21
TSS-CL	Water							
Batch R5450538	3							
WG3528894-6 DUP Total Suspended Solid	s	<b>L2581059-3</b> 11.3	9.5		mg/L	17	20	04-MAY-21
WG3528894-5 LCS Total Suspended Solid	S		93.0		%		85-115	04-MAY-21
WG3528894-4 MB Total Suspended Solid	s		<3.0		mg/L		3	04-MAY-21

# **Quality Control Report**

Workorder: L2581059

Report Date: 13-MAY-21

#### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

#### Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

#### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# **Microbial Test Results**

Sample collected April 27, 2021

**Final Report** 

May 13, 2021

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

#4, 6125 12 Street SE, Calgary, AB T2H 2K1



# SAMPLE INFORMATION

Samula ID/		Dates		Dessint
Sample ID/ Internal ID	Collected	Received	Enterococcus test initiation	- Receipt temperature
L2581059-1 WWTP EFFLUENT – UV TROUGH /	27-Apr-21 at 0800h	28-Apr-21 at 1000h	28-Apr-21 at 1115h	8.2°C
2021-1320-01	000011	100011		
L2581059-2 COLUMBIA RIVER UPSTREAM /	27-Apr-21 at 0830h	28-Apr-21 at 1000h	28-Apr-21 at 1115h	8.3°C
2021-1320-02	083011	100011	111511	
L2581059-3 COLUMBIA RIVER ISLAND DOWN STREAM /	27-Apr-21 at 0845h	28-Apr-21 at 1000h	28-Apr-21 at 1115h	8.6°C
2021-1320-03				

## **TEST TYPES**

• *Enterococcus* enumeration test

# RESULTS

### **Microbial test results**

Samula ID	MPN/100 mL
Sample ID	Enterococcus
L2581059-1 WWTP EFFLUENT – UV TROUGH	<1
L2581059-2 COLUMBIA RIVER UPSTREAM	3.0
L2581059-3 COLUMBIA RIVER ISLAND DOWN STREAM	1.0

MPN = Most Probable Number

## QA/QC

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

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



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that Cell.

Reviewed By: Leila Oosterbroek, BSc

Report By: Shae Cole, BSc Biologist

**Environmental Scientist** 

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.

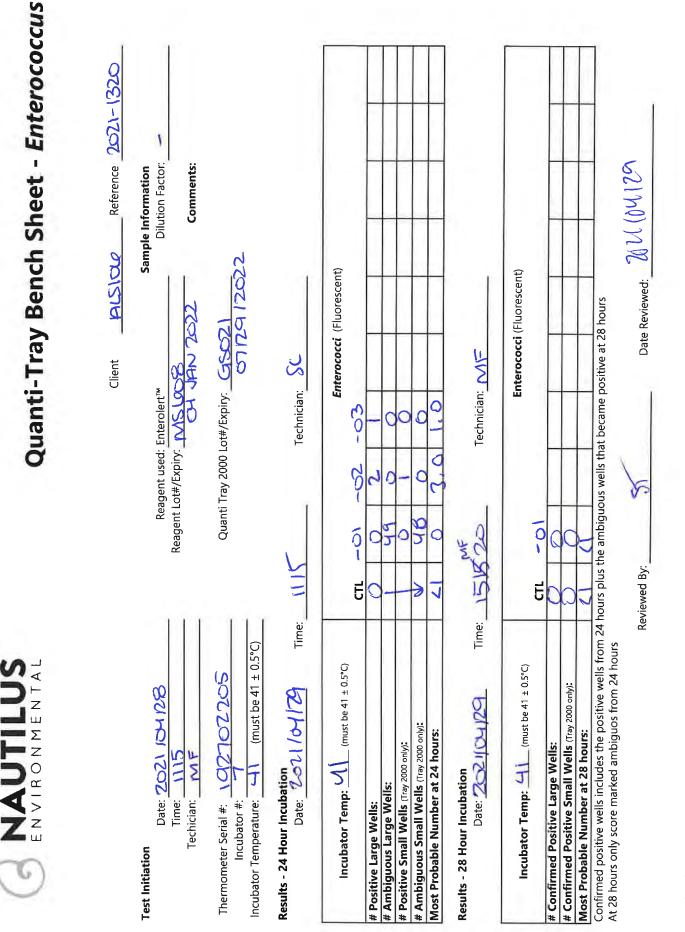
# **REFERENCES**

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** 



File: ENT F106

Written by KS on 2006/07/11 Revised by LO on 2021/03/17

Nautilus Environmental (Calgary)



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

ALS) Environmental

# Subcontract Request Form

## Subcontract To:

# NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

#4, 6125-12 STREET SE CALGARY,AB T2H 2K1

		Container(s)	-la(a) in		A SAN DO NOTAT
		eontainer (57	ple(s) in	<u>3</u> sam	lease see enclosed
Priority Flag	DATE SAMPLED DUE DATE	2021-1320	CAL REQUIRED	ANALYTIC	AMPLE UMBER
300	<b>4/27/2021</b> 8.2°C 5/10/2021	-01		FLUENT - UV	2581059-1 WWTP EFF
630	4/27/2021 & 3°C 5/10/2021	-02	cus (ENTERO-HQ cus (ENTERO-HQ	A RIVER	L2581059-2 COLUMBIA
845	4/27/2021 B.B°C 5/10/2021	-03	cus (ENTERO-HQ	М	L2581059-3 COLUMBIA ISLAND DOWN STREAM
ຼົງalsglobal.com	2021/04/28 10:00 3x400ml bottle NoS/NoL Email: patryk.wojciak@a		Patryk Wojcia 2559 29 STRI CALGARY,AB		Subcontract Info Conta Analysis and reporting
	k@alsglobal.com	patryk.wojciał	ipt to:	nation of rece	Please email confirm
		Date Shipped:			Shipped By:
	14.000	Date Received:			Received By:
		Date Verified:			/erified By:



**END OF REPORT** 



n of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

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Page	1 of

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Report To		Tropore r'(	ormat / Distribut	ion		Serv	ice R	eque	sted	(Rush	for ro	utine a	inalysi	is sub	ject to	availab	ility)
Company:	Kicking Horse Mountain Resort Utility Corporation	Standar	Standard Other Other Other Other														
Contact:	Travis Jobin	PDF Excel Digital Fax						O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT									
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickingh	orseresort.com		O E	merger	icy (1-2	2 Bus. I	Days) -	100%	Surcha	arge - C	Contac	t ALS to	o Confirm	1 TAT
		Email 2:	pmajer@skircr.c	<u>com</u>		O s	ame Da	y or W	/eekend	d Emer	gency	- Conta	ect ALS	to Cor	nfirm T.	AT	
Phone:	250-344-8442 Fax:	Email 3:	mskyring@kicki	nghorseresort.co	<u>om</u>					A	nalys	sis Re	quès	st			
Invoice To	Same as Report ? Yes I No	Client / P	roject Informatio			Plea	ase in	dicat	e belo	w Fill	lered	Pres	erved	d or b	oth (F	F, P, F/I	2)
Hardcopy of I	nvoice with Report? Yes Vo	Job #:	Week 2 - 2021	Spring EMS pro	gram - WW												
Company:	Resorts of the Canadian Rockies	PO / AFE:															
Contact:	Patrick Majer	LSD:															
Address:	1505 - 17th Ave SW Calgary AB																lers
Phone:	Fax:	Quote #:															Containers
	Vork Order # use only)	ALS Contact:	PW	Sampler:	TJ/JD							0	Fecal Coliform	cocci			
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 I	Fecal (	Enterococc	E. Coli		Number of
a de la com	WWTP Effluent - UV trough Temp: 73 pH: 67		27-Apr-21	8:00	Water	X	Χ.	Χ	Х	Х	X	X	X	X	X		5
	Columbia River Upstream Temp: 7 pH: 7.5	/	27-Apr-21	8:30	Water		X	Х	Х	Х	X	Х	X	X	Х		4
	Columbia River Island Down stream Temp: 6 4 pH:		27-Apr-21,	8:45	Water		X	X	X	X	X	X	X	X	Х		4
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			1														
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	Special Instructions / Regulations with water or land	l use (CCM	E-Freshwater A	quatic Life/BC	CSR - Commerci	ial/AB	8 Tier	1 - N	atura	l, etc	) / Ha	zardo	ous D	etail	s		
			- <u> </u>	<u>,</u>				-									
	Failure to complete all																
	By the use of this form the user ackno Also provided on another Excel tab are the ALS location												mon	anal	yses.		
	SHIPMENT RELEASE (client use)		MENT RECEPTI										10N (				
Released by		<u> </u>	Date:	Fime:	Temperature:	Veri	fied b	<u></u>		Date			Time		ſ		/ations:
Travis Jobin	27-Apr-21	(A)	1/20	121	S ∘c												add SIF

GENF 20.00 Front



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received:06-MAY-21Report Date:19-MAY-21 17:41 (MT)Version:FINAL

Client Phone: 250-344-8442

# Certificate of Analysis

Lab Work Order #: L2584387 Project P.O. #: NOT SUBMITTED Job Reference: WEEK 4 - 2021 SPRING EMS PROGRAM C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298 ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Environmental 🕽

www.alsglobal.com

**RIGHT SOLUTIONS RIGHT PARTNER** 

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2584387-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ/JD on 05-MAY-21 @ 08:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.420		0.050	mg/L		19-MAY-21	R5460204
Biochemical Oxygen Demand	<2.0		2.0	mg/L		06-MAY-21	R5455974
Orthophosphate-Dissolved (as P)	0.112	DLHC	0.010	mg/L		07-MAY-21	R5454600
Enterococcus	See Attached					06-MAY-21	R5458819
Coliform Bacteria - Fecal	<1		1	CFU/100mL		06-MAY-21	R5454524
MPN - E. coli	<1		1	MPN/100mL		06-MAY-21	R5454515
Phosphorus (P)-Total	0.337		0.025	mg/L		17-MAY-21	R5458681
Total Suspended Solids	8.4		3.0	mg/L		12-MAY-21	R5456918
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC Nitrate (as N)	4.28		0.020	mg/L		06-MAY-21	R5456188
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	4.31		0.022	mg/L		12-MAY-21	
Nitrite in Water by IC							
Nitrite (as N)	0.033		0.010	mg/L		06-MAY-21	R5456188
L2584387-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ/JD on 05-MAY-21 @ 08:20							
Matrix: WATER							
Miscellaneous Parameters							_
Ammonia, Total (as N)	<0.050		0.050	mg/L		19-MAY-21	R5460204
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		07-MAY-21	R5454600
Enterococcus	See Attached					06-MAY-21	R5458819
Coliform Bacteria - Fecal	2		1	CFU/100mL		06-MAY-21	R5454524
MPN - E. coli	2	OCR	1	MPN/100mL		06-MAY-21	R5454515
Phosphorus (P)-Total	0.0121		0.0050	mg/L		17-MAY-21	R5458681
Total Suspended Solids	17.0		3.0	mg/L		12-MAY-21	R5456918
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC Nitrate (as N)	0.182		0.020	mg/L		06-MAY-21	R5456188
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.182		0.022	mg/L		12-MAY-21	
Nitrite in Water by IC	-0.010		0.010	mg/l		06 MAX 21	DE456499
	<0.010		0.010	mg/L		06-MAY-21	R5456188
L2584387-3 COLUMBIA RIVER DOWN STREAM (IS	LAND)						
Sampled By: TJ/JD on 05-MAY-21 @ 08:30							
Matrix: WATER							
Miscellaneous Parameters	0.050		0.050			10 MAX 04	DEACOODA
Ammonia, Total (as N)	<0.050		0.050	mg/L		19-MAY-21	R5460204
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		07-MAY-21	R5454600
Enterococcus	See Attached					06-MAY-21	R5458819
Coliform Bacteria - Fecal	2		1	CFU/100mL		06-MAY-21	R5454524
MPN - E. coli	1	OCR	1	MPN/100mL		06-MAY-21	R5454515
Phosphorus (P)-Total	0.0058		0.0050	mg/L		17-MAY-21	R5458681
Total Suspended Solids	16.4		3.0	mg/L		12-MAY-21	R5456918
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC Nitrate (as N)	0.183		0.020	mg/L		06-MAY-21	R5456188
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.183		0.022	mg/L		12-MAY-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

>) <0.010	0.010	mg/L	06-MAY-21	R5456188
<0.010	0.010	mg/L	06-MAY-21	R5456188

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# **Reference Information**

#### Sample Parameter Qualifier Key:

DLHC			
2.10	Detection Limit Raise	ed: Dilution required due to high concentration of	of test analyte(s).
OCR	Parameter is out of c	lient specific range.	
est Method Re	eferences:		
ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode
oxygen demand dissolved oxyger	(BOD) are determined meter. Dissolved BO	l by diluting and incubating a sample for a spec	ochemical Oxygen Demand (BOD)". All forms of biochemical ified time period, and measuring the oxygen depletion using a nple through a glass fibre filter prior to dilution. Carbonaceous or to incubation.
EC-MPN-CL	Water	MPN - E. coli	APHA 9223B
Substrate Colifor sample is mixed The packet is inc	m Test". E. coli and T with a mixture hydroly cubated for 18 or 24 ho unted. The final result Holding Time:	edures adapted from APHA Method 9223 "Enzy otal Coliform are determined simultaneously. T zable substrates and then sealed in a multi-we ours and then the number of wells exhibiting a is obtained by comparing the positive response	he I packet. positive
FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D
Coliform bacteria	a is enumerated by cul I 24 hour incubation at	turing and colony counting. A known sample vo	brane Filter Technique for Members of the Coliform Group". Jume is filtered through a 0.45 micron membrane filter. The test e growth medium. This method is specific for thermotolerant
N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
			dified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society n of trace levels of ammonium in seawater", Roslyn J. Waston et
NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions	are analyzed by Ion C	Chromatography with conductivity and/or UV de	tection.
NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions	are analyzed by Ion C	Chromatography with conductivity and/or UV de	tection.
P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
	carried out using proce stion of the sample.	edures adapted from APHA Method 4500-P "Pt	osphorus". Total Phosphorus is determined colourimetrically afte
PO4-DO-COL-CL	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
		edures adapted from APHA Method 4500-P "Ph been lab or field filtered through a 0.45 micron	osphorus". Dissolved Orthophosphate is determined membrane filter.
TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		edures adapted from APHA Method 2540 "Solic nple through a glass fibre filter, and by drying th	s". Solids are determined gravimetrically. Total suspended solids e filter at 104 deg. C.
ALS test metho	ds may incorporate m	odifications from specified reference methods t	o improve performance.
The last two lette	ers of the above test co	ode(s) indicate the laboratory that performed a	alytical analysis for that test. Refer to the list below:

Laboratory Deminition Code	
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
Chain of Custody Numbers:	

# **Reference Information**

#### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



		Workorder	L258438	57	Report Date: 19-	MAY-21	Pa	ge 1 of 3
1 0	CICKING HORSE MOU 500 Kicking Horse Tra Golden BC V0A 1H0		ORPORATIO	NC				
Contact: T	RAVIS JOBIN							
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	Water							
Batch R5 WG3532878-2 Biochemical Ox	455974 LCS ygen Demand		101.9		%		85-115	06-MAY-21
WG3532878-1 Biochemical Ox	<b>MB</b> ygen Demand		<2.0		mg/L		2	06-MAY-21
EC-MPN-CL	Water							
Batch R5 WG3531130-1 MPN - E. coli	454515 MB		<1		MPN/100mL		1	06-MAY-21
FCC-MF-CL	Water							
Batch R5 WG3531148-1 Coliform Bacteri	<b>454524</b> <b>MB</b> ia - Fecal		<1		CFU/100mL		1	06-MAY-21
NH3-F-CL	Water							
	460204							
WG3537924-14 Ammonia, Total			104.5		%		85-115	19-MAY-21
Ammonia, Total	(as N)		104.5		mg/L		85-115	19-MAY-21
WG3537924-13 Ammonia, Total			<0.050		mg/L		0.05	19-MAY-21
NO2-IC-N-CL	Water				3		0.00	10 10/11/21
	456188							
WG3533232-2 Nitrite (as N)			102.3		%		90-110	06-MAY-21
WG3533232-1 Nitrite (as N)	MB		<0.010		mg/L		0.01	06-MAY-21
NO3-IC-N-CL	Water							
	456188							
WG3533232-2 Nitrate (as N)	LCS		100.2		%		90-110	06-MAY-21
WG3533232-1 Nitrate (as N)	MB		<0.020		mg/L		0.02	06-MAY-21
P-T-COL-CL	Water							

Water



		Workorder:	L258438	7	Report Date: 1	9-MAY-21	Pa	ge 2 of 3
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-CL	Water							
Batch R5458681 WG3536022-2 LCS Phosphorus (P)-Total			106.9		%		80-120	17-MAY-21
WG3536022-1 MB Phosphorus (P)-Total			<0.0050		mg/L		0.005	17-MAY-21
PO4-DO-COL-CL	Water							
Batch R5454600 WG3531122-2 LCS Orthophosphate-Dissolve	ed (as P)		102.2		%		80-120	07-MAY-21
WG3531122-1 MB Orthophosphate-Dissolve	ed (as P)		<0.0050		mg/L		0.005	07-MAY-21
TSS-CL	Water							
BatchR5456918WG3533139-2LCSTotal Suspended Solids			88.5		%		85-115	12-MAY-21
WG3533139-1 MB Total Suspended Solids			<3.0		mg/L		3	12-MAY-21

Workorder: L2584387

Report Date: 19-MAY-21

#### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

#### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# **Microbial Test Results**

Samples collected May 5, 2021

**Final Report** 

May 17, 2021

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

#4, 6125 12 Street SE, Calgary, AB T2H 2K1



## SAMPLE INFORMATION

Comple ID/		Dessint			
Sample ID/	Collected	Received	Enterococcus test initiation	<ul> <li>Receipt temperature</li> </ul>	
L2584387-1 WWTP EFFLUENT – UV TROUGH /	5-May-21 at 0800h	6-May-21 at 1100h	6-May-21 at 1230h	10.8°C	
2021-1371-01	000011	110011	125011		
L2584387-2 COLUMBIA RIVER UPSTREAM /	5-May-21 at 0820h	6-May-21 at 1100h	6-May-21 at 1230h	9.8°C	
2021-1371-02	082011	110011	125011		
L2584387-3 COLUMBIA RIVER DOWN STREAM (ISLAND) /	5-May-21 at 0830h	6-May-21 at 1100h	6-May-21 at 1230h	10.9°C	
2021-1371-03					

#### **TEST TYPES**

• *Enterococcus* enumeration test

### RESULTS

### **Microbial test results**

Comula ID	MPN/100 mL	
Sample ID	Enterococcus	
L2584387-1 WWTP EFFLUENT – UV TROUGH	4.1	
L2584387-2 COLUMBIA RIVER UPSTREAM	<1	
L2584387-3 COLUMBIA RIVER DOWN STREAM (ISLAND)	<1	

MPN = Most Probable Number

### QA/QC

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

Samples received and set outside of the 24-hour hold time as per the client's request.



that Cell.

Report By: Shae Cole, BSc Biologist

Destalaret

Reviewed By: Leila Oosterbroek, BSc Environmental Scientist

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** 

ENVIRONMENTAL	Quanti-Tray Bench Sheet - Enterococcus
Test Initiation Date: <u>Jourus</u> 106 Time: <u>1130</u> Techician: <u>Jour</u>	Client ALSIOG Reference 2021-371 Reagent used: Enterolert <sup>IM</sup> Reagent Lot#/Expiry: <u>INSUG WIGON 2000</u>
Thermometer Serial #: <u>「くて子らころららら</u> Incubator #: <u>3</u> Incubator Temperature: <u>4</u> (must be 41 ± 0.5°C)	Quanti Tray 2000 Lot#/Expiry: GSO21 09 24 2003
21105/07 Time:	Technician: Sc
Incubator Temp: ULL (must be 41 ± 0.5°C)	B. 6. 23.6
# Positive Small Wells (Tray 2000 only): # Ambiguous Small Wells (Tray 2000 only): Most Probable Number at 24 hours:	
Results - 28 Hour Incubation Date:	Teetinician:
nust be 41 ± 0.5°C)	Enterococci (Fluorescent)
# 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 ambiguos from 24 hours Reviewed By:	s plus the ambiguous wells that became positive at 28 hours ed Bv:
Written by KS on 2006/07/11	Nautilus Environmental (Caloarv)

Revised by LO on 2021/03/17

File: ENT F106



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



CALGARY

### Subcontract Request Form

### Subcontract To:

# NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

#4, 6125-12 STREET SE CALGARY, AB T2H 2K1

0

				our final results	s. exceede	d - Please Procee
Please see enclosed	<u>3</u> san	nple(s) in	<u>3</u>	Container(s)		
SAMPLE NUMBER	ANALYTI	ICAL REQU	IRED		DATE SAMPLED DUE DATE	Priority Flag
L2584387-1 WWTP EFFLUE TROUGH		cus (ENTER	O-HQ 1)	10.8°C	<b>5/5/2021</b> 5/18/2021	800
L2584387-2 COLUMBIA RIV UPSTREAM		cus (ENTER	.O-HQ 1)	9.8°0	<b>5/5/2021</b> 5/18/2021	820
L2584387-3 COLUMBIA RIV STREAM (ISLAND)	4	<b>1</b> :cus (ENTER	.O-HQ 1)	10.90(	<b>5/5/2021</b> 5/18/2021	<del>4</del> <i>3</i> 0
Subcontract Info Contact: Analysis and reporting info o	:ontact:	Patryk W 2559 29 CALGAR	Vojciak, E STREET Y,AB T1Y		2021-13 2021/05/ 1100 (CCD) AE Email: patryk.wojciak@a	106 good ( 1051
Please email confirmation	1 of recei	pt to:	pa	atryk.wojciak	@alsglobal.com	
Shipped By:			C	ate Shipped:		
Received By:			C	ate Received:		
/erified By:			C	Date Verified:		
			т	emperature:		



**END OF REPORT** 



1



L2584387-COFC

#### ustody / Analytical Request Form ada Toll Free: 1 800 668 9878 www.alsglobal.com

COC #

Page <u>1</u> of <u>1</u>

Report To			/ Distribut	ion		Serv	ice R	eque	sted	(Rush	for ro	utine	analys	is sub	ject to	availa	ability)	
Company:	Kicking Horse Mountain Resort Utility Corporation	Standard	d 🗍 Other															
Contact:					✓ Fax	Regular (Standard Turnaround Times - Business Days)     Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT												
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickingh	orseresort.com	<u> </u>	() Er	nergen	icy (1-	2 Bus.	Days) -	100%	Surch	arge - I	Contac	t ALS to	> Confi	rm TAT	
		Email 2:	pmajer@skircr.@			O sa	ame Da	iy or W	/eeken	d Emer	gency	- Conta	ect ALS	to Cor	nfirm TA	AT		
Phone:	250-344-8442 Fax:	Email 3:	mskyring@kicki		com					A	nalys	sis Re	ques	st				
Invoice To	Same as Report ? Yes V No		roject Informatio	برندا والمتحد والمحد والمحد والمحد والمحد والمحد والمحد والمحد والمحد والمحد والمحد والمحد والمحد والمحد والمح		Plea	ase in	dicat	e bel	ow Fil	tered	, Pres	erved	l or b	oth (F	, P, F	-/P)	· · ·
	Invoice with Report? Yes V No	Job #:	WEEK 4 - 202		rogram													
Company:	Resorts of the Canadian Rockies	PO / AFE:																
Contact:	Patrick Majer	LSD:	· · · · · · · · · · · · · · · · · · ·												i İ			
Address:	1505 - 17th Ave SW Calgary AB			· · ·					•									lers
Phone:	Fax:	Quote #:	WW - Q33059						•									Itair
	Vork Order# o use only)	ALS Contact:	LS	Sampler:	TJ/JD							٩	Fecal Coliform	cocci				Number of Containers
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 (	Enterococci	E. Coli			Numb
	WWTP Effluent - UV trough Temp: G, 2 pH: 7, 2		05-May-21	8:00	Water	Х	X	Х	Х	Х	X	X	X	X	X			5
	Columbia River Upstream Temp: 2,0 pH: 7.9		05-May-21	8:20	Water		X	X	X	Х	X	Х	Х	X	X			4
	Columbia River Down stream (island) Temp: (1) Columbia		05-May-21	8:30	Water		X	Х	X	X	X	Х	Х	X	x	_		4
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	Special Instructions / Regulations with water or land	l use (CCM	IE-Freshwater A	quatic Life/BC	CSR - Commerc	ial/AE	Tier	1 - N	atura	nl, etc	;) / Ha	zard	ous C	etails	S			
Please return	n fresh bottles for next weeks sampling- Thanks		6 41-1- 6	data				<u></u>							<u></u>	<u> </u>		-
	Failure to complete all By the use of this form the user ackno									e Exc	cel ta	b.						
	Also provided on another Excel tab are the ALS location												nmon	anal	yses.			
	SHIPMENT RELEASE (client use)				ly)			Sł	HIPMI	ENTA	/ERIF	ICAT	ION	lab u	ise onl	ly)		
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	5-May-21	1 -	$  \leq K$	UK	1-~ °C												'No? sadd :	SIE



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received: 13-MAY-21 Report Date: 02-JUN-21 15:02 (MT) Version: FINAL

Client Phone: 250-344-8442

# Certificate of Analysis

Lab Work Order #: L2587289 Project P.O. #: NOT SUBMITTED Job Reference: WEEK 5 - 2021 SPRING EMS PROGRAM - WW C of C Numbers: Legal Site Desc:

Comments: ADDITIONAL 01-JUN-21 08:21

Patryk Wojciak, B.Sc., P.Chem. Account Manager

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Environmental 🐊

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2587289-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ/JD on 11-MAY-21 @ 08:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.185		0.050	mg/L		01-JUN-21	R5476464
Biochemical Oxygen Demand	<2.0		2.0	mg/L		13-MAY-21	R5459472
Orthophosphate-Dissolved (as P)	0.120		0.010	mg/L		13-MAY-21	R5457268
Enterococcus	See Attached					13-MAY-21	R5475877
Coliform Bacteria - Fecal	<1		1	CFU/100mL		13-MAY-21	R5457957
MPN - E. coli	<1		1	MPN/100mL		13-MAY-21	R5457949
Phosphorus (P)-Total	0.257		0.025	mg/L		24-MAY-21	R5464896
Total Suspended Solids	4.8		3.0	mg/L		21-MAY-21	R5462829
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC Nitrate (as N)	8.19		0.020	mg/L		13-MAY-21	R5457710
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	8.21		0.022	mg/L		14-MAY-21	
Nitrite in Water by IC							
Nitrite (as N)	0.018		0.010	mg/L		13-MAY-21	R5457710
L2587289-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ/JD on 11-MAY-21 @ 09:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.166		0.050	mg/L		01-JUN-21	R5476464
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		13-MAY-21	R5457268
Enterococcus	See Attached					13-MAY-21	R5475877
Coliform Bacteria - Fecal	7		1	CFU/100mL		13-MAY-21	R5457957
MPN - E. coli	1	OCR	1	MPN/100mL		13-MAY-21	R5457949
Phosphorus (P)-Total	<0.0050		0.0050	mg/L		24-MAY-21	R5464896
Total Suspended Solids	15.2		3.0	mg/L		21-MAY-21	R5462829
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC	0 101		0.020	ma/l		13-MAY-21	DE 457740
Nitrate (as N)	0.191		0.020	mg/L		13-IVIA 1-21	R5457710
Nitrate+Nitrite Nitrate and Nitrite (as N)	0.191		0.022	mg/L		14-MAY-21	
Nitrite in Water by IC	0						
Nitrite (as N)	<0.010		0.010	mg/L		13-MAY-21	R5457710
L2587289-3 COLUMBIA RIVER DOWN STREAM ISL	AND						
Sampled By: TJ/JD on 11-MAY-21 @ 08:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		01-JUN-21	R5476464
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		13-MAY-21	R5457268
Enterococcus	See Attached					13-MAY-21	R5475877
Coliform Bacteria - Fecal	3		1	CFU/100mL		13-MAY-21	R5457957
MPN - E. coli	2	OCR	1	MPN/100mL		13-MAY-21	R5457949
Phosphorus (P)-Total	0.0104		0.0050	mg/L		24-MAY-21	R5464896
Total Suspended Solids	21.8		3.0	mg/L		21-MAY-21	R5462829
NO2, NO3 and Sum of NO2/NO3	-		-	U U			
Nitrate in Water by IC Nitrate (as N)	0.191		0.020	mg/L		13-MAY-21	R5457710
	0.101		0.020	<del></del>			
Nitrate+Nitrite		1					

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2587289-3 COLUMBIA RIVER DOWN STREAM ISL Sampled By: TJ/JD on 11-MAY-21 @ 08:30 Matrix: WATER Nitrite in Water by IC	AND						
Nitrite (as N)	<0.010		0.010	mg/L		13-MAY-21	R5457710

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# **Reference Information**

#### Qualifiers for Sample Submission Listed:

Sample Parameter Qualifier Key:         Qualifier       Description         OCR       Parameter is out of client is         Gest Method References:       ALS Test Code       Matrix       Test         BOD-BC-CL       Water       Bid         This analysis is carried out using procedures oxygen demand (BOD) are determined by adding a nitre analysis is carried out using procedures oxygen demand (BOD) are determined by adding a nitre EC-MPN-CL       Water       MF         This analysis is carried out using procedures Substrate Coliform Test". E. coli and Total C sample is mixed with a mixture hydrolyzable The packet is incubated for 18 or 24 hours a response are counted. The final result is obtiprobability table.       Recommended Holding Time:         Sample: 1 day       Reference: APHA       FCC-MF-CL       Water       Fe         This analysis is carried out using procedure: Coliform bacteria is enumerated by culturing involves an initial 24 hour incubation at 44.5 bacteria (Fecal) and is used for non-turbid with N2N3-CALC-CL       Water       Nit         N13-F-CL       Water       Mit         N13-F-CL       Water       Nit         N02-IC-N-CL       Water       Nit         N03-IC-N-CL       Water       Nit         Inorganic anions are analyzed by lon Chrom       No3-IC-N-CL       Water       Nit         N03-IC-N-CL       Water       Nit       Nit	·	Inded Holding Time prior to receipt at the lab.
QualifierDescriptionOCRParameter is out of client isOCRParameter is out of client isTest Method References:ALS Test CodeMatrixBOD-BC-CLWaterBoD-BC-CLWaterBoD-BC-CLWaterDis analysis is carried out using proceduresoxygen demand (BOD) are determined by ddissolved oxygen meter.Dissolved BOD (CBOD) is determined by adding a nitrEC-MPN-CLWaterCMPN-CLWaterThis analysis is carried out using proceduresSubstrate Coliform Test".E. coli and Total CSample is mixed with a mixture hydrolyzableThe packet is incubated for 18 or 24 hours aresponse are counted.The final result is obtprobability table.Recommended Holding Time:Sample: 1 dayReference: APHAFCC-MF-CLVaterFCC-MF-CLWaterN2N3-CALC-CLWaterN13-F-CLWaterN143-F-CLWaterN03-IC-N-CLWaterN03-IC-N-CLWaterN03-IC-N-CLWaterN03-IC-N-CLWaterNo3-IC-N-CLWaterInorganic anions are analyzed by lon ChromNO3-IC-N-CLWaterNotanica anions are analyzed by lon ChromNO3-IC-N-CLWaterNotanica anions are analyzed by lon ChromP-T-COL-CLWaterPot-DO-COL-C	est Description	Method Reference**
OCR       Parameter is out of client is         Parameter is out of client is         est Method References:         ALS Test Code       Matrix       Term         BOD-BC-CL       Water       Bio         BOD-BC-CL       Water       Bio         This analysis is carried out using procedure oxygen demand (BOD) are determined by d       dissolved oxygen meter. Dissolved BOD (SBOD (CBOD) is determined by adding a nitre         EC-MPN-CL       Water       MF         This analysis is carried out using procedure: Substrate Coliform Test". E. coli and Total C sample is mixed with a mixture hydrolyzable.       Recommended Holding Time: Sample: 1 day         Reference: APHA       FCC-MF-CL       Water       Fe         This analysis is carried out using procedure: Coliform bacteria is enumerated by culturing involves an initial 24 hour incubation at 44.5 bacteria (Fecal) and is used for non-turbid w         N2N3-CALC-CL       Water       Nit         NH3-F-CL       Water       Nit         NH3-F-CL       Water       Nit         No2-IC-N-CL       Water       Nit         Inorganic anions are analyzed by lon Chrom       NO3-IC-N-CL       Water       Nit         NO3-IC-N-CL       Water       Nit       Inorganic anions are analyzed by lon Chrom       To         No3-IC-N-CL <td< th=""><th>est Description</th><th>Method Reference**</th></td<>	est Description	Method Reference**
Test Method References:ALS Test CodeMatrixTestBOD-BC-CLWaterBidThis analysis is carried out using procedure: oxygen demand (BOD) are determined by ddissolved oxygen meter. Dissolved BOD (SCBOD (CBOD) is determined by adding a nitrEC-MPN-CLWaterEC-MPN-CLWaterMFThis analysis is carried out using procedure: Substrate Coliform Test". E. coli and Total CSample is mixed with a mixture hydrolyzable The packet is incubated for 18 or 24 hours a response are counted. The final result is oblig probability table. Recommended Holding Time: Sample: 1 day Reference: APHAWaterFeFCC-MF-CLWaterFeThis analysis is carried out using procedure Coliform bacteria is enumerated by culturing involves an initial 24 hour incubation at 44.5 bacteria (Fecal) and is used for non-turbid w N2N3-CALC-CLWaterNitNH3-F-CLWaterNitNH3-F-CLWaterNitInorganic anions are analyzed by Ion Chrom NO3-IC-N-CLWaterNitInorganic anions are analyzed by Ion Chrom P-T-COL-CLWaterToThis analysis is carried out using procedure persulphate digestion of the sample.Po4-DO-COL-CLWaterPO4-DO-COL-CLWaterDisPO4-DO-COL-CLWaterDis	est Description	Method Reference**
ALS Test CodeMatrixTestBOD-BC-CLWaterBidBOD-BC-CLWaterBidThis analysis is carried out using proceduresoxygen demand (BOD) are determined by doxygen demand (BOD) are determined by ddissolved oxygen meter.Dissolved BOD (SGBOD (CBOD) is determined by adding a nitrEC-MPN-CLWaterFLWaterThis analysis is carried out using proceduresSubstrate Coliform Test".E. coli and Total CSample is mixed with a mixture hydrolyzableThe packet is incubated for 18 or 24 hours aresponse are counted.The final result is obtprobability table.Recommended Holding Time:Sample: 1 dayReference: APHAFCC-MF-CLWaterFCC-MF-CLWaterN2N3-CALC-CLWaterN13-F-CLWaterN13-F-CLWaterNM3-F-CLWaterN02-IC-N-CLWaterN03-IC-N-CLWaterN03-IC-N-CLWaterInorganic anions are analyzed by lon ChromNO3-IC-N-CLWaterNotalic anions are analyzed by lon ChromP-T-COL-CLWaterP-T-COL-CLWaterPO4-DO-COL-CLWaterDisPO4-DO-COL-CLWaterDis	•	Method Reference**
BOD-BC-CL       Water       Bid         BOD-BC-CL       Water       Bid         This analysis is carried out using procedure       oxygen demand (BOD) are determined by d         dissolved oxygen meter.       Dissolved BOD (SG         BOD (CBOD) is determined by adding a nitr         EC-MPN-CL       Water       MF         This analysis is carried out using procedure       Substrate Coliform Test". E. coli and Total C         Substrate Coliform Test".       E. coli and Total C         Sample is mixed with a mixture hydrolyzable       The packet is incubated for 18 or 24 hours a         response are counted.       The final result is obtered probability table.         Recommended Holding Time:       Sample: 1 day         Reference: APHA       FCC-MF-CL       Water         FCC-MF-CL       Water       Fe         This analysis is carried out using procedure       Coliform bacteria is enumerated by culturing         coliform bacteria is enumerated by culturing       Substrate (Fecal) and is used for non-turbid w         N2N3-CALC-CL       Water       Nit         NH3-F-CL       Water       An         This analysis is carried out, on sulfuric acid of Chemistry, "Flow-injection analysis with flat.       NO2-IC-N-CL         NO2-IC-N-CL       Water       Nit         Inorganic a	•	Method Reference**
This analysis is carried out using procedure oxygen demand (BOD) are determined by d dissolved oxygen meter. Dissolved BOD (SK BOD (CBOD) is determined by adding a nitr EC-MPN-CL Water MF This analysis is carried out using procedure: Substrate Coliform Test". E. coli and Total C sample is mixed with a mixture hydrolyzable The packet is incubated for 18 or 24 hours a response are counted. The final result is obt probability table. Recommended Holding Time: Sample: 1 day Reference: APHA FCC-MF-CL Water Fe This analysis is carried out using procedure: Coliform bacteria is enumerated by culturing involves an initial 24 hour incubation at 44.5 bacteria (Fecal) and is used for non-turbid w N2N3-CALC-CL Water Nit NH3-F-CL Water An This analysis is carried out, on sulfuric acid of Chemistry, "Flow-injection analysis with fl al. NO2-IC-N-CL Water Nit Inorganic anions are analyzed by Ion Chrom P-T-COL-CL Water To This analysis is carried out using procedures persulphate digestion of the sample. PO4-DO-COL-CL Water Dis	iochemical Oxygen Demand (BOD)	
oxygen demand (BOD) are determined by ddissolved oxygen meter. Dissolved BOD (SGBOD (CBOD) is determined by adding a nitrEC-MPN-CLWaterThis analysis is carried out using procedureSubstrate Coliform Test". E. coli and Total Csample is mixed with a mixture hydrolyzableThe packet is incubated for 18 or 24 hours aresponse are counted. The final result is obtprobability table.Recommended Holding Time:Sample: 1 dayReference: APHAFCC-MF-CLWaterFCC-MF-CLWaterColiform bacteria is enumerated by culturinginvolves an initial 24 hour incubation at 44.5bacteria (Fecal) and is used for non-turbid wN2N3-CALC-CLWaterNtis analysis is carried out, on sulfuric acidof Chemistry, "Flow-injection analysis with flal.NO2-IC-N-CLWaterNitInorganic anions are analyzed by Ion ChromNO3-IC-N-CLWaterNo3-IC-N-CLWaterInorganic anions are analyzed by Ion ChromP-T-COL-CLWaterP-T-COL-CLWaterP-T-COL-CLWaterThis analysis is carried out using procedurepersulphate digestion of the sample.PO4-DO-COL-CLWaterDisconding and substratePO4-DO-COL-CLWaterDisconding and substratePO4-DO-COL-CLWaterPartPartWaterPot-DO-COL-CLPartPartPartPart<		APHA 5210 B-5 day IncubO2 electrode
This analysis is carried out using procedure Substrate Coliform Test". E. coli and Total C sample is mixed with a mixture hydrolyzable The packet is incubated for 18 or 24 hours a response are counted. The final result is obti- probability table. Recommended Holding Time: Sample: 1 day Reference: APHA FCC-MF-CL Water Fe This analysis is carried out using procedure Coliform bacteria is enumerated by culturing involves an initial 24 hour incubation at 44.5 bacteria (Fecal) and is used for non-turbid w N2N3-CALC-CL Water Nit NH3-F-CL Water An This analysis is carried out, on sulfuric acid of Chemistry, "Flow-injection analysis with fl al. NO2-IC-N-CL Water Nit Inorganic anions are analyzed by Ion Chronr P-T-COL-CL Water To This analysis is carried out using procedure P-T-COL-CL Water To This analysis is carried out using procedure persulphate digestion of the sample. PO4-DO-COL-CL Water Dis	diluting and incubating a sample for a specifi	chemical Oxygen Demand (BOD)". All forms of biochemical ed time period, and measuring the oxygen depletion using a ole through a glass fibre filter prior to dilution. Carbonaceous to incubation.
Substrate Coliform Test". E. coli and Total C         sample is mixed with a mixture hydrolyzable         The packet is incubated for 18 or 24 hours a         response are counted. The final result is obtorobability table.         Recommended Holding Time:         Sample: 1 day         Reference: APHA         FCC-MF-CL       Water         For bacteria is enumerated by culturing involves an initial 24 hour incubation at 44.5         bacteria (Fecal) and is used for non-turbid with a mixture hydrolyce and is used for non-turbid with a mixture acid of Chemistry, "Flow-injection analysis with flat.         NO2-IC-N-CL       Water       Am         NO2-IC-N-CL       Water       Nitt         Inorganic anions are analyzed by Ion Chrom       NO3-IC-N-CL         NO3-IC-N-CL       Water       Nitt         Inorganic anions are analyzed by Ion Chrom       Po-T-COL-CL         Vater       To         This analysis is carried o	IPN - E. coli	APHA 9223B
This analysis is carried out using procedure Coliform bacteria is enumerated by culturing involves an initial 24 hour incubation at 44.5 bacteria (Fecal) and is used for non-turbid w V2N3-CALC-CLV2N3-CALC-CLWaterNH3-F-CLWaterNH3-F-CLWaterArrThis analysis is carried out, on sulfuric acid of Chemistry, "Flow-injection analysis with fl al.NO2-IC-N-CLWaterNitInorganic anions are analyzed by Ion ChronNO3-IC-N-CLWaterInorganic anions are analyzed by Ion ChronP-T-COL-CLWaterThis analysis is carried out using procedure persulphate digestion of the sample.PO4-DO-COL-CLWaterDis	Collform are determined simultaneously. The substrates and then sealed in a multi-well and then the number of wells exhibiting a pobtained by comparing the positive responses	packet. sitive
Coliform bacteria is enumerated by culturing nvolves an initial 24 hour incubation at 44.5 bacteria (Fecal) and is used for non-turbid w N2N3-CALC-CL Water Nit NH3-F-CL Water An This analysis is carried out, on sulfuric acid of Chemistry, "Flow-injection analysis with flal.NO2-IC-N-CL Water Nit Inorganic anions are analyzed by Ion Chrom NO3-IC-N-CL Water Nit Inorganic anions are analyzed by Ion Chrom P-T-COL-CL Water To This analysis is carried out using procedure persulphate digestion of the sample.PO4-DO-COL-CL Water Dis	ecal Coliform Count-MF	APHA 9222D
NH3-F-CLWaterAndThis analysis is carried out, on sulfuric acid of Chemistry, "Flow-injection analysis with flal.NO2-IC-N-CLWaterNitNO2-IC-N-CLWaterNitInorganic anions are analyzed by Ion ChromNO3-IC-N-CLWaterNitInorganic anions are analyzed by Ion ChromP-T-COL-CLWaterNitP-T-COL-CLWaterToToThis analysis is carried out using procedurepersulphate digestion of the sample.PO4-DO-COL-CLWaterDis	ng and colony counting. A known sample volu 5 degrees C of the filter with the appropriate	rane Filter Technique for Members of the Coliform Group". Ime is filtered through a 0.45 micron membrane filter. The test growth medium. This method is specific for thermotolerant
This analysis is carried out, on sulfuric acid of Chemistry, "Flow-injection analysis with fl al. NO2-IC-N-CL Water Nit Inorganic anions are analyzed by Ion Chron NO3-IC-N-CL Water Nit Inorganic anions are analyzed by Ion Chron P-T-COL-CL Water To This analysis is carried out using procedure persulphate digestion of the sample. PO4-DO-COL-CL Water Dis	litrate+Nitrite	CALCULATION
of Chemistry, "Flow-injection analysis with fl al. NO2-IC-N-CL Water Nit norganic anions are analyzed by Ion Chrom NO3-IC-N-CL Water Nit norganic anions are analyzed by Ion Chrom P-T-COL-CL Water To This analysis is carried out using procedure persulphate digestion of the sample. PO4-DO-COL-CL Water Dis	mmonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
norganic anions are analyzed by Ion Chrom NO3-IC-N-CL Water Nit norganic anions are analyzed by Ion Chrom P-T-COL-CL Water To This analysis is carried out using procedure persulphate digestion of the sample. PO4-DO-COL-CL Water Dis		fied from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of trace levels of ammonium in seawater", Roslyn J. Waston et
NO3-IC-N-CL Water Nit Inorganic anions are analyzed by Ion Chrom P-T-COL-CL Water To This analysis is carried out using procedure persulphate digestion of the sample. PO4-DO-COL-CL Water Dis	litrite in Water by IC	EPA 300.1 (mod)
P-T-COL-CL Water To This analysis is carried out using procedure persulphate digestion of the sample. PO4-DO-COL-CL Water Dis	matography with conductivity and/or UV dete	ction.
P-T-COL-CL Water To This analysis is carried out using procedure persulphate digestion of the sample. PO4-DO-COL-CL Water Dis	litrate in Water by IC	EPA 300.1 (mod)
This analysis is carried out using procedure persulphate digestion of the sample. PO4-DO-COL-CL Water Dis	matography with conductivity and/or UV dete	ction.
persulphate digestion of the sample. 204-DO-COL-CL Water Dis	otal P in Water by Colour	APHA 4500-P PHOSPHORUS
	es adapted from APHA Method 4500-P "Pho	sphorus". Total Phosphorus is determined colourimetrically afte
	iss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
	es adapted from APHA Method 4500-P "Pho n lab or field filtered through a 0.45 micron m	sphorus". Dissolved Orthophosphate is determined embrane filter.
rss-cl Water To	otal Suspended Solids	APHA 2540 D-Gravimetric
	es adapted from APHA Method 2540 "Solids through a glass fibre filter, and by drying the	Solids are determined gravimetrically. Total suspended solids filter at 104 deg. C.
ALS test methods may incorporate modific	cations from specified reference methods to	improve performance.

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

# **Reference Information**

L2587289 CONTD.... PAGE 5 of 5 Version: FINAL

#### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**				
Chain of Custody Numbers:							

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



		Workorder:	L258728	9	Report Date: 02-	JUN-21	Pa	ge 1 of 4
Gilenti. 11 G	ICKING HORSE MOL 500 Kicking Horse Tra olden BC V0A 1H0 RAVIS JOBIN	INTAIN UTILITY C						
Contact:	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Applygod
Test	Watrix	Reference	Result	Quaimer	Units	KFD	Linin	Analyzed
BOD-BC-CL	Water							
	459472							
WG3537133-2 Biochemical Oxy	LCS /gen Demand		102.4		%		85-115	13-MAY-21
WG3537133-1 Biochemical Oxy	<b>MB</b> /gen Demand		<2.0		mg/L		2	13-MAY-21
EC-MPN-CL	Water							
	457949							
WG3535228-5 MPN - E. coli	МВ		<1		MPN/100mL		1	13-MAY-21
FCC-MF-CL	Water							
Batch R54	457957							
WG3535242-1	МВ							
Coliform Bacteria	a - Fecal		<1		CFU/100mL		1	13-MAY-21
NH3-F-CL	Water							
	476464							
WG3545463-30 Ammonia, Total	(as N)		101.9		%		85-115	01-JUN-21
WG3545463-29 Ammonia, Total			<0.050		mg/L		0.05	01-JUN-21
NO2-IC-N-CL	Water							
	457710							
WG3534921-10 Nitrite (as N)			106.4		%		90-110	13-MAY-21
WG3534921-9 Nitrite (as N)	МВ		<0.010		mg/L		0.01	13-MAY-21
NO3-IC-N-CL	Water							
	457710							
WG3534921-10 Nitrate (as N)	LCS		104.2		%		90-110	13-MAY-21
WG3534921-9 Nitrate (as N)	МВ		<0.020		mg/L		0.02	13-MAY-21
P-T-COL-CL	Water							
	464896							
WG3540266-2 Phosphorus (P)-	<b>LCS</b> Total		94.2		%		80-120	24-MAY-21
WG3540266-1	МВ							



	Workorder: L2587289	Report Date: 02-JUN-21	Pa	ige 2 of 4
Test Matrix	Reference Result Q	ualifier Units RPD	Limit	Analyzed
P-T-COL-CL Water				
BatchR5464896WG3540266-1MBPhosphorus (P)-Total	<0.0050	mg/L	0.005	24-MAY-21
PO4-DO-COL-CL Water				
BatchR5457268WG3534235-6LCSOrthophosphate-Dissolved (as P)	107.9	%	80-120	13-MAY-21
WG3534235-5 MB Orthophosphate-Dissolved (as P)	<0.0050	mg/L	0.005	13-MAY-21
TSS-CL Water				
Batch R5462829 WG3539144-2 LCS Total Suspended Solids	106.1	%	85-115	21-MAY-21
WG3539144-1 MB Total Suspended Solids	<3.0	mg/L	3	21-MAY-21

Workorder: L2587289

Report Date: 02-JUN-21

### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material

Certified Reference Material Continuing Calibration Verification CRM CCV

CVS Calibration Verification Standard LCSD Laboratory Control Sample Duplicate

Workorder: L2587289

Report Date: 02-JUN-21

#### Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Physical Tests							
Total Suspended Solids							
	1	11-MAY-21 08:00	21-MAY-21 10:45	7	10	days	EHT
	2	11-MAY-21 09:00	21-MAY-21 10:45	7	10	days	EHT
	3	11-MAY-21 08:30	21-MAY-21 10:45	7	10	days	EHT
Bacteriological Tests							
Fecal Coliform Count-MF							
	1	11-MAY-21 08:00	13-MAY-21 11:00	30	51	hours	EHTR
	2	11-MAY-21 09:00	13-MAY-21 11:00	30	50	hours	EHTR
	3	11-MAY-21 08:30	13-MAY-21 11:00	30	50	hours	EHTR
MPN - E. coli							
	1	11-MAY-21 08:00	13-MAY-21 11:00	30	51	hours	EHTR
	2	11-MAY-21 09:00	13-MAY-21 11:00	30	50	hours	EHTR
	3	11-MAY-21 08:30	13-MAY-21 11:00	30	50	hours	EHTR

#### Legend & Qualifier Definitions:

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

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

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

EHT: Exceeded ALS recommended hold time prior to analysis.

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

Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2587289 were received on 13-MAY-21 08:40.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# **Microbial Test Results**

Sample collected May 11, 2021

**Final Report** 

May 31, 2021

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

#4, 6125 12 Street SE, Calgary, AB T2H 2K1



## SAMPLE INFORMATION

Samula ID/		Dessint		
Sample ID/ Internal ID	Collected	Received	Enterococcus test initiation	<ul> <li>Receipt temperature</li> </ul>
L2587289-1 WWTP EFLUENT – UV TROUGH / 2021-1401-01	11-May-21 at 0800h	13-May-21 at 1000h	13-May-21 at 1200h	12.0°C
L2587289-2 COLUMBIA RIVER UPSTREAM / 2021-1401-02	11-May-21 at 0900h	13-May-21 at 1000h	13-May-21 at 1200h	12.0°C
L2587289-3 COLUMBIA RIVER DOWN STREAM ISLAND / 2021-1401-03	11-May-21 at 0830h	13-May-21 at 1000h	13-May-21 at 1200h	12.7°C

### **TEST TYPES**

• *Enterococcus* enumeration test

### **RESULTS**

#### **Microbial test results**

Samula ID	MPN/100 mL		
Sample ID -	Enterococcus		
L2587289-1 WWTP EFLUENT – UV TROUGH	<1		
L2587289-2 COLUMBIA RIVER UPSTREAM	<1		
L2587289-3 COLUMBIA RIVER DOWN STREAM ISLAND	<1		

MPN = Most Probable Number

### QA/QC

QA/QC summary	Enterococcus
Protocol deviations	See below
Control performance	Acceptable
Test performance	Valid

The samples were received and testing initiated outside of the required 24-hour hold time at the client's request.



Dan h

Report By: Dana Wong, BSc Biologist

osla lairet

Reviewed By: Leila Oosterbroek, BSc Environmental Scientist

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** 

Client     ALS/06     Reference       Reagent used:     Finenolert <sup>w</sup> Sample Information       Reagent used:     Finenolert <sup>w</sup> Sample Information       Reagent used:     Finenolert <sup>w</sup> Dilution Factor.       AT     (must be 41 ± 0.5C)     OLAP24[2:0:2]       AT     (must be 41 ± 0.5C)     OLAP24[2:0:2]       AT     (must be 41 ± 0.5C)     Comments:       Out Tray 2000 Lot#/Expliny:     Jethnician     Jethnician       AT     (must be 41 ± 0.5C)     Time:     Jethnician       AT     (must be 41 ± 0.5C)     Time:     Jethnician       AT     (must be 41 ± 0.5C)     Time:     Jethnician       AT     (must be 41 ± 0.5C)     Time:     Jethnician       AT     (must be 41 ± 0.5C)     Time:     Jethnician       AT     (must be 41 ± 0.5C)     Time:     Jethnician       AT     (must be 41 ± 0.5C)     Time:     Jethnician       Imagending     (must be 41 ± 0.5C)     Time:     Jethnician       Imagending     (must be a1 ± 0.5C)     Time:     Jethnician       Imagending     (must be a1 ± 0.5C)     Time:     Jethnician       Imagending     (must be antiguous suble that became positive at 28 hours:     Jethnician       Imagending     Mast became positive at	ENVIRONMENTAL	Quanti-Tray Bench Sheet - Enterococcus
Sample Information       Reagent used: Enterolet <sup>14</sup> Reagent used: Enterolet <sup>14</sup> Dilution Factor       Comments:       Quanti Tray 2000 Lot#/Expiny: _55021_0312/032       ± 0.5°0     Cut Tray 2000 Lot#/Expiny: _55021_0312/032       ± 0.5°0     Cut Christen: _5C       Time:     Time:       Time:     Time:       Cont     Cut Vol - 0.2       Cont		AL5106
Image: Construction of the co	Zaujosii3	Sample Information Dilution Factor.
Time:     100     Technician: SC       5°()     Crl     1401-02       0     0     1401-02       0     0     1401-02       0     0     1401-02       1     0     1       1     1     0       1     1     0       1     1     0       1     1     0       1     1     1       1	19270270S 子 イ) (must be 41±0.5°C)	
S <sup>C</sup> Crt.     (40)-0)     1401-02     Intercoc       Crt.     (40)-0)     1401-02     1401-02       Crt.     Crt.     (40)-0)     1401-02       S <sup>C</sup> Crt.     Crt.     Crt.     Crt.       S <sup>C</sup> Crt.     Crt.     Crt.     Crt.       S <sup>C</sup> Crt.     Crt.     Crt.     Crt.       A hours     Plus the ambiguous wells that became positive       Reviewed By:     Crt.	LI Latos/14 Time: (2	Technician: <u>SC</u>
Time: Time: Time: Time: Time: Time: Technician: Te	(must be 41 ± 0.5°C) CTL [4(0)-0]	-02 り4のトンのス
Time: Time: Time: Trime: Cru Cru Cru Cru Cru Cru Cru Cru A hours Reviewed By:	0	
Time: Time: Technician: Techni	Vells (Tray 2000 only):	
Time: Technician:	:	
5°C) Enteroc CTL CTL CTL CTL CTL CTL CTL CTL CTL CTL CTL		Technician:
4 hours Reviewed By: U	(must be 41 ± 0.5°C)	Enterococci (Fluorescent)
plus the ambiguous wells that became positive ed By:		
		ells that became positive at 28 hours Date Reviewed: 1000 DATE
Written by KS on 2006/07/11		

Revised by LO on 2021/03/17

itilus environmental (caigary)

File: ENT F106



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



CALGARY

## Subcontract Request Form

#### Subcontract To:

# NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

#4, 6125-12 STREET SE CALGARY,AB T2H 2K1

	inal report and invoice: PO# <u>L</u> a to be provided with your final res	<u>2587289</u> sults	
		time-Please	? Picket
Please see enclosed <u>3</u>	sample(s) in <u>3</u> Container	r(s)	
SAMPLE NUMBER		DATE SAMPLED	Priority
ANAL	YTICAL REQUIRED 2021-1401	DUE DATE	Flag
L2587289-1 WWTP EFFLUENT - U TROUGH		.6/3/2020 12.0°C May 11,2021 as per 5/25/2021	4600 heret
L2587289-2 COLUMBIA RIVER UPSTREAM Enterc	-02 proccus (ENTERO-HQ 1)	6/3/2020 May 11/2021 12.0°C 5/25/2021	100 client
L2587289-3 COLUMBIA RIVER DO STREAM ISLAND Enterc	wn coccus (ENTERO-HQ 1)	673/2020 12.7°C 5/25/2021	30) per chant is
Subcontract Info Contact: Analysis and reporting info contact	John Forbes (403) 291-9897 Patryk Wojciak, B.Sc., P.Che 2559 29 STREET NE CALGARY,AB T1Y 7B5 Phone: (403) 291-9897	10:00	global.com
Please email confirmation of re	ceipt to: patryk.wojci	iak@alsglobal.com	
Shipped By:	Date Shipped	d:	
Received By:	Date Receive	ed:	
erified By:	Date Verified	1:	
	Temperature		
Sample Integrity Issues:			

a.



**END OF REPORT** 



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### Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 <u>www.alsglobal.com</u>

COC #

Page 1 of 1

Report To	· · · · · · · · · · · · · · · · · · ·	Report Fo	ormat / Distribut	ion		Serv	ice R	eque	sted	(Rush	for ro	utine a	analys	sis sub	ject to	availa	bility)	
Company:	Kicking Horse Mountain Resort Utility Corporation	Standar	d 🗌 Other									es - Bu						
Contact:	Travis Jobin	D PDF	Excel	Digital	✓ Fax	O PI	riority (	2-4 BL	siness	Days)	- 50%	Surcha	rge - C	Contact	ALS to	Confirm	n TAT	
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickingh	orseresort.com												o Confin	m TAT	
		Email 2:	pmajer@skircr.	com	··	O Si	ame Da	ay or V	Veeken	d Emer	gency	- Conta	ect ALS	to Co	nfirm T	AT		
Phone:	250-344-8442 Fax:	Email 3:	mskyring@kicki	nghorseresort.c	<u>xom</u>							sis Re						
Invoice To	Same as Report ? Yes Vo	Client / P	roject Information			Plea	ase ir	dicat	e bel	ow Fil	tered	, Pres	serve	d or b	oth (F	<sup>=</sup> , P, F,	/P)	:
Hardcopy of I	Invoice with Report? Yes Vo	Job #:	Week 5 - 2021	Spring EMS pr	ogram - WW													
Company:	Resorts of the Canadian Rockies	PO / AFE:																
Contact:	Patrick Majer	LSD:																6
Address:	1505 - 17th Ave SW Calgary AB		<u></u>															ner
Phone:	Fax:	Quote #:	0															ntai
	Vork Order #	ALS Contact:	PW	Sampler:	TJ/JD								oliform	occi				Number of Containers
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	Enteroc	E. Coli			Numb∈
	WWTP Effluent - UV trough Temp: 11 pH: 6,8		03-Jun-20	200	Water	X	X	Х	X	X	Χ	X	X	Х	X			5
	Columbia River Upstream Temp: 7,6 pH:		03-Jun-20	9100	Water		X	Х	X	Х	X	Х	X	Х	Х			4
	Columbia River Down stream Island Temp: 7,8 pH: 7	7.93	03-Jun-20	830	Water		Х	X	X	Х	X	X	Х	X	X			4
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	Special Instructions / Regulations with water or land	use (CCM	E-Freshwater A	quatic Life/BC	CSR - Commerci	al/AB	Tier	1 - N	atura	l, etc	) / Ha	zardo	ous C	)etail:	5			
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KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received:30-JUN-21Report Date:14-JUL-21 16:49 (MT)Version:FINAL

Client Phone: 250-344-8442

# Certificate of Analysis

Lab Work Order #: L2608319 Project P.O. #: NOT SUBMITTED Job Reference: RCR-KICKING HORSE MOUNTAIN RESORT C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298 ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Environmental 🕽

www.alsglobal.com

**RIGHT SOLUTIONS RIGHT PARTNER** 

# ALS ENVIRONMENTAL ANALYTICAL REPORT

ample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
2608319-1 WWTP EFFLUENT UV TROUGH							
ampled By: TJ on 29-JUN-21 @ 07:00							
fatrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.059		0.050	mg/L		10-JUL-21	R5517164
Biochemical Oxygen Demand	<2.0		2.0	mg/L		30-JUN-21	R5512763
Orthophosphate-Dissolved (as P)	0.492	DLHC	0.050	mg/L		30-JUN-21	R5507014
Coliform Bacteria - Fecal	<1		1	CFU/100mL		30-JUN-21	R5507172
MPN - E. coli	<1		1	MPN/100mL		30-JUN-21	R5507193
Phosphorus (P)-Total	0.54		0.10	mg/L		14-JUL-21	R5521591
Total Suspended Solids	<3.0		3.0	mg/L		06-JUL-21	R5512948
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	5.70		0.020	mg/L		30-JUN-21	R5507209
Nitrate+Nitrite Nitrate and Nitrite (as N)	5.71		0.022	mg/L		01-JUL-21	
Nitrite in Water by IC	5.71		0.022	ing/L		0100221	
Nitrite (as N)	0.013		0.010	mg/L		30-JUN-21	R5507209

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

### **Reference Information**

### Sample Parameter Qualifier Key:

Qualifier	Description		
DLHC	Detection Limit Raise	d: Dilution required due to high concentration of	f test analyte(s).
IS-B	Matrix Spike recovery	could not be accurately calculated due to high	analyte background in sample.
est Method R	eferences:		
LS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode
oxygen demand dissolved oxyge	(BOD) are determined in meter. Dissolved BOI	by diluting and incubating a sample for a spec	ochemical Oxygen Demand (BOD)". All forms of biochemical fied time period, and measuring the oxygen depletion using a nple through a glass fibre filter prior to dilution. Carbonaceous r to incubation.
C-MPN-CL	Water	MPN - E. coli	APHA 9223B
Substrate Colifo ample is mixed The packet is in	orm Test". E. coli and To d with a mixture hydrolyz cubated for 18 or 24 ho punted. The final result i Holding Time:	dures adapted from APHA Method 9223 "Enzy otal Coliform are determined simultaneously. T zable substrates and then sealed in a multi-wel ours and then the number of wells exhibiting a p s obtained by comparing the positive response	ne I packet. ositive
CC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D
Coliform bacteri	a is enumerated by cult al 24 hour incubation at	uring and colony counting. A known sample vo	brane Filter Technique for Members of the Coliform Group". lume is filtered through a 0.45 micron membrane filter. The test e growth medium. This method is specific for thermotolerant
2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
IH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
			dified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society n of trace levels of ammonium in seawater", Roslyn J. Waston et
IO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)
norganic anions	s are analyzed by lon C	hromatography with conductivity and/or UV det	ection.
103-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)
norganic anions	s are analyzed by lon C	hromatography with conductivity and/or UV det	ection.
-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
	carried out using proce estion of the sample.	dures adapted from APHA Method 4500-P "Ph	osphorus". Total Phosphorus is determined colourimetrically afte
04-DO-COL-C	L Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
		dures adapted from APHA Method 4500-P "Ph been lab or field filtered through a 0.45 micron	osphorus". Dissolved Orthophosphate is determined nembrane filter.
SS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		dures adapted from APHA Method 2540 "Solid ple through a glass fibre filter, and by drying th	s". Solids are determined gravimetrically. Total suspended solids e filter at 104 deg. C.
ALS test metho	ods may incorporate mo	odifications from specified reference methods to	p improve performance.
-			alytical analysis for that test. Refer to the list below:

Laboratory Demittion Code	
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
Chain of Custody Numbers:	

## **Reference Information**

#### Test Method References:

ALS Test Code	Matrix	<b>Test Description</b>	Method Reference**
---------------	--------	-------------------------	--------------------

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



#### ~ ... \_ \_

			Qualit	y Control	Report			
		Workorder:	L2608319	9 Re	port Date: 14-	JUL-21	Pa	ge 1 of 3
1500 Golde	ING HORSE MOU Kicking Horse Tra en BC V0A 1H0 'IS JOBIN	JNTAIN UTILITY CO ail	ORPORATIC	DN				
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	Water							
Batch R55127	763							
WG3569446-3 DU	-	L2608319-1						
Biochemical Oxygen		<2.0	<2.0	RPD-NA	mg/L	N/A	30	30-JUN-21
WG3569446-2 LC Biochemical Oxygen			101.6		%		85-115	30-JUN-21
WG3569446-1 MB	3							
Biochemical Oxygen	Demand		<2.0		mg/L		2	30-JUN-21
EC-MPN-CL	Water							
Batch R55071 WG3567535-4 MB MPN - E. coli			<1		MPN/100mL		1	30-JUN-21
FCC-MF-CL	Water							
Batch R55071 WG3567517-3 MB Coliform Bacteria - F	3		<1		CFU/100mL		1	30-JUN-21
NH3-F-CL	Water							
Batch R55171	64							
WG3573261-2 LC Ammonia, Total (as	-		100.9		%		85-115	10-JUL-21
WG3573261-1 MB Ammonia, Total (as			<0.050		mg/L		0.05	10-JUL-21
NO2-IC-N-CL	Water							
Batch R55072	209							
WG3567542-6 LC Nitrite (as N)	S		100.1		%		90-110	30-JUN-21
WG3567542-5 MB Nitrite (as N)	3		<0.010		mg/L		0.01	30-JUN-21
NO3-IC-N-CL	Water							
Batch R55072	209							
WG3567542-6 LC Nitrate (as N)	S		99.0		%		90-110	30-JUN-21
WG3567542-5 MB Nitrate (as N)	3		<0.020		mg/L		0.02	30-JUN-21

P-T-COL-CL

Water



	Workorder:	L2608319	9	Report Date: 14	4-JUL-21	Pa	ge 2 of 3
Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-CL Water							
Batch R5521591							
WG3576011-8 LCS Phosphorus (P)-Total		101.6		%		80-120	14-JUL-21
WG3576011-7 MB Phosphorus (P)-Total		<0.0050		mg/L		0.005	14-JUL-21
PO4-DO-COL-CL Water							
Batch R5507014							
WG3567330-5 DUP Orthophosphate-Dissolved (as P)	<b>L2608319-1</b> 0.492	0.504		mg/L	2.4	20	30-JUN-21
WG3567330-2 LCS Orthophosphate-Dissolved (as P)		98.8		%		80-120	30-JUN-21
WG3567330-1 MB Orthophosphate-Dissolved (as P)		<0.0050		mg/L		0.005	30-JUN-21
TSS-CL Water							
Batch R5512948							
WG3569615-2 LCS Total Suspended Solids		92.1		%		85-115	06-JUL-21
WG3569615-1 MB Total Suspended Solids		<3.0		mg/L		3	06-JUL-21

Workorder: L2608319

Report Date: 14-JUL-21

### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

#### Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Service Requested (Rush for routine analysis subject to availability)

Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT

C Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT

Analysis Request Please indicate below Filtered, Preserved or both (F, P, F/P)

Soli

Х

Same Day or Weekend Emergency - Contact ALS to Confirm TAT

# orm

Page 1 of

Number of Containers

5

	Chai	n of Custody / Canada Toll & www.a	Analytical Re Free: 1 800 66	equest Form 8 9878							CO	C# _	Pa	
(ALS)Environmental	Bonort E	ormat / Distribu			Ison	ico P	eque	etod	(Buch	for ro	utine (	analysis		
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Company: Kicking Horse Mountain Resort Utility Corporation	✓ Standar	the second second second second second second second second second second second second second second second s			-	_						rge - Co		-
Contact: Travis Jobin	PDF	Excel	Digita				~~~~				<u> </u>	arge - C		_
Address: 1500 Kicking Horse Trail	Email 1:	tjobin@kickingt		<u>l</u>	_							arge - Ci		-
	Email 2:	pmajer@skircr.			-	ame D	ay or w	veeken				-		11 
Phone: 250-344-8442 Fax:	Email 3:	mskyring@kick		com							~	equest	1.	-
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Company: Resorts of the Canadian Rockies	PO / AFE		· · ·		4							·		
Contact: Patrick Majer	LSD:				1							*		
Address: 1505 - 17th Ave SW Calgary AB					<b>.</b>					• •				
Phone: Fax:	Quote #:	WW - Q33059	-											
Lab Work Order # (lab use only)	ALS Contact:	PW	Sampler:	TJ				- 2				oliform	志福	1
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	0010-1-2	
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Please return fresh bottles for next weeks sampling- Thanks

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 RELE	EASE (client use		SHIP	MENT REGEPTI	ON (lab use only	0	SHIPN	IENT VERIFICA	TION (lab use o	nly)
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тј	29-Jun-21	8:30	/0 \	$0/\gamma$						If Yes add SIF

GENF 20.00 Front



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received:06-AUG-21Report Date:12-AUG-21 15:46 (MT)Version:FINAL

Client Phone: 250-344-8442

# Certificate of Analysis

Lab Work Order #: L2623538 Project P.O. #: NOT SUBMITTED Job Reference: RCR-KICKING HORSE MOUNTAIN RESORT C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2623538-1 UV TROUGH							
Sampled By: CLIENT on 05-AUG-21 @ 08:15							
Matrix: WATER							
Miscellaneous Parameters							
Biochemical Oxygen Demand	<2.0		2.0	mg/L		06-AUG-21	R5548396
Orthophosphate-Dissolved (as P)	0.390	DLHC	0.025	mg/L		07-AUG-21	R5546171
Coliform Bacteria - Fecal	24		1	CFU/100mL		06-AUG-21	R5546465
Phosphorus (P)-Total	0.467	DLHC	0.025	mg/L		12-AUG-21	R5549027
Total Suspended Solids	<3.0		3.0	mg/L		11-AUG-21	R5548823
			0.0				10010020

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

### **Reference Information**

#### Sample Parameter Qualifier Key:

Qualifier	Description						
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).						
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.						
est Method	References:						
ALS Test Cod	e Matrix	Test Description	Method Reference**				
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode				
oxygen demar dissolved oxyg	d (BOD) are determined en meter. Dissolved BOI	by diluting and incubating a sample for a s	- "Biochemical Oxygen Demand (BOD)". All forms of biochemical specified time period, and measuring the oxygen depletion using a sample through a glass fibre filter prior to dilution. Carbonaceous prior to incubation.				
FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D				
Coliform bacte	ria is enumerated by cult ial 24 hour incubation at	uring and colony counting. A known samp	Membrane Filter Technique for Members of the Coliform Group". le volume is filtered through a 0.45 micron membrane filter. The test priate growth medium. This method is specific for thermotolerant evel.				
P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS				
	s carried out using proce gestion of the sample.	dures adapted from APHA Method 4500-F	P "Phosphorus". Total Phosphorus is determined colourimetrically after				
PO4-DO-COL-	CL Water	Diss. Orthophosphate in Water by Colou	Ir APHA 4500-P PHOSPHORUS				
		dures adapted from APHA Method 4500-F been lab or field filtered through a 0.45 mic	P "Phosphorus". Dissolved Orthophosphate is determined cron membrane filter.				
TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric				
		dures adapted from APHA Method 2540 " ple through a glass fibre filter, and by dryi	Solids". Solids are determined gravimetrically. Total suspended solids ng the filter at 104 deg. C.				
* ALS test met	nods may incorporate mo	difications from specified reference metho	ods to improve performance.				
The last two le	tters of the above test co	de(s) indicate the laboratory that performe	ed analytical analysis for that test. Refer to the list below:				
Laboratory De	finition Code Labo	ratory Location					
CL	ALS E	ENVIRONMENTAL - CALGARY, ALBERT	A, CANADA				

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



		Workorder:	L2623538	8	Report Date: 12-	AUG-21	Pa	ge 1 of 2
Client: Contact:	KICKING HORSE MOUN 1500 Kicking Horse Trail Golden BC V0A 1H0 TRAVIS JOBIN		ORPORATIC	DN				
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	Water							
Batch	R5548396							
WG3594358 Biochemical	-2 LCS Oxygen Demand		101.2		%		85-115	06-AUG-21
WG3594358 Biochemical	-1 MB Oxygen Demand		<2.0		mg/L		2	06-AUG-21
FCC-MF-CL	Water							
Batch WG3592938 Coliform Bac	R5546465 -1 MB cteria - Fecal		<1		CFU/100mL		1	06-AUG-21
P-T-COL-CL	Water							
Batch WG3595909 Phosphorus			107.9		%		80-120	12-AUG-21
WG3595909 Phosphorus	-5 MB		<0.0050		mg/L		0.005	12-AUG-21
PO4-DO-COL-C	L Water							
Batch WG3592560	R5546171 -3 DUP	L2623538-1						
Orthophospl	hate-Dissolved (as P)	0.390	0.443		mg/L	13	20	07-AUG-21
WG3592560 Orthophospl	-2 LCS hate-Dissolved (as P)		101.8		%		80-120	07-AUG-21
WG3592560 Orthophospl	-1 MB hate-Dissolved (as P)		<0.0050		mg/L		0.005	07-AUG-21
WG3592560 Orthophospl	-4 MS hate-Dissolved (as P)	L2623538-1	N/A	MS-B	%		-	07-AUG-21
TSS-CL	Water							
Batch	R5548823							
WG3594593 Total Suspe			92.5		%		85-115	11-AUG-21
WG3594593 Total Suspe			<3.0		mg/L		3	11-AUG-21

Workorder: L2623538

Report Date: 12-AUG-21

### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

#### Sample Parameter Qualifier Definitions:

Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.

### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

### Chain of Custody / Analytical Request Form Canada Toll Eree: 1 800 668 9878

COC #

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Number of Containers

4

ALS	Environmental		www.	alsglobal.com	0 0010									Page	1	of _
Report To		Report F	ormat / Distribu	ition	<u> </u>	Serv	vice F	Reaue	sted	(Rust	for ro	outine	analvs	is subject	to avail	ability)
Company:	Kicking Horse Mountain Water Utility Co. Ltd.	Standard Other											usiness			
Contact:	Travis Jobin	PDF	Excel	Digital	Fax	O F	riority	(2-4 Bi	siness	Days)	- 50%	Surcha	arge - C	ontact ALS	to Confir	m TAT
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kicking	horseresort.com	· · . ·	O E	merge	ncy (1-	2 Bus.	Days)	- 100%	6 Surch	narge - (	Contact ALS	5 to Conf	irm TAT
		Email 2:	pmajer@skircr			O s	ame D	ay or V	Veeker	d Erne	rgency	- Cont	act ALS	to Confirm	TAT	
Phone:	250-344-6003 Fax:	Email 3:		kinghorseresort.	com					A	nalys	sis Re	eques	it.		
Invoice To	Same as Report ? Yes V No	Client / P	roject Informat	ion		Ple	ase i	ndicat	e bel	ow Fi	tered	, Pres	served	or both	(F, P, F	=/P)
Hardcopy of	Invoice with Report? Yes V No	Job #:	RCR - Kicking	Horse Mountain	Resort		-			<u> </u>						
Company:	Resorts of the Canadian Rockies	PO / AFE	· · · · · · · · · · · · · · · · · · ·													
Contact:	Patrick Majer	LSD:				1										
Address:	1505 - 17th Ave SW Calgary AB					1										
Phone:	Fax	Quote #:	Q33059			1							· ·			
1.2.53.240.7.	Work Order #	ALS Contact:	LS	Sampler:		1		Coliform	Phosphate							
Sample #	Sample Identification (This description will appear on the report)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal Co	Ortho Pt	Total P						
	UV trough		05-Aug-21	0815	Water	X	X	X	X	X						
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GENF 20.00 Front

Observations:

Yes / No ? If Yes add SIF



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received:26-AUG-21Report Date:02-SEP-21 15:08 (MT)Version:FINAL

Client Phone: 250-344-8442

# Certificate of Analysis

Lab Work Order #: L2631980 Project P.O. #: NOT SUBMITTED Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2631980-1 UV TROUGH Sampled By: CLIENT on 25-AUG-21 @ 10:00 Matrix: WATER							
Maria Maren Miscellaneous Parameters							
Ammonia, Total (as N)	0.052		0.050	mg/L		01-SEP-21	R5575676
Biochemical Oxygen Demand	<2.0		2.0	mg/L		26-AUG-21	R5572625
Orthophosphate-Dissolved (as P)	0.464	DLHC	0.050	mg/L		26-AUG-21	R5571002
Coliform Bacteria - Fecal	<2	DLM	2	CFU/100mL		26-AUG-21	R5571989
MPN - E. coli	<1		1	MPN/100mL		26-AUG-21	R5571965
Phosphorus (P)-Total	0.550		0.0050	mg/L		31-AUG-21	R5572938
Total Suspended Solids	<3.0		3.0	mg/L		30-AUG-21	R5572768

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

### **Reference Information**

### Sample Parameter Qualifier Key:

Qualifier	Description						
DLHC	Detection Limit Raised	d: Dilution required due to high concentration of	test analyte(s).				
DLM	Detection Limit Adjust	ed due to sample matrix effects (e.g. chemical i	nterference, colour, turbidity).				
Test Method Re	eferences:						
ALS Test Code	Matrix	Test Description	Method Reference**				
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode				
oxygen demand ( dissolved oxygen	(BOD) are determined l meter. Dissolved BOD	by diluting and incubating a sample for a specifi	chemical Oxygen Demand (BOD)". All forms of biochemical ed time period, and measuring the oxygen depletion using a ple through a glass fibre filter prior to dilution. Carbonaceous to incubation.				
EC-MPN-CL	Water	MPN - E. coli	APHA 9223B				
Substrate Colifor sample is mixed The packet is inc response are cou probability table.	Recommended Holding Time: Sample: 1 day						
FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D				
Coliform bacteria involves an initial	is enumerated by culture 24 hour incubation at	uring and colony counting. A known sample volu	rane Filter Technique for Members of the Coliform Group". ume is filtered through a 0.45 micron membrane filter. The test growth medium. This method is specific for thermotolerant				
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC				
			fied from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of trace levels of ammonium in seawater", Roslyn J. Waston et				
P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS				
	arried out using proced stion of the sample.	dures adapted from APHA Method 4500-P "Pho	sphorus". Total Phosphorus is determined colourimetrically after				
PO4-DO-COL-CL	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS				
		dures adapted from APHA Method 4500-P "Pho- een lab or field filtered through a 0.45 micron m	sphorus". Dissolved Orthophosphate is determined embrane filter.				
TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric				
		dures adapted from APHA Method 2540 "Solids ple through a glass fibre filter, and by drying the	". Solids are determined gravimetrically. Total suspended solids filter at 104 deg. C.				
** ALS test method	ds may incorporate mo	difications from specified reference methods to	improve performance.				
The last two lette	rs of the above test co	de(s) indicate the laboratory that performed ana	lytical analysis for that test. Refer to the list below:				
Laboratory Defir	nition Code Labor	atory Location					
CL	ALS E	NVIRONMENTAL - CALGARY, ALBERTA, CA	NADA				
Chain of Custod	y Numbers:						

## **Reference Information**

#### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
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#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



		Workorder:	L263198	0	Report Date: 02-	SEP-21	Pa	ge 1 of 3
1500 Golde	Kicking Horse Tra en BC V0A 1H0	JNTAIN UTILITY C ail	ORPORATIC	N				
eentaet.	/IS JOBIN							
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	Water							
Batch R55726	625							
WG3608015-2 LC Biochemical Oxyger	-		93.2		%		85-115	26-AUG-21
WG3608015-1 ME Biochemical Oxyger			<2.0		mg/L		2	26-AUG-21
EC-MPN-CL	Water							
Batch R55719								
WG3607377-1 ME MPN - E. coli			<1		MPN/100mL		1	26-AUG-21
FCC-MF-CL	Water							
Batch R55719 WG3607404-1 ME Coliform Bacteria - F	989 3		<1		CFU/100mL		1	26-AUG-21
NH3-F-CL	Water							
Batch R55756	676							
WG3609256-6 LC Ammonia, Total (as			89.9		%		85-115	01-SEP-21
WG3609256-5 ME Ammonia, Total (as			<0.050		mg/L		0.05	01-SEP-21
P-T-COL-CL	Water							
Batch R55729	938							
WG3606973-8 LC Phosphorus (P)-Tota			104.6		%		80-120	31-AUG-21
WG3606973-7 ME Phosphorus (P)-Tota			<0.0050		mg/L		0.005	31-AUG-21
PO4-DO-COL-CL	Water							
Batch R55710	002							
WG3605705-7 LC Orthophosphate-Dis			102.4		%		80-120	26-AUG-21
WG3605705-2 ME Orthophosphate-Dis			<0.0050		mg/L		0.005	26-AUG-21
TSS-CL	Water							
Batch R55727	768							
WG3607219-2 LC Total Suspended Sc			103.8		%		85-115	30-AUG-21
WG3607219-1 ME	3							



			Workorder	: L263198	30	Report Date: 0	2-SEP-21	P	age 2 of 3
Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-CL		Water							
Batch WG36072 Total Su	R5572768 219-1 MB spended Solids			<3.0		mg/L		3	30-AUG-21

Workorder: L2631980

Report Date: 02-SEP-21

### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

#### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



### Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

COC #

Page \_\_\_\_\_ of \_\_\_\_\_

(ALS)																	_
Report To		Report Fo	ormat / Distribut	tion		Serv	ice R	eque	sted	(Rush	for ro	utine a	nalysis	subject	to availa	ability)	
Company:	Kicking Horse Mountain Water Utility Co. Ltd.	Standard	Standard Other    Regular (Standard Turnaround Times - Business Days)														
Contact:	Travis Jobin	DF	Excel	Digital	✓ Fax	O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm					m TAT						
Address:	1500 Kicking Horse Trail	Email 1:	Email 1: tjobin@kickinghorseresort.com O Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT														
		Email 2:									TAT						
Phone:	250-344-6003 Fax:	Email 3:	mskyring@kicki	inghorseresort.c	om								quest				
Invoice To	Same as Report ? Yes Vo	Client / Pr	roject Informati			Plea	ase in	dicat	e belo	ow Fil	tered	, Pres	erved o	r both	(F, P, F	/P)	
	Invoice with Report? Yes Vo	Job #:	RCR - Kicking I	lorse Mountain	Resort												
Company:	Resorts of the Canadian Rockies	PO / AFE:															
Contact:	Patrick Majer	LSD:															<i>(</i> 0
Address:	1505 - 17th Ave SW Calgary AB																Containers
Phone:	Fax:	Quote #:	Q33059						Ð								ntai
	Vork Order #	ALS Contact:	LS	Sampler:				Fecal Coliform	Ortho Phosphate		کمو	<b>A</b> r					5
Sample #	Sample Identification (This description will appear on the report)		Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecal (	Ortho I	Total F	N-NH4	E.Coli					Number
14	UV trough		Aug 25 21	10:00	Water	X	X	Χ	X	Χ	Х	X					5
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	Special Instructions / Regulations with water or land	d use (CCN	E-Freshwater A	quatic Life/BC	CSR - Commerc	ial/AE	3 Tier	1 - N	atura	il, etc	) / Ha	zardo	ous Del	ails			
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	Failure to complete all By the use of this form the user ackno	owledges a	ind agrees with	the Terms and	Conditions as p	rovide	ed on	a se	parat	e Exe	cel ta	b.					
	Also provided on another Excel tab are the ALS location	n addresses	s, phone numbe	ers and sample	container / pres	ervati	on / h	oldir	ng tin	ne tal	ole fo	r con	imon a	nalyse	S.	School and A	
	SHIPMENT RELEASE (client use)	SHIP	MENT RECEPT	ION (lab use on	lý)			Sł	HPM	ENT	VERIF	-ICAT	ION (la	b use o	only)	100 X X X Y	
Released by	/: Date (dd-mmm-yy) Time (hh-mm) Received		Date:	Time:	Temperature:	Veri	fied b	y:		Date	9:		Time:		Obse Yes /	No ?	
Mark Skyring	30-Sep-19	1h	198/26	1100	0° °C										If Yes	add	SIF
India Oryning		<u> </u>				-	_							CEN	IE 20.00	Front	



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received: 29-SEP-21 Report Date: 22-OCT-21 09:29 (MT) Version: FINAL

Client Phone: 250-344-8442

# Certificate of Analysis

Lab Work Order #:L2645017Project P.O. #:NOT SUBMITTEDJob Reference:WEEK 1-2021 FALL EMS PROGRAM-WWC of C Numbers:17-834403Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2645017-1 WWTP EFFLUENT-UV TROUGH							
Sampled By: TJ on 28-SEP-21 @ 08:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.171		0.050	mg/L		11-OCT-21	R5616127
Biochemical Oxygen Demand	<2.0		2.0	mg/L		30-SEP-21	R5609157
Orthophosphate-Dissolved (as P)	0.426	DLHC	0.050	mg/L		30-SEP-21	R5606094
Enterococcus	See Attached					29-SEP-21	R5626628
Coliform Bacteria - Fecal	<1		1	CFU/100mL		29-SEP-21	R5605637
MPN - E. coli	<1		1	MPN/100mL		29-SEP-21	R5605608
Phosphorus (P)-Total	0.519	DLHC	0.050	mg/L		05-OCT-21	R5609367
Total Suspended Solids	3.7		3.0	mg/L		01-OCT-21	R5607398
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC Nitrate (as N)	10.3		0.020	mg/L		01-OCT-21	R5607260
Nitrate+Nitrite				0			
Nitrate and Nitrite (as N)	10.3		0.022	mg/L		04-OCT-21	
Nitrite in Water by IC							
Nitrite (as N)	0.018		0.010	mg/L		01-OCT-21	R5607260
L2645017-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ on 28-SEP-21 @ 07:15							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		11-OCT-21	R5616127
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		30-SEP-21	R5606094
Enterococcus	See Attached					29-SEP-21	R5626628
Coliform Bacteria - Fecal	21		1	CFU/100mL		29-SEP-21	R5605637
MPN - E. coli	14	OCR	1	MPN/100mL		29-SEP-21	R5605608
Phosphorus (P)-Total	0.0473		0.0050	mg/L		05-OCT-21	R5609367
Total Suspended Solids	95.9		3.0	mg/L		01-OCT-21	R5607398
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC							
Nitrate (as N)	0.091		0.020	mg/L		01-OCT-21	R5607260
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.091		0.022	mg/L		04-OCT-21	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		01-OCT-21	R5607260
	<0.010		0.010	iiig/∟		01-001-21	13007200
L2645017-3 COLUMBIA RIVER DOWNSTREAM							
Sampled By: TJ on 28-SEP-21 @ 09:30							
Matrix: WATER Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	ma/l		11-OCT-21	R5616127
Orthophosphate-Dissolved (as P)	<0.050		0.050	mg/L mg/L		30-SEP-21	R5616127 R5606094
Enterococcus	<0.0050 See Attached		0.0050	mg/∟		29-SEP-21	
Coliform Bacteria - Fecal			4	CFU/100mL		29-SEP-21 29-SEP-21	R5626628
MPN - E. coli	26 24	OCR	1	MPN/100mL		29-SEP-21 29-SEP-21	R5605637 R5605608
			1			29-SEP-21 05-OCT-21	
Phosphorus (P)-Total	0.0469		0.0050	mg/L			R5609367
Total Suspended Solids NO2, NO3 and Sum of NO2/NO3	66.0		3.0	mg/L		30-SEP-21	R5606351
NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC							
Nitrate in water by iC Nitrate (as N)	0.089		0.020	mg/L		01-OCT-21	R5607260
Nitrate+Nitrite			0.020				
Nitrate and Nitrite (as N)	0.089		0.022	mg/L		04-OCT-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2645017-3 COLUMBIA RIVER DOWNSTREAM							
Sampled By: TJ on 28-SEP-21 @ 09:30							
Matrix: WATER							
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		01-OCT-21	R5607260
L2645017-4 COLUMBIA RIVER SIDECHANNEL							
Sampled By: TJ on 28-SEP-21 @ 09:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		11-OCT-21	R5616127
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		30-SEP-21	R5606094
Enterococcus	See Attached					29-SEP-21	R5626628
Coliform Bacteria - Fecal	34		1	CFU/100mL		29-SEP-21	R5605637
MPN - E. coli	16	OCR	1	MPN/100mL		29-SEP-21	R5605608
Phosphorus (P)-Total	0.0292		0.0050	mg/L		05-OCT-21	R5609367
Total Suspended Solids	39.3		3.0	mg/L		01-OCT-21	R5607398
NO2, NO3 and Sum of NO2/NO3 Nitrate in Water by IC							
Nitrate in Water by IC Nitrate (as N)	0.075		0.020	mg/L		01-OCT-21	R5607260
Nitrate+Nitrite Nitrate and Nitrite (as N)	0.075		0.000			04 007 24	
Nitrite in Water by IC	0.075		0.022	mg/L		04-OCT-21	
Nitrite (as N)	<0.010		0.010	mg/L		01-OCT-21	R5607260

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## **Reference Information**

Qualifier	Description							
DLHC	Detection Limit Raise	ed: Dilution required due to high concentration	on of test analyte(s).					
ЛS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.							
DCR	Parameter is out of client specific range.							
est Method I	References:							
ALS Test Code	e Matrix	Test Description	Method Reference**					
OD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode					
oxygen demano dissolved oxyge	d (BOD) are determined en meter. Dissolved BO	by diluting and incubating a sample for a sp	"Biochemical Oxygen Demand (BOD)". All forms of biochemical becified time period, and measuring the oxygen depletion using a sample through a glass fibre filter prior to dilution. Carbonaceous prior to incubation.					
C-MPN-CL	Water	MPN - E. coli	APHA 9223B					
sample is mixe The packet is ir response are c probability table	d with a mixture hydroly ncubated for 18 or 24 ho ounted. The final result e. I Holding Time:	otal Coliform are determined simultaneously zable substrates and then sealed in a multi- ours and then the number of wells exhibiting is obtained by comparing the positive respon	well packet. a positive					
CC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D					
Coliform bacter	ia is enumerated by cul al 24 hour incubation a	turing and colony counting. A known sample	lembrane Filter Technique for Members of the Coliform Group". > volume is filtered through a 0.45 micron membrane filter. The test riate growth medium. This method is specific for thermotolerant vel.					
12N3-CALC-CI	_ Water	Nitrate+Nitrite	CALCULATION					
H3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC					
			modified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society ation of trace levels of ammonium in seawater", Roslyn J. Waston et					
IO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)					
norganic anion	is are analyzed by Ion C	Chromatography with conductivity and/or UV	detection.					
103-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)					
norganic anion	is are analyzed by Ion C	Chromatography with conductivity and/or UV	detection.					
-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS					
	carried out using proce estion of the sample.	dures adapted from APHA Method 4500-P '	"Phosphorus". Total Phosphorus is determined colourimetrically after					
04-DO-COL-0	CL Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS					
		edures adapted from APHA Method 4500-P ' been lab or field filtered through a 0.45 micro	Phosphorus". Dissolved Orthophosphate is determined on membrane filter.					
SS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric					
Flain an altraia in	carried out using proce	dures adapted from APHA Method 2540 "So	olids". Solids are determined gravimetrically. Total suspended solid					

This analysis is carried out using procedures adapted from APHA Method 2540 "Solids". Solids are determined gravimetrically. Total suspended solids (TSS) are determined by filtering a sample through a glass fibre filter, and by drying the filter at 104 deg. C.

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
Chain of Custody Numbers:	

## **Reference Information**

### **Test Method References:**

ALS Test Code	Matrix	Test Description	Method Reference**

17-834403

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2645017

Report Date: 22-OCT-21

Page 1 of 5

Client:	KICKING HORSE MOUNTAIN UTILITY CORPORATION
	1500 Kicking Horse Trail
	Golden BC V0A 1H0

Contact: TRAVIS JOBIN

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	Water							
Batch R5609157 WG3631016-3 DUP Biochemical Oxygen D		<b>L2645017-1</b> <2.0	<2.0	RPD-NA	mg/L	N/A	30	30-SEP-21
WG3631016-2 LCS Biochemical Oxygen D	emand		96.4		%		85-115	30-SEP-21
WG3631016-1 MB Biochemical Oxygen D	emand		<2.0		mg/L		2	30-SEP-21
EC-MPN-CL	Water							
Batch R5605608 WG3628864-1 MB MPN - E. coli	3		<1		MPN/100mL		4	
WG3628864-4 MB							1	29-SEP-21
MPN - E. coli			<1		MPN/100mL		1	29-SEP-21
FCC-MF-CL Batch R5605637 WG3628910-3 MB Coliform Bacteria - Fec			<1		CFU/100mL		1	29-SEP-21
NH3-F-CL	Water							
Batch R5616127	,							
WG3636061-19 DUP Ammonia, Total (as N)		<b>L2645017-2</b> <0.050	<0.050	RPD-NA	mg/L	N/A	20	11-OCT-21
WG3636061-18 LCS Ammonia, Total (as N)			106.5		%		85-115	11-OCT-21
WG3636061-2 LCS Ammonia, Total (as N)			111.8		%		85-115	11-OCT-21
WG3636061-1 MB Ammonia, Total (as N)			<0.050		mg/L		0.05	11-OCT-21
WG3636061-17 MB Ammonia, Total (as N)			<0.050		mg/L		0.05	11-OCT-21
WG3636061-20 MS Ammonia, Total (as N)		L2645017-3	105.4		%		75-125	11-OCT-21
NO2-IC-N-CL	Water							
Batch R5607260 WG3630765-7 DUP	)	L2645017-1	0.010		ma/l		00	04 00T 04
Nitrite (as N) WG3630765-2 LCS Nitrite (as N)		0.018	0.019		mg/L %	3.8	20	01-OCT-21
WG3630765-6 LCS			103.3		/0		90-110	01-OCT-21



		Workorder:	L264501	7	Report Date:	22-OCT-21	Pa	ge 2 of 5
ſest	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-N-CL	Water							
Batch R5607260								
WG3630765-6 LCS Nitrite (as N)			103.2		%		90-110	01-OCT-21
WG3630765-1 MB Nitrite (as N)			<0.010		mg/L		0.01	01-OCT-21
WG3630765-5 MB Nitrite (as N)			<0.010		mg/L		0.01	01-OCT-21
<b>WG3630765-8 MS</b> Nitrite (as N)		L2645017-2	99.2		%		75-125	01-OCT-21
NO3-IC-N-CL	Water							
Batch R5607260								
WG3630765-7 DUP Nitrate (as N)		<b>L2645017-1</b> 10.3	10.3		mg/L	0.1	20	01-OCT-21
WG3630765-2 LCS Nitrate (as N)			103.6		%		90-110	01-OCT-21
WG3630765-6 LCS Nitrate (as N)			103.6		%		90-110	01-OCT-21
WG3630765-1 MB Nitrate (as N)			<0.020		mg/L		0.02	01-OCT-21
WG3630765-5 MB Nitrate (as N)			<0.020		mg/L		0.02	01-OCT-21
WG3630765-8 MS Nitrate (as N)		L2645017-2	97.7		%		75-125	01-OCT-21
P-T-COL-CL	Water							
Batch R5609367								
WG3631783-3 DUP Phosphorus (P)-Total		<b>L2645017-1</b> 0.519	0.570		mg/L	9.4	20	05-OCT-21
WG3631783-2 LCS Phosphorus (P)-Total			107.9		%		80-120	05-OCT-21
WG3631783-1 MB Phosphorus (P)-Total			<0.0050		mg/L		0.005	05-OCT-21
WG3631783-4 MS Phosphorus (P)-Total		L2645017-1	N/A	MS-B	%		-	05-OCT-21
PO4-DO-COL-CL	Water							
Batch R5606094								
WG3628913-2 LCS Orthophosphate-Dissolv	red (as P)		98.0		%		80-120	30-SEP-21
WG3628913-1 MB Orthophosphate-Dissolv	red (as P)		<0.0050		mg/L		0.005	30-SEP-21



	Workorder: L264501	7 Report Date: 22-OCT-2	21 Page 3 of 5
Test Matrix	Reference Result	Qualifier Units RP	D Limit Analyzed
PO4-DO-COL-CL Water			
Batch R5606094			
WG3628913-4 MS Orthophosphate-Dissolved (as P)	<b>L2645017-4</b> 108.6	%	70-130 30-SEP-21
TSS-CL Water			
Batch R5606351			
WG3628285-2 LCS			
Total Suspended Solids	89.2	%	85-115 30-SEP-21
WG3628285-1 MB			
Total Suspended Solids	<3.0	mg/L	3 30-SEP-21
Batch R5607398			
WG3629382-2 LCS			
Total Suspended Solids	101.1	%	85-115 01-OCT-21
WG3629382-1 MB			
Total Suspended Solids	<3.0	mg/L	3 01-OCT-21

Workorder: L2645017

Report Date: 22-OCT-21

### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate
	· · ·

### Sample Parameter Qualifier Definitions:

_	Qualifier	Description
	MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
	RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

### Workorder: L2645017

Report Date: 22-OCT-21

#### Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Bacteriological Tests							
Fecal Coliform Count-MF							
	2	28-SEP-21 07:15	29-SEP-21 14:00	30	31	hours	EHTL
MPN - E. coli							
	2	28-SEP-21 07:15	29-SEP-21 14:00	30	31	hours	EHTL

### Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2645017 were received on 29-SEP-21 11:30.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# **Microbial Test Results**

Samples collected September 28, 2021

**Final Report** 

October 22, 2021

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



### SAMPLE INFORMATION

Sample ID (		Dessint			
Sample ID/ Internal ID	Collected Received		Enterococcus test initiation	— Receipt temperature	
L2645017-1 WWTP EFFLUENT-UV TROUGH/	28-Sep-21 at 0830h	29-Sep-21 at 1400h	29-Sep-21 at 1530h	12.8°C	
2122-0200-01	085011	14001	15300		
L2645017-2 COLUMBIA RIVER UPSTREAM/	28-Sep-21 at 0915h	29-Sep-21 at 1400h	29-Sep-21 at 1530h	13.1°C	
2122-0200-02	091311	140011	155011		
L2645017-3 COLUMBIA RIVER DOWNSTREAM/	28-Sep-21 at 0930h	29-Sep-21 at 1400h	29-Sep-21 at 1530h	12.4°C	
2122-0200-03	095011	140011	155011		
L2645017-4 COLUMBIA RIVER SIDECHANNEL/	28-Sep-21 at 0900h	29-Sep-21 at 1400h	29-Sep-21 at 1530h	12.7°C	
2122-0200-04	09000	140011	10001		

### **TEST TYPES**

• *Enterococcus* enumeration test

### **RESULTS**

### **Microbial test results**

Sample ID	MPN/100 mL Enterococcus		
L2645017-1 WWTP EFFLUENT-UV TROUGH	<1		
L2645017-2 COLUMBIA RIVER UPSTREAM	4.1		
L2645017-3 COLUMBIA RIVER DOWNSTREAM	4.1		
12645017-4 COLUMBIA RIVER SIDECHANNEL	4.1		
	4.		

MPN = Most Probable Number



### QA/QC

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

The samples were received and testing initiated outside of the 24-hour hold time at client's request. Additionally, the test temperature was less than the required test temperature by 0.5°C.



intio

Destalaret

Reviewed By: Leila Oosterbroek, P Biol Environmental Scientist

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

Report By:

Courtney Bogstie, BSc

Senior Biologist

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)

Reference: 2122-0200



**APPENDIX A – Test data** 

Test Initiation     Date:     2021/09/20       Time:     1530       Techcian:     60       Thermometer Serial #:     192302034       Incubator #:     40       Incubator Temperature:     40	Reagent used: Enterolert <sup>IM</sup> Reagent Lot#/Expiry: <u>CT214 2077</u> Quanti Tray 2000 Lot#/Expiry: <u>CTG28</u>	Sample Information Dilution Factor: NA comments:
Results - 24 Hour Incubation       Date: 2021/09/30       Time:         Incubator Temp: 41 ± 0.5°C       Incubator Temp: 41 ± 0.5°C	Technicia	n: EV Enterococci (Fluorescent)
# Positive Large Wells: # Ambiguous Large Wells: # Positive Small Wells (Tav 2000 onlo):		
# Ambiguous Small Wells (Tray 2000 only): Most Probable Number at 24 hours:	21 Z1	
Results - 28 Hour Incubation Date:	Technician:	
Incubator Temp: (must be 41 ± 0.5°C)	CTL	Enterococci (Fluorescent)
# Confirmed Positive Large Wells:		
# Confirmed Positive Small Wells (Tray 2000 only):		
Most Probable Number at 28 hours:		

Written by KS on 2006/07/11 Revised by LO on 2021/03/17

Nautilus Environmental (Calgary)

File: ENT F106

File: ENT F106

Written by KS on 2006/07/11 Revised by LO on 2021/03/17

Nautilus Environmental (Calgary)

AUTILUS ENVIRONMENTAL	Quanti-Tray Bench Sheet - Enterococcus
Test Initiation Date: 2011/09/29	
Thermometer Serial #: 1923 02207 Incubator #: 4 Incubator Temperature: 10 (must be 41 + 0.5°0)	Keagent Lot#/Expiry:     Colored Lot#/Expiry:     Comments:       Quanti Tray 2000 Lot#/Expiry:     CTO28     2024/63/10
ation 2001/09/30 Time:	ISSS Technician:
Incubator Temp: ULL (must be 41 ± 0.5°C)	0200 - 03 Enterococci (Fluorescent)
# Positive Large Wells: # Ambiguous Large Wells:	
# Positive Small Wells (Tray 2000 only): # Ambiguous Small Wells (Tray 2000 only): Most Probable Number at 24 hours:	
Results - 28 Hour Incubation Date:	Technician:
Incubator Temp: (must be 41 ± 0.5°C)	Enterococci (Fluorescent)
# 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 ambiguos from 24 hours	plus the ambiguous wells that became positive at 28 hours
Reviewed By:	id By: X Date Reviewed: 2011110/07
Written by KS on 2006/07/11 Revised by LO on 2021/03/17	File: ENT File: ENT F106

File: ENT F106

AUTILUS ENVIRONMENTAL	Quanti-Tray Bench Sheet - Enterococcus
	Client AUS 106 Reference 2122-0200-04
Test Initiation Date: 2021/09/29 Time: 1530 Techician: 20	Reagent used: Enterolert <sup>IM</sup> Sample Information Reagent Lot#/Expiry: <u>CT21U1 2022/07/C</u> Comments:
Thermometer Serial #: <u>1923 Cr207</u> Incubator #: <u>4</u> Incubator Temperature: <u>40</u> (must be 41 ± 0.5°C)	Quanti Tray 2000 Lot#/Expiry: CT028 2029/G3/ IQ
Results - 24 Hour Incubation Date: <u>2671/09/20</u> Time: 19	ISSS Technician: EV
Incubator Temp: $\overline{\mathcal{A}}$ (must be 41 ± 0.5°C)	CTL 0.200-04 Enterococci (Fluorescent)
# Positive Small Wells (Tray 2000 only): # Ambiguous Small Wells (Tray 2000 only): Most Probable Number at 24 hours:	
Results - 28 Hour Incubation Date:	Technician:
Incubator Temp: (must be 41 ± 0.5°C)	Enterococci (Fluorescent)
y 2000 only):	
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 ambiguos from 24 hours	plus the ambiguous wells that became positive at 28 hours
Reviewed By:	ed By: ST Date Reviewed: 201110 10 7

Written by KS on 2006/07/11 Revised by LO on 2021/03/17

Nautilus Environmental (Calgary)

File: ENT F106



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



#### Subcontract Request Form

#### Subcontract To:

## NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

#4, 6125-12 STREET SE CALGARY,AB T2H 2K1

NOTES:	Please reference on final report and invoice: PO# <u>L2645017</u>	
	ALS requires QC data to be provided with your final results.	
	The requires go data to be provided with your mainesults.	

Please see enclosed <u>4</u> sample(s) in <u>4</u> Container(s)

SAMPLE NUMBER ANALYTI	CAL REQUIRED	-0200	DATE SA	AMPLED DUE DATE	Priority Flag
L2645017-1 WWTP EFFLUENT-UV	212	-0200	9/28/2		
TROUGH Enterococ	cus (ENTERO-HQ 1)	-01	06:30 10/6/2021		12.8°C
L2645017-2 COLUMBIA RIVER UPSTREAM	-0.		9/28/2021		10.000
	cus (ENTERO-HQ 1)		09:15	10/6/2021	13,100
L2645017-3 COLUMBIA RIVER		-03	9/28/2	021	10 1100
DOWNSTREAM Enterocod	cus (ENTERO-HQ 1)		09:30	10/6/2021	12.4°C
L2645017-4 COLUMBIA RIVER SIDECHANNEL		-04	9/28/2	021	12,700
Enterocod	cus (ENTERO-HQ 1)		09:00	10/6/2021	
Subcontract Info Contact:	John Forbes (403) 2	91-9897	2021/09/20	Bood C	andition
Analysis and reporting info contact:	Patryk Wojciak, B.S 2559 29 STREET NE	c., P.Chem.	Drop off		
	CALGARY,AB T1Y 7	6	NoSINOL	bottles	
	Phone: (403) 291	-9897	Email: pati	yk.wojciak@a	alsglobal.com
Please email confirmation of rece	ipt to: patr	yk.wojciak	@alsglobal.	com	
Shipped By:	Date	e Shipped:			
Received By:	Date	e Received:			
Verified By:	Date	e Verified:			
	Terr	perature:			
Sample Integrity Issues:					



**END OF REPORT** 





Form

COC #

## Page <u>1</u> of <u>1</u>

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Report To	-	<b>1</b>	+			Serv	ice R	e <b>que</b>	sted	(Rush	for ro	outine	analys	is sub	ject to	availa	ability)	,
Company:	Kicking Horse Mountain Resort Utility Corporation	Standar	d 🗌 Other						lard Tu									
Contact:	Travis Jobin	Excel	🔲 Digital	🗸 Fax	O PI	nority (	2-4 Bu	siness	Days)	- 50%	Surcha	rge - C	ontact	ALS to	Confir	m TAT		
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickingh	orseresort.com		O Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT												
		Email 2:	pmajer@skircr.@	<u>com</u>		O Same Day or Weekend Emergency - Contact ALS to Confirm TAT							AT					
Phone:	250-344-8442 Fax:	Email 3:	mskyring@kicki	nghorseresort.c	<u>com</u>	Analysis Request												
Invoice To	Same as Report ? Yes Vo	Client / P	roject Information			Plea	ase ir	dicat	e belc	w Fil	tered	, Pres	serve	d or b	oth (F	, P, F	/P)	
Hardcopy of	Invoice with Report? Yes Vo	Job #:	Week 1 - 2021	Fall EMS progr	am - WW													1
Company:	Resorts of the Canadian Rockies	PO / AFE:	·															
Contact:	Patrick Majer	LSD:													•			~
Address:	1505 - 17th Ave SW Calgary AB		•		· · · · · · · · · · · · · · · · · · ·													ners
Phone:	Fax:	Quote #:											-					ntai
100 200 200	Nork Order # b use only)	ALS Contact:	PW	Sampler:	TJ .								oliform	occi				Number of Containers
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	Enteroco	E. Coli			Numbe
0.000	WWTP Effluent - UV trough Temp: 16 pH: 6.8		28-Sep-21	830	Water	X	Χ	Χ	X	X	Х	X	X	X	X			5
115	Columbia River Upstream Temp:{0,5 pH: 7,8		28-Sep-21	715	Water		X	X	X	X	Х	Х	X	X	X			4
	Columbia River Down stream Temp: 05 pH: 7,8		28-Sep-21	930	Water		Х	X	X	X	X	Х	X	Х	Х			4
	Columbia River Side Channel Temp: (0,5 pH: 7,8		28-Sep-21	90	Water		Х	Х	X	X	X	X	X	Х	Х			4
1.2.2.2.1.1.2.1.1.1.1.1.1.1.1.1.1.1.1.1											-							
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	Special instructions / Regulations with water of and				CSN-Commerci		l liel	1 - 1	alura	i, etc	1 1 10	zaru					<u>u. In</u>	<u>4.8363</u>
											`							
	Failure to complete all	portions of	f this form may	delay analysis.	. Please fill in thi	s forr	n LE(	GIBL	Ŷ.						~~~~~			
	By the use of this form the user ackno									e Exc	cel ta	ь.						
	Also provided on another Excel tab are the ALS location					rvati	on / h						the second second second second second second second second second second second second second second second s		_			
	SHIPMENT RELEASE (client use)		MENT RECEPTI	ON (lab use onl			<u>ae</u>	<u> </u>	IIPME	107 X X 7 X	200.2.27.2	ICAT	<u></u>		se on			
Released by	CT0 act	av:	Date	Time:	Temperature:	Veri	fied b	y:		Date	<b>)</b> :		Time	<b>e</b> :		Obsei Yes /		
Travis Jobin	SEP 28 1030	th .	1/20	14)	S ℃											fes / If Yes		
		<u> </u>	<u>''}</u> ,			L									GENF			



## **CERTIFICATE OF ANALYSIS**

Work Order	© CG2104652	Page	: 1 of 4
Client	: Kicking Horse Mountain Resort LP	Laboratory	: Calgary - Environmental
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1500 Kicking Horse Trail PO BOX 330	Address	2559 29th Street NE
	Golden BC Canada V0A 1H0		Calgary AB Canada T1Y 7B5
Telephone	: 250 344 6003	Telephone	: +1 403 407 1800
Project	: WEEK 3-2021 FALL EMS	Date Samples Received	: 06-Oct-2021 10:50
	PROGRAM-WW		
PO	:	Date Analysis	: 06-Oct-2021
		Commenced	
C-O-C number	:	Issue Date	: 01-Nov-2021 16:19
Sampler	: Travis Jobin		
Site	:		
Quote number	: CG21-RESC100-0001		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results

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 FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Anthony Calero	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Patryk Wojciak	Account Manager	External Subcontracting, 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).

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

>: 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.



## Analytical Results

CG2104652-001

Sub-Matrix:Water (Matrix: Water)

## Client sample ID: WWTP EFFLUENT-UV TROUGH

Client sampling date / time: 05-Oct-2021 08:30

Arrende	01011	Decult	LOR	Unit	Method	Dran Data		001 0
Analyte	CAS Number	Result	LUR	Unit	Method	Prep Date	Analysis Date	QCLo
Physical Tests							Dale	
solids, total suspended [TSS]		<3.0	3.0	mg/L	E160-H	-	10-Oct-2021	31618
Anions and Nutrients				_				
ammonia, total (as N)	7664-41-7	0.0629	0.0050	mg/L	E298	29-Oct-2021	29-Oct-2021	33287
nitrate (as N)	14797-55-8	17.4	0.0050	mg/L	E235.NO3-L	07-Oct-2021	07-Oct-2021	31347
nitrite (as N)	14797-65-0	0.0907	0.0010	mg/L	E235.NO2-L	07-Oct-2021	07-Oct-2021	31347
phosphate, ortho-, dissolved (as P)	14265-44-2	0.411	0.0100	mg/L	E378-U	06-Oct-2021	06-Oct-2021	31304
phosphorus, total	7723-14-0	0.495	0.0100	mg/L	E372-U	20-Oct-2021	20-Oct-2021	32224
nitrate + nitrite (as N)		17.5	0.0051	mg/L	EC235.N+N	-	18-Oct-2021	-
Bacteriological Tests								
coliforms, thermotolerant [fecal]		<1	1	CFU/100mL	E012.FC	-	06-Oct-2021	31413
Enterococcus		<1	1	MPN/100m L	ENTERO.MF	-	22-Oct-2021	-
coliforms, Escherichia coli [E. coli]		<1	1	MPN/100m L	E010	-	06-Oct-2021	31405
Aggregate Organics								
biochemical oxygen demand [BOD]		<2.0	2.0	mg/L	E550	-	06-Oct-2021	31285
Please refer to the General Comments section	for an explanation of any	qualifiers deter	ted					

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

#### **Analytical Results**

#### CG2104652-002

Sub-Matrix:Water (Matrix: Water)

#### Client sample ID: COLUMBIA RIVER UPSTREAM -Client sampling date / time: 05-Oct-2021 09:00

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
solids, total suspended [TSS]		15.4	3.0	mg/L	E160-H	-	10-Oct-2021	316189
Anions and Nutrients								
ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298	29-Oct-2021	29-Oct-2021	332876
nitrate (as N)	14797-55-8	0.0932	0.0050	mg/L	E235.NO3-L	07-Oct-2021	07-Oct-2021	313471
nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L	07-Oct-2021	07-Oct-2021	313470
phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U	06-Oct-2021	06-Oct-2021	313049
phosphorus, total	7723-14-0	0.0090	0.0020	mg/L	E372-U	20-Oct-2021	20-Oct-2021	322245
nitrate + nitrite (as N)		0.0932	0.0051	mg/L	EC235.N+N	-	18-Oct-2021	-
Bacteriological Tests								
coliforms, thermotolerant [fecal]		6	1	CFU/100mL	E012.FC	-	06-Oct-2021	314132
Enterococcus		<1	1	MPN/100m	ENTERO.MF	-	22-Oct-2021	-
coliforms, Escherichia coli [E. coli]		5	1	L MPN/100m L	E010	-	06-Oct-2021	314050

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



#### **Analytical Results**

CG2104652-003

Sub-Matrix:Water (Matrix: Water)

Client sample ID: COLUMBIA RIVER DOWNSTREAM -

Client sampling date / time: 05-Oct-2021 09:20

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
solids, total suspended [TSS]		11.2	3.0	mg/L	E160-H	-	10-Oct-2021	316189
Anions and Nutrients								
ammonia, total (as N)	7664-41-7	<0.0050	0.0050	mg/L	E298	29-Oct-2021	29-Oct-2021	332876
nitrate (as N)	14797-55-8	0.0820	0.0050	mg/L	E235.NO3-L	07-Oct-2021	07-Oct-2021	313471
nitrite (as N)	14797-65-0	<0.0010	0.0010	mg/L	E235.NO2-L	07-Oct-2021	07-Oct-2021	313470
phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U	06-Oct-2021	06-Oct-2021	313049
phosphorus, total	7723-14-0	0.0104	0.0020	mg/L	E372-U	20-Oct-2021	20-Oct-2021	322245
nitrate + nitrite (as N)		0.0820	0.0051	mg/L	EC235.N+N	-	18-Oct-2021	-
Bacteriological Tests								
coliforms, thermotolerant [fecal]		2	1	CFU/100mL	E012.FC	-	06-Oct-2021	314132
Enterococcus		<1	1	MPN/100m	ENTERO.MF	-	22-Oct-2021	-
coliforms, Escherichia coli [E. coli]		2	1	L MPN/100m L	E010	-	06-Oct-2021	314050

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

#### Analytical Results

#### CG2104652-004

Sub-Matrix:Water

(Matrix: Water)

Client sample ID: COLUMBIA RIVER SIDE CHANNEL -21 09:45

Client sampling dat	te / time: 05-Oct-202
---------------------	-----------------------

Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
solids, total suspended [TSS]		10.0	3.0	mg/L	E160-H	-	10-Oct-2021	316189
Anions and Nutrients								
ammonia, total (as N)	7664-41-7	0.0069	0.0050	mg/L	E298	29-Oct-2021	29-Oct-2021	332876
nitrate (as N)	14797-55-8	0.0863	0.0050	mg/L	E235.NO3-L	07-Oct-2021	07-Oct-2021	313471
nitrite (as N)	14797-65-0	0.0010	0.0010	mg/L	E235.NO2-L	07-Oct-2021	07-Oct-2021	313470
phosphate, ortho-, dissolved (as P)	14265-44-2	<0.0010	0.0010	mg/L	E378-U	06-Oct-2021	06-Oct-2021	313049
phosphorus, total	7723-14-0	0.0150	0.0020	mg/L	E372-U	20-Oct-2021	20-Oct-2021	322245
nitrate + nitrite (as N)		0.0873	0.0051	mg/L	EC235.N+N	-	18-Oct-2021	-
Bacteriological Tests								
coliforms, thermotolerant [fecal]		4	1	CFU/100mL	E012.FC	-	06-Oct-2021	314132
Enterococcus		<1	1	MPN/100m	ENTERO.MF	-	22-Oct-2021	-
coliforms, Escherichia coli [E. coli]		4	1	L MPN/100m L	E010	-	06-Oct-2021	314050

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



## **QUALITY CONTROL INTERPRETIVE REPORT**

/ork Order	: CG2104652	Page	: 1 of 9
lient	: Kicking Horse Mountain Resort LP	Laboratory	: Calgary - Environmental
ontact	: Travis Jobin	Account Manager	: Patryk Wojciak
ddress	: 1500 Kicking Horse Trail PO BOX 330	Address	2559 29th Street NE
	Golden BC Canada V0A 1H0		Calgary, Alberta Canada T1Y 7B5
elephone	250 344 6003	Telephone	: +1 403 407 1800
roject	: WEEK 3-2021 FALL EMS PROGRAM-WW	Date Samples Received	: 06-Oct-2021 10:50
)	:	Issue Date	: 01-Nov-2021 16:19
O-C number	:		
ampler	: Travis Jobin		
te	:		
uote number	: CG21-RESC100-0001		
o. of samples received	: 4		
o. of samples analysed	:4		

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

#### 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 Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

#### Summary of Outliers

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

- No Method Blank value outliers occur.
- <u>No</u> Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Matrix Spike outliers occur.
- <u>No</u> 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**

• 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.

latrix: Water					Ev	aluation: × =	Holding time exce	edance ; 🔹		Holding Tim
Analyte Group	Method	Sampling Date	Ext	raction / Pr	reparation			Analys	is	
Container / Client Sample ID(s)			Preparation	Holding	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT 3d]										
WWTP EFFLUENT-UV TROUGH	E550	05-Oct-2021					06-Oct-2021	3 days	1 days	1
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
COLUMBIA RIVER DOWNSTREAM	E298	05-Oct-2021	29-Oct-2021				29-Oct-2021	28 days	24 days	1
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										,
COLUMBIA RIVER SIDE CHANNEL	E298	05-Oct-2021	29-Oct-2021				29-Oct-2021	28 days	24 days	1
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid) COLUMBIA RIVER UPSTREAM	E298	05-Oct-2021	29-Oct-2021				29-Oct-2021	28 days	24 daya	1
	2230	00-001-2021	29-001-2021				29-001-2021	20 uays	24 uays	•
Anions and Nutrients : Ammonia by Fluorescence										
Amber glass total (sulfuric acid)										
WWTP EFFLUENT-UV TROUGH	E298	05-Oct-2021	29-Oct-2021				29-Oct-2021	28 davs	24 days	1
									,	
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace L	evel)									
HDPE										
COLUMBIA RIVER DOWNSTREAM	E378-U	05-Oct-2021					06-Oct-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Lo	evel)									
HDPE										
COLUMBIA RIVER SIDE CHANNEL	E378-U	05-Oct-2021					06-Oct-2021	3 days	1 days	1



atrix: Water						aluation: × =	Holding time exce	edance ; •	<pre>/ = Within</pre>	Holding I
Analyte Group	Method	Sampling Date	Ex	traction / Pr				Analys	sis	
Container / Client Sample ID(s)			Preparation Date	Holding Rec	g Times Actual	Eval	Analysis Date	Holding Rec	g Times Actual	Eval
nions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace L	.evel)									
HDPE COLUMBIA RIVER UPSTREAM	E378-U	05-Oct-2021					06-Oct-2021	3 days	1 days	~
nions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace L	.evel)									
HDPE WWTP EFFLUENT-UV TROUGH	E378-U	05-Oct-2021					06-Oct-2021	3 days	1 days	~
nions and Nutrients : Nitrate in Water by IC (Low Level)							1			
HDPE COLUMBIA RIVER DOWNSTREAM	E235.NO3-L	05-Oct-2021					07-Oct-2021	3 days	2 days	1
nions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE COLUMBIA RIVER SIDE CHANNEL	E235.NO3-L	05-Oct-2021					07-Oct-2021	3 days	2 days	~
nions and Nutrients : Nitrate in Water by IC (Low Level)							1			
HDPE COLUMBIA RIVER UPSTREAM	E235.NO3-L	05-Oct-2021					07-Oct-2021	3 days	2 days	*
nions and Nutrients : Nitrate in Water by IC (Low Level)										
HDPE WWTP EFFLUENT-UV TROUGH	E235.NO3-L	05-Oct-2021					07-Oct-2021	3 days	2 days	1
nions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE COLUMBIA RIVER DOWNSTREAM	E235.NO2-L	05-Oct-2021					07-Oct-2021	3 days	2 days	1
nions and Nutrients : Nitrite in Water by IC (Low Level)							1			
HDPE COLUMBIA RIVER SIDE CHANNEL	E235.NO2-L	05-Oct-2021					07-Oct-2021	3 days	2 days	1
nions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE COLUMBIA RIVER UPSTREAM	E235.NO2-L	05-Oct-2021					07-Oct-2021	3 days	2 days	1



atrix: Water nalyte Group	Mathad	Complian Det-	<b>F</b> .4	traction / Pi			Holding time exce	Analys		
	Method	Sampling Date						-		
Container / Client Sample ID(s)			Preparation	Holdin Rec	g Times Actual	Eval	Analysis Date		g Times Actual	Eval
			Date	Rec	Actual			Rec	Actual	
nions and Nutrients : Nitrite in Water by IC (Low Level)										
HDPE										
WWTP EFFLUENT-UV TROUGH	E235.NO2-L	05-Oct-2021					07-Oct-2021	3 days	2 days	1
nions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
COLUMBIA RIVER DOWNSTREAM	E372-U	05-Oct-2021	20-Oct-2021				20-Oct-2021	28 days	15 days	1
nions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
COLUMBIA RIVER SIDE CHANNEL	E372-U	05-Oct-2021	20-Oct-2021				20-Oct-2021	28 days	15 days	✓
nions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
COLUMBIA RIVER UPSTREAM	E372-U	05-Oct-2021	20-Oct-2021				20-Oct-2021	28 days	15 days	1
nions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
WWTP EFFLUENT-UV TROUGH	E372-U	05-Oct-2021	20-Oct-2021				20-Oct-2021	28 days	15 days	✓
acteriological Tests : Enterococcus by (MF - mE)										
Sterile HDPE (Sodium thiosulphate)										
COLUMBIA RIVER DOWNSTREAM	ENTERO.MF	05-Oct-2021					22-Oct-2021	48 hrs	408 hrs	32
										EH
acteriological Tests : Enterococcus by (MF - mE)										
Sterile HDPE (Sodium thiosulphate)										
COLUMBIA RIVER SIDE CHANNEL	ENTERO.MF	05-Oct-2021					22-Oct-2021	48 hrs	408 hrs	x
										EH
							1		I	
acteriological Tests : Enterococcus by (MF - mE)										
acteriological Tests : Enterococcus by (MF - mE) Sterile HDPE (Sodium thiosulphate)										
acteriological Tests : Enterococcus by (MF - mE) Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAM	ENTERO.MF	05-Oct-2021					22-Oct-2021	48 hrs	409 hrs	×
Sterile HDPE (Sodium thiosulphate)	ENTERO.MF	05-Oct-2021					22-Oct-2021	48 hrs	409 hrs	
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAM	ENTERO.MF	05-Oct-2021					22-Oct-2021	48 hrs	409 hrs	
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAM acteriological Tests : Enterococcus by (MF - mE)	ENTERO.MF	05-Oct-2021	-				22-Oct-2021	48 hrs	409 hrs	¥
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAM	ENTERO.MF	05-Oct-2021 05-Oct-2021					22-Oct-2021	48 hrs	409 hrs	



Container / Client Sample ID(s)       Image: Sample ID(s)         acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)       E012.FC       05         Sterile HDPE (Sodium thiosulphate)       E012.FC       05         acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)       E012.FC       05         Sterile HDPE (Sodium thiosulphate)       E012.FC       05         COLUMBIA RIVER DOWNSTREAM       E012.FC       05         acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)       5         Sterile HDPE (Sodium thiosulphate)       E012.FC       05         COLUMBIA RIVER UPSTREAM       E012.FC       05         acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)       5       5         Sterile HDPE (Sodium thiosulphate)       E012.FC       05         COLUMBIA RIVER UPSTREAM       E012.FC       05         acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)       5         Sterile HDPE (Sodium thiosulphate)       E012.FC       05         wWTP EFFLUENT-UV TROUGH       E012.FC       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       5         Sterile HDPE (Sodium thiosulphate)       E010       05         columbia RIVER SIDE CHANNEL       E010       05 <t< th=""><th>5-Oct-2021 5-Oct-2021 5-Oct-2021 5-Oct-2021 5-Oct-2021</th><th>Extr Preparation Date</th><th>action / Pr Holding Rec</th><th>eparation g Times Actual</th><th>Eval</th><th>Analysis Date         Analysis Date         06-Oct-2021         06-Oct-2021         06-Oct-2021         06-Oct-2021         06-Oct-2021         06-Oct-2021</th><th>Rec     30 hrs     30 hrs     30 hrs     30 hrs</th><th>24 hrs 25 hrs 25 hrs 26 hrs</th><th>Eval</th></t<>	5-Oct-2021 5-Oct-2021 5-Oct-2021 5-Oct-2021 5-Oct-2021	Extr Preparation Date	action / Pr Holding Rec	eparation g Times Actual	Eval	Analysis Date         Analysis Date         06-Oct-2021         06-Oct-2021         06-Oct-2021         06-Oct-2021         06-Oct-2021         06-Oct-2021	Rec     30 hrs     30 hrs     30 hrs     30 hrs	24 hrs 25 hrs 25 hrs 26 hrs	Eval
acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)E012.FC05Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)E012.FC05Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)E012.FC05acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate) <td< th=""><th>5-Oct-2021 5-Oct-2021 5-Oct-2021</th><th></th><th>Rec</th><th>Actual</th><th></th><th>06-Oct-2021 06-Oct-2021 06-Oct-2021 06-Oct-2021</br></th><th>Rec     30 hrs     30 hrs     30 hrs     30 hrs</th><th>Actual24 hrs25 hrs25 hrs26 hrs</th><th>+</th></td<>	5-Oct-2021 5-Oct-2021 5-Oct-2021		Rec	Actual		06-Oct-2021 06-Oct-2021 06-Oct-2021 	Rec     30 hrs     30 hrs     30 hrs     30 hrs	Actual24 hrs25 hrs25 hrs26 hrs	+
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) WWTP EFFLUENT-UV TROUGHE012.FC05acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAME01005	5-Oct-2021 5-Oct-2021 5-Oct-2021					06-Oct-2021 06-Oct-2021 06-Oct-2021	30 hrs 30 hrs 30 hrs 30 hrs	24 hrs 25 hrs 25 hrs 26 hrs	*
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) WWTP EFFLUENT-UV TROUGHE012.FC05acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAME01005	5-Oct-2021 5-Oct-2021 5-Oct-2021					06-Oct-2021 06-Oct-2021 06-Oct-2021	30 hrs 30 hrs 30 hrs	25 hrs 25 hrs 26 hrs	↓
COLUMBIA RIVER SIDE CHANNELE012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) WWTP EFFLUENT-UV TROUGHE012.FC05acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E012.FC05Sterile HDPE (Sodium thiosulphate) WWTP EFFLUENT-UV TROUGHE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAME01005	5-Oct-2021 5-Oct-2021 5-Oct-2021					06-Oct-2021 06-Oct-2021 06-Oct-2021	30 hrs 30 hrs 30 hrs	25 hrs 25 hrs 26 hrs	4
acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER DOWNSTREAM         acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER UPSTREAM         E012.FC         05         acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER UPSTREAM         E012.FC         05         acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)         Sterile HDPE (Sodium thiosulphate)         WWTP EFFLUENT-UV TROUGH         E012.FC         05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER SIDE CHANNEL         E010       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER DOWNSTREAM         E010       05	5-Oct-2021 5-Oct-2021 5-Oct-2021					06-Oct-2021 06-Oct-2021 06-Oct-2021	30 hrs 30 hrs 30 hrs	25 hrs 25 hrs 26 hrs	✓ ✓
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) WWTP EFFLUENT-UV TROUGHE012.FC05acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005	5-Oct-2021 5-Oct-2021					06-Oct-2021 06-Oct-2021	30 hrs 30 hrs	25 hrs 26 hrs	✓
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) WWTP EFFLUENT-UV TROUGHE012.FC05acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005	5-Oct-2021 5-Oct-2021					06-Oct-2021 06-Oct-2021	30 hrs 30 hrs	25 hrs 26 hrs	✓
Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) WWTP EFFLUENT-UV TROUGHE012.FC05acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005	5-Oct-2021 5-Oct-2021					06-Oct-2021 06-Oct-2021	30 hrs 30 hrs	25 hrs 26 hrs	✓
COLUMBIA RIVER DOWNSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER UPSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)5Sterile HDPE (Sodium thiosulphate) WWTP EFFLUENT-UV TROUGHE012.FC05acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E012.FC05Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)E01005acteriologica	5-Oct-2021 5-Oct-2021					06-Oct-2021 06-Oct-2021	30 hrs 30 hrs	25 hrs 26 hrs	✓
acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER UPSTREAM         E012.FC         acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)         Sterile HDPE (Sodium thiosulphate)         WWTP EFFLUENT-UV TROUGH         E012.FC         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER SIDE CHANNEL         E010         05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER SIDE CHANNEL         E010       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)         Sterile HDPE (Sodium thiosulphate)       E010         COLUMBIA RIVER SIDE CHANNEL       E010         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       E010         Sterile HDPE (Sodium thiosulphate)       E010       05         COLUMBIA RIVER DOWNSTREAM       E010       05	5-Oct-2021 5-Oct-2021					06-Oct-2021 06-Oct-2021	30 hrs 30 hrs	25 hrs 26 hrs	
Sterile HDPE (Sodium thiosulphate)       E012.FC       05         COLUMBIA RIVER UPSTREAM       E012.FC       05         acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)       E012.FC       05         Sterile HDPE (Sodium thiosulphate)       E012.FC       05         wWTP EFFLUENT-UV TROUGH       E012.FC       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       E010       05         Sterile HDPE (Sodium thiosulphate)       E010       05         COLUMBIA RIVER SIDE CHANNEL       E010       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       E010       05         Sterile HDPE (Sodium thiosulphate)       E010       05         COLUMBIA RIVER SIDE CHANNEL       E010       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       E010       05	5-Oct-2021					06-Oct-2021	30 hrs	26 hrs	
Sterile HDPE (Sodium thiosulphate)       E012.FC       05         COLUMBIA RIVER UPSTREAM       E012.FC       05         acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)       E012.FC       05         Sterile HDPE (Sodium thiosulphate)       E012.FC       05         wWTP EFFLUENT-UV TROUGH       E012.FC       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       E010       05         Sterile HDPE (Sodium thiosulphate)       E010       05         COLUMBIA RIVER SIDE CHANNEL       E010       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       E010       05         Sterile HDPE (Sodium thiosulphate)       E010       05         COLUMBIA RIVER SIDE CHANNEL       E010       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       E010       05	5-Oct-2021					06-Oct-2021	30 hrs	26 hrs	
COLUMBIA RIVER UPSTREAME012.FC05acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)Sterile HDPE (Sodium thiosulphate) WWTP EFFLUENT-UV TROUGHE012.FC05acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER SIDE CHANNELE01005acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAME01005	5-Oct-2021					06-Oct-2021	30 hrs	26 hrs	
acteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)         Sterile HDPE (Sodium thiosulphate)         WWTP EFFLUENT-UV TROUGH         E012.FC         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER SIDE CHANNEL         E010         o5         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER SIDE CHANNEL         E010         O5         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER DOWNSTREAM         E010       05	5-Oct-2021					06-Oct-2021	30 hrs	26 hrs	
Sterile HDPE (Sodium thiosulphate)       E012.FC       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       E012.FC       05         Sterile HDPE (Sodium thiosulphate)       COLUMBIA RIVER SIDE CHANNEL       E010       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       Sterile HDPE (Sodium thiosulphate)       E010       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       Sterile HDPE (Sodium thiosulphate)       COLUMBIA RIVER DOWNSTREAM       E010       05									✓
Sterile HDPE (Sodium thiosulphate)       E012.FC       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       E012.FC       05         Sterile HDPE (Sodium thiosulphate)       COLUMBIA RIVER SIDE CHANNEL       E010       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       Sterile HDPE (Sodium thiosulphate)       E010       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       Sterile HDPE (Sodium thiosulphate)       COLUMBIA RIVER DOWNSTREAM       E010       05									✓
WWTP EFFLUENT-UV TROUGH     E012.FC     05       acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)     5       Sterile HDPE (Sodium thiosulphate)     E010     05       COLUMBIA RIVER SIDE CHANNEL     E010     05       acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)     5       Sterile HDPE (Sodium thiosulphate)     COLUMBIA RIVER DOWNSTREAM     E010     05									*
acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER SIDE CHANNEL         E010         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)         Sterile HDPE (Sodium thiosulphate)         COLUMBIA RIVER DOWNSTREAM         E010         05									•
Sterile HDPE (Sodium thiosulphate)       E010       05         COLUMBIA RIVER SIDE CHANNEL       E010       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       Sterile HDPE (Sodium thiosulphate)       E010       05         COLUMBIA RIVER DOWNSTREAM       E010       05	5-Oct-2021					06 Oct 2021			
Sterile HDPE (Sodium thiosulphate)       E010       05         COLUMBIA RIVER SIDE CHANNEL       E010       05         acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)       Sterile HDPE (Sodium thiosulphate)       E010       05         COLUMBIA RIVER DOWNSTREAM       E010       05	5-Oct-2021					06 Oct 2021			
COLUMBIA RIVER SIDE CHANNEL     E010     05       acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)     Sterile HDPE (Sodium thiosulphate)       COLUMBIA RIVER DOWNSTREAM     E010     05	5-Oct-2021					06 Oct 2021			
acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate) Sterile HDPE (Sodium thiosulphate) COLUMBIA RIVER DOWNSTREAM E010 05	5-Oct-2021					06 Oct 2021			
Sterile HDPE (Sodium thiosulphate)     E010     05       COLUMBIA RIVER DOWNSTREAM     E010     05						06-06-2021	30 hrs	25 hrs	1
Sterile HDPE (Sodium thiosulphate)     E010     05       COLUMBIA RIVER DOWNSTREAM     E010     05									
COLUMBIA RIVER DOWNSTREAM E010 05									
acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)	5-Oct-2021					06-Oct-2021	30 hrs	26 hrs	✓
acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)									
Sterile HDPE (Sodium thiosulphate)									
	5-Oct-2021					06-Oct-2021	30 hrs	26 hrs	1
acteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)									
Sterile HDPE (Sodium thiosulphate)									
	5-Oct-2021					06-Oct-2021	30 hrs	27 hrs	1
	C COLLOLI					50 000 2021	001110		-
hysical Tests : TSS by Gravimetry									
HDPE COLUMBIA RIVER DOWNSTREAM E160-H 05-						10-Oct-2021	7 days	5 days	1
	5-Oct-2021							Juays	



Matrix: Water					Ev	valuation: × =	Holding time exce	edance ; •	= Within	Holding Time
Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding	g Times	Eval
			Date	Rec	Actual			Rec	Actual	
Physical Tests : TSS by Gravimetry										
HDPE COLUMBIA RIVER SIDE CHANNEL	E160-H	05-Oct-2021					10-Oct-2021	7 days	5 days	~
Physical Tests : TSS by Gravimetry										
HDPE COLUMBIA RIVER UPSTREAM	E160-H	05-Oct-2021					10-Oct-2021	7 days	5 days	~
Physical Tests : TSS by Gravimetry										
HDPE WWTP EFFLUENT-UV TROUGH	E160-H	05-Oct-2021					10-Oct-2021	7 days	5 days	✓

#### Legend & Qualifier Definitions

EHT: Exceeded ALS recommended hold time prior to analysis.

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



## **Quality Control Parameter Frequency Compliance**

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

Matrix: Water Quality Control Sample Type			on: × = QC frequ	ount		,	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Frequency (%)	Evaluation
Laboratory Duplicates (DUP)						,	
Ammonia by Fluorescence	E298	332876	1	4	25.0	5.0	1
Biochemical Oxygen Demand - 5 day	E550	312856	1	17	5.8	5.0	 ✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	313049	1	20	5.0	5.0	
Nitrate in Water by IC (Low Level)	E235.NO3-L	313471	1	4	25.0	5.0	✓ ✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	313470	1	4	25.0	5.0	
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	314132	0	8	0.0	5.0	<u>x</u>
Total Coliforms and E. coli (Enzyme Substrate)	E010	314050	2	20	10.0	10.0	
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	322245	1	20	5.0	5.0	· ·
TSS by Gravimetry	E160-H	316189	1	20	5.0	5.0	· ·
Laboratory Control Samples (LCS)							
Ammonia by Fluorescence	E298	332876	1	4	25.0	5.0	1
Biochemical Oxygen Demand - 5 day	E550	312856	1	17	5.8	5.0	<u> </u>
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	313049	1	20	5.0	5.0	
Nitrate in Water by IC (Low Level)	E235.NO3-L	313471	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	313470	1	4	25.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	322245	1	20	5.0	5.0	✓
TSS by Gravimetry	E160-H	316189	1	20	5.0	5.0	✓
Method Blanks (MB)							
Ammonia by Fluorescence	E298	332876	1	4	25.0	5.0	1
Biochemical Oxygen Demand - 5 day	E550	312856	1	17	5.8	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	313049	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	313471	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	313470	1	4	25.0	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	314132	1	8	12.5	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	314050	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	322245	1	20	5.0	5.0	✓
TSS by Gravimetry	E160-H	316189	1	20	5.0	5.0	✓
Matrix Spikes (MS)							
Ammonia by Fluorescence	E298	332876	1	4	25.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	313049	1	20	5.0	5.0	✓
Nitrate in Water by IC (Low Level)	E235.NO3-L	313471	1	4	25.0	5.0	✓
Nitrite in Water by IC (Low Level)	E235.NO2-L	313470	1	4	25.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	322245	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	Water	APHA 9223 (mod)	The enzyme substrate test simultaneously detects Total Coliforms and E. coli in a 100 mL sample after incubation at $35.0 \pm 0.5^{\circ}$ C for either 18 or 24 hours (dependent on
	Calgary - Environmental			reagent used).
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC Calgary - Environmental	Water	APHA 9222 D (mod)	Following filtration $(0.45 \mu\text{m})$ , and incubation at $45.5 \pm 0.2^{\circ}$ C for 24 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160-H 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 $104 \pm 1^{\circ}$ 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	J. Environ. Monit., 2005, 7, 37-42 (mod)	Ammonia in water is analyzed by flow-injection analysis with fluorescence detection after reaction with orthophthaldialdehyde (OPA).
Total Phosphorus by Colourimetry (Ultra Trace)	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)	E378-U Calgary - Environmental	Water	APHA 4500-P E (mod)	Dissolved Orthophosphate is determined colourimetrically on a water 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).
Enterococcus by (MF - mE)	ENTERO.MF Nautilus Environmental (Calgary) - #4 6125 - 12 Street SE Calgary Alberta Canada T2H 2K1	Water	APHA 9230C (mod)	Following filtration (0.45 $\mu m$ ), and incubation at 35.0 $\pm 0.5^\circ C$ for 48 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.

Page	: 9 of 9
Work Order	: CG2104652
Client	: Kicking Horse Mountain Resort LP
Project	WEEK 3-2021 FALL EMS PROGRAM-WW



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



## **QUALITY CONTROL REPORT**

Work Order	CG2104652	Page	: 1 of 6
Client	: Kicking Horse Mountain Resort LP	Laboratory	: Calgary - Environmental
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, Alberta Canada T1Y 7B5
Telephone	: 250 344 6003	Telephone	:+1 403 407 1800
Project	: WEEK 3-2021 FALL EMS PROGRAM-WW	Date Samples Received	: 06-Oct-2021 10:50
PO	:	Date Analysis Commenced	:06-Oct-2021
C-O-C number	:	Issue Date	:01-Nov-2021 16:19
Sampler	: Travis Jobin		
Site	:		
Quote number	:CG21-RESC100-0001		
No. of samples received	: 4		
No. of samples analysed	: 4		

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

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

#### 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	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Catherine Fong	Lab Analyst	Inorganics, Calgary, Alberta
Erin Sanchez		Inorganics, Calgary, Alberta
Harpreet Chawla	Team Leader - Inorganics	Inorganics, Calgary, Alberta
Parker Sgarbossa	Laboratory Analyst	Inorganics, Calgary, Alberta
Patryk Wojciak	Account Manager	External Subcontracting, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, 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 Services number is a unique identifier assigned to discrete substances.
- DQO = Data Quality Objective.
- LOR = Limit of Reporting (detection limit).
- RPD = Relative Percentage Difference
- # = Indicates a QC result that did not meet the ALS DQO.



#### 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	Sub-Matrix: Water						Laboratory Duplicate (DUP) Report								
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier				
Physical Tests (QC	C Lot: 316189)														
CG2104641-001	Anonymous	solids, total suspended [TSS]		E160-H	3.0	mg/L	45.0	44.2	1.79%	20%					
Anions and Nutrier	nts (QC Lot: 313049)														
CG2104651-021	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	<0.0010	<0.0010	0	Diff <2x LOR					
Anions and Nutrier	nts (QC Lot: 313470)									1 1					
CG2104652-001	WWTP EFFLUENT-UV TROUGH	nitrite (as N)	14797-65-0	E235.NO2-L	0.0010	mg/L	0.0907	0.0878	3.25%	20%					
Anions and Nutrier	nts (QC Lot: 313471)														
CG2104652-001	WWTP EFFLUENT-UV TROUGH	nitrate (as N)	14797-55-8	E235.NO3-L	0.0050	mg/L	17.4	17.4	0.0224%	20%					
Anions and Nutrier	nts (QC Lot: 322245)														
CG2104652-001	WWTP EFFLUENT-UV TROUGH	phosphorus, total	7723-14-0	E372-U	0.0100	mg/L	0.495	0.492	0.598%	20%					
Anions and Nutrier	nts (QC Lot: 332876)														
CG2104652-001	WWTP EFFLUENT-UV TROUGH	ammonia, total (as N)	7664-41-7	E298	0.0050	mg/L	0.0629	0.0625	0.638%	20%					
Bacteriological Tes	sts (QC Lot: 314050)														
CG2104655-002	Anonymous	coliforms, Escherichia coli [E. coli]		E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR					
CG2104657-001	Anonymous	coliforms, Escherichia coli [E. coli]		E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR					
Aggregate Organic	s (QC Lot: 312856)														
CG2104634-011	Anonymous	biochemical oxygen demand [BOD]		E550	6.0	mg/L	9.2	10.2	10.3%	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.

Analyte	CAS Number Method	LOR	Unit	Result	Qualifier
Physical Tests (QCLot: 316189)					
solids, total suspended [TSS]	E160-H	3	mg/L	<3.0	
Anions and Nutrients (QCLot: 313049)				1 1	
phosphate, ortho-, dissolved (as P)	14265-44-2 E378-U	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 313470)					
nitrite (as N)	14797-65-0 E235.NO2-L	0.001	mg/L	<0.0010	
Anions and Nutrients (QCLot: 313471)					
nitrate (as N)	14797-55-8 E235.NO3-L	0.005	mg/L	<0.0050	
Anions and Nutrients (QCLot: 322245)					
phosphorus, total	7723-14-0 E372-U	0.002	mg/L	<0.0020	
Anions and Nutrients (QCLot: 332876)					
ammonia, total (as N)	7664-41-7 E298	0.005	mg/L	<0.0050	
Bacteriological Tests (QCLot: 314050)					
coliforms, Escherichia coli [E. coli]	E010	1	MPN/100mL	<1	
Bacteriological Tests (QCLot: 314132)					
coliforms, thermotolerant [fecal]	E012.FC	1	CFU/100mL	<1	
Aggregate Organics (QCLot: 312856)					
biochemical oxygen demand [BOD]	E550	2	mg/L	<20.0	



#### 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	Sub-Matrix: Water						Laboratory Control Sample (LCS) Report							
					Spike	Recovery (%)	Recovery	Limits (%)						
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	LCS Low I		Qualifier					
Physical Tests (QCLot: 316189)														
solids, total suspended [TSS]		E160-H	3	mg/L	150 mg/L	101	85.0	115						
Anions and Nutrients (QCLot: 313049)														
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	102	80.0	120						
Anions and Nutrients (QCLot: 313470)														
nitrite (as N)	14797-65-0	E235.NO2-L	0.001	mg/L	0.5 mg/L	102	90.0	110						
Anions and Nutrients (QCLot: 313471)														
nitrate (as N)	14797-55-8	E235.NO3-L	0.005	mg/L	2.5 mg/L	102	90.0	110						
Anions and Nutrients (QCLot: 322245)														
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	96.4	80.0	120						
Anions and Nutrients (QCLot: 332876)														
ammonia, total (as N)	7664-41-7	E298	0.005	mg/L	0.2 mg/L	100	85.0	115						
Aggregate Organics (QCLot: 312856)									1					
biochemical oxygen demand [BOD]		E550	2	mg/L	198 mg/L	87.0	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 Spik	e (MS) Report		
					Sp	ike	Recovery (%)	Recovery	/ Limits (%)	
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier
Anions and Nutr	ients (QCLot: 313049	)								
CG2104651-022	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0475 mg/L	0.05 mg/L	95.0	70.0	130	
Anions and Nutr	ients (QCLot: 313470	)								
CG2104652-002	COLUMBIA RIVER UPSTREAM	nitrite (as N)	14797-65-0	E235.NO2-L	0.529 mg/L	0.5 mg/L	106	75.0	125	
Anions and Nutr	ients (QCLot: 313471	)								
CG2104652-002	COLUMBIA RIVER UPSTREAM	nitrate (as N)	14797-55-8	E235.NO3-L	2.63 mg/L	2.5 mg/L	105	75.0	125	
Anions and Nutr	ients (QCLot: 322245	)								
CG2104652-002	COLUMBIA RIVER UPSTREAM	phosphorus, total	7723-14-0	E372-U	0.0770 mg/L	0.0676 mg/L	114	70.0	130	
Anions and Nutr	ients (QCLot: 332876	)								
CG2104652-002	COLUMBIA RIVER UPSTREAM	ammonia, total (as N)	7664-41-7	E298	0.105 mg/L	0.1 mg/L	105	75.0	125	

# Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878

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Report To		Report Fo	ormat / Distribut	ion		Serv	ice R	eque	sted	(Rush	for ro	outine	analys	is sub	oject to	o availa	bility)
Company:	Kicking Horse Mountain Resort Utility Corporation	Standard	Standard Other					Regular (Standard Turnaround Times - Business Days)									
Contact:	Travis Jobin	PDF	PDF Excel Digital Fax Priority (2-4				2-4 Bi	isiness	Days)	- 50%	Surcha	arge - C	ontact	ALS to	Confir	n TAT	
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickingh	orseresort.com												to Confir	m TAT
		Email 2:	pmajer@skircr.		1.	O s	ame Da	ey or V	Veeken	d Eme	gency	- Cont	act ALS	i to Co	nfirm T	AT	
Phone:	250-344-8442 Fax:	Email 3: mskyring@kickinghorseresort.com Analysis Request															
Invoice To	Same as Report ? Yes I No	Client / P	roject Informatio	on		Plea	ase in	dicat	te bele	ow Fi	tered	, Pre	serve	d or b	oth (I	F, P, F	/P)
Hardcopy of	Invoice with Report? Yes I No	Job #:	Week 2 - 2021	Fall EMS progra	am - WW												
Company:	Resorts of the Canadian Rockies	PO / AFE:			1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -												
Contact:	Patrick Majer	LSD:													ľ		
Address:	1505 - 17th Ave SW Calgary AB											1			-		ners
Phone:	Fax:	Quote #:															ntai
	Nork Order # b use only)	ALS Contact:	PW	Sampler:	TJ							٩	Fecal Coliform	cocci			Number of Containers
Sample #	Sample Identification (This description will appear on the report	rt)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total F	Ortho	Fecal	Enterococo	E. Coli		Numb
. A gala	WWTP Effluent - UV trough Temp: 17 pH: 6	.8	05-Oct-21	8:30	Water	X	X	X	X	X	X	X	X	X	X		5
	Columbia River Upstream Temp: 7,4 pH: 7	,7	05-Oct-21	9:00	Water		X	Х	X	X	X	X	X	X	X		4
	Columbia River Down stream Temp: 7, 4 pH: 7	1.7	05-Oct-21-4	9:20	Water		X	Х	X	X	X	X	X	X	Х		4
	Columbia River Side Channel Temp: 7,4 pH: 7	.7	05-Oct-21	± 9:45	Water		X	X	X	X	X	X	X	X	X		4
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	By the use of this form the user a	acknowledges a	ind agrees with	the Terms and	Conditions as p	rovid	ed on	i a se	epara	te Ex	cel ta	ab.					
	Also provided on another Excel tab are the ALS loc	ation addresses	s, phone numbe	ers and sample	container / pres	ervati	on / ł	ıoldi	ng tir	ne ta	ble fo	or col	nmo	1 ana	lyses	). 	-
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GENF 20.00 Front



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received: 14-OCT-21 Report Date: 01-NOV-21 14:43 (MT) Version: FINAL

Client Phone: 250-344-8442

## Certificate of Analysis

Lab Work Order #: L2651451 Project P.O. #: NOT SUBMITTED Job Reference: WEEK 3-2021 FALL EMS PROGRAM-WW C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298 ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Environmental 🕽

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2651451-1 WWTP EFFLUENT-UV TROUGH							
Sampled By: TJ on 12-OCT-21 @ 08:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	4.3		1.3	mg/L		01-NOV-21	R5633806
Biochemical Oxygen Demand	<2.0		2.0	mg/L		15-OCT-21	R5625007
Orthophosphate-Dissolved (as P)	0.564	DLHC	0.050	mg/L		15-OCT-21	R5620438
Enterococcus	See Attached					15-OCT-21	R5630358
Coliform Bacteria - Fecal	<1		1	CFU/100mL		15-OCT-21	R5622337
MPN - E. coli	<1		1	MPN/100mL		15-OCT-21	R5622260
Nitrate (as N)	11.4		0.020	mg/L		15-OCT-21	R5624458
Nitrite (as N)	0.033		0.010	mg/L		15-OCT-21	R5624458
Phosphorus (P)-Total	0.643	DLHC	0.050	mg/L		28-OCT-21	R5631914
Total Suspended Solids	<3.0		3.0	mg/L		17-OCT-21	R5623401
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite						40.007.04	
Nitrate and Nitrite (as N)	11.5		0.022	mg/L		19-OCT-21	
L2651451-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ on 12-OCT-21 @ 09:30							
Matrix: WATER							
Miscellaneous Parameters							<b>BFGGGGGGGGGGGGG</b>
Ammonia, Total (as N)	<0.050		0.050	mg/L		01-NOV-21	R5633806
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		15-OCT-21	R5620438
Enterococcus	See Attached					15-OCT-21	R5630358
Coliform Bacteria - Fecal	<1	0.05	1	CFU/100mL		15-OCT-21	R5622337
MPN - E. coli	2	OCR	1	MPN/100mL		15-OCT-21	R5622260
Nitrate (as N)	0.088		0.020	mg/L		15-OCT-21	R5624458
Nitrite (as N)	<0.010		0.010	mg/L		15-OCT-21	R5624458
Phosphorus (P)-Total	0.0057		0.0050	mg/L		28-OCT-21	R5631914
Total Suspended Solids NO2, NO3 and Sum of NO2/NO3	6.1		3.0	mg/L		17-OCT-21	R5623401
Noz, Nos and Sun of Noz/Nos							
Nitrate and Nitrite (as N)	0.088		0.022	mg/L		19-OCT-21	
L2651451-3 COLUMBIA RIVER DOWNSTREAM							
Sampled By: TJ on 12-OCT-21 @ 09:45							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		01-NOV-21	R5633806
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		15-OCT-21	R5620438
Enterococcus	See Attached					15-OCT-21	R5630358
Coliform Bacteria - Fecal	2		1	CFU/100mL		15-OCT-21	R5622337
MPN - E. coli	2	OCR	1	MPN/100mL		15-OCT-21	R5622260
Nitrate (as N)	0.39		0.10	mg/L		15-OCT-21	R5624458
Nitrite (as N)	<0.050	DLDS	0.050	mg/L		15-OCT-21	R5624458
Phosphorus (P)-Total	0.0105		0.0050	mg/L		28-OCT-21	R5631914
Total Suspended Solids	7.5		3.0	mg/L		17-OCT-21	R5623401
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.39		0.11	mg/L		19-OCT-21	
L2651451-4 COLUMBIA RIVER SIDE CHANNEL							
Sampled By: TJ on 12-OCT-21 @ 09:15							
Matrix: WATER							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2651451-4 COLUMBIA RIVER SIDE CHANNEL							
Sampled By: TJ on 12-OCT-21 @ 09:15							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		01-NOV-21	R5633806
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		15-OCT-21	R5620438
Enterococcus	See Attached			_		15-OCT-21	R5630358
Coliform Bacteria - Fecal	2		1	CFU/100mL		15-OCT-21	R5622337
MPN - E. coli	2	OCR	1	MPN/100mL		15-OCT-21	R5622260
Nitrate (as N)	0.070		0.020	mg/L		15-OCT-21	R5624458
Nitrite (as N)	<0.010		0.010	mg/L		15-OCT-21	R5624458
Phosphorus (P)-Total	0.0052		0.0050	mg/L		28-OCT-21	R5631914
Total Suspended Solids	5.5		3.0	mg/L		17-OCT-21	R5623401
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.070		0.022	mg/L		19-OCT-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## **Reference Information**

#### Sample Parameter Qualifier Key:

Qualifier	Description		
OLDS	Detection Limit Rais	ed: Dilution required due to high Dissolved So	lids / Electrical Conductivity.
DLHC	Detection Limit Rais	ed: Dilution required due to high concentration	n of test analyte(s).
ЛS-B	Matrix Spike recover	ry could not be accurately calculated due to his	gh analyte background in sample.
OCR	Parameter is out of	client specific range.	
est Method F	References:		
ALS Test Code	e Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode
oxygen demano dissolved oxyge	d (BOD) are determined en meter. Dissolved BC	d by diluting and incubating a sample for a spe	Biochemical Oxygen Demand (BOD)". All forms of biochemical ecified time period, and measuring the oxygen depletion using a ample through a glass fibre filter prior to dilution. Carbonaceous rior to incubation.
C-MPN-CL	Water	MPN - E. coli	APHA 9223B
Substrate Colif sample is mixe The packet is in esponse are co probability table	orm Test". E. coli and T d with a mixture hydroly ncubated for 18 or 24 h ounted. The final result e. I Holding Time:	edures adapted from APHA Method 9223 "En Fotal Coliform are determined simultaneously. yzable substrates and then sealed in a multi-w ours and then the number of wells exhibiting a is obtained by comparing the positive respon-	The rell packet. a positive
CC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D
Coliform bacter	ia is enumerated by cu al 24 hour incubation a	Ituring and colony counting. A known sample	mbrane Filter Technique for Members of the Coliform Group". volume is filtered through a 0.45 micron membrane filter. The test ate growth medium. This method is specific for thermotolerant el.
2N3-CALC-CI	Water	Nitrate+Nitrite	CALCULATION
IH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
			odified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society ion of trace levels of ammonium in seawater", Roslyn J. Waston et
102-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)
norganic anion	is are analyzed by Ion	Chromatography with conductivity and/or UV c	letection.
103-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)
norganic anion	is are analyzed by Ion (	Chromatography with conductivity and/or UV o	letection.
-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
	carried out using proc pestion of the sample.	edures adapted from APHA Method 4500-P "F	Phosphorus". Total Phosphorus is determined colourimetrically afte
04-DO-COL-0	CL Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
		edures adapted from APHA Method 4500-P "F been lab or field filtered through a 0.45 micro	Phosphorus". Dissolved Orthophosphate is determined n membrane filter.
SS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		edures adapted from APHA Method 2540 "So mple through a glass fibre filter, and by drying	lids". Solids are determined gravimetrically. Total suspended solids the filter at 104 deg. C.
AL 0 1 1	ada may incorporato m	nodifications from specified reference methods	to improve performance
ALS test meth	ous may incorporate n	iounications from specified reference methods	to improve performance.

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

## **Reference Information**

#### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
Chain of Custody Nu	mbers:		

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



## **Quality Control Report**

			Workorder:	L265145	1 Re	eport Date: 01-NOV-21			ge 1 of 4	
Client:	1500 Kick	king Horse Trail BC V0A 1H0	ITAIN UTILITY C	ORPORATIO	NC					
Contact: Test		Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed	
Test		WIGUIA	Reference	Result	Quaimer	onns	KFD	Linint	Analyzeu	
BOD-BC-CL		Water								
	R5625007									
WG3640907-2 LCS Biochemical Oxygen Demand		mand		95.7		%		85-115	15-OCT-21	
WG3640907-1 MB Biochemical Oxygen Demand				••••				00 110	10 001 21	
		mand		<2.0		mg/L		2	15-OCT-21	
EC-MPN-CL		Water								
Batch	R5622260									
WG3639679-1 MB				4						
MPN - E. coli				<1		MPN/100mL		1	15-OCT-21	
FCC-MF-CL		Water								
	R5622337	Water								
WG3639711-										
Coliform Bac	teria - Feca	l		<1		CFU/100mL		1	15-OCT-21	
NH3-F-CL		Water								
	R5633806									
WG3649633-2 Ammonia, To				100.6		%		85-115	01-NOV-21	
WG3649633-25 MB Ammonia, Total (as N)										
			<0.050		mg/L		0.05	01-NOV-21		
NO2-IC-N-CL		Water								
Batch	R5624458									
WG3640756-3	3 DUP		<b>L2651451-2</b> <0.010	<0.010		mg/L	NI/A	20	15 OCT 24	
Nitrite (as N) WG3640756-2	2 LCS		<0.010	<0.010	RPD-NA	ilig/L	N/A	20	15-OCT-21	
Nitrite (as N)				100.4		%		90-110	15-OCT-21	
WG3640756-										
Nitrite (as N)				<0.010		mg/L		0.01	15-OCT-21	
WG3640756-4 Nitrite (as N)			L2651451-1	101.4		%		75-125	15 OCT 21	
				101.4		70		75-125	15-OCT-21	
NO3-IC-N-CL	DE604450	Water								
Batch WG3640756-3	R5624458 3 DUP		L2651451-2							
Nitrate (as N)			0.088	0.072		mg/L	19	20	15-OCT-21	
WG3640756-2										
Nitrate (as N)				100.9		%		90-110	15-OCT-21	
WG3640756-	1 MB									



	Workorder:	L265145 <sup>2</sup>	I Re	eport Date: (	)1-NOV-21	Pa	ge 2 of 4
Test Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-CL Water							
Batch R5624458 WG3640756-1 MB Nitrate (as N)		<0.020		mg/L		0.02	15-OCT-21
WG3640756-4 MS Nitrate (as N)	L2651451-1	N/A	MS-B	%		-	15-OCT-21
P-T-COL-CL Water							
Batch R5631914 WG3647975-3 DUP	L2651451-3						
Phosphorus (P)-Total	0.0105	0.0090		mg/L	16	20	28-OCT-21
WG3647975-2 LCS Phosphorus (P)-Total		101.1		%		80-120	28-OCT-21
WG3647975-1 MB Phosphorus (P)-Total		<0.0050		mg/L		0.005	28-OCT-21
WG3647975-4 MS Phosphorus (P)-Total	L2651451-3	79.4		%		70-130	28-OCT-21
PO4-DO-COL-CL Water							
Batch R5620438							
WG3638858-2 LCS Orthophosphate-Dissolved (as P)		92.0		%		80-120	15-OCT-21
WG3638858-1 MB Orthophosphate-Dissolved (as P)		<0.0050		mg/L		0.005	15-OCT-21
TSS-CL Water							
Batch R5623401							
WG3639364-2 LCS Total Suspended Solids		101.1		%		85-115	17-OCT-21
WG3639364-1 MB Total Suspended Solids		<3.0		mg/L		3	17-OCT-21

Workorder: L2651451

Report Date: 01-NOV-21

### Legend:

_		
	Limit	ALS Control Limit (Data Quality Objectives)
	DUP	Duplicate
	RPD	Relative Percent Difference
	N/A	Not Available
	LCS	Laboratory Control Sample
	SRM	Standard Reference Material
	MS	Matrix Spike
	MSD	Matrix Spike Duplicate
	ADE	Average Desorption Efficiency
	MB	Method Blank
	IRM	Internal Reference Material
	CRM	Certified Reference Material
	CCV	Continuing Calibration Verification
	CVS	Calibration Verification Standard
	LCSD	Laboratory Control Sample Duplicate

### Sample Parameter Qualifier Definitions:

 Qualifier	Description
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

Workorder: L2651451

Report Date: 01-NOV-21

#### Hold Time Exceedances:

	Sample						
ALS Product Description	ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Bacteriological Tests							
Fecal Coliform Count-MF							
	1	12-OCT-21 08:00	15-OCT-21 08:30	30	72	hours	EHTR
	2	12-OCT-21 09:30	15-OCT-21 08:30	30	71	hours	EHTR
	3	12-OCT-21 09:45	15-OCT-21 08:30	30	71	hours	EHTR
	4	12-OCT-21 09:15	15-OCT-21 08:30	30	71	hours	EHTR
MPN - E. coli							
	1	12-OCT-21 08:00	15-OCT-21 09:30	30	73	hours	EHTR
	2	12-OCT-21 09:30	15-OCT-21 09:30	30	72	hours	EHTR
	3	12-OCT-21 09:45	15-OCT-21 09:30	30	72	hours	EHTR
	4	12-OCT-21 09:15	15-OCT-21 09:30	30	72	hours	EHTR

### Legend & Qualifier Definitions:

EHTR-FM: Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR: Exceeded ALS recommended hold time prior to sample receipt.
EHTL: Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT: Exceeded ALS recommended hold time prior to analysis.
Rec. HT: ALS recommended hold time (see units).

Notes\*:

Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes. Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L2651451 were received on 14-OCT-21 14:45.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# **Microbial Test Results**

Samples collected October 12, 2021

**Final Report** 

October 27, 2021

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

10823 27 Street SE, Calgary, AB, Canada T2Z 3V9



### SAMPLE INFORMATION

Sample ID /		Dessint		
Sample ID/ - Internal ID	Collected	Received	Enterococcus test initiation	- Receipt temperature
L2651451-1 WWTP EFFLUENT-UV TROUGH/ 2122-0354-01	12-Oct-21	15-Oct-21 at 1030h	15-Oct-21 at 1605h	10.0°C
L2651451-2 COLUMBIA RIVER UPSTREAM/ 2122-0354-02	12-Oct-21	15-Oct-21 at 1030h	15-Oct-21 at 1605h	8.8°C
L2651451-3 COLUMBIA RIVER DOWNSTREAM/ 2122-0354-03	12-Oct-21	15-Oct-21 at 1030h	15-Oct-21 at 1605h	8.9°C
L2651451-4 COLUMBIA RIVER SIDE CHANNEL/ 2122-0354-04	12-Oct-21	15-Oct-21 at 1030h	15-Oct-21 at 1605h	10.1°C

### **TEST TYPES**

• *Enterococcus* enumeration test

### **RESULTS**

### **Microbial test results**

Sample ID	MPN/100 mL Enterococcus	
L2651451-1 WWTP EFFLUENT-UV TROUGH	<1	
L2651451-2 COLUMBIA RIVER UPSTREAM	<1	
L2651451-3 COLUMBIA RIVER DOWNSTREAM	1.0	
L2651451-4 COLUMBIA RIVER SIDE CHANNEL	<1	

MPN = Most Probable Number



### QA/QC

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

The samples were received and testing initiated outside of the 24-hour hold time at the client's request. Additionally, the temperature was greater than the required test temperature by 0.5°C at test completion.



stie

Report By: Courtney Bogstie, BSc Senior Biologist

Destalaret

Reviewed By: Leila Oosterbroek, P Biol Environmental Scientist

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** 

ENVIRONMENTAL	Quanti-Tray Bench Sheet - Enterococcus	cus
	Client ALS106 Reference 2122- 03SY	
Test Initiation Date: 202 (11011S Time: 160S Techician: 51 MAF	Reagent used: Enterolert <sup>™</sup> Sample Information Reagent Lot#/Expiry: ET214/09 JUL 2022 Comments:	
Thermometer Serial #: <u>1927-02207</u> Incubator #: <u>식</u> Incubator Temperature: <u>네</u> (must be 41 ± 0.5°C)	Quanti Tray 2000 Lot#/Expiry: <u>CT028/03/10/2024</u>	
Results - 24 Hour Incubation Date: 20 211 101 16	e: 1610 Technician: STTMAP	
Incubator Temp: U.C. (must be 41 ± 0.5°C)	CCC	
# Positive Large Wells: # Ambiguous Large Wells:	_	
# Positive Small Wells (Tray 2000 only):		
# Ambiguous Small Wells (Tray 2000 only): Most Probable Number at 24 hours:		
Results - 28 Hour Incubation Date:	Technicaen:	
Incubator Temp: (must be 41 ± 0.5°C)	Enterococci (Fluorescent)	
# Confirmed Positive Large Wells:		
* CONTINUED POSITIVE STRAIL WEILS (Tray 2000 only): Most Probable Number at 28 hours:		
ositive wells from 2 os from 24 hours	hours plus the ambiguous wells that became positive	
E.	Reviewed By: 21 101 101 Date Reviewed: Manuel Date Reviewed:	
Written by KS on 2006/07/11	Nautilus Environmental (Calgary)	File: ENT

File: ENT F106

Written by KS on 2006/07/11 Revised by LO on 2021/03/17



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



CALGARY

### Subcontract Request Form

### Subcontract To:

# NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

#4, 6125-12 STREET SE CALGARY,AB T2H 2K1

NOTES:	Please reference on final report and invoice: PO# <u>L2651451</u>	-
	ALS requires QC data to be provided with your final results.	

Dianan and an alarad				
Please see enclosed	4	sample(s) in	4	Container(s)

SAMPLE NUMBER		DATE SAMPLED		Priority
ANAL		DUE DATE	Flag	
L2651451-1 WWTP EFFLUENT-UV TROUGH			10/12/2021	
	coccus (ENTERO-HQ 1)	-01	10/26/2021	10,0C
L2651451-2 COLUMBIA RIVER UPSTREAM		20	10/12/2021	8.8°C
	coccus (ENTERO-HQ 1)	-02	10/26/2021	
L2651451-3 COLUMBIA RIVER DOWNSTREAM		1.1.1	10/12/2021	8.9°C
이야지 않는 것같이 잘 못 내 있었던 것 같아요.	coccus (ENTERO-HQ 1)	-03	10/26/2021	UT U
L2651451-4 COLUMBIA RIVER SI	DE		10/12/2021	10,100
CHANNEL Enterc	ococcus (ENTERO-HQ 1)	-64	10/26/2021	1011 0
Subcontract Info Contact: Analysis and reporting info contact	John Forbes (403 :: Patryk Wojciak, B 2559 29 STREET	.Sc., P.Chem	2122-0354 No5/No5 2021/10/15 Good Cor 1.10:30 Cabo	nd.
	CALGARY, AB T1Y	785	Ynu400mL bottles	
	Phone: (403) 29	91-9897	Email:patryk.wojciak@a	alsglobal.com
Please email confirmation of re	eceipt to: pa	tryk.wojcia	ak@alsglobal.com	
Shipped By:	D	ate Shipped:	<u> </u>	
Received By:	1:			
/erified By:	D	ate Verified:		
	Т	emperature:		
Sample Integrity Issues:				



**END OF REPORT** 



COC#

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ALS	Enuiran	mental

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(ALS)	nuronillental																
Report To		Report	Inder District		-										ject to	availabi	lity)
Company:	Kicking Horse Mountain Resort Utility Corporation	Standard	d 🗌 Other			Regular (Standard Turnaround Times - Business Days)											
Contact:	Travis Jobin	PDF Excel Digital Fax O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Co					Confirm `	TAT									
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickingl	norseresort.com		O e	merger	ncy (1-	2 Bus.	Days)	- 100%	% Surcharge - Contact ALS to Confirm TAT			TAT		
		Email 2:	pmajer@skircr.	com		O s	ame Da	ay or W	/eeken	d Eme	rgency	- Conta	ntact ALS to Confirm TAT				
Phone:	250-344-8442 Fax:	Email 3:	mskyring@kick	inghorseresort.c	om						nalys						
Invoice To	Same as Report ? Yes Vo	Client / Pr	roject Informati			Ple	ase ir	idicat	e belo	ow Fi	itered	, Pres	erved	d or b	oth (F	, P, F/F	)
Hardcopy of I	Invoice with Report? Yes Vo	Job #:	Week 3 - 2021	Fall EMS progr	am - WW												·
Company:	Resorts of the Canadian Rockies	PO/AFE:															
Contact:	Patrick Majer	LSD:			·												
Address:	1505 - 17th Ave SW Calgary AB																ners
Phone:	Fax:	Quote #:															Containers
	Vork Order # ) use only)	ALS Contact:	PW	Sampler:	TJ								Coliform	cocci			o
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 (	Entero	E Coli		Number
	WWTP Effluent - UV trough Temp: 115 pH: 6.8		12-Oct-21	SOU AM	Water	X	X	Х	X	Х	X	X	X	Х	X		5
	Columbia River Upstream Temp: <b>3, 9</b> pH: <b>7</b> , 7		12-Oct-21	930	Water		x	Х	X	x	X	x	X	X	X		4
	Columbia River Down stream Temp: 34 pH: 7,7		12-Oct-21	945	Water	<b>I</b>	X	X	X	Х	X	x	X	X	X		4
	Columbia River Side Channel Temp: 3;4 pH: 7,7		12-Oct-21	915	Water		X	Х	X	Х	X	X	Х	Х	Х		4
1.1																	
11. j.f. 1																	
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					- Autor						<u> </u>				1-11-11-11-11-11-11-11-11-11-11-11-11-1		
	Special Instructions / Regulations with water or land	d use (CCN	E-Freshwater /	Aquatic Life/BC	CSR - Commerc	ial/AE	<sup>3</sup> Tier	1 - N	atura	al, etc	:) / Ha	azard	ous C	Detail	5		
	Failure to complete all By the use of this form the user ackne	owledges a	nd agrees with	the Terms and	Conditions as p	rovid	ed on	a se	parat	te Ex	cel ta	ıb.					
	Also provided on another Excel tab are the ALS location	addresses	s, phone numb	ers and sample	container / pres	ervati	on / ł	noldii	ng tin	ne ta	ble fo	r cor	nmon	anal	<u>yses.</u>		a a 1000 Marco
	SHIPMENT RELEASE (client use)			ION (lab use on				ŞI	HPMI	ENT	VERI	FICAT		(lab u	se on	ly)	CR. 4. 2. 2. March 199
Released by	Date (dd-mmm-yy) Time (hh-mm) Received	12	Date:	Time:	Temperature:		ified b	y:		Dat	e:		Time	э:	ľ	Observ Yes / N	0?
Travis Jobin	26-May-20		10/14	12m	<u>)</u> <u>0</u>										- Andrewski	If Yes a	
															CENE	20.00 Fi	ont .

GENF 20.00

Page <u>1</u> of <u>1</u>



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received:21-OCT-21Report Date:17-NOV-21 14:11 (MT)Version:FINAL

Client Phone: 250-344-8442

# Certificate of Analysis

Lab Work Order #: L2653960 Project P.O. #: NOT SUBMITTED Job Reference: WEEK 4 - 2021 FALL EMS PROGRAM - WW C of C Numbers: Legal Site Desc:

Comments:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298 ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Environmental 🕽

www.alsglobal.com

**RIGHT SOLUTIONS RIGHT PARTNER** 

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2653960-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ on 20-OCT-21 @ 08:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.136		0.050	mg/L		16-NOV-21	R5652157
Biochemical Oxygen Demand	<2.0		2.0	mg/L		22-OCT-21	R5629318
Orthophosphate-Dissolved (as P)	0.251	DLHC	0.050	mg/L		21-OCT-21	R5626445
Enterococcus	See Attached			_		21-OCT-21	R5634278
Coliform Bacteria - Fecal	<1		1	CFU/100mL		21-OCT-21	R5626886
MPN - E. coli	<1		1	MPN/100mL		21-OCT-21	R5626833
Nitrate (as N)	15.2		0.020	mg/L		22-OCT-21	R5633792
Nitrite (as N)	0.047		0.010	mg/L		22-OCT-21	R5633792
Phosphorus (P)-Total	0.328	DLHC	0.025	mg/L		03-NOV-21	R5635329
Total Suspended Solids	<3.0		3.0	mg/L		24-OCT-21	R5627906
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	15.3		0.022	mg/L		17-NOV-21	
L2653960-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ on 20-OCT-21 @ 09:45							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		16-NOV-21	R5652157
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		21-OCT-21	R5626445
Enterococcus	See Attached					21-OCT-21	R5634278
Coliform Bacteria - Fecal	3		1	CFU/100mL		21-OCT-21	R5626886
MPN - E. coli	3	OCR	1	MPN/100mL		21-OCT-21	R5626833
Nitrate (as N)	0.101		0.020	mg/L		22-OCT-21	R5633792
Nitrite (as N)	<0.010		0.010	mg/L		22-OCT-21	R5633792
Phosphorus (P)-Total	0.0056		0.0050	mg/L		03-NOV-21	R5635329
Total Suspended Solids	4.7		3.0	mg/L		24-OCT-21	R5627906
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite Nitrate and Nitrite (as N)	0.101		0.022	mg/L		17-NOV-21	
L2653960-3 COLUMBIA RIVER DOWN STREAM	0.101		0.011				
Sampled By: TJ on 20-OCT-21 @ 10:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		16-NOV-21	R5652157
Orthophosphate-Dissolved (as P)	< 0.0050		0.0050	mg/L		21-OCT-21	R5626445
Enterococcus	See Attached		0.0000			21-OCT-21	R5634278
Coliform Bacteria - Fecal	2		1	CFU/100mL		21-OCT-21	R5626886
MPN - E. coli	1	OCR	1	MPN/100mL		21-OCT-21	R5626833
Nitrate (as N)	0.105		0.020	mg/L		22-OCT-21	R5633792
Nitrite (as N)	<0.010		0.020	mg/L		22-OCT-21	R5633792
Phosphorus (P)-Total	0.0055		0.0050	mg/L		03-NOV-21	R5635329
Total Suspended Solids	6.7		3.0	mg/L		24-OCT-21	R5627906
NO2, NO3 and Sum of NO2/NO3			0.0	<del>y</del> , <b>-</b>			
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.105		0.022	mg/L		17-NOV-21	
L2653960-4 COLUMBIA RIVER SIDE CHANNEL							
Sampled By: TJ on 20-OCT-21 @ 09:30							
Matrix: WATER							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2653960-4 COLUMBIA RIVER SIDE CHANNEL							
Sampled By: TJ on 20-OCT-21 @ 09:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	0.051		0.050	mg/L		16-NOV-21	R5652157
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		21-OCT-21	R5626445
Enterococcus	See Attached					21-OCT-21	R5634278
Coliform Bacteria - Fecal	1		1	CFU/100mL		21-OCT-21	R5626886
MPN - E. coli	1	OCR	1	MPN/100mL		21-OCT-21	R5626833
Nitrate (as N)	0.096		0.020	mg/L		22-OCT-21	R5633792
Nitrite (as N)	<0.010		0.010	mg/L		22-OCT-21	R5633792
Phosphorus (P)-Total	<0.0050		0.0050	mg/L		03-NOV-21	R5635329
Total Suspended Solids	3.5		3.0	mg/L		24-OCT-21	R5627906
NO2, NO3 and Sum of NO2/NO3							
Nitrate+Nitrite	0.000		0.000			47 NOV 01	
Nitrate and Nitrite (as N)	0.096		0.022	mg/L		17-NOV-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# **Reference Information**

### Sample Parameter Qualifier Key:

Qualifier	Description					
DLHC	Detection Limit Raised: Dilution required due to high concentration of test analyte(s).					
OCR	Parameter is out of c	lient specific range.				
est Method R	eferences:					
ALS Test Code	Matrix	Test Description	Method Reference**			
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode			
oxygen demand dissolved oxyge	(BOD) are determined n meter. Dissolved BO	by diluting and incubating a sample for a spe	Biochemical Oxygen Demand (BOD)". All forms of biochemical ecified time period, and measuring the oxygen depletion using a ample through a glass fibre filter prior to dilution. Carbonaceous rior to incubation.			
EC-MPN-CL	Water	MPN - E. coli	APHA 9223B			
Substrate Colifo sample is mixed The packet is in	rm Test". E. coli and T I with a mixture hydroly cubated for 18 or 24 ho punted. The final result Holding Time:	edures adapted from APHA Method 9223 "En total Coliform are determined simultaneously. rzable substrates and then sealed in a multi-w ours and then the number of wells exhibiting a is obtained by comparing the positive respon	The vell packet. a positive			
FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D			
Coliform bacteri involves an initia	a is enumerated by cul al 24 hour incubation at	turing and colony counting. A known sample	embrane Filter Technique for Members of the Coliform Group". volume is filtered through a 0.45 micron membrane filter. The test ate growth medium. This method is specific for thermotolerant el.			
N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION			
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC			
			nodified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society tion of trace levels of ammonium in seawater", Roslyn J. Waston et			
NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)			
Inorganic anions	s are analyzed by Ion C	Chromatography with conductivity and/or UV of	detection.			
NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)			
norganic anions	s are analyzed by Ion C	Chromatography with conductivity and/or UV of	detection.			
P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS			
	carried out using proce	edures adapted from APHA Method 4500-P "R	Phosphorus". Total Phosphorus is determined colourimetrically after			
PO4-DO-COL-C	L Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS			
		edures adapted from APHA Method 4500-P "I been lab or field filtered through a 0.45 micro	Phosphorus". Dissolved Orthophosphate is determined n membrane filter.			
TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric			
		edures adapted from APHA Method 2540 "So nple through a glass fibre filter, and by drying	lids". Solids are determined gravimetrically. Total suspended solids the filter at 104 deg. C.			
ALS test metho	ods may incorporate m	odifications from specified reference methods	s to improve performance.			
The last two lett	ers of the above test co	ode(s) indicate the laboratory that performed	analytical analysis for that test. Refer to the list below:			
	inition Codo					

Laboratory Definition Code	Laboratory Location
CL	ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA
Chain of Custody Numbers:	

# **Reference Information**

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2653960 Report Date: 17-NOV-21 Page 1 of 3 KICKING HORSE MOUNTAIN UTILITY CORPORATION Client: 1500 Kicking Horse Trail Golden BC V0A 1H0 TRAVIS JOBIN Contact: Test Reference Qualifier RPD Matrix Result Units Limit Analyzed BOD-BC-CL Water Batch R5629318 WG3646039-3 DUP L2653960-1 **Biochemical Oxygen Demand** <2.0 <2.0 **RPD-NA** mg/L N/A 30 22-OCT-21 WG3646039-2 LCS **Biochemical Oxygen Demand** 92.5 % 85-115 22-OCT-21 WG3646039-1 MB **Biochemical Oxygen Demand** <2.0 mg/L 2 22-OCT-21 EC-MPN-CL Water Batch R5626833 WG3643581-1 MB MPN - E. coli <1 MPN/100mL 1 21-OCT-21 FCC-MF-CL Water Batch R5626886 WG3643645-1 MB Coliform Bacteria - Fecal <1 CFU/100mL 1 21-OCT-21 NH3-F-CL Water Batch R5652157 WG3659985-13 LCS 96.5 Ammonia, Total (as N) % 85-115 16-NOV-21 WG3659985-9 MB <0.050 Ammonia, Total (as N) mg/L 0.05 16-NOV-21 NO2-IC-N-CL Water R5633792 Batch WG3649836-2 LCS Nitrite (as N) 109.3 % 90-110 22-OCT-21 WG3649836-1 MB Nitrite (as N) <0.010 mg/L 0.01 22-OCT-21 NO3-IC-N-CL Water Batch R5633792 WG3649836-2 LCS Nitrate (as N) 107.7 % 90-110 22-OCT-21 WG3649836-1 MB <0.020 Nitrate (as N) mg/L 0.02 22-OCT-21

P-T-COL-CL

Water



		Workorder	: L265396	0	Report Date: 1	7-NOV-21	Pa	ge 2 of 3
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
P-T-COL-CL	Water							
Batch R56353	-							
WG3651684-2 LC3 Phosphorus (P)-Tota	-		99.4		%		80-120	03-NOV-21
WG3651684-1 MB Phosphorus (P)-Tota			<0.0050		mg/L		0.005	03-NOV-21
PO4-DO-COL-CL	Water							
Batch R56264 WG3643001-2 LC3 Orthophosphate-Dise	3		89.5		%		80-120	21-OCT-21
WG3643001-1 MB Orthophosphate-Diss			<0.0050		mg/L		0.005	21-OCT-21
TSS-CL	Water							
Batch R56279 WG3644358-2 LC3 Total Suspended Sol	5		98.6		%		85-115	24-OCT-21
WG3644358-1 MB Total Suspended Sol			<3.0		mg/L		3	24-0CT-21

Workorder: L2653960

Report Date: 17-NOV-21

### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate
-	

#### Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# **Microbial Test Results**

Samples collected October 20, 2021

Final Report

November 2, 2021

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

10823 27 Street SE, Calgary, AB, Canada T2Z 3V9



### SAMPLE INFORMATION

Sample ID/		Possint			
Sample ID/ Internal ID	Collected	Received	Enterococcus test initiation	- Receipt temperature	
L2653960-1 WWTP EFFLUENT- UV TROUGH/	20-Oct-21 at 0830h	21-Oct-21 at 1430h	21-Oct-21 at 1445h	6.6°C	
2122-0405-01	083011	145011	144511		
L2653960-2 COLUMBIA RIVER UPSTREAM/	20-Oct-21 at 0945h	21-Oct-21 at 1430h	21-Oct-21 at 1445h	3.8°C	
2122-0405-02	094511	143011	144511		
L2653960-3 COLUMBIA RIVER DOWNSTREAM/	20-Oct-21 at	21-Oct-21 at	21-Oct-21 at	3.0°C	
2122-0405-03	1000h	1430h	1445h	5.0 C	
L2653960-4 COLUMBIA RIVER SIDE CHANNEL/	20-Oct-21 at	21-Oct-21 at	21-Oct-21 at	3.8°C	
2122-0405-04	0930h	1430h	1445h	5.0 C	

### **TEST TYPES**

• *Enterococcus* enumeration test

### **RESULTS**

### **Microbial test results**

Sample ID	MPN/100 mL Enterococcus	
L2653960-1 WWTP EFFLUENT-UV TROUGH	<1	
L2653960-2 COLUMBIA RIVER UPSTREAM	<1	
L2653960-3 COLUMBIA RIVER DOWNSTREAM	<1	
L2653960-4 COLUMBIA RIVER SIDE CHANNEL	<1	

MPN = Most Probable Number



# QA/QC

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

The samples were received and testing initiated outside of the 24-hour hold time at the client's request.



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Destalairet

Reviewed By: Leila Oosterbroek, P Biol Environmental Scientist

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

Report By:

Courtney Bogstie, BSc

Senior Biologist

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** 

	Client ACLOY Reference 207-01.02, 03.04
Test Initiation Date: 2021/10/21 Time: <u>NUぐ</u> Techician: SC	Sample Inf Dilut UN 2022 C
Thermometer Serial #:192702207Incubator #:4Incubator Temperature:UI	Quanti Tray 2000 Lot#/Expiry: CT028, 03/10/2024
Results - 24 Hour Incubation Date: 10 21(10   22 Time:	: 1435 Technician: ST MAF
Incubator Temp: (must be 41 ± 0.5°C)	Enter
# Positive Large Wells:	
# Ambiguous Large Wells: # Positive Small Wells (Tray 2000 only):	
# Ambiguous Small Wells (Tray 2000 only): Most Probable Number at 24 hours:	202
Results - 28 Hour Incubation Date:	Technician:
Incubator Temp: (must be 41 ± 0.5°C)	Enterococci (Fluorescent)
# Confirmed Positive Large Wells: # Confirmed Positive Small Wells (Free 2000 and a	
Most Probable Number at 28 hours: Most Probable Number at 28 hours: Confirmed positive wells includes the positive wells from 2 <sup>4</sup> At 28 hours only score marked ambiguos from 24 hours	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 ambiguos from 24 hours
Ε.	Reviewed By: W 25
Written by KS on 2006/07/11 Revised by LO on 2021/03/17	Nautilus Environmental (Calgary) F106



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



CALGARY

### Subcontract Request Form

### Subcontract To:

# NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

#4, 6125-12 STREET SE CALGARY,AB T2H 2K1

NOTES: Please reference on final r ALS requires QC data to b	e provided with your	final results.		
	Procee	d iF	hold the	ne passe
Please see enclosed <u>4</u> sam	ole(s) in <u>4</u> Co	ontainer(s)		
SAMPLE NUMBER ANALYTIC	AL REQUIRED		DATE SAMPLED DUE DATE	Priority Flag
L2653960-1 WWTP EFFLUENT - UV TROUGH Enterococc	us (ENTERO-HQ 1)	-01	<b>10/20/2021</b> 11/2/2021	830
L2653960-2 COLUMBIA RIVER UPSTREAM Enterococo	us (ENTERO-HQ 1)	-02	<b>10/20/2021</b> 11/2/2021	943 3.8°C
L2653960-3 COLUMBIA RIVER DOWN STREAM Enterococo	cus (ENTERO-HQ 1)	-03	<b>10/20/2021</b> 11/2/2021	1000 3.0°C
L2653960-4 COLUMBIA RIVER SIDE CHANNEL Enterococ	cus (ENTERO-HQ 1)	-04	<b>10/20/2021</b> <b>2122-0405</b> <sup>11/2/2021</sup>	930) 3.5°C
Subcontract Info Contact: Analysis and reporting info contact:	John Forbes (403) Patryk Wojciak, B.S 2559 29 STREET N CALGARY,AB T1Y 7 Phone: (403) 293	Sc., P.Chem. E B5	2021/10/21 6000 14:30 Cab OC 43:400mL bottles NoS/Nob Email:patryk.wojciako	Condition
Please email confirmation of rece	ipt to: pat	ryk.wojciak	@alsglobal.com	
Shipped By:	Da	te Shipped:		
Received By:	Da	te Received:		
Verified By:	Da	te Verified:		
	Те	mperature:		
Sample Integrity Issues:				



**END OF REPORT** 



-



Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com COC #

Page <u>1</u> of <u>1</u>

Report To		Inteport Fo	ormat / Distribu	tion		Serv	ice R	eque	sted	(Rush	for ro	utine	analys	is sub	ject to	availabilii	ty)
Company:	npany: Kicking Horse Mountain Resort Utility Corporation		Standard Other Regular (Standard Turnaround Times - Busines							usiness	Days)						
Contact:	Travis Jobin	D PDF	Excel .	Digital		O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm T					AT						
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kicking	orseresort.com		O Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT											
		Email 2:	pmajer@skircr.	com		O s	ame Da	ay or W	/eeken	d Erner	gency	- Conta	act ALS	to Cor	nfirm TA	т	
Phone:	250-344-8442 Fax:	Email 3:	mskyring@kick	inghorseresort.c	<u>xom</u>							sis Re					
Invoice To	Same as Report ? Yes J No	Client / P	roject Informati	on		Ple	ase in	ndicat	e belo	w Fil	tered	, Pres	serve	d or b	oth (F	, P, F/P)	
Hardcopy of	Invoice with Report? Yes No	Job #:	Week 4 - 2021	Fall EMS progr	am - WW												
Company:	Resorts of the Canadian Rockies	PO / AFE															
Contact:	Patrick Majer	LSD:															
Address:	1505 - 17th Ave SW Calgary AB																lers
Phone:	Fax:	Quote #:	· · ·														Containers
	Nork Order # b use only)	ALS Contact:	PW	Sampler:	TJ ,								Coliform	cocci			4
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 F	Fecal Colifor	Enterococci	E. Coli		Number
	WWTP Effluent - UV trough Temp: 12 pH: 6.8		20-Oct-21	830	Water	X	Х	Х	X	Χ	Х	X	X	X	X		5
	Columbia River Upstream Temp: 2.7 pH: 7,8		20-Oct-21	945	Water	<u> </u>	Х	Х	X	Х	X	X	X	Х	X		4
	Columbia River Down stream Temp: 4,6 pH: 7,8	<u> </u>	20-Oct-21	100	Water		X	X	X	Х	X	x	X	X	X		4
	Columbia River Side Channel Temp: 3.() pH: 7. 8		20-Oct-21	930	Water		X	X	X	Х	X	X	X	X	X		4
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	Special Instructions / Regulations with water or land	d use (CCN	IE-Freshwater A	Aquatic Life/BC	CSR - Commerc	ial/AE	3 Tier	1 - N	latura	i, etc	:) / Ha	azard	ous I	Detail	S		
	Failure to complete all	nontione	t this form	dolou analysis	Place fill in th	ic for			<u></u>								
	By the use of this form the user ackno Also provided on another Excel tab are the ALS location	owledges a	ind agrees with	the Terms and	Conditions as p	rovid	ed on	a se	parat				nmor	i anal	lvses		
	SHIPMENT RELEASE (client use)		MENT RECEPT					SI		ENT	/ERIF	FICAT	TION	(lab u	ise on	<b>v</b> )	
Released by	y: Date (dd-mmm-yy) Time (hh-mm) Received	A CONTRACT OF THE OWNER	Date:	Time:	Temperature:		fied b	<u>0. 17 31</u>	<u></u>	Date		<u>a seneral X</u>	Tim	201 98 20 5 S -	Ī	Observa Yes / No	
	-26-May-20- 0:30 Min		11 11 12 1 - Z J	10'.30	) ⊃ °C					1			1			If Yes ac	

GENF 20.00 Front



KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received:27-OCT-21Report Date:17-NOV-21 14:05 (MT)Version:FINAL

Client Phone: 250-344-8442

# Certificate of Analysis

Lab Work Order #: L2656086 Project P.O. #: NOT SUBMITTED Job Reference: WEEK 5 - 2021 FALL EMS PROGRAM - WW C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]

ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298 ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Environmental 🕽

www.alsglobal.com

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# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2656086-1 WWTP EFFLUENT - UV TROUGH							
Sampled By: TJ on 26-OCT-21 @ 09:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		16-NOV-21	R5652157
Biochemical Oxygen Demand	<2.0		2.0	mg/L		28-OCT-21	R5634437
Orthophosphate-Dissolved (as P)	0.226	DLHC	0.050	mg/L		27-OCT-21	R5631717
Enterococcus	See Attached					27-OCT-21	R5636398
Coliform Bacteria - Fecal	<1		1	CFU/100mL		27-OCT-21	R5631980
MPN - E. coli	<1		1	MPN/100mL		27-OCT-21	R5631890
Phosphorus (P)-Total	0.323	DLHC	0.025	mg/L		16-NOV-21	R5650376
Total Suspended Solids	3.3		3.0	mg/L		02-NOV-21	R5634652
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC Nitrate (as N)	13.8		0.020	mg/L		27-OCT-21	R5634870
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	13.8		0.022	mg/L		03-NOV-21	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		27-OCT-21	R5634870
L2656086-2 COLUMBIA RIVER UPSTREAM							
Sampled By: TJ on 26-OCT-21 @ 09:45							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		16-NOV-21	R5652157
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		27-OCT-21	R5631717
Enterococcus	See Attached					27-OCT-21	R5636398
Coliform Bacteria - Fecal	1		1	CFU/100mL		27-OCT-21	R5631980
MPN - E. coli	<1		1	MPN/100mL		27-OCT-21	R5631890
Phosphorus (P)-Total	0.0050		0.0050	mg/L		16-NOV-21	R5650376
Total Suspended Solids	6.3		3.0	mg/L		30-OCT-21	R5633743
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC Nitrate (as N)	0.089		0.020	mg/L		27-OCT-21	R5634870
Nitrate+Nitrite							
Nitrate and Nitrite (as N)	0.089		0.022	mg/L		03-NOV-21	
Nitrite in Water by IC Nitrite (as N)	<0.010		0.010	mg/L		27-OCT-21	R5634870
	~0.010		0.010	iiig/L		21 001-21	110004070
L2656086-3 COLUMBIA RIVER DOWNSTREAM							
Sampled By: TJ on 26-OCT-21 @ 10:00 Matrix: WATER							
Matrix: WATER Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		16-NOV-21	R5652157
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		27-OCT-21	R5631717
Enterococcus	See Attached		0.0000	iiig/L		27-0CT-21 27-0CT-21	R5636398
Coliform Bacteria - Fecal	<1 See Allached		1	CFU/100mL		27-0CT-21 27-0CT-21	R5631980
MPN - E. coli	<1		1	MPN/100mL		27-0CT-21 27-0CT-21	R5631960
Phosphorus (P)-Total	<0.0050		0.0050	mg/L		16-NOV-21	R5650376
Total Suspended Solids	<0.0050		0.0050 3.0	mg/L		30-OCT-21	R5633743
NO2, NO3 and Sum of NO2/NO3	0.9		3.0	mg/∟		30-001-21	13033743
Not and sum of NoziNos Nitrate in Water by IC Nitrate (as N)	0.095		0.020	ma/l		27-OCT-21	D5624070
Nitrate (as N) Nitrate+Nitrite	0.085		0.020	mg/L		21-001-21	R5634870
Nitrate+Nitrite Nitrate and Nitrite (as N)	0.085		0.022	mg/L		03-NOV-21	

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2656086-3 COLUMBIA RIVER DOWNSTREAM							
Sampled By: TJ on 26-OCT-21 @ 10:00							
Matrix: WATER							
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		27-OCT-21	R5634870
L2656086-4 COLUMBIA SIDE CHANNEL							
Sampled By: TJ on 26-OCT-21 @ 09:30							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		16-NOV-21	R5652157
Orthophosphate-Dissolved (as P)	<0.0050		0.0050	mg/L		27-OCT-21	R5631717
Enterococcus	See Attached					27-OCT-21	R5636398
Coliform Bacteria - Fecal	1		1	CFU/100mL		27-OCT-21	R5631980
MPN - E. coli	<1		1	MPN/100mL		27-OCT-21	R5631890
Phosphorus (P)-Total	0.0051		0.0050	mg/L		16-NOV-21	R5650376
Total Suspended Solids	3.3		3.0	mg/L		30-OCT-21	R5633743
NO2, NO3 and Sum of NO2/NO3							
Nitrate in Water by IC Nitrate (as N)	0.093		0.020	mg/L		27-OCT-21	R5634870
Nitrate+Nitrite	0.095		0.020	iiig/L		21-001-21	13034070
Nitrate and Nitrite (as N)	0.093		0.022	mg/L		03-NOV-21	
Nitrite in Water by IC							
Nitrite (as N)	<0.010		0.010	mg/L		27-OCT-21	R5634870

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

# **Reference Information**

### Sample Parameter Qualifier Key:

eample i aram			
Qualifier	Description		
DLHC	Detection Limit Raise	ed: Dilution required due to high concentration	of test analyte(s).
Test Method R	eferences:		
ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode
oxygen demand dissolved oxyge	(BOD) are determined n meter. Dissolved BO	l by diluting and incubating a sample for a spe	Biochemical Oxygen Demand (BOD)". All forms of biochemical cified time period, and measuring the oxygen depletion using a ample through a glass fibre filter prior to dilution. Carbonaceous ior to incubation.
EC-MPN-CL	Water	MPN - E. coli	APHA 9223B
Substrate Colifo sample is mixed The packet is in	rm Test". E. coli and T with a mixture hydroly cubated for 18 or 24 ho unted. The final result Holding Time:	edures adapted from APHA Method 9223 "Enz otal Coliform are determined simultaneously. zable substrates and then sealed in a multi-we ours and then the number of wells exhibiting a is obtained by comparing the positive respons	The ell packet. positive
FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D
Coliform bacteria involves an initia	a is enumerated by cul al 24 hour incubation at	turing and colony counting. A known sample v	nbrane Filter Technique for Members of the Coliform Group". volume is filtered through a 0.45 micron membrane filter. The test te growth medium. This method is specific for thermotolerant l.
N2N3-CALC-CL	Water	Nitrate+Nitrite	CALCULATION
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
			odified from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society on of trace levels of ammonium in seawater", Roslyn J. Waston et
NO2-IC-N-CL	Water	Nitrite in Water by IC	EPA 300.1 (mod)
Inorganic anions	are analyzed by Ion C	Chromatography with conductivity and/or UV d	etection.
NO3-IC-N-CL	Water	Nitrate in Water by IC	EPA 300.1 (mod)
Inorganic anions	are analyzed by Ion C	chromatography with conductivity and/or UV d	etection.
P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
This analysis is			hosphorus". Total Phosphorus is determined colourimetrically after
PO4-DO-COL-C	L Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
		edures adapted from APHA Method 4500-P "P been lab or field filtered through a 0.45 micror	hosphorus". Dissolved Orthophosphate is determined membrane filter.
TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		edures adapted from APHA Method 2540 "Soli nple through a glass fibre filter, and by drying	ds". Solids are determined gravimetrically. Total suspended solids he filter at 104 deg. C.
** ALS test metho	ods may incorporate me	odifications from specified reference methods	to improve performance.
The last two lette	ers of the above test co	ode(s) indicate the laboratory that performed a	nalytical analysis for that test. Refer to the list below:
Laboratory Defi	inition Code Labo	pratory Location	
CL		ENVIRONMENTAL - CALGARY, ALBERTA, (	

Chain	of	Custody	Numbers:
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ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA

# **Reference Information**

### Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
---------------	--------	------------------	--------------------

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Workorder: L2656086 Report Date: 17-NOV-21 Page 1 of 3 KICKING HORSE MOUNTAIN UTILITY CORPORATION Client: 1500 Kicking Horse Trail Golden BC V0A 1H0 TRAVIS JOBIN Contact: Test Reference RPD Matrix Result Qualifier Units Limit Analyzed BOD-BC-CL Water Batch R5634437 WG3650400-3 L2656086-1 DUP **Biochemical Oxygen Demand** <2.0 <2.0 **RPD-NA** mg/L N/A 30 28-OCT-21 WG3650400-2 LCS **Biochemical Oxygen Demand** 92.1 % 85-115 28-OCT-21 WG3650400-1 MB **Biochemical Oxygen Demand** <2.0 mg/L 2 28-OCT-21 EC-MPN-CL Water Batch R5631890 WG3647978-1 MB MPN - E. coli <1 MPN/100mL 1 27-OCT-21 FCC-MF-CL Water Batch R5631980 WG3648018-1 MB Coliform Bacteria - Fecal <1 CFU/100mL 1 27-OCT-21 NH3-F-CL Water Batch R5652157 WG3659985-16 DUP L2656086-1 Ammonia, Total (as N) < 0.050 < 0.050 **RPD-NA** mg/L N/A 20 16-NOV-21 WG3659985-15 LCS Ammonia, Total (as N) 101.8 % 85-115 16-NOV-21 WG3659985-14 MB Ammonia, Total (as N) < 0.050 mg/L 0.05 16-NOV-21 WG3659985-17 MS L2656086-1 123.3 % Ammonia, Total (as N) 75-125 16-NOV-21 NO2-IC-N-CL Water Batch R5634870 WG3651179-6 LCS 97.2 Nitrite (as N) % 90-110 27-OCT-21 WG3651179-5 MB Nitrite (as N) <0.010 mg/L 0.01 27-OCT-21 Water NO3-IC-N-CL Batch R5634870 WG3651179-6 LCS Nitrate (as N) % 98.9 90-110 27-OCT-21 WG3651179-5 MB



		Workorder:	L265608	6	Report Date: 17	NOV-21	Pa	ge 2 of 3
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO3-IC-N-CL Batch R5634870 WG3651179-5 MB Nitrate (as N)	Water		<0.020		mg/L		0.02	27-OCT-21
P-T-COL-CL	Water							
Batch R5650376 WG3659402-3 DUP Phosphorus (P)-Total		<b>L2656086-1</b> 0.323	0.322		mg/L	0.1	20	16-NOV-21
WG3659402-2 LCS Phosphorus (P)-Total			91.2		%		80-120	16-NOV-21
WG3659402-1 MB Phosphorus (P)-Total			<0.0050		mg/L		0.005	16-NOV-21
WG3659402-4 MS Phosphorus (P)-Total		L2656086-2	76.8		%		70-130	16-NOV-21
PO4-DO-COL-CL Batch R5631717 WG3646934-6 LCS Orthophosphate-Dissolv	Water		108.0		%		80-120	27-OCT-21
WG3646934-5 MB Orthophosphate-Dissolv			<0.0050		mg/L		0.005	27-OCT-21
WG3646934-8 MS Orthophosphate-Dissolv	ved (as P)	L2656086-4	100.2		%		70-130	27-OCT-21
TSS-CL	Water							
Batch R5633743 WG3648528-2 LCS Total Suspended Solids			100.3		%		85-115	30-OCT-21
WG3648528-1 MB Total Suspended Solids			<3.0		mg/L		3	30-OCT-21
Batch R5634652 WG3650105-2 LCS Total Suspended Solids			105.1		%		85-115	02-NOV-21
WG3650105-1 MB Total Suspended Solids			<3.0		mg/L		3	02-NOV-21

Workorder: L2656086

Report Date: 17-NOV-21

#### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

#### Sample Parameter Qualifier Definitions:

Qualifier	Description
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

#### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# **Microbial Test Results**

Samples collected October 26, 2021

Final Report

November 5, 2021

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

10823 27 Street SE, Calgary, AB, Canada T2Z 3V9



### SAMPLE INFORMATION

Semale ID/		Dates		Dessint
Sample ID/ Internal ID	Collected Received		Enterococcus test initiation	Receipt temperature
L2656086-1 WWTP EFFLUENT-UV TROUGH/	26-Oct-21 at 0900h	27-Oct-21 at 1300h	27-Oct-21 at 1500h	8.1°C
2122-0450-01	090011	150011	130011	
L2656086-2 COLUMBIA RIVER UPSTREAM/	26-Oct-21 at 0945h	27-Oct-21 at 1300h	27-Oct-21 at 1500h	8.1°C
2122-0450-02	054511	150011	150011	
L2656086-3 COLUMBIA RIVER DOWNSTREAM/	26-Oct-21 at 1000h	27-Oct-21 at 1300h	27-Oct-21 at 1500h	7.0°C
2122-0450-03	100011	150011	130011	
L2656086-4 COLUMBIA RIVER SIDE CHANNEL/	26-Oct-21 at 0930h	27-Oct-21 at 1300h	27-Oct-21 at 1500h	5.4°C
2122-0450-04	093011	15001	15001	

#### **TEST TYPES**

• *Enterococcus* enumeration test

#### RESULTS

### **Microbial test results**

Sample ID	MPN/100 mL Enterococcus	
L2656086-1 WWTP EFFLUENT-UV TROUGH	<1	
L2656086-2 COLUMBIA RIVER UPSTREAM	<1	
L2656086-3 COLUMBIA RIVER DOWNSTREAM	1.0	
L2656086-4 COLUMBIA RIVER SIDE CHANNEL	3.0	

MPN = Most Probable Number



### QA/QC

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

The samples were received and testing initiated outside of the 24-hour hold time at the client's request.



optio

Report By: Courtney Bogstie, BSc Senior Biologist

Destalaret

Reviewed By: Leila Oosterbroek, P Biol Environmental Scientist

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.

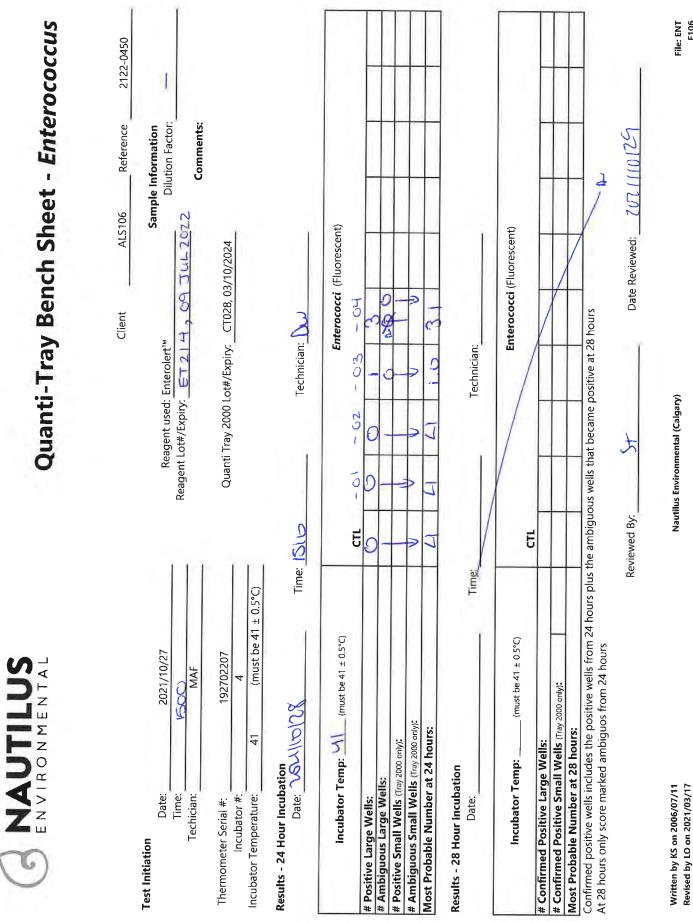
#### REFERENCES

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** 



F106



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





Subcontract Request Form

### Subcontract To:

# NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

#4, 6125-12 STREET SE CALGARY,AB T2H 2K1

NOTES: Please reference on fina ALS requires QC data t					oceed if	time
Please see enclosed <u>4</u> sa	mple(s) in	4	Container(s)		1 1010	1. 5
SAMPLE NUMBER ANALYT	ICAL REQUIRED	)		DATE S	AMPLED DUE DATE	Priority Flag
L2656086-1 WWTP EFFLUENT - UV TROUGH Enteroco	ccus (ENTERO-HC	21)	2122-0450-01	10/26, 8.1°C		900
L2656086-2 COLUMBIA RIVER UPSTREAM Enteroco	ccus (ENTERO-HQ	2 1)	-02	10/26, 8,1%	/ <b>2021</b> 11/8/2021	945
L2656086-3 COLUMBIA RIVER DOWNSTREAM Enterocod	ccus (ENTERO-HQ	2 1)	-03	10/26/ 7.0°C	2 <b>021</b> 11/8/2021	1000
L2656086-4 COLUMBIA SIDE CHANNEL Enterocod	cus (ENTERO-HQ	1)	-04	10/26/ 5,4°C	2 <b>021</b> 11/8/2021	930
Subcontract Info Contact: Analysis and reporting info contact:	John Forbes Patryk Wojcia 2559 29 STR CALGARY,AB Phone: (40	ak, I EET T1Y	3) 291-9897 (2) 3.Sc., P.Chem. (2) NE (2) 77B5 /	x400mLbe	Good Condi He ryk.wojciak@a	
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**END OF REPORT** 



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#### ain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

COC#

Page	1 of	1
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Report To		IReport Fo	ormat / Distribut	ion		Servi	ce Re	eque	sted (	Rush	for ro	utine a	nalysis	s subjr	ect to	availabil	lity)
Company:	Kicking Horse Mountain Resort Utility Corporation	Standard				R	egular	(Stand	ard Tur	narour	nd Tim	es - Bus	iness [	Jays)			
Contact:		PDF	Excel	Digital	↓ Fax	O Pr	iority (	2-4 Bu	siness l	Days) -	50%	Surchar	ge - Co	ontact A	LS to (	Confirm T	TAT
Address:	1500 Kicking Horse Trail	Email 1:	C Emergenery (1-2 Rus Davis) - 100% Surcharde - Contact ALS to Conf							Confirm	TAT						
			pmajer@skircr.c			Same Day or Weekend Emergency,- Contact ALS to Confirm TAT								1			
Phone:	250-344-8442 Fax		mskyring@kicki		om					A	nalys	is Re	quest	t	_		
	-Same as Report ? Yes V No		roject Informatio			Plea	ase in	dicate	e belo	w Fill	tered,	Prese	erved	or bo	oth (F	, P, F/P	)
	Invoice with Report? Yes Vo		Week 5 - 2021		am - WW												
Company:	Resorts of the Canadian Rockies	PO/AFE:															
Contact:	Patrick Majer	LSD:															<b>_</b>
Address:	1505 - 17th Ave SW Calgary AB																ners
Phone:	Fax:	Quote #:															Containers
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	b use only)	Contact:	PW	Sampler:	ΤJ					ļ			Fecal Coliform	occi			r of
Sample	Sample Identification	Ű	Date	Time		22		Н4	ß	02	Р	е Б	ŭ	Enterococci	Coli		Number
#	(This description will appear on the report)		(dd-mmm-yy)	(hh:mm)	Sample Type	BOD5	TSS	N-NH4	N-NO3	N-NO2	Total	Ortho	Fec	Шă	ш		n Z
	WWTP Effluent - UV trough Temp: 12,0 pH: 6.8		26-Oct-21	900	Water	X	X	Х	X	Х	Х	X	X	X	X		5
	Columbia River Upstream Temp: 6.6 pH: 7.8		26-Oct-21	945	Water		X	X	X	Х	X	X	X	X	X		4
	Columbia River Down stream Temp: 66 pH: 7.8		26-Oct-21	1000	Water		X	Х	X	Х	Х	X	X	X	X		4
	Columbia River Side Channel Temp: 6.8 pH: 7.6		26-Oct-21	930	Water		X	Х	X	Х	Х	X	X	X	X		4
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	Also provided on another Excel tab are the ALS location	addresses	s, phone numbe	ers and sample	container / pres	ervati	on / ł	noldi	ng tin	ne tal	ble fo	or con	ımon	anal	yses		
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KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received:24-NOV-21Report Date:02-DEC-21 16:16 (MT)Version:FINAL

Client Phone: 250-344-8442

# Certificate of Analysis

Lab Work Order #: L2665839 Project P.O. #: NOT SUBMITTED Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

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ADDRESS: 2559 29 Street NE, Calgary, AB T1Y 7B5 Canada | Phone: +1 403 291 9897 | Fax: +1 403 291 0298 ALS CANADA LTD Part of the ALS Group An ALS Limited Company

Environmental 🕽

www.alsglobal.com

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2665839-1 UV TROUGH							
Sampled By: TJ on 23-NOV-21 @ 10:00							
Matrix: WATER							
Miscellaneous Parameters							
Ammonia, Total (as N)	<0.050		0.050	mg/L		29-NOV-21	R5659425
Biochemical Oxygen Demand	<2.0		2.0	mg/L		24-NOV-21	R5659271
Orthophosphate-Dissolved (as P)	0.0910		0.0050	mg/L		24-NOV-21	R5657033
Coliform Bacteria - Fecal	400	DLA	100	CFU/100mL		24-NOV-21	R5657338
MPN - E. coli	<1		1	MPN/100mL		24-NOV-21	R5657426
Phosphorus (P)-Total	0.207	DLHC	0.025	mg/L		02-DEC-21	R5661811
Total Suspended Solids	4.5		3.0	mg/L		29-NOV-21	R5658882

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## **Reference Information**

#### Sample Parameter Qualifier Key:

Qualifier	Description		
DLA	Detection Limit adjuste	ed for required dilution	
DLHC	Detection Limit Raisec	I: Dilution required due to high concentration of t	est analyte(s).
Test Method Re	eferences:		
ALS Test Code	Matrix	Test Description	Method Reference**
BOD-BC-CL	Water	Biochemical Oxygen Demand (BOD)	APHA 5210 B-5 day IncubO2 electrode
oxygen demand dissolved oxyger	(BOD) are determined to meter. Dissolved BOD	by diluting and incubating a sample for a specifie	themical Oxygen Demand (BOD)". All forms of biochemical ad time period, and measuring the oxygen depletion using a de through a glass fibre filter prior to dilution. Carbonaceous to incubation.
EC-MPN-CL	Water	MPN - E. coli	APHA 9223B
Substrate Colifor sample is mixed The packet is inc	m Test". E. coli and To with a mixture hydrolyz ubated for 18 or 24 hou inted. The final result is folding Time:	lures adapted from APHA Method 9223 "Enzym- tal Coliform are determined simultaneously. The able substrates and then sealed in a multi-well p urs and then the number of wells exhibiting a pos s obtained by comparing the positive responses	acket. sitive
FCC-MF-CL	Water	Fecal Coliform Count-MF	APHA 9222D
Coliform bacteria involves an initial	is enumerated by cultu 24 hour incubation at 4	iring and colony counting. A known sample volu	ane Filter Technique for Members of the Coliform Group". me is filtered through a 0.45 micron membrane filter. The test growth medium. This method is specific for thermotolerant
NH3-F-CL	Water	Ammonia by Fluorescence	J. ENVIRON. MONIT., 2005, 7, 37-42, RSC
			ied from J. Environ. Monit., 2005, 7, 37 - 42, The Royal Society of trace levels of ammonium in seawater", Roslyn J. Waston et
P-T-COL-CL	Water	Total P in Water by Colour	APHA 4500-P PHOSPHORUS
	arried out using proced stion of the sample.	lures adapted from APHA Method 4500-P "Phos	phorus". Total Phosphorus is determined colourimetrically after
PO4-DO-COL-CL	Water	Diss. Orthophosphate in Water by Colour	APHA 4500-P PHOSPHORUS
		lures adapted from APHA Method 4500-P "Phos een lab or field filtered through a 0.45 micron me	phorus". Dissolved Orthophosphate is determined embrane filter.
TSS-CL	Water	Total Suspended Solids	APHA 2540 D-Gravimetric
		lures adapted from APHA Method 2540 "Solids" ole through a glass fibre filter, and by drying the	. Solids are determined gravimetrically. Total suspended solids filter at 104 deg. C.
** ALS test method	ds may incorporate mo	difications from specified reference methods to i	mprove performance.
The last two lette	rs of the above test coo	de(s) indicate the laboratory that performed anal	ytical analysis for that test. Refer to the list below:
Laboratory Defin	nition Code Labor	atory Location	
CL	ALS E	NVIRONMENTAL - CALGARY, ALBERTA, CAN	IADA
Chain of Custod	ly Numbers:		

## **Reference Information**

#### Test Method References:

ALS Test Code	Matrix	<b>Test Description</b>	Method Reference**
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#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



		Workorder:	L2665839	9	Report Date: 02	-DEC-21	Pa	ge 1 of 3
1500 Kid Golden	cking Horse Trai BC V0A 1H0	NTAIN UTILITY C	ORPORATIC	DN				
Contact: TRAVIS								
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BOD-BC-CL	Water							
Batch R5659271								
WG3666317-2 LCS Biochemical Oxygen D	emand		100.9		%		85-115	24-NOV-21
WG3666317-1 MB Biochemical Oxygen D	emand		<2.0		mg/L		2	24-NOV-21
EC-MPN-CL	Water							
Batch R5657426	5							
<b>WG3665253-1 MB</b> MPN - E. coli			<1		MPN/100mL		1	24-NOV-21
FCC-MF-CL	Water							
Batch R5657338	3							
WG3665177-1 MB								
Coliform Bacteria - Feo	al		<1		CFU/100mL		1	24-NOV-21
NH3-F-CL	Water							
Batch R5659425	5							
WG3667337-2 LCS Ammonia, Total (as N)			102.9		%		85-115	29-NOV-21
WG3667337-1 MB Ammonia, Total (as N)			<0.050		mg/L		0.05	29-NOV-21
P-T-COL-CL	Water							
Batch R5661811								
WG3669076-6 LCS Phosphorus (P)-Total			92.9		%		80-120	02-DEC-21
WG3669076-5 MB Phosphorus (P)-Total			<0.0050		mg/L		0.005	02-DEC-21
PO4-DO-COL-CL	Water							
Batch R5657033	3							
WG3664816-2 LCS Orthophosphate-Dissol	ved (as P)		96.0		%		80-120	24-NOV-21
WG3664816-1 MB Orthophosphate-Dissol	ved (as P)		<0.0050		mg/L		0.005	24-NOV-21
TSS-CL	Water							
Batch R5658882	2							
WG3666293-2 LCS Total Suspended Solids	\$		97.1		%		85-115	29-NOV-21
WG3666293-1 MB	~		0		<i>,</i> ,,		03-110	23-1101-21



		Workorder	: L266583	39	Report Date: 0	2-DEC-21	P	age 2 of 3
Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
TSS-CL	Water							
Batch R WG3666293-1 Total Suspend	<b>5658882</b> <b>MB</b> led Solids		<3.0		mg/L		3	29-NOV-21

Workorder: L2665839

Report Date: 02-DEC-21

#### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

#### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Chain of Ca	L 2665839-COEC
	L2665839-COFC

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ALS Environmental	Denert Co	rmat / Distributi	0.0		IServi	ce Re	ques	ted (F	Rush f	or rout	tine ana	lysis sut	ject to	availabi	ility)
Report To			011		Service Requested (Rush for routine analysis subject to availab Regular (Standard Turnaround Times - Business Days)										
Company: Kicking Horse Mountain Water Utility Co. Ltd.		/		✓ Fax	O Pri	iority (2	-4 Busi	iness D	ays) -	50% S	urcharge	- Contact	: ALS to	Confirm	TAT
Contact: Travis Jobin	PDF	Excel	Digital			nergeno	у (1-2	Bus. D	ays) - :	100% 9	Surcharg	e - Contac	t ALS tr	o Confirm	1 TAT
ddress: 1500 Kicking Horse Trail		tjobin@kickinghe			0 sa	me Day	or We	ekend	Emerg	ency -	Contact	ALS to Co	nfirm T/	AT	
		pmajer@skircr.c			Ĕ				Ar	nalysi	s Req	uest			
Phone: 250-344-6003 Fax:		mskyring@kickii		om	Plea	ase in	dicate	belo					ooth (F	F, P, F/F	P)
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Company: Resorts of the Canadian Rockies	PO / AFE:														
Contact: Patrick Majer	LSD:				-										
ddress: 1505 - 17th Ave SW Calgary AB															
Phone: Fax:	Quote #:	Q33059			-			ate							
Lab Work Order # (lab use only)	ALS Contact:	LS	Sampler:	-TJ· ··	_		Coliforn	Phosphate		4		-			
Sample Sample Identification	report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	BOD	TSS	Fecai	Ortho	Total	N-NH4	E.Coli		<u>_</u>	╞╌┥	
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## **CERTIFICATE OF ANALYSIS**

Work Order	CG2106773	Page	÷ 1 of 2
Client	: Kicking Horse Mountain Resort LP	Laboratory	: Calgary - Environmental
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	: 15-Dec-2021 23:05
PO	:	Date Analysis Commenced	: 15-Dec-2021
C-O-C number	:	Issue Date	: 21-Dec-2021 16:46
Sampler	: TJ		
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 FDA 21 CFR Part 11.

Signatories	Position	Laboratory Department
Erin Sanchez		Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	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).

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

>: greater than.

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

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

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

#### Qualifiers

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

#### Analytical Results

CG2106773-001								
Sub-Matrix:Water		Client samp	ole ID: UV tr	ough				
(Matrix: Water)		Client samp	oling date / i	<i>ime:</i> 14-Dec-20	21 15:30			
Analyte	CAS Number	Result	LOR	Unit	Method	Prep Date	Analysis Date	QCLot
Physical Tests								
solids, total suspended [TSS]		4.3	3.0	mg/L	E160-H	-	19-Dec-2021	371904
Anions and Nutrients								
phosphate, ortho-, dissolved (as P)	14265-44-2	0.191 DLHC,	0.0100	mg/L	E378-U	15-Dec-2021	15-Dec-2021	368689
phosphorus, total	7723-14-0	0.300	0.0200	mg/L	E372-U	21-Dec-2021	21-Dec-2021	369764
Bacteriological Tests								
coliforms, thermotolerant [fecal]		<1	1	CFU/100mL	E012.FC	-	15-Dec-2021	369910
coliforms, Escherichia coli [E. coli]		<1	1	MPN/100m L	E010	-	15-Dec-2021	369881
Aggregate Organics								
biochemical oxygen demand [BOD]		2.9	2.0	mg/L	E550	-	15-Dec-2021	368778

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

<sup>&</sup>lt;: less than.



## **QUALITY CONTROL INTERPRETIVE REPORT**

Work Order	: CG2106773	Page	: 1 of 4
Client	: Kicking Horse Mountain Resort LP	Laboratory	: Calgary - Environmental
Contact	: Travis Jobin	Account Manager	: Patryk Wojciak
Address	: 1500 Kicking Horse Trail PO BOX 330	Address	2559 29th Street NE
	Golden BC Canada V0A 1H0		Calgary, Alberta Canada T1Y 7B5
Telephone	250 344 6003	Telephone	: +1 403 407 1800
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 15-Dec-2021 23:05
PO	:	Issue Date	: 21-Dec-2021 16:46
C-O-C number	:		
Sampler	: TJ		
Site	:		
Quote number	: CG21-RESC100-0001		
No. of samples received	:1		
No. of samples analysed	:1		

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

#### 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 Services number is a unique identifier assigned to discrete substances.

DQO: Data Quality Objective.

LOR: Limit of Reporting (detection limit).

RPD: Relative Percent Difference.

#### Summary of Outliers

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

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

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

• <u>No</u> 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.

Aatrix: Water					Ev	aluation: × =	Holding time excee	edance ; 🔹	= Within	Holding Tim
Analyte Group	Method	Sampling Date	Ext	raction / Pi	reparation			Analys	sis	
Container / Client Sample ID(s)			Preparation	Holdin	g Times	Eval	Analysis Date	Holding Times		Eval
			Date	Rec	Actual			Rec	Actual	
Aggregate Organics : Biochemical Oxygen Demand - 5 day										
HDPE [BOD HT 3d]										
UV trough	E550	14-Dec-2021					15-Dec-2021	3 days	1 days	✓
Anions and Nutrients : Dissolved Orthophosphate by Colourimetry (Ultra Trace Le	vel)									
HDPE										
UV trough	E378-U	14-Dec-2021					15-Dec-2021	3 days	1 days	✓
Anions and Nutrients : Total Phosphorus by Colourimetry (Ultra Trace)										
Amber glass total (sulfuric acid)										
UV trough	E372-U	14-Dec-2021	21-Dec-2021				21-Dec-2021	28 days	7 days	✓
Bacteriological Tests : Thermotolerant (Fecal) Coliform (MF-mFC)										
Sterile HDPE (Sodium thiosulphate)										
UV trough	E012.FC	14-Dec-2021					15-Dec-2021	30 hrs	21 hrs	*
Bacteriological Tests : Total Coliforms and E. coli (Enzyme Substrate)										
Sterile HDPE (Sodium thiosulphate)										
UV trough	E010	14-Dec-2021					15-Dec-2021	30 hrs	22 hrs	×
Physical Tests : TSS by Gravimetry									1	
HDPE										
UV trough	E160-H	14-Dec-2021					19-Dec-2021	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		Evaluati	on: × = QC frequ	ency outside spe	ecification; 🗸 =	QC frequency wit	hin specification
Quality Control Sample Type			Co	ount		Frequency (%)	
Analytical Methods	Method	QC Lot #	QC	Regular	Actual	Expected	Evaluation
Laboratory Duplicates (DUP)							
Biochemical Oxygen Demand - 5 day	E550	368778	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	368689	1	20	5.0	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	369910	1	20	5.0	5.0	~
Total Coliforms and E. coli (Enzyme Substrate)	E010	369881	2	19	10.5	10.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	369764	1	20	5.0	5.0	~
TSS by Gravimetry	E160-H	371904	1	12	8.3	5.0	✓
Laboratory Control Samples (LCS)							
Biochemical Oxygen Demand - 5 day	E550	368778	1	20	5.0	5.0	✓
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	368689	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	369764	1	20	5.0	5.0	✓
TSS by Gravimetry	E160-H	371904	1	12	8.3	5.0	~
Method Blanks (MB)							
Biochemical Oxygen Demand - 5 day	E550	368778	1	20	5.0	5.0	1
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	368689	1	20	5.0	5.0	✓
Thermotolerant (Fecal) Coliform (MF-mFC)	E012.FC	369910	1	20	5.0	5.0	✓
Total Coliforms and E. coli (Enzyme Substrate)	E010	369881	1	19	5.2	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	369764	1	20	5.0	5.0	1
TSS by Gravimetry	E160-H	371904	1	12	8.3	5.0	~
Matrix Spikes (MS)							
Dissolved Orthophosphate by Colourimetry (Ultra Trace Level)	E378-U	368689	1	20	5.0	5.0	✓
Total Phosphorus by Colourimetry (Ultra Trace)	E372-U	369764	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 $35.0 \pm 0.5^{\circ}$ 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 $\mu$ m), and incubation at 45.5 $\pm$ 0.2°C for 24 hours, colonies exhibiting characteristic morphology of the target organism are enumerated and confirmed.
TSS by Gravimetry	E160-H 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 $104 \pm 1^{\circ}$ 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.
Total Phosphorus by Colourimetry (Ultra Trace)	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)	E378-U Calgary - Environmental	Water	APHA 4500-P F (mod)	Dissolved Orthophosphate is determined colourimetrically on a flow analyzer 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
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	CG2106773	Page	: 1 of 4
Client	: Kicking Horse Mountain Resort LP	Laboratory	: Calgary - Environmental
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, Alberta Canada T1Y 7B5
Telephone	: 250 344 6003	Telephone	:+1 403 407 1800
Project	: RCR - Kicking Horse Mountain Resort	Date Samples Received	: 15-Dec-2021 23:05
PO		Date Analysis Commenced	: 15-Dec-2021
C-O-C number		Issue Date	:21-Dec-2021 16:46
Sampler	: TJ		
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 Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percentage Difference (RPD) and Acceptance Limits
- Matrix Spike (MS) Report; Recovery and Acceptance Limits
- Reference Material (RM) Report; Recovery and Acceptance Limits
- Method Blank (MB) Report; Recovery and Acceptance Limits
- Laboratory Control Sample (LCS) Report; Recovery and Acceptance Limits

#### 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
Erin Sanchez		Inorganics, Calgary, Alberta
Katarzyna Glinka	Analyst	Inorganics, Calgary, Alberta
Ruifang Zheng	Analyst	Inorganics, Calgary, Alberta
Sunil Palak		Microbiology, 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 Services number is a unique identifier assigned to discrete substances.
- DQO = Data Quality Objective.
- LOR = Limit of Reporting (detection limit).
- RPD = Relative Percentage Difference
- # = Indicates a QC result that did not meet the ALS DQO.

#### 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	Jub-Matrix: Water				Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Physical Tests (QC	Lot: 371904)										
CG2106761-002	Anonymous	solids, total suspended [TSS]		E160-H	3.0	mg/L	80.3	78.3	2.52%	20%	
Anions and Nutrien	ts (QC Lot: 368689)										
CG2106767-010	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0010	mg/L	0.0233	0.0231	0.655%	20%	
Anions and Nutrien	ts (QC Lot: 369764)										
CG2106773-001	UV trough	phosphorus, total	7723-14-0	E372-U	0.0200	mg/L	0.300	0.291	3.24%	20%	
Bacteriological Test	ts (QC Lot: 369881)										
CG2106753-003	Anonymous	coliforms, Escherichia coli [E. coli]		E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	
CG2106755-005	Anonymous	coliforms, Escherichia coli [E. coli]		E010	1	MPN/100mL	<1	<1	0	Diff <2x LOR	
Bacteriological Test	ts (QC Lot: 369910)										
CG2106749-002	Anonymous	coliforms, thermotolerant [fecal]		E012.FC	1	CFU/100mL	<1	<1	0	Diff <2x LOR	
Aggregate Organics	(QC Lot: 368778)										
CG2106762-001	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.

CAS Number Method	LOR	Unit	Result	Qualifier
E160-H	3	mg/L	<3.0	
14265-44-2 E378-U	0.001	mg/L	<0.0010	
7723-14-0 E372-U	0.002	mg/L	<0.0020	
E010	1	MPN/100mL	<1	
E012.FC	1	CFU/100mL	<1	
E550	2	mg/L	<2.0	
	E160-H 14265-44-2 E378-U 7723-14-0 E372-U E010 E012.FC	E160-H       3         14265-44-2       E378-U       0.001         7723-14-0       E372-U       0.002          E010       1          E012.FC       1	E160-H       3       mg/L         14265-44-2       E378-U       0.001       mg/L         7723-14-0       E372-U       0.002       mg/L          E010       1       MPN/100mL          E012.FC       1       CFU/100mL	Image: marked state sta

#### 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	Jub-Matrix: Water						Laboratory Control Sample (LCS) Report					
					Spike	Recovery (%)	Recovery Limits (%)					
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier			
Physical Tests (QCLot: 371904)												
solids, total suspended [TSS]		E160-H	3	mg/L	150 mg/L	98.7	85.0	115				
Anions and Nutrients (QCLot: 368689)												
phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.001	mg/L	0.02 mg/L	104	80.0	120				
Anions and Nutrients (QCLot: 369764)												
phosphorus, total	7723-14-0	E372-U	0.002	mg/L	8.02 mg/L	96.1	80.0	120				
Aggregate Organics (QCLot: 368778)												
biochemical oxygen demand [BOD]		E550	2	mg/L	198 mg/L	102	85.0	115				
					190 mg/L	102	00.0	113				



#### 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	ub-Matrix: Water						Matrix Spike (MS) Report						
					Spike		Recovery (%)	Recovery Limits (%)					
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	Concentration	Target	MS	Low	High	Qualifier			
Anions and Nutrie	nions and Nutrients (QCLot: 368689)												
CG2106767-011	Anonymous	phosphate, ortho-, dissolved (as P)	14265-44-2	E378-U	0.0513 mg/L	0.05 mg/L	103	70.0	130				
Anions and Nutrients (QCLot: 369764)													
CG2106829-002	Anonymous	phosphorus, total	7723-14-0	E372-U	ND mg/L	0.0676 mg/L	ND	70.0	130				

#### Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878 www.alsglobal.com

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<u>Autrese.</u>					Email 1: <u>jobin@kickingnorsereson.com</u> Email 2: <u>pmajer@skircr.com</u>						Same Day or Weekend Emergency - Contact ALS to Confirm TAT									
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KICKING HORSE MOUNTAIN UTILITY CORPORATION ATTN: TRAVIS JOBIN 1500 Kicking Horse Trail Golden BC VOA 1H0 Date Received: 15-OCT-20 Report Date: 04-NOV-20 14:21 (MT) Version: FINAL

Client Phone: 250-344-8442

# Certificate of Analysis

Lab Work Order #: L2517179 Project P.O. #: NOT SUBMITTED Job Reference: RCR - KICKING HORSE MOUNTAIN RESORT C of C Numbers: Legal Site Desc:

Patryk Wojciak, B.Sc., P.Chem. Account Manager

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Environmental 🕽

www.alsglobal.com

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## ALS ENVIRONMENTAL ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L2517179-1 UV TROUGH Sampled By: TJ on 15-OCT-20 @ 09:30 Matrix: WATER <b>Miscellaneous Parameters</b> Trout Bioassay LC50	See Attached					19-OCT-20	R5278541
-							

\* Refer to Referenced Information for Qualifiers (if any) and Methodology.

## **Reference Information**

#### Test Method References:

ALS Test Code	Matrix Test Description		Method Reference**

\*\* ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

Laboratory Definition Code Laboratory Location

Chain of Custody Numbers:

#### **GLOSSARY OF REPORT TERMS**

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.

mg/kg - milligrams per kilogram based on dry weight of sample

mg/kg wwt - milligrams per kilogram based on wet weight of sample

mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight

mg/L - unit of concentration based on volume, parts per million.

< - Less than.

D.L. - The reporting limit.

N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory. UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION. Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.



Contact: Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
Oraclast	Golden BC V0A 1H0 TRAVIS JOBIN							
0	1500 Kicking Horse Tra	ail						
Client:	KICKING HORSE MOL	JNTAIN UTILITY C	ORPORATIO	ON				
		Workorder:	L251717	9	Report Date:	04-NOV-20	Pa	ge 1 of 2

## **Quality Control Report**

Workorder: L2517179

Report Date: 04-NOV-20

#### Legend:

Limit	ALS Control Limit (Data Quality Objectives)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

#### Hold Time Exceedances:

All test results reported with this submission were conducted within ALS recommended hold times.

ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes 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 to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.



# **Acute Toxicity Test Results**

Sample collected October 15, 2020

Final Report

November 3, 2020

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

#4, 6125 12 Street SE, Calgary, AB T2H 2K1



### SAMPLE INFORMATION

Samula ID (		Dates		Deceint
Sample ID/ Internal ID	Collected	Received	Rainbow trout test initiation	Receipt temperature
L2517179-1 UV TROUGH / 2021-0324	15-Oct-20 at 0930h	15-Oct-20 at 1520h	19-Oct-20 at 1405h	6.9°C

### **TEST TYPES**

• Rainbow trout 96-h LC50 test

### RESULTS

### **Toxicity test results**

Sample ID	Rainbow trout LC50 (% v/v)
L2517179-1 UV TROUGH	>100
IC - Lathal Concentration	

LC = Lethal Concentration

### QA/QC

QA/QC summary	Rainbow trout
Reference toxicant LC50 (95% CL)	3.2 (3.0-3.5) g/L KCl <sup>1</sup>
Reference toxicant historical mean (2 SD Range)	3.5 (2.6-4.6) g/L KCl
Reference toxicant CV	9.6%
Organism health history	Acceptable
Protocol deviations	None
Water quality range deviations	None
Control performance	Acceptable
Test performance	Valid

<sup>1</sup> Test date, October 5, 2020

LC = Lethal Concentration; CL = Confidence Limit



Michael Ulrubleshi

Report By: Michael Wrubleski, BSc Biologist

thiese

Reviewed By: Sara Thiessen, BSc Senior 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.



**APPENDIX A – Summary of test conditions** 



Test species	Oncorhynchus mykiss
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)

# Table 1.Summary of test conditions: 96-h rainbow trout (Oncorhynchus mykiss)<br/>survival test.



**APPENDIX B** – Toxicity test data

### MAIITIIIIC

# **Trout Bench Sheet**

Method	TRD Client	ALS106	Reference	2021-0324		_ Chamber5
Test Log						Sample Information
					Daily Data	
Day	Date	Time	Initial	Chem, Cart	Review	Initial pH: 7.0
0	2020/10/19	1405	AW / KK	1	MAF	Initial EC (µS/cm): 573
1	2020/10/20	0900	AW	•	UP.	Initial DO (mg/L): 7.6
2	2020/10/21	0815	U-	£	SC.	Initial Temp (°C): /7
3	2020/10/22	0830	AE	đ	NW	Salinity (ppt):
4	2020/10/23	ORIS	ST	1	NW	
ample Pre- veration rate	e adjusted to 6.5 +/- 1 mL/min	Note: * ; time w /L <b>yes/no</b> 0.5 hours	hen the test w 1 hour	as loaded with	fish 2 hours	DO in mg/L (70% - 100% saturation)** 62 mg/L - 8.9 mg/L at 14°C
O(mg/L) of		0.0	THOUT	i s nours	Lindary	6.1 mg/L - 8.8 mg/L at 15°C
/O(IIIg/L) 01	10078	0.0				6.0 mg/L - 8.6 mg/L at 16°C
act Chamic	try and Biology					**corrected for altitude
Conc.	CTL 6	12	25	50	100	
Conc.		12	25	50	100	
David	0.2 03		pH (units) (ra	inge: 5.5-8.5)		1
Day 0	0.2 0.0	0.1	0:1	0,0	-2.5	
Day 4	49 79	8.0	2.0	XIO	8.0	
			EC (u	S/cm)		
Day 0	43, 447	USR	414	515	589	
Day 4	440 460	463	480	Gile	69D	
Day 0 Day 4	8.e 0.e 3.5 8.5	DO (mg/L B.B 8.5	) (70-100% si	aturation at tes	st temp.) 8.0 8.5	
		Ter	mperature (°C	(range: 14-16"	<b>C</b> )	
Day 0	15 15	15	15	15	15	
Day 4	15 14	15	15	16	15	
		10.00		1.3	1000 C	
D0	10			kets number st		
Day 0			10	10	1	
Day 1	0 10	10	10	10	- D	
Day 2	10 10	10	10		10	
Day 3	10 10	10	10	215	10	
Day 4	10 10		9103	9		
	Validity Criteria: must be a	- (QG)			e control	
	Unless otherwise noted, beh	avior is considere	d to be norma	al		
	anism Data				Test Organis	m Information
Control	Length Weight					
Fish	(cm) (g)				Batch	20200820TR
1	2.7 0.3	Loading Density	/ (a/L):	OIZ	Source	Troutlodge
2	37 0.4	(must be ≤0.5 g/L)	· · j/ -/·			
3	ZIT OIZ	- (			Tank #	4
4		Mean Length (c	·m);	3.1	1.6116	
5	31 0,3	Mean Length (c	<i>.</i> ,.		Dave Hold at	15+ 2°C

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Comments :

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Reviewed By:

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Length Range (cm):

Mean Weight (g):

Weight Range: (g):

TP

(Must be ≥0.3g)

Days Held at 15± 2°C

Percent stock mortality

⑦ days prior to test, must be ≤2%)

(must be ≥14 days)

Date Reviewed:

27-35

0.3

0.2-0.5 Test Volume (L)

38

AW

0

2020/10/23

16L 18



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



### Subcontract Request Form

### Subcontract To:

### NAUTILUS ENVIRONMENTAL COMPANY INC. - CALGARY, AB, CANADA

#4, 6125-12 STREET SE CALGARY,AB T2H 2K1

NOTES: Please reference on final ALS requires QC data to	report and invoice: PO# <u>L251</u> be provided with your final results	<u>7179</u> 5.	
Please see enclosed <u>1</u> sam	ple(s) in <u>2</u> Container(s)		
SAMPLE NUMBER ANALYTI	CAL REQUIRED	DATE SAMPLED DUE DATE	Priority Flag
L2517179-1 UV TROUGH Trout LC5	0 (96h) Bioassay (TROUT-LC50-HQ 14	<b>10/15/2020</b>	2-
Subcontract Info Contact: Analysis and reporting info contact:	John Forbes (403) 291-9897 Patryk Wojciak, B.Sc., P.Chem. 2559 29 STREET NE	2020/10/15 Good Condi 15:20 G.A.C Jozao JC 2x20L canboy/S NoS/Not Email: patryk.wojciak@also	
Please email confirmation of rece	ipt to: patryk.wojciak	@alsglobal.com	
Shipped By:	Date Shipped:		_
Received By:	Date Received:		
Verified By:	Date Verified:		
Sample Integrity Issues:	Temperature:		



**END OF REPORT** 



1

## Chain of Custody / Analytical Request Form

COC #

Canada Toll Free: 1 800 668 9878 www.alsglobal.com

Page \_\_\_\_\_ of

	Report Fo	ormat / Distribut	tion		IC on do	A Dogue	Sted (D	uch for r	outine and	iue eievic	biect to	availabil	un A		
	Report Format / Distribution Service Requested (Rush for routine analysis subject											t to availability)			
Kicking Horse Mountain Water Utility Co. Ltd.	Standard	d 🗌 Other	Regular (Standard Turnaround Times - Business Days)								<u> </u>				
Travis Jobin	PDF Digital Fax O Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TA														
-1500 Kicking Horse Trail	Email 1: tjobin@kickinghorseresort.com O Emergency (1-2 Bus. Days) - 100% Surcharge - Cont											TAT			
	Email 2:	pmajer@skircr.	<u>com</u>	·	Same Day or Weekend Emergency - Contact ALS to Confirm TAT										
250-344-6003 Fax:	Email 3:	mskyring@kicki	inghorseresort.	<u>com</u>									_ <del></del>		
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Resorts of the Canadian Rockies	PO / AFE:														
Patrick Majer	LSD:												•."		
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	1500 Kicking Horse Trail         250-344-6003       Fax:         Same as Report ?       Yes         Invoice with Report?       Yes         Patrick Majer       No         1505 - 17th Ave SW Calgary AB       Fax:         Vork Order #       Sample Identification         (This description will appear on the report)       UV trough         Uv trough       Image: Apple Identification         Special Instructions / Regulations with water or land         Failure to complete all         By the use of this form the user acknow         Also provided on another Excel tab are the ALS location	1500 Kicking Horse Trail       Email 1:         Email 2:       250-344-6003       Fax:       Email 3:         Same as Report ?       Yes       No       Client / Pr         Invoice with Report?       Yes       No       Job #         Resorts of the Canadian Rockies       PO / AFE:       Patrick Majer       LSD:         1505 - 17th Ave SW Calgary AB       Isos       Cuote #:         Vork Order #       ALS       Contact:         Use only)       Sample Identification       (This description will appear on the report)         UV trough       Isos       ALS         Special Instructions / Regulations with water or land use (CCM         Failure to complete all portions o         Special Instructions / Regulations with water or land use (Also provided on another Excel tab are the ALS location addresses	1500 Kicking Horse Trail       Email 1: jjobin@kickingt         250-344-6003       Fax:       Email 2: pmajer@skicc.         250-344-6003       Fax:       Email 3: mskyring@kick         Same as Report ?       Yes       No       Client / Project Informati         Invoice with Report?       Yes       No       Job # RCR - Kicking I         Resorts of the Canadian Rockies       PO / AFE:       Patrick Majer       LSD:         1505 - 17th Ave SW Calgary AB       Sample Identification       Date       Guote #: Q33059         Vork Order #       Sample Identification       Date       Identification       Date         (This description will appear on the report)       UV trough       15-Oct-20       Iso-Oct-20         UV trough       15-Oct-20       Iso-Oct-20       Iso-Oct-20       Iso-Oct-20         Special Instructions / Regulations with water or land use (CCME-Freshwater A       Special Instructions / Regulations with water or land use (CCME-Freshwater A         Failure to complete all portions of this form may         Bay the use of this form the user acknowledges and agrees with	1500 Kicking Horse Trail       Email 1: jjobin@kickinghorseresort.com         250-344-6003       Fax:       Email 2: pmajer@skircr.com         250-344-6003       Fax:       Email 3: mskyring@kickinghorseresort.com         250-344-6003       Fax:       Email 3: mskyring@kickinghorseresort.com         250-344-6003       Fax:       Client / Project Information         Invoice with Report?       Yes       No       Ob #       RCR - Kicking Horse Mountain         Resorts of the Canadian Rockies       P0 / AFE:       Patrick Majer       LSD:       1505 - 17th Ave SW Calgary AB         Sample Identification       Guote #:       Q33059       ALS       Sampler:         Vork Order #       ALS       Contact:       LS       Sampler:         Use only)       Sample Identification       Date       Time         (This description will appear on the report)       UV trough       15-Oct-20       9:30         UV trough       15-Oct-20       9:30       Immetry       Immetry         Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC       Failure to complete all portions of this form may delay analysis         Special Instructions / Regulations with water or land use acknowledges and agrees with the Terms and Also provided on another Excel tab are the ALS location addresses, phone numbers and sample <td>1500 Kicking Horse Trail       Email 1: jjobin@kickinghorseresort.com         250-344-6003       Fax:       Email 3: mskyring@kickinghorseresort.com         Same as Report ?       Yes       No       Client / Project Information         Invoice with Report?       Yes       No       Job &amp; RCR - Kicking Horseresort.com         Resorts of the Canadian Rockies       PO / AFE:       Patrick Majer       LSD:         1505 - 17th Ave SW Calgary AB       Sampler:       TJ         Oute #:       Q33059       ALS       Sampler:         Vork Order #       ALS       Contact:       LS       Sampler:         1505 - 17th Ave SW Calgary AB       Contact:       LS       Sampler:       TJ         Vork Order #       ALS       Contact:       LS       Sampler:       TJ         UV trough       15-Oct-20       9:30       Water         UV trough       15-Oct-20       9:30       Water         Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commerc         Failure to complete all portions of this form may delay analysis. 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# Chain of Custody / Analytical Request Form Canada Toll Free: 1 800 668 9878

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Report To		Report Fo	rmat / Distributi	on		Servio	e Requ	ested	(Rush for	routine	analysis	subjec	t to avai	lability)		
Company:	Kicking Horse Mountain Water Utility Co. Ltd. Standard Other						Regular (Standard Turnaround Times - Business Days)									
Contact:	Travis Jobin							Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT								
Address:	1500 Kicking Horse Trail	Email 1:	tjobin@kickingh	orseresort.com			ergency (1	-2 Bus.	Days) - 10	)% Surch	harge - Co	ge - Contact ALS to Confirm TAT				
		Email 2:	pmajer@skircr.c	om		O Same Day or Weekend Emergency - Contact ALS to Confirm TAT										
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